REFERENCE MANUAL | PUBLIC

SAP Adaptive Server Enterprise 16.0 SP03

Document Version: 1.0 – 2019-06-06

Reference Manual: Procedures

THE BEST RUN SAP

Content

1 System Stored Procedures

SAP Adaptive Server Enterprise system stored procedures are similar to the stored procedures that you create using the Transact-SQL language, but are supplied in SAP ASE to use for updating and getting reports from system tables.

System stored procedures are created by `installmaster` at installation. They are located in the `sybsystemprocs` database, and owned by the system administrator. Use `sp_version` to determine which version of `installmaster` was most recently run.

Some system stored procedures can only run in a specific database, but many of them can run in any database. You can create your own system procedures to execute from any database.

You can declare up to 10,000 variables in a stored procedure.

All system stored procedures:

- Execute at isolation level 1.
- Report a return status that indicates whether or not they completed successfully, and if they did not, the reasons for failure.
  The following example means that the procedure executed successfully:

  ```
  return status = 0
  ```

  The examples in this book do not include the return status.

See the following for more information:

- Creating your own stored procedures: *System Administration Guide*.
- Return values for system stored procedures: *Return Values* in the *Transact-SQL User's Guide*.

1.1 Permissions on System Stored Procedures

Set permissions for system stored procedures in the `sybsystemprocs` database.

Some system stored procedures can run only by a user with specific privileges or roles. Permission check for a system procedure may differ based on the granular permissions setting. Check the permission information for each system stored procedure for details. See *Using Granular Permissions* in the *Security Administration Guide* for more information on granular permissions.

Other system procedures (for example, all the `sp_help` procedures) can be executed by any user, provided that the `execute` permission on the procedure was granted to public in `sybsystemprocs`.

To deny a user permission on a system stored procedure, the system administrator must add the user to `sybsystemprocs..sysusers` and write a `revoke` statement that applies to that procedure. The owner of a user database can directly control permissions on the system stored procedures within his or her own database.

1.2 Auditing Stored Procedures

In general, you can audit execution of stored procedures by enabling the exec_procedure audit option, which generates an audit record containing the name of the stored procedure and the parameters.

In addition, the audit option sproc_auth enables auditing for authorization checks that are performed inside system stored procedures.

Some system stored procedures can be audited after enabling specific audit options. See procedure-specific documentation in the reference manual.

For more information, see the *Security Administration Guide* > *Auditing*.

1.3 Executing System Stored Procedures

If a system stored procedure is executed in a database other than sybsystemprocs, it operates on the system tables in the database in which it was executed.

For example, if the database owner of pubs2 runs sp_adduser in pubs2, the new user is added to pubs2..sysusers.

Run a system procedure in a specific database by either of the following:

- Opening that database with the use command and execute the procedure
- Qualifying the procedure name with the database name

For example, the user-defined system procedure sp_foo, which executes the db_name system function, returns the name of the database in which it is executed. When executed in the pubs2 database, it returns the value "pubs2":

```
exec pubs2..sp_foo
```

```
------------------------------
pubs2
(1 row affected, return status = 0)
```

When executed in sybsystemprocs, it returns the value "sybsystemprocs":

```
exec sybsystemprocs..sp_foo
```

```
------------------------------
sybsystemprocs
(1 row affected, return status = 0)
```

See sybsystemprocs in *Reference Manual: Tables*.

1.4 Entering Parameter Values

If a parameter value for a system procedure contains punctuation or embedded blanks, or is a reserved word, you must enclose it in single or double quotes. If the parameter is an object name qualified by a database name or owner name, enclose the entire name in single or double quotes.

> i Note
>
> Do not use delimited identifiers as system procedure parameters; they may produce unexpected results.

If a procedure has multiple optional parameters, you can supply parameters in the following form instead of supplying all the parameters:

```
@<parametername> = <value>
```

You can also use "null" as a placeholder for a parameter. Do not enclose "null" in quotes.

SQL has no rules about the number of words you can put on a line or where you must break a line. If you issue a system procedure followed by a command, the SAP ASE server attempts to execute the system procedure, then the command. For example, if you execute the following command, the SAP ASE server returns the output from `sp_help`, then runs the `checkpoint` command:

```
sp_help checkpoint
```

If you specify more parameters than the number of parameters expected by the system procedure, the extra parameters are ignored by the SAP ASE server.

1.5 Messages

System procedures return informational and error messages. System procedure error messages start at error number 17000.

Error messages from the functions and commands included in a procedure are documented in *Troubleshooting and Error Messages Guide*.

1.6 System Procedure Tables

Several system procedure tables in the `master` database, such as `spt_values`, `spt_committab`, `spt_monitor`, and `spt_limit_types`, are used by system stored procedures to convert internal system values (for example, status bits) into human-readable format.

`spt_values` is never updated. To see how it is used, execute `sp_helptext` to look at the text for one of the system stored procedures that references it.

In addition, some system stored procedures create and then drop temporary tables.

Related Information

sp_helptext [page 485]

1.7 sp_activeroles

Displays all active roles.

Syntax

```
sp_activeroles [expand_down]
```

Parameters

expand_down

shows the hierarchy tree of all active roles contained by your roles.

Examples

Example 1

Displays all active roles.

```
sp_activeroles
```

```
Role Name
------------------------------
sa_role
sso_role
oper_role
replication_role
```

Example 2

Displays active roles and their hierarchy tree:

```
sp_activeroles expand_down
```

```
Role Name       Parent Role Name              Level
-------------------------------- ------------------
sa_role         NULL                              1
doctor_role     NULL                              1
```

```
oper_role       NULL                                 1
```

Usage

`sp_activeroles` displays all your active roles and all roles contained by those roles.

See also:

- `alter role`, `create role`, `drop role`, `grant`, `revoke`, `set` in *Reference Manual: Commands*
- For information about creating, managing, and using roles, see the *System Administration Guide*.
- `mut_excl_roles`, `proc_role`, `role_contain`, `role_name` in *Reference Manual: Building Blocks*

Permissions

Any user can execute `sp_activeroles`. Permission checks do not differ based on the granular permissions settings.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_displayroles [page 276]

1.8 sp_add_qpgroup

Adds an abstract plan group.

Syntax

```
sp_add_qpgroup <new_name>
```

Parameters

<new_name>

is the name of the new abstract plan group. Group names must be valid identifiers.

Examples

Example 1

Creates a new abstract plan group named `dev_plans`:

```
sp_add_qpgroup dev_plans
```

Usage

Use `sp_add_qpgroup` to add abstract plan groups for use in capturing or creating abstract plans. The abstract plan group must exist before you can create, save, or copy plans into a group.

You cannot run `sp_add_qpgroup` in a transaction.

See also `set` in *Reference Manual: Commands*.

Permissions

The permission checks for `sp_add_qpgroup` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `manage abstract plans` privilege.
Disabled	With granular permissions disabled, you must be the database owner or a user with sa_role

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_help_qpgroup [page 410]

1.9 sp_add_resource_limit

Creates a limit on the number of server resources that can be used by an SAP ASE login, or by an application, or both, to execute a query, query batch, or transaction.

Syntax

```
sp_add_resource_limit <name>, <appname>, <rangename>, <limittype>, <limitvalue>
    [, <enforced>[, <action>[, <scope> ]]]
```

Parameters

<name>

is the SAP ASE login to which the limit applies. To create a limit that applies to all users:

- Of a particular application, specify NULL for <name>.
- Using any application, specify NULL for both <name> and <appname>.

<appname>

is the name of the application to which the limit applies. To create a limit that applies to:

- All applications used by an SAP ASE login, specify NULL for <appname>.
- A particular application, specify the application name that the client program passes to the SAP ASE server in the login packet.
- All users using any application, specify NULL for both <name> and <appname>.

<rangename>

is the time range during which the limit is enforced. The time range must exist in the systimeranges system table of the master database at the time you create the limit.

<limittype>

is the type of resource to limit. This must be one of the following:

- row_count – limits the number of rows a query can return.
- elapsed_time – limits the number of seconds, in wall-clock time, that a query batch or transaction can run.
- io_cost – limits either the actual cost or the optimizer’s cost estimate for processing a query.

- tempdb_space – limits the number of pages a tempdb database can have during a single session.
- lock_count – limits the number of logical locks held simultaneously by a user process.
- idle_time – number of seconds connections can be idle before they are released.
- cpu_time – limits the number of seconds of CPU time that a query batch or transaction can use.

<limitvalue>

is the maximum amount of the server resource (I/O cost, elapsed time in seconds, row count, or tempdb space) that can be used by the login or application before the SAP ASE server enforces the limit. This must be a positive, nonzero integer that is less than or equal to 2^{31}. The following table indicates what value to specify for each limit type:

- row_count – the maximum number of rows that can be returned by a query before the limit is enforced.
- elapsed_time – the number of seconds, in wall-clock time, that a query batch or transaction can run before the limit is enforced.
- io_cost – a unitless measure derived from the optimizer’s costing formula.
- tempdb_space – the number of pages used in tempdb per session.
- lock_count – limits the number of logical locks held simultaneously by a user process.

<enforced>

determines whether the limit is enforced prior to or during query execution. The following table lists the valid values for each limit type:

enforced Code	Description	Limit Type
1	Action is taken when the estimated I/O cost of execution exceeds the specified limit.	io_cost
2	Action is taken when the actual row count, elapsed time, or I/O cost of execution exceeds the specified limit.	row_count elapsed_time io_cost lock_count
3	Action is taken when either the estimated cost or the actual cost exceeds the specified limit.	io_cost

If you specify an <enforced> value of 3, the SAP ASE server performs a logical "or" of 1 and 2. For example, assume <enforced> is set to 3. If you run a query with io_cost that exceeds the estimated cost, the specified <action> is executed. If the query is within the limits specified for estimated cost but exceeds the actual cost, the specified <action> is also executed.

If you do not specify an <enforced> value, the SAP ASE server enforces limit 2 for row_count and elapsed_time and limit 3 for io_cost. In other words, if the limit type is io_cost, the specified action is executed if the query exceeds either the estimated or actual cost.

<action>

is the action to take when the limit is exceeded. The following action codes are valid for all limit types:

- 1 – issues a warning
- 2 – aborts the query batch (not supported for lock_limit)
- 3 – aborts the transaction
- 4 – kills the session
- 5 – records the resource limit violations in the monThresholdEvent table

If you do not specify an <action> value, the SAP ASE server uses a default value of 2 (abort the query batch).

<scope>

is the scope of the limit. Specify one of the following codes appropriate to the type of limit:

- 1 – Query
- 2 – Query batch (one or more SQL statements sent by the client to the server)
- 4 – Transaction
- 6 – Query batch and transaction
- 8 – Session scope (always 8 for idle_time)

If you do not specify a <scope> value, the limit applies to all possible scopes for the limit type.

Examples

Example 1

Creates a resource limit that applies to all users of the payroll application during the early_morning time range. If the query batch takes more than 120 seconds to execute, the SAP ASE server issues a warning:

```
sp_add_resource_limit NULL, payroll, early_morning, elapsed_time, 120, 2, 1, 2
```

Example 2

Creates a resource limit that applies to all ad hoc queries and applications run by "joe_user" during the midday time range. When a query returns more than 5000 rows, the SAP ASE server aborts the transaction:

```
sp_add_resource_limit joe_user, NULL, midday, row_count, 5000, 2, 3, 1
```

Example 3

Creates a resource limit that applies to all ad hoc queries and applications run by "joe_user" during the `midday` time range. When the optimizer estimates that the I/O cost would exceed 650, the SAP ASE server aborts the transaction:

```
sp_add_resource_limit joe_user, NULL, midday, io_cost, 650, 1, 3, 1
```

Example 4

Sets the number of locks to 10000 that all users can simultaneously have open for a session:

```
sp_add_resource_limit NULL, NULL, "at all times", "lock_count", 10000
```

Example 5

Sets the length of idle time to 10 seconds before queries are released for user sa and application `isql`; `at all times` indicates the time range encompasses all hours of the day, 2 indicates the limit is enforced prior to execution time, 4 indicates the action is taken when the 10 seconds expires, and 8 indicates the scope of the limit is for the session:

```
sp_add_resource_limit sa, isql, 'at all times', idle_time, 10, 2, 4, 8
```

Usage

Additional considerations for using `sp_add_resource_limit`.

- You must enable `sp_configure "allow resource limits"` for resource limits to take effect.
- Multiple resource limits can exist for a given user, application, limit type, scope, and enforcement time, as long as their time ranges do not overlap.
- All limits for the currently active named time ranges and the "at all times" range for a login and/or application name are bound to the user's session at login time. Therefore, if a user logs into the SAP ASE server independently of a given application, resource limits that restrict the user in combination with that application do not apply. To guarantee restrictions on that user, create a resource limit that is specific to the user and independent of any application.
- Since either the user login name or application name, or both, are used to identify a resource limit, the SAP ASE server observes a predefined search precedence while scanning the `sysresourcelimits` table for applicable limits for a login session. The following table describes the precedence of matching ordered pairs of login name and application name:

Level	Login Name	Application Name
1	"joe_user"	`payroll`
2	NULL	`payroll`
3	"joe_user"	NULL
4	NULL	NULL

If one or more matches are found for a given precedence level, no further levels are searched. This prevents conflicts regarding similar limits for different login/application combinations.
If no match is found at any level, no limit is imposed on the session.

- When you add, delete, or modify resource limits, the SAP ASE server rebinds the limits for each session for that login and/or application at the beginning of the next query batch for that session.
- When you change the currently active time ranges, the SAP ASE server rebinds limits for the session. This rebinding occurs at the beginning of the next query batch.
- You cannot associate the limits for a particular login, application, or login/application combination with named time ranges that overlap (except for limits that share the same time range).
  For example, if a user is limited to retrieving 50 rows between 9:00 a.m. and 1:00 p.m., you cannot create a second resource limit for the same user that limits him to retrieving 100 rows between 10:00 a.m. and 12:00 noon. However, you can create a resource hierarchy by assigning the 100-row limit to the *user* between 10:00 a.m. and 12:00 noon and assigning the 50-row limit to an **application**, like `isql`, between 9:00 a.m. and 1:00 p.m.
- Setting a value for `lock_count` requires that you set the enable monitoring configuration parameter to 1:
  `sp_configure 'enable monitoring', 1`
- `lock_count` does not support the abort_batch action.
- `lock_count` limit is not inherited by child threads and is not applicable for DTM environment.

> i Note
>
> Although the SAP ASE server terminates the current transaction when it reaches its time limit, you receive no 11005 error message until you issue another SQL command or batch; in other words, the message appears only when you attempt to use the connection again.

For more information on resource limits, see the *System Administration Guide*.

See also `isql` in the *Utility Guide*.

Permissions

The permission checks for `sp_add_resource_limit`System Administration differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `manage resource limit` privilege.
Disabled	With granular permissions disabled, you must be a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_configure [page 203]
sp_drop_resource_limit [page 287]
sp_help_resource_limit [page 407]
sp_modify_resource_limit [page 586]

1.10 sp_add_time_range

Adds a named time range to an SAP ASE server.

Syntax

```
sp_add_time_range <name>, <startday>, <endday>, <starttime>, <endtime>
```

Parameters

<name>

is the name of the time range. Time range names must be 255 characters or fewer. The name cannot already exist in the `systimeranges` system table of the `master` database.

<startday>

is the day of the week on which the time range begins. This must be the full weekday name for the default server language, as stored in the `syslanguages` system table of the `master` database.

<endday>

is the day of the week on which the time range ends. This must be the full weekday name for the default server language, as stored in the `syslanguages` system table of the `master` database. The `<endday>` can fall either earlier or later in the week than the `<startday>` or can be the same day as the `<startday>`.

<starttime>

is the time of day when the time range begins. Specify the `<starttime>` in terms of a 24-hour clock, with a value between "00:00" (midnight) and "23:59" (11:59 p.m.). Use the following form:

```
"<HH>:<MM>"
```

<endtime>

is the time of day when the time range ends. Specify the `<endtime>` in terms of a 24-hour clock, with a value between "00:00" (midnight) and "23:59" (11:59 p.m.). Use the following form:

```
"<HH>:<MM>"
```

> i Note
>
> To create a time range that spans the entire day, specify both a start time and an end time of "00:00".

The `<endtime>` must occur later in the day than the`< starttime>`, unless `<endtime>` is "00:00".

Examples

Example 1

Creates the `business_hours` time range, which is active Monday through Friday, from 9:00 a.m. to 5:00 p.m.:

```
sp_add_time_range business_hours, monday, Friday, "09:00", "17:00"
```

Example 2

Creates two time ranges, `before_hours` and `after_hours`, that, together, span all non-business hours Monday through Friday. The `before_hours` time range covers the period from 12:00 midnight to 9:00 a.m., Monday through Friday. The `after_hours` time range covers the period from 6:00 p.m. through 12:00 midnight, Monday through Friday:

```
sp_add_time_range before_hours, Monday, Friday, "00:00", "09:00"
```

```
sp_add_time_range after_hours, Monday, Friday, "18:00", "00:00"
```

Example 3

Creates the `weekends` time range, which is 12:00 midnight Saturday to 12:00 midnight Sunday:

```
sp_add_time_range weekends, Saturday, Sunday, "00:00", "00:00"
```

Example 4

Creates the `Fri_thru_Mon` time range, which is 9:00 a.m. to 5:00 p.m., Friday, Saturday, Sunday, and Monday:

```
sp_add_time_range Fri_thru_Mon, Friday, Monday, "09:00", "17:00"
```

Example 5

Creates the `Wednesday_night` time range, which is Wednesday from 5:00 p.m. to 12:00 midnight:

```
sp_add_time_range Wednesday_night, Wednesday, Wednesday, "17:00", "00:00"
```

Usage

There are additional considerations when using `sp_add_time_range`:

- The SAP ASE server includes one named time range, the "at all times" time range. This time range covers all times, from the first day through the last of the week, from 00:00 through 23:59. It cannot be modified or deleted.
- The SAP ASE server generates a unique ID number for each named time range and inserts it into the `systimeranges` system table,
- When storing a time range in the `systimeranges` system table, the SAP ASE server converts its `<startday>` and `<endday>` values into integers. For servers with a default language of us_english, the week begins on Monday (day 1) and ends on Sunday (day 7).
- You can create a time range that overlaps with one or more other time ranges.
- Range days are contiguous, so the days of the week can wrap around the end to the beginning of the week. In other words, Sunday and Monday are contiguous days, as are Tuesday and Wednesday.
- The active time ranges are bound to a session at the beginning of each query batch. A change in the server's active time ranges due to a change in actual time has no effect on a session during the processing of a query batch. In other words, if a resource limit restricts a query batch during a given time range but a query batch begins before that time range becomes active, the query batch that is already running is not affected by the resource limit.
- The addition, modification, and deletion of time ranges using the system procedures does not affect the active time ranges for sessions currently in progress.
- If a resource limit has a transaction as its scope, and a change occurs in the server's active time ranges while a transaction is running, the newly active time range does not affect the transaction currently in progress.
- Changes to a resource limit that has a transaction as its scope does not affect any transactions currently in progress.
- For more information on time ranges, see the *System Administration Guide*.

Permissions

The permission checks for `sp_add_time_range` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `manage resource limit` privilege.
Disabled	With granular permissions disabled, you must be a user with sso_role.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_add_resource_limit [page 18]
sp_drop_time_range [page 290]
sp_modify_time_range [page 589]

1.11 sp_addalias

Allows an SAP ASE user to be known in a database as another user.

Syntax

```
sp_addalias <loginame>, <name_in_db>
```

Parameters

<loginame>

is the master.dbo.syslogins name of the user who wants an alternate identity in the current database.

<name_in_db>

is the database user name to alias <loginame> to. The name must exist in both master.dbo.syslogins and in the sysusers table of the current database.

Examples

Example 1

There is a user named "albert" in the database's sysusers table and a login for a user named "victoria" in master.dbo.syslogins. This command allows "victoria" to use the current database by assuming the name "albert":

```
sp_addalias victoria, albert
```

Usage

There are additional considerations when using sp_addalias:

- Executing sp_addalias maps one user to another in the current database. The mapping is shown in sysalternates, where the two users' suids (system user IDs) are connected.
- A user can be aliased to only one database user at a time.
- A report on any users mapped to a specified user can be generated with sp_helpuser, giving the specified user's name as an argument.
- When a user tries to use a database, the SAP ASE server checks sysusers to confirm that the user is listed there. If the user is not listed there, the SAP ASE server then checks sysalternates. If the user's suid is listed in sysalternates, mapped to a database user's suid, the SAP ASE server treats the first user as the second user while using the database.
  If the user named in <loginame> is in the database's sysusers table, the SAP ASE server does not use the user's alias identity, because it checks sysusers and finds the loginame before checking sysalternates, where the alias is listed.

See also use in *Reference Manual: Commands*.

Permissions

The permission checks for sp_addalias differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with manage any user privilege.
Disabled	With granular permissions disabled, you must be the database owner, a user with sa_role, or a user with sso_role.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_addlogin [page 47]
sp_adduser [page 73]
sp_dropalias [page 281]
sp_helpuser [page 494]

1.12 sp_addauditrecord

Allows users to enter user-defined audit records (comments) into the audit trail.

Syntax

```
sp_addauditrecord [<text>[, <db_name>[, <obj_name>
     [, <owner_name>[, <dbid>[, <objid>]]]]]]
```

Parameters

<text>

is the text of the message to add to the current audit table. The text is inserted into the `extrainfo` field of the table.

<db_name>

is the name of the database referred to in the record. The name is inserted into the `dbname` field of the current audit table.

<obj_name>

is the name of the object referred to in the record. The name is inserted into the `objname` field of the current audit table.

<owner_name>

is the owner of the object referred to in the record. The name is inserted into the `objowner` field of the current audit table.

<dbid>

is the database ID number of `db_name`. Do not enclose this integer value in quotes. `<dbid>` is inserted into the `dbid` field of the current audit table.

<objid>

is the object ID number of `obj_name`. Do not enclose this integer value in quotes. `<objid>` is inserted into the `objid` field of the current audit table.

Examples

Example 1

Adds "I gave A. Smith permission to view the payroll table in the corporate database. This permission was in effect from 3:10 to 3:30 pm on 9/22/92." to the `extrainfo` field; "corporate" to the `dbname` field;

"payroll" to the objname field; "dbo" to the objowner field; "10" to the dbid field, and "1004738270" to the objid field of the current audit table:

```
sp_addauditrecord "I gave A. Smith permission to view the payroll table in
the corporate database. This permission was in effect from 3:10 to 3:30 pm
on 9/22/92.", "corporate", "payroll", "dbo", 10, 1004738270
```

Example 2

Adds this record to the audit trail. This example uses parameter names with the @ prefix, which allows you to leave some fields empty:

```
sp_addauditrecord @text="I am disabling auditing briefly while we
reconfigure the system", @db_name="corporate"
```

Usage

The SAP ASE server writes all audit records to the current audit table. The current audit table is determined by the value of the current audit table configuration parameter, set with sp_configure. An installation can have up to eight system audit tables, named sysaudits_01, sysaudits_02, and so forth, through sysaudits_08.

> i Note
>
> The records actually are first stored in the in-memory audit queue, and the audit process later writes the records from the audit queue to the current audit table. Therefore, you cannot count on an audit record being stored immediately in the audit table.

You can use sp_addauditrecord if:

- You have been granted execute permission on sp_addauditrecord – no special role is required
- Auditing is enabled – a system security officer used sp_configure to turn on the auditing configuration parameter
- The adhoc option of sp_audit is set to on

Permissions

The permission checks for sp_addauditrecord differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled: • Users with execute permission on the procedure can execute sp_addauditrecord. • By default, sso_role has execute permission. • The database owner of sybsystemprocs can grant execute permission.
Disabled	With granular permissions disabled:

Setting	Description
	- Users with execute permission on the procedure can execute `sp_addauditrecord`. - By default sso_role has execute permission. - Users with sa_role can grant execute permission. - The database owner of `sybsystemprocs` can grant `execute` permission to other users.

Auditing

You can enable `adhoc` auditing option to audit this procedure. Values in `event` and `extrainfo` columns from the `sysaudits` table are:

Information	Value
Audit option	`adhoc`
Event	1
Command or access audited	User-defined audit record
Information in **`extrainfo`**	- **Roles** – Current active roles - **Keywords or options** – NULL - **Previous value** – NULL - **Current value** – NULL - **Other information** – `text` parameter value - **Other information** – Original login name, if `set proxy` in effect

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_audit [page 77]

1.13 sp_addaudittable

Adds another system audit table after auditing is installed.

Syntax

```
sp_addaudittable <devname>
```

Parameters

<devname>

is the name of the device for the audit table. Specify a device name or specify "default". If you specify "default", the SAP ASE server creates the audit table on the same device as the `sybsecurity` database. Otherwise, the SAP ASE server creates the table on the device you specify.

Examples

Example 1

Creates a system audit table on `auditdev2`. If only one system audit table (`sysaudits_01`) exists when you execute the procedure, the SAP ASE server names the new audit table `sysaudits_02` and places it on its own segment, called `aud_seg_02`, on `auditdev2`:

```
sp_addaudittable auditdev2
```

Example 2

Creates a system audit table on the same device as the `sybsecurity` database. If two system audit tables (`sysaudits_01` and `sysaudits_02`) exist when you execute the procedure, the SAP ASE server names the new audit table `sysaudits_03` and places it on its own segment, called `aud_seg_03`, on the same device as the `sybsecurity` database:

```
sp_addaudittable "default"
```

Usage

There are additional considerations when using `sp_addaudittable`:

- Auditing must already be installed when you run sp_addaudittable. To add a system audit table:
    1. Create the device for the audit table, using disk init. For example, run a command like this for UNIX:

       ```
       disk init name = "auditdev2",
       physname = "/dev/rxyla",
       size = "5K"
       ```

    2. Add the device to the sybsecurity database with the alter database command. For example, to add auditdev2 to the sybsecurity database, use:

       ```
       alter database sybsecurity on auditdev2
       ```

    3. Execute sp_addaudittable to create the table.
- The SAP ASE server names the new system audit table and the new segment according to how many audit tables are already defined. For example, if five audit tables are defined before you execute the procedure, the SAP ASE server names the new audit table sysaudits_06 and the new segment aud_seg_06. If you specify "default", the SAP ASE server places the segment on the same device as the sybsecurity database. Otherwise, the SAP ASE server places the segment on the device you name.
- A maximum of eight audit tables is allowed. If you already have eight audit tables, and you attempt to execute sp_addaudittable to add another one, the SAP ASE server displays an error message.
- For information about how to install auditing, see the installation documentation for your platform. See the *System Administration Guide* for information on how to use auditing.

See also alter database and disk init in *Reference Manual: Commands*.

Permissions

The permission checks for sp_addaudittable differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with manage auditing privilege.
Disabled	With granular permissions disabled, you must be a user with sso_role.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide > Auditing*.

Related Information

sp_audit [page 77]

1.14 sp_addengine

Adds an engine to an existing engine group or, if the group does not exist, creates an engine group and adds the engine.

Considerations for Process Mode

`sp_addengine` does not run in threaded mode.

Syntax

```
sp_addengine <engine_number>, <engine_group> [, <instance_id>]
```

Parameters

<engine_number>
is the number of the engine you are adding to the group. Legal values are between 0 and a maximum equal to the number of configured online engines minus one.

<engine_group>
is the name of the engine group to which you are adding the engine. If `engine_group` does not exist, the SAP ASE server creates it and adds the engine to it. Engine group names must conform to the rules for identifiers. For details, see *Reference Manual: Building Blocks > Expressions, Identifiers, and Wildcard Characters*.

<instance_id>
(in cluster environments) ID of the instance to which you are adding an engine or engine group.

Examples

Example 1

If no engine group is called `DS_GROUP`, this statement establishes the group. If `DS_GROUP` already exists, this statement adds engine number 2 to that group:

```
sp_addengine 2, DS_GROUP
```

Example 2

Adds engine number 5 to instance ID 8:

```
sp_addengine 5, 8
```

Usage

There are additional considerations when using `sp_addengine`:

- `sp_addengine` creates a new engine group if the value of `engine_group` does not already exist.
- If `sp_cluster set <system_view>` is set to `cluster`, you can add an engine or engine group to any instance in the cluster. If `<system_view>` is set to `instance`, you can add and engine or engine group only to a local instance.
- The engine groups `ANYENGINE` and `LASTONLINE` are predefined. `ANYENGINE` includes all existing engines. `LASTONLINE` specifies the engine with highest engine number. A system administrator can create additional engine groups. You cannot modify predefined engine groups.
- As soon as you use `sp_bindexeclass` to bind applications or logins to an execution class associated with `engine_group`, the associated process may start running on `engine_number`.
- `sp_engine` can run in sessions using chained transactions after you use `sp_procxmode` to change the transaction mode to `anymode`.
- Prior to making engine affinity assignments, study the environment and consider the number of nonpreferred applications and the number of SAP ASE engines available. See the *Performance and Tuning Guide* for more information about non-preferred applications.

Permissions

The permission checks for `sp_addengine` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `manage any execution class` privilege.
Disabled	With granular permissions disabled, you must be a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_addexeclass [page 35]
sp_bindexeclass [page 110]
sp_clearpsexe [page 161]
sp_dropengine [page 294]
sp_setpsexe [page 723]
sp_showcontrolinfo [page 741]
sp_showexeclass [page 743]
sp_showpsexe [page 763]
sp_unbindexeclass [page 824]

1.14.1 sp_addexeclass

Creates or updates a user-defined execution class that you can bind to client applications, logins, and stored procedures.

Considerations for Process Mode

The predefined engine group parameter `ANYENGINE` and `LASTONLINE` are valid only in process mode.

Syntax

```
sp_addexeclass <classname>, <priority>, <timeslice>, <engine_group> [,
<instance_id>]
```

Parameters

`<classname>`

is the name of the new execution class.

`<priority>`

is the priority value with which to run the client application, login, or stored procedure after it is associated with this execution class. Legal values are `HIGH`, `LOW`, and `MEDIUM`.

`<timeslice>`

is the time unit assigned to processes associated with this class. The SAP ASE server currently ignores this parameter.

<engine_group>

identifies an existing group of engines on which processes associated with this class can run.

<instance_id>

(in cluster environments) ID of the instance to which you are binding a user-defined execution class.

Examples

Example 1

Defines a new execution class called DS with a <priority> value of LOW and associates it with the engine group DS_GROUP:

```
sp_addexeclass "DS", "LOW", 0, "DS_GROUP"
```

Example 2

(Cluster Edition) Defines a new execution class called DS with a priority value of LOW and associates it with the engine group DS_GROUP on instance number 8, enter:

```
sp_addexeclass "DS", "LOW", 0, "DS_GROUP", 8
```

Usage

There are additional considerations when using sp_addexeclass:

- sp_addexeclass creates or updates a user-defined execution class that you can bind to client applications, logins, and stored procedures. If the class already exists, the class attribute values are updated with the values supplied by the user.
- When you run sp_addexeclass in threaded mode, the SAP ASE server uses <engine_group> for the name of a thread pool.
- (In cluster environments) If sp_cluster set <system_view> is set to cluster, you can add an execution class on any instance in the cluster. If the <system_view> is set to instance, you can add an execution class only to a local instance.
- Use the predefined engine group parameter ANYENGINE if you do not want to restrict the execution object to an engine group.
- Use sp_addengine to define engine groups. Use sp_showexeclass to display execution class attributes and the engines in any engine group associated with the specified execution class. sp_showcontrolinfo lists the existing engine groups.

Permissions

The permission checks for sp_addexeclass differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with manage any execution class privilege.
Disabled	With granular permissions disabled, you must be a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_addengine [page 33]
sp_bindexeclass [page 110]
sp_clearpsexe [page 161]
sp_dropengine [page 294]
sp_dropexeclass [page 296]
sp_setpsexe [page 723]
sp_showcontrolinfo [page 741]
sp_showexeclass [page 743]
sp_unbindexeclass [page 824]

1.15 sp_addextendedproc

Creates an extended stored procedure (ESP) in the master database.

Syntax

```
sp_addextendedproc <esp_name>, <dll_name>
```

Parameters

<esp_name>

is the name of the extended stored procedure. This name must be identical to the name of the procedural language function that implements the ESP. `<esp_name>` must be a valid SAP ASE identifier.

`<dll_name>`

is the name of the dynamic link library (DLL) file containing the function specified by `<esp_name>`. The `<dll_name>` can be specified with no extension or with its platform-specific extension, such as `.dll` on Windows or `.so` on Solaris. If an extension is specified, the `<dll_name>` must be enclosed in quotation marks.

Examples

Example 1

Registers an ESP for the function named `my_esp`, which is in the `sqlsrvdll.dll` file. The name of the resulting ESP database object is also `my_esp`:

```
sp_addextendedproc my_esp, "sqlsrvdll.dll"
```

Usage

There are additional considerations when using `sp_addextendedproc`:

- Execute `sp_addextendedproc` from the `master` database.
- You can only use `sp_addextendedproc` to add extended stored procedures that take no parameters. If your extended stored procedure requires a formal parameter list, you must use the `create procedure` command with the `as external name` option, together with the complete parameter list.
- The `<esp_name>` is case sensitive. It must match the name of the function in the DLL.
- The DLL represented by `<dll_name>` must reside on the server machine on which the ESP is being created and the DLL directory must be in:
    - (Windows) `$PATH`
    - (Compaq Tru64) `$LD_LIBRARY_PATH`
    - (HP) `$SH_LIBRARY_PATH`

  If the file is not found, the search mechanism also searches `$SYBASE/lib` (`$SYBASE/dll` on Windows).
- (Windows) An ESP function should not call a C run-time signal routine. This can cause XP Server to fail, because Open Server does not support signal handling on Windows.

See also `create procedure` in *Reference Manual: Commands*.

Permissions

The permission checks for `sp_addextendedproc` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `manage any ESP` privilege.
Disabled	With granular permissions disabled, you must be a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_dropextendedproc [page 297]
sp_helpextendedproc [page 448]

1.16 sp_addexternlogin

(Component Integration Services only) Creates an alternate login account and password to use when communicating with a remote server through Component Integration Services.

Syntax

```
sp_addexternlogin <server>, <loginame>, <externname>
    [, <externpasswd>] [<rolename>]
```

Parameters

`<server>`

is the name of the remote server. The `<remote_server>` must be known to the local server by an entry in the `master.dbo.sysservers` table.

`<loginame>`

is an account known to the local server. `<loginame>` must be represented by an entry in the `master.dbo.syslogins` table. The "sa" account, the "sso" account, and the

<loginame> account are the only users authorized to modify remote access for a given local user.

<externname>

is an account known to the <server> and must be a valid account on the node where the <server> runs. This is the account used for logging into the <server>.

<externpasswd>

is the password for <externname>.

<rolename>

is the SAP ASE user's assigned role. If <rolename> is specified, <login_name> is ignored.

Examples

Example 1

Tells the local server that when the login name "bobj" logs in, access to the remote server OMNI1012 is by the remote name "jordan" and the remote password "hitchpost". Only the "bobj" account, the "sa" account, and the "sso" account have the authority to add or modify a remote login for the login name "bobj":

```
sp_addexternlogin OMNI1012, bobj, jordan, hitchpost
```

Example 2

Shows a many-to-one mapping so that all SAP ASE users that need a connection to DB2 can be assigned the same name and password:

```
sp_addexternlogin DB2, NULL, login2, password2
```

Example 3

SAP ASE roles can also be assigned remote logins. With this capability, anyone with a particular role can be assigned a corresponding login name and password for a given remote server:

```
sp_addexternlogin DB2, NULL, login3, password3, role
```

Usage

There are additional considerations when using sp_addexternlogin:

- sp_addexternlogin assigns an alternate login name and password to be used when communicating with a remote server. It stores the password internally in encrypted form.

  > i Note
  >
  > You can use sp_addexternlogin only when Component Integration Services is configured.

- Mappings can be one-to-one (for specific users), role-to-one (role-based), many-to-one (server-based), or based on the client login and password from the TDS loginrec.

- The login and password have a many to one mapping. That is, you can assign all the users who need to log into a remote server the same name and password.
- When several external logins are set for a user, the following precedence is followed for user connections to a remote server.
  1. One-to-one mapping.
  2. If there is no one-to-one mapping, active role is used.
  3. If neither one-to-one mapping nor active role is present, then many-to-one mapping.
  4. If none of the above is used then SAP ASE login and password.
- You can assign external logins to SAP ASE roles. You can assign anyone with a particular role a corresponding login name and password for any given remote server.
- When you establish a connection to a remote server for a user that has more than one role active, each role is searched for an external login mapping and uses the first mapping it finds to establish the login. This is the same order as displayed by the stored procedure `sp_activeroles`.
- If you perform role mapping, and a user's role is changed (using `set role`), any connections made to remote servers that used role mapping must be disconnected. You cannot do this if a transaction is pending. You cannot use `set role` if a transaction is active and remote connections are present that used role mapping.
- Before running `sp_addexternlogin`, add the remote server to the SAP ASE server with `sp_addserver`.
- `<externname>` and `<externpasswd>` must be a valid user and password combination on the node where the `<server>` runs.
- Sites with automatic password expiration need to plan for periodic updates of passwords for external logins.
- Use `sp_dropexternlogin` to remove the definition of the external login.
- `sp_addexternlogin` cannot be used from within a transaction.
- The "sa" account and the `<loginame>` account are the only users who can modify remote access for a given local user.

Permissions

The permission checks for `sp_addexternlogin` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `manage any remote login` privilege. Any user can execute `sp_addexternlogin` for their own login.
Disabled	With granular permissions disabled, you must be a user with sa_role or sso_role. Any user can execute `sp_addexternlogin` for their own login.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_addserver [page 58]
sp_dropexternlogin [page 299]
sp_helpexternlogin [page 450]
sp_helpserver [page 481]

1.17 sp_addgroup

Adds a group to a database. Groups are used as collective names in granting and revoking privileges.

Syntax

```
sp_addgroup <grpname>
```

Parameters

<grpname>

is the name of the group. Group names must conform to the rules for identifiers.

Examples

Example 1

Creates a group named `accounting` in the current database:

```
sp_addgroup accounting
```

Usage

There are additional considerations when using `sp_addgroup`:

- `sp_addgroup` adds the new group to a database's `sysusers` table. Each group's user ID (`uid`) is 16384 or larger (except "public," which is always 0).
- A group and a user cannot have the same name.

- Once a group has been created, add new users with `sp_adduser`. To add an existing user to a group, use `sp_changegroup`.
- Every database is created with a group named "public". Every user is automatically a member of "public". Each user can be a member of one additional group.

See also `grant`, `revoke` in *Reference Manual: Commands*.

Permissions

The permission checks for `sp_addgroup` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `manage any user` privilege.
Disabled	With granular permissions disabled, you must be the database owner, a user with sso_role, or a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_adduser [page 73]
sp_changegroup [page 135]
sp_dropgroup [page 304]
sp_helpgroup [page 452]

1.18 sp_addlanguage

Defines the names of the months and days for an alternate language and its date format.

Syntax

```
sp_addlanguage <language>, <alias>, <months>, <shortmons>,
    <days>, <datefmt>, <datefirst>
```

Parameters

<language>

is the official language name for the language, entered in 7-bit ASCII characters only.

<alias>

substitutes for the alternate language's official name. Enter either "null", to make the alias the same as the official language name, or a name you prefer. You can use 8-bit ASCII characters in an alias—"français", for example—if your terminal supports them.

<months>

is a list of the full names of the 12 months, ordered from January through December, separated only by commas (no spaces allowed). Month names can be up to 20 characters long and can contain 8-bit ASCII characters.

<shortmons>

is a list of the abbreviated names of the 12 months, ordered from January through December, separated only by commas (no spaces allowed). Month abbreviations can be up to 9 characters long and can contain 8-bit ASCII characters.

<days>

is a list of the full names of the seven days, ordered from Monday through Sunday, separated only by commas (no spaces allowed). Day names can be up to 30 characters long and can contain 8-bit ASCII characters.

<datefmt>

is the date order of the date parts month/day/year for entering datetime, smalldatetime, date, or time data. Valid arguments are mdy, dmy, ymd, ydm, myd, or dym. "dmy" indicates that dates are in day/month/year order.

<datefirst>

sets the number of the first weekday for date calculations. For example, Monday is 1, Tuesday is 2, and so on.

Examples

Example 1

This stored procedure adds French to the languages available on the server. "null" makes the alias the same as the official name, "french". Date order is "dmy" – day/month/year. "1" specifies that lundi, the first item in the <days> list, is the first weekday. Because the French do not capitalize the names of the days and months except when they appear at the beginning of a sentence, this example shows them being added in lowercase:

```
sp_addlanguage french, null,
    "janvier,fevrier,mars,avril,mai,juin,juillet,
    aout,septembre,octobre,novembre,decembre",
    "jan,fev,mars,avr,mai,juin,jui,aout,sept,oct,
    nov,dec",
    "lundi,mardi,mercredi,jeudi,vendredi,samedi,
    dimanche",
    dmy, 1
```

Usage

Usually, you add alternate languages from one of SAP ASE's Language Modules using the `langinstall` utility or the SAP ASE installation program. A Language Module supplies the names of the dates and translated error messages for that language. However, if a Language Module is not provided with your server, use `sp_addlanguage` to define the date names and format.

Use `alter login` to change a user's default language. If you set a user's default language to a language added with `sp_addlanguage`, and there are no localization files for the language, the users receive an informational message when they log in, indicating that their client software could not open the localization files.

See also:

- `set` in *Reference Manual: Commands*
- `langinstall` in the *Utility Guide*

Permissions

The permission checks for `sp_addlanguage` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `manage server` privilege.
Disabled	With granular permissions disabled, you must be a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_droplanguage [page 308]
sp_helplanguage [page 464]
sp_modifylogin [page 592]

sp_setlangalias [page 717]

1.18.1 Changing System Tables With sp_addlanguage

The sp_addlanguage system procedure performs changes to system tables.

- sp_addlanguage creates an entry in master.dbo.syslanguages, inserting a unique numeric value in the langid column for each alternate language. langid 0 is reserved for U.S. English.
- The <language> parameter becomes the official language name, stored in the name column of master.dbo.syslanguages. Language names must be unique. Use sp_helplanguage to display a list of the alternate languages available on SAP ASE.
- sp_addlanguage sets the alias column in master.dbo.syslanguages to the official language name if NULL is entered for alias, but system administrators can change the value of syslanguage.alias with sp_setlanalias.
- sp_addlanguage sets the upgrade column in master.dbo.syslanguages to 0.

1.18.2 Dates for Languages Added with sp_addlanguage

For alternate languages added with Language Modules, the SAP ASE server sends date values to clients as datetime datatype, and the clients use localization files to display the dates in the user's current language.

For date strings added with sp_addlanguage, use the convert function to convert the dates to character data in the server, where <pubdate> is datetime data and <table> is any table:

```
select convert(char, <pubdate>) from <table>
```

When users perform data entry on date values and need to use date names created with sp_addlanguage, the client must have these values input as character data, and sent to the server as character data.

1.19 sp_addlogin

Deprecated by SAP ASE versions 15.7 and later. To add a login account in SAP ASE, use the `create login` command. See *Reference Manual: Commands* > *Commands* > *create login*.

1.20 sp_addmessage

Adds user-defined messages to `sysusermessages` for use by stored procedure `print` and `raiserror` calls and by `sp_bindmsg`.

Syntax

```
sp_addmessage <message_num>, <message_text>
    [,<language>[, <with_log>[, replace]]]
```

Parameters

`<message_num>`

is the message number of the message to add. The message number for a user-defined message must be 20000 or greater.

`<message_text>`

is the text of the message to add. The maximum length is 1024 bytes.

`<language>`

is the language of the message to add. This must be a valid language name in the `syslanguages` table. If this parameter is missing, the SAP ASE server assumes that messages are in the default session language indicated by `@@langid`.

`<with_log>`

specifies whether the message is logged in the SAP ASE error log as well as in the Windows Event Log on Windows servers, if logging is enabled. Valid values are:

- `TRUE` – the message is logged, regardless of the severity of the error
- `FALSE` – the message may or may not be logged, depending on the severity of the error.

If you do not specify a value for `<with_log>`, the default is FALSE.

`replace`

specifies whether to overwrite an existing message of the same number and`<languid>`. If `replace` is specified, the existing message is overwritten; if replace is omitted, it is not. If you do not specify a value for replace, the parameter's default behavior specifies that the existing message is not overwritten.

Examples

Example 1

Adds a message with the number 20001 to sysusermessages:

```
sp_addmessage 20001, "The table '%1!' is not owned by the user '%2!'."
```

Example 2

Adds a message with the number 20002 to sysusermessages. This message is logged in the SAP ASE error log, as well as in the Windows Event Log on Windows servers, if event logging is enabled. If a message numbered 20002 exists in the default session language, this message overwrites the old message:

```
sp_addmessage 20002, "The procedure'%1!' is not owned
by the user '%2!'.", NULL, TRUE, "replace"
```

Usage

sp_addmessage does not overwrite an existing message of the same number and <langid> unless you specify @replace = "replace".

print and raiserror recognize placeholders in the message text to print out. A single message can contain up to 20 unique placeholders in any order. These placeholders are replaced with the formatted contents of any arguments that follow the message when the text of the message is sent to the client.

The placeholders are numbered to allow reordering of the arguments when the SAP ASE server is translating a message to a language with a different grammatical structure. A placeholder for an argument appears as "%<nn>!", a percent sign (%), followed by an integer from 1 to 20, followed by an exclamation point (!). The integer represents the argument number in the string in the argument list. "%1!" is the first argument in the original version, "%2!" is the second argument, and so on.

Only the user who created a message can execute sp_addmessage with the replace option to replace that original message.

See also print, raiserror in *Reference Manual: Commands*.

Permissions

The permission checks for sp_addmessage differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, any user can execute `sp_addmessage`. To add a message with `with_log`, you must be the database owner or a user with `own database` privilege on the database.
Disabled	With granular permissions disabled, any user can execute `sp_addmessage`. To add a message with `with_log`, you must be the database owner or a user with sa_role. Only the user who created the message can execute `sp_addmessage` with the `replace` option to replace that original message.

Auditing

You can enable `create` auditing option to audit this procedure. Values in `event` and `extrainfo` columns from the `sysaudits` table are:

Information	Value
Audit option	`create`
Event	15
Command or access audited	`sp_addmessage`
Information in **`extrainfo`**	● **Roles** – Current active roles ● **Keywords or options** – NULL ● **Previous value** – NULL ● **Current value** – NULL ● **Other information** – Message number ● **Proxy information** – Original login name, if `set proxy` in effect

Example of `extrainfo` after executing `sp_addmessage`:

```
sa_role sso_role oper_role sybase_ts_role mon_role; ; ; ; 210002; ; s
         a/ase;
```

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_altermessage [page 75]

sp_bindmsg [page 113]

sp_dropmessage [page 309]

sp_getmessage [page 390]

1.21 sp_addobjectdef

(Component Integration Services only) Specifies the mapping between a local table and an external storage location.

Syntax

```
sp_addobjectdef <tablename>, <objectdef>[, "<objecttype>"]
```

Parameters

<tablename>

is the name of the object as it is defined in a local table. The <tablename> can be in any of the following forms:

- <dbname>.<owner>.<object>
- <dbname>..<object>
- <owner>.<object>
- <object>

<dbname> and <owner> are optional. <object> is required. If you do not specify an <owner>, the default (current user name) is used. If you specify a <dbname>, it must be the current database name, and you must specify <owner> or mark the owner with a placeholder in the format <dbname>..<object>. Enclose any multipart <tablename> values in quotes.

<objectdef>

is a string naming the external storage location of the object. The <objecttype> at <objectdef> can be a table, view, or read-only remote procedure call (RPC) result set accessible to a remote server. A table, view, or RPC uses the following format for <objectdef>:

```
<server_name>.<dbname>.<owner>.<object>
```

<server_name> and <object> are required. <dbname> and <owner> are optional, but if they are not supplied, a placeholder in the format <dbname>..<object>, is required.

<objecttype>

is one of the values that specify the format of the object named by <objectdef>. Valid values are:

- table – indicates that the object named by <objectdef> is a table accessible to a remote server. This value is the default for <objecttype>.
- view – indicates that the object named by <objectdef> is a view managed by a remote server and processed as a table.
- rpc – indicates that the object named by <objectdef> is an RPC managed by a remote server. The SAP ASE server processes the result set from the RPC as a read-only table.

Enclose the <objecttype> value in quotes.

This table summarizes how each <objecttype> is used:

Table 1: Summary of objecttype Uses

objecttype	*create table*	*create existing table*	**Write to table**	**Read from table**
table	Yes	Yes	Yes	Yes
view	No	Yes	Yes	Yes
rpc	No	Yes	No	Yes

Examples

Example 1

Maps the local table accounts in the database finance to the remote object pubs.dbo.accounts in the remote server named MYSERVER. The current database must be finance:

```
sp_addobjectdef "finance.dbo.accounts", "MYSERVER.pubs.dbo.accounts", "table"
```

A subsequent create table creates a table in the pubs database. If pubs.dbo.accounts is an existing table, a create existing table statement populates the table finance.dbo.accounts with information about the remote table.

Example 2

Maps the local table stockcheck to an RPC named stockcheck on remote server NEWYORK in the database wallstreet with owner "kelly". The result set from RPC stockcheck is seen as a read-only table:

```
sp_addobjectdef stockcheck, "NEWYORK.wallstreet.kelly.stockcheck", "rpc"
```

Typically, the next operation would be a create existing table statement for the object stockcheck.

Usage

There are additional considerations when using sp_addobjectdef:

- sp_addobjectdef specifies the mapping between a local table and an external storage location. It identifies the format of the object at that location.You can use sp_addobjectdef only when Component Integration Services is installed and configured.
- sp_addobjectdef replaces the sp_addtabledef command. sp_addobjectdef allows existing scripts to run without modification. Internally, sp_addtabledef invokes sp_addobjectdef.
- Only the system administrator can provide the name of another user as a table owner.
- When <objecttype> is table, view, or rpc, the <objectdef> parameter takes the following form:

  ```
  "<server_name>.<database>.<owner>.<tablename>"
  ```

  - <server_name> – represents a server that has already been added to sysservers by sp_addserver.
  - <database> – may not be required. Some server classes do not support it.
  - <owner> – should always be provided, to avoid ambiguity. If you do not specify <owner>, the remote object referenced may vary, depending on whether or not the external login corresponds to the remote object owner.
  - <tablename> – is the name of a remote server table.
- Use sp_addobjectdef before issuing any create table or create existing table commands. However, if a remote table exists, you need not use sp_addobjectdef before executing create proxy_table.
  create table is valid only for the <objecttype> values table and file. When either create table or create existing table is used, the SAP ASE server checks sysattributes to determine whether any table mapping has been specified for the object. Follow the <objecttype> values view and rpc with create existing table statements.
- After the table has been created, all future references to the local table name (by select, insert, delete, and update) are mapped to the correct location.

See also:

- create existing table, create table, drop table in *Reference Manual: Commands*
- *Component Integration Services User's Guide > Server Classes*.

Permissions

The permission checks for sp_addobjectdef differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be the table owner or a user with manage database privilege.
Disabled	With granular permissions disabled, you must be the table owner, the database owner, or a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide > Auditing*.

Related Information

sp_addlogin [page 47]
sp_addserver [page 58]
sp_defaultloc [page 247]
sp_dropobjectdef [page 311]
sp_helpserver [page 481]

1.22 sp_addremotelogin

Authorizes a new remote server user by adding an entry to master.dbo.sysremotelogins.

Syntax

```
sp_addremotelogin <remoteserver>[,< loginame>[, <remotename>] ]
```

Parameters

<remoteserver>

is the name of the remote server to which the remote login applies. This server must be known to the local server by an entry in the master.dbo.sysservers table, which was created with sp_addserver.

> i Note
>
> This manual page uses the term "local server" to refer to the server that is executing the remote procedures run from a "remote server."

<loginame>

is the login name of the user on the local server. <loginame> must already exist in the master.dbo.syslogins table.

<remotename>

is the name used by the remote server when logging into the local server. All <remotenames> that are not explicitly matched to a local <loginame> are automatically matched to a local name. In Example 1 , the local name is the remote name that is used to log in. In Example 2 , the local name is "albert."

Examples

Example 1

Creates an entry in the sysremotelogins table for the remote server GATEWAY, for purposes of login validation. This is a simple way to map remote names to local names when the local and remote servers have the same users:

```
sp_addremotelogin GATEWAY
```

This example results in a value of -1 for the suid column and a value of NULL for the remoteusername in a row of sysremotelogins.

Example 2

Creates an entry that maps all logins from the remote server GATEWAY to the local user name "albert". The SAP ASE server adds a row to sysremotelogins with Albert’s server user ID in the suid column and a null value for the remoteusername:

```
sp_addremotelogin GATEWAY, albert
```

For these logins to be able to run RPCs on the local server, they must specify a password for the RPC connection when they log into the local server, or they must be "trusted" on the local server. To define these logins as "trusted", use sp_remotelogin.

Example 3

Maps a remote login from the remote user "pogo" on the remote server GATEWAY to the local user "ralph". The SAP ASE server adds a row to sysremotelogins with Ralph’s server user ID in the suid column and "pogo" in the remoteusername column:

```
sp_addremotelogin GATEWAY, ralph, pogo
```

Usage

There are additional considerations when using sp_addremotelogin:

- When a remote login is received, the local server tries to map the remote user to a local user in three different ways:
  - First, the local server looks for a row in sysremotelogins that matches the remote server name and the remote user name. If the local server finds a matching row, the local server user ID for that row is used to log in the remote user. This applies to mappings from a specified remote user.
  - If no matching row is found, the local server searches for a row that has a null remote name and a local server user ID other than -1. If such a row is found, the remote user is mapped to the local server user

    ID in that row. This applies to mappings from any remote user from the remote server to a specific local name.
    - Finally, if the previous attempts failed, the local server checks the `sysremotelogins` table for an entry that has a null remote name and a local server user ID of -1. If such a row is found, the local server uses the remote name supplied by the remote server to look for a local server user ID in the `syslogins` table. This applies when login names from the remote server and the local server are the same.
- The name of the local user may be different on the remote server.
- If you use `sp_addremotelogin` to map all users from a remote server to the same local name, use `sp_remotelogin` to specify the "trusted" option for those users. For example, if all users from the server GOODSRV that are mapped to "albert" are to be "trusted", use `sp_remotelogin` as follows:

  ```
  sp_remoteoption GOODSRV, albert, NULL, trusted, true
  ```

  Logins that are not specified as "trusted" cannot execute RPCs on the local server unless they specify passwords for the local server when they log into the remote server. In Open Client Client-Library, the user can use the `ct_remote_pwd` routine to specify a password for server-to-server connections. `isql` and `bcp` do not permit users to specify a password for RPC connections.
  If users are logged into the remote server using "unified login", these logins are already authenticated by a security mechanism. These logins must also be trusted on the local server, or the users must specify passwords for the server when they log into the remote server.
- Every remote login entry has a status. The default status for the `trusted` option is `false` (not trusted). This means that when a remote login comes in using that entry, the password is checked. If you do not want the password to be checked, change the status of the `trusted` option to `true` with `sp_remotelogin`.

See also:

- *System Administration Guide* for more information about setting up servers for remote procedure calls and for using "unified login."
- `isql` in the *Utility Guide*

Permissions

The permission checks for `sp_addremotelogin` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `manage any remote login` privilege.
Disabled	With granular permissions disabled, you must be a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide > Auditing*.

Related Information

sp_addlogin [page 47]
sp_addserver [page 58]
sp_dropremotelogin [page 313]
sp_helpremotelogin [page 470]
sp_helprotect [page 471]
sp_helpserver [page 481]
sp_remoteoption [page 687]

1.23 sp_addsegment

Defines a segment on a database device in a database.

Syntax

```
sp_addsegment <segname>, <dbname>, <devname>
```

Parameters

`<segname>`

is the name of the new segment to add to the `syssegments` table of the database. Segment names are unique in each database.

`<dbname>`

specifies the name of the database in which to define the segment. `<dbname>` must be the name of the current database or match the database name qualifying `sp_addsegment`.

`<devname>`

is the name of the database device in which to locate `<segname>`. A database device can have more than one segment associated with it.

Examples

Example 1

Creates a segment named indexes for the database pubs2 on the database device named dev1:

```
sp_addsegment indexes, pubs2, dev1
```

Example 2

Creates a segment named indexes for the pubs2 database on the database device named pubs2_dev:

```
disk init
    name = "pubs2_dev",
    physname = "/dev/pubs_2_dev",
    vdevno = 9, size = 5120
go
alter database pubs2 on pubs2_dev = 2
go
pubs2..sp_addsegment indexes, pubs2, dev1
```

Usage

There are additional considerations when using sp_addsegment:

- You cannot create a segment on a device that already has an exclusive segment. If you attempt to do so, you see an error message similar to:

  ```
  A segment with a virtually hashed table exists on
  device orders_dat.
  ```

- sp_addsegment defines segment names for database devices created with disk init and assigned to a specific database with an alter database or create database command.
- After defining a segment, use it in create table and create index commands and in the sp_placeobject procedure to place a table or index on the segment.
  When a table or index is created on a particular segment, all subsequent data for the table or index is located on the segment.
- Use the system procedure sp_extendsegment to extend the range of a segment to another database device used by the same database.
- If a database is extended with alter database on a device used by that database, the segments mapped to that device are also extended.
- The system and default segments are mapped to each database device included in a create database or alter database command. The logsegment is also mapped to each device, unless you place it on a separate device with the log on extension to create database or with sp_logdevice. See the *System Administration Guide* for more information.
- Although you can use sp_addsegment in a database that has both data and the log on the same device, such as when the database is created without the log on option, the SAP ASE server returns an error message if you create a database using:

  ```
  create database <dbname> on <devicename> log on <devicename> with override
  ```

See alsoalter database, create index, create table, and disk init in *Reference Manual: Commands*.

Permissions

The permission checks for sp_addsegment differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with manage database permission
Disabled	With granular permissions disabled, you must be the database owner or a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_dropsegment [page 319]
sp_extendsegment [page 365]
sp_helpdb [page 438]
sp_helpdevice [page 446]
sp_placeobject [page 664]

1.24 sp_addserver

Defines a remote server, or the name of the local server; specifies the server for remote procedure calls (RPCs) when using the host and port parameters.

Syntax

```
sp_addserver <lname>[, <class>[,< pname>]]
```

Component Integration Services (CIS) only:

```
sp_addserver '<logical_server_name>', ASEnterprise, '<host>:<port>:<filter>
```

Parameters

<lname>

is the name used to address the server on your system. `sp_addserver` adds a row to the `sysservers` table if there is no entry already present for `<lname>`. Server names must be unique and must conform to the rules for identifiers.

<class>

identifies the category of server being added. A server `<class>` of "null" defaults to "ASEnterprise". Allowable values for the `<class>` parameter are:

- `local` – local server (there can be only one) used only once after start-up, or after restarting the SAP ASE server, to identify the local server name so that it can appear in messages printed by the SAP ASE server
- `null` – remote server with no category defined
- `ASEnterprise` – all versions of SAP ASE; support for SQL Server 4.9 is not provided.
- `ASAnywhere` – Adaptive Server Anywhere version 6.0 or later.
- `ASIQ` – a server with server class ASIQ is any version of Adaptive Server IQ of 12.0 or later.
- `direct_connect` (Component Integration Services only) – an Open Server-based application that conforms to the `direct_connect` interface specification.
- `sds`– conforms to the interface requirements of a Specialty Data Store™ as described in the SAP ASE Specialty Data Store Developer's Kit manual.

> i Note
>
> The SAP ASE server does not support server class `db2`. To use `db2`, migrate your `db2` server class to `direct_connect` class.

<pname>

is the name in the interfaces file for the server named `<lname>`. This enables you to establish local aliases for other SAP ASE servers or Backup Servers that you may need to communicate with. If you do not specify a `<pname>`, `<lname>` is used.

(Component Integration Services only) You can use `<pname>` to specify the hostname or IP address and the port of the server you wish to connect to. This enables you to bypass the need for directory services (such as LDAP or an interfaces file) for the server when using the CT-Library. Use the following format:

-
  ```
  "hostname:port"
  ```

-
  ```
  "ipaddr:port"
  ```

i Note

You must enclose the hostname and port with single or double quotes to use this option.

<filter>

in cluster environments – adds a remote server for remote procedure calls (RPCs).

```
<filter> = ssl [= 'CN = <common_name>']
```

Use this format to declare the `<host:port>` number:

```
ip_address:port
```

Examples

Example 1

(In cluster environments) Adds a remote server named big_logical_server:

```
sp_addserver 'big_logical_server', ASEntrprise,
    'maynard:23954:ssl= "CN=ase1.big server 1.com"'
```

The rules for common names are the same as those used for dynamic listeners and the directory service entries.

Example 2

Adds an entry for a remote server named GATEWAY in `master.dbo.sysservers`. The `<pname>` is also GATEWAY:

```
sp_addserver GATEWAY
```

Example 3

Adds an entry for a remote server named GATEWAY in `master.dbo.sysservers`. The `<pname>` is VIOLET. If there is already a `sysservers` entry for GATEWAY with a different `<pname>`, the `<pname>` of server GATEWAY changes to VIOLET:

```
sp_addserver GATEWAY, null, VIOLET
```

Example 4

Adds an entry for the local server named PRODUCTION:

```
sp_addserver PRODUCTION, local
```

Example 5

(Component Integration Services only) Adds an entry for a remote SAP ASE server with the host name "myhost" with port number 10224:

```
sp_addserver S1, ASEnterprise, "myhost:10224"
```

i Note

If you use this syntax for <pname>, the SAP ASE site handler cannot successfully connect to this server; only CIS connections recognize this syntax for <pname>.

Example 6

(Component Integration Services only) Adds an entry for a remote SAP ASE server with the host IP 192.123.456.010 with port number 11222:

```
sp_addserver S3, direct_connect, "192.123.456.010:11222"
```

Usage

There are additional considerations when using sp_addserver:

- The sysservers table identifies the name of the local server and its options, and any remote servers that the local server can communicate with.
  To execute a remote procedure call on a remote server, the remote server must exist in the sysservers table.
- If <lname> already exists as a server name in the sysservers table, sp_addserver changes the remote server's srvnetname to the name specified by <pname>. When it does this, sp_addserver reports which server it changed, what the old network name was, and what the new network name is.
- The installation or upgrade process for your server adds an entry in sysservers for a Backup Server. If you remove this entry, you cannot back up your databases.
- The SAP ASE server requires that the Backup Server have an <lname> of SYB_BACKUP. If you do not want to use that as the name of your Backup Server, or if you have more than one Backup Server running on your system, modify the <pname> for server SYB_BACKUP with sp_addserver so that the SAP ASE server can communicate with Backup Server for database dumps and loads.
- If you specify an <lname>, <pname> and <class> that already exist in sysservers, sp_addserver prints an error message and does not update sysservers.
- Use sp_serveroption to set or clear server options.

See also *Component Integration Services User's Guide > Remote Servers*.

Permissions

The permission checks for sp_addserver differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with manage server privilege. To execute sp_addserver for a server that is a shared disk cluster, you must be a user with manage cluster privilege and manage server privilege.

Setting	Description
Disabled	With granular permissions disabled, you must be a user with sso_role.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_addremotelogin [page 53]
sp_dropremotelogin [page 313]
sp_dropserver [page 321]
sp_helpremotelogin [page 470]
sp_helpserver [page 481]
sp_serveroption [page 710]

1.25 sp_addthreshold

Creates a threshold to monitor space on a database segment. When free space on the segment falls below the specified level, the SAP ASE server executes the associated stored procedure.

Syntax

```
sp_addthreshold <dbname>, <segname>, <free_space>, <proc_name>
```

Parameters

`<dbname>`

is the database for which to add the threshold. This must be the name of the current database.

`<segname>`

is the segment for which to monitor free space. Use quotes when specifying the "default" segment.

<free_space>

is the number of free pages at which the threshold is crossed. When free space in the segment falls below this level, the SAP ASE server executes the associated stored procedure.

<proc_name>

is the stored procedure to be executed when the amount of free space on `<segname>` drops below `<free_space>`. The procedure can be located in any database on the current SAP ASE server or on an Open Server. Thresholds cannot execute procedures on remote SAP ASE servers.

Examples

Example 1

Creates a threshold for `segment1`. When the free space on `segment1` drops below 200 pages, the SAP ASE server executes the procedure `pr_warning`:

```
sp_addthreshold mydb, segment1, 200, pr_warning
```

Example 2

Creates a threshold for the `user_data` segment. When the free space on `user_data` falls below 100 pages, the SAP ASE server executes a remote procedure call to the Open Server `mail_me` procedure:

```
sp_addthreshold userdb, user_data, 100, "o_server...mail_me"
```

Example 3

Creates a threshold on the `indexes` segment of the `pubs2` database. You can issue this command from any database:

```
pubs2..sp_addthreshold pubs2, indexes, 100, pr_warning
```

Usage

When a threshold is crossed, the SAP ASE server executes the associated stored procedure. The SAP ASE server uses the following search path for the threshold procedure:

- If the procedure name does not specify a database, the SAP ASE server looks in the database in which the threshold was crossed.
- If the procedure is not found in this database, and the procedure name begins with "`sp_`", the SAP ASE server looks in the `sybsystemprocs` database.

If the procedure is not found in either database, the SAP ASE server sends an error message to the error log.

The SAP ASE server uses a **hysteresis value**, the global variable `@@thresh_hysteresis`, to determine how sensitive thresholds are to variations in free space. Once a threshold executes its procedure, it is deactivated.

The threshold remains inactive until the amount of free space in the segment rises to `@@thresh_hysteresis` pages above the threshold. This prevents thresholds from executing their procedures repeatedly in response to minor fluctuations in free space.

See also:

- `create procedure` and `dump transaction` in *Reference Manual: Commands*
- *System Administration Guide* for more information about using thresholds
- `lct_admin` in *Reference Manual: Building Blocks*

Permissions

The permission checks for `sp_addthreshold` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `manage database` privilege.
Disabled	With granular permissions disabled, you must be the database owner or a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_dboption [page 228]
sp_dropthreshold [page 323]
sp_helpthreshold [page 492]
sp_modifythreshold [page 597]
sp_thresholdaction [page 808]

1.25.1 Creating Additional Thresholds

Each database can have up to 256 thresholds, including the last-chance threshold.

When you add a threshold, it must be at least twice the size of the `@@thresh_hysteresis` pages from the closest threshold.

1.25.2 Executing Threshold Procedures

Tasks initiated when a threshold is crossed execute as background tasks. These tasks do not have an associated terminal or user session. If you execute `sp_who` while these tasks are running, the `status` column shows "background."

The SAP ASE server executes the threshold procedure with the permissions the user had at the time he or she added the threshold, minus any permissions that have since been revoked.

Each threshold procedure uses one user connection, for as long as it takes for the procedure to execute.

1.25.3 Changing or Deleting Thresholds

To change or delete thresholds, use `sp_helpthreshold`, `sp_modifythreshold`, and sp_dropthreshold.

Procedure	Description
`sp_helpthreshold`	For information about existing thresholds.
`sp_modifythreshold`	To associate a threshold with a new threshold procedure, free-space value, or segment (you cannot change the free-space value or segment name associated with the last-chance threshold). Each time a user modifies a threshold, that user becomes the threshold owner. When the threshold is crossed, the SAP ASE server executes the threshold with the permissions the owner had at the time he or she modified the threshold, minus any permissions that have since been revoked.
`sp_dropthreshold`	To drop a threshold from a segment.

1.25.4 Disabling Free-Space Accounting

Use the `no free space acctg` option of `sp_dboption` to disable free-space accounting on non-log segments.

> ⚠ Caution
>
> System procedures cannot provide accurate information about space allocation when free-space accounting is disabled.

You cannot disable free-space accounting on log segments.

1.25.5 The Last-Chance Threshold

By default, the SAP ASE server monitors the free space on the segment where the log resides and executes `sp_thresholdaction` when the amount of free space is less than that required to permit a successful dump of the transaction log. This amount of free space, called the last-chance threshold, is calculated by the SAP ASE server and cannot be changed by users.

If the last-chance threshold is crossed before a transaction is logged, the SAP ASE server suspends the transaction until log space is freed. Use sp_dboption to change this behavior for a particular database sp_dboption "abort tran on log full", true causes the SAP ASE server to roll back all transactions that have not yet been logged when the last-chance threshold is crossed.

All databases have a last-chance threshold, including master. The threshold is an estimate of the number of free log pages that are required to back up the transaction log. As you allocate more space to the log segment, the SAP ASE server automatically adjusts the last-chance threshold.

1.25.6 Creating Threshold Procedures

Any user with create procedure privilege can create a threshold procedure in a database. Usually, a system administrator creates sp_thresholdaction in the sybsystemprocs database, and the database owners create threshold procedures in user databases.

sp_addthreshold does not verify that the specified procedure exists. It is possible to add a threshold before creating the procedure it executes.

sp_addthreshold checks to ensure that the user adding the threshold procedure has been granted the "sa_role". All system roles active when the threshold procedure is created are entered in systhresholds as valid roles for the user writing the procedure.

The SAP ASE server passes four parameters to a threshold procedure:

- <@dbname>, varchar(30), which identifies the database
- <@segmentname>, varchar(30), which identifies the segment
- <@space_left>, int, which indicates the number of free pages associated with the threshold
- <@status>, int, which has a value of 1 for last-chance thresholds and 0 for other thresholds

These parameters are passed by position rather than by name; your threshold procedure can use other names for them, but it must declare them in the order shown and with the correct datatypes.

It is not necessary to create a different procedure for each threshold. To minimize maintenance, you can create a single threshold procedure in the sybsystemprocs database that is executed for all thresholds in the SAP ASE server.

Include print and raiserror statements in the threshold procedure to send output to the error log.

1.26 sp_addtype

Creates a user-defined datatype.

Syntax

```
sp_addtype <typename>,
    <phystype> [(<length>) | (<precision> [, <scale>])]
    [, "identity" | <nulltype>]
```

Parameters

<typename>

is the name of the user-defined datatype. Type names must conform to the rules for identifiers and must be unique in each database.

<phystype>

is the physical or SAP ASE server-supplied datatype on which to base the user-defined datatype. You can specify any SAP ASE datatype except `timestamp`.

The `char`, `varchar`, `unichar`, `univarchar`, `nchar`, `nvarchar`, `binary`, and `varbinary` datatypes expect a `<length>` in parentheses. If you do not supply one, the SAP ASE server uses the default length of 1 character.

The `float` datatype expects a binary `<precision>` in parentheses. If you do not supply one, the SAP ASE server uses the default precision for your platform.

The `numeric` and `decimal` datatypes expect a decimal `<precision>` and `<scale>`, in parentheses and separated by a comma. If you do not supply them, the SAP ASE server uses a default precision of 18 and a scale of 0.

Enclose physical types that include punctuation, such as parentheses or commas, within single or double quotes.

identity

indicates that the user-defined datatype has the IDENTITY property. Enclose the `identity` keyword within single or double quotes. You can specify the IDENTITY property only for `numeric` datatypes with a scale of 0.

IDENTITY columns store sequential numbers, such as invoice numbers or employee numbers, that are generated by the SAP ASE server. The value of the IDENTITY column uniquely identifies each row in a table. IDENTITY columns are not updatable and do not allow null values.

<nulltype>

indicates how the user-defined datatype handles null value entries. Acceptable values for this parameter are `null`, `NULL`, `nonull`, `NONULL`, `"not null"`, and `"NOT NULL"`.

Any `<nulltype>` that includes a blank space must be enclosed in single or double quotes.

If you omit both the IDENTITY property and the `<nulltype>`, the SAP ASE server creates the datatype using the null mode defined for the database. By default, datatypes for which no `<nulltype>` is specified are created NOT NULL (that is, null values are not allowed and explicit entries are required). For compliance to the SQL standards, use the `sp_dboption` system procedure to set the `allow nulls by default` option to `true`. This changes the database's null mode to NULL.

Examples

Example 1

Creates a user-defined datatype called `ssn` to be used for columns that hold social security numbers. Since the `<nulltype>` parameter is not specified, the SAP ASE server creates the datatype using the database's default null mode. Notice that `varchar(11)` is enclosed in quotation marks, because it contains punctuation (parentheses):

```
sp_addtype ssn, "varchar(11)"
```

Example 2

Creates a user-defined datatype called `birthday` that allows null values:

```
sp_addtype birthday, "datetime", null
```

Example 3

Creates a user-defined datatype called `temp52` used to store temperatures of up to 5 significant digits with 2 places to the right of the decimal point:

```
sp_addtype temp52, "numeric(5,2)"
```

Example 4

Creates a user-defined datatype called `row_id` with the IDENTITY property, to be used as a unique row identifier. Columns created with this datatype store system-generated values of up to 10 digits in length:

```
sp_addtype "row_id", "numeric(10,0)", "identity"
```

Example 5

Creates a user-defined datatype with an underlying type of `sysname`:

```
sp_addtype systype, sysname
```

Although you cannot use the `sysname` datatype in a `create table`, `alter table`, or `create procedure` statement, you can use a user-defined datatype that is based on `sysname`.

Usage

- sp_addtype creates a user-defined datatype and adds it to the systypes system table. Once a user-defined datatype is created, you can use it in create table and alter table statements and bind defaults and rules to it.
- Build each user-defined datatype in terms of one of the SAP ASE-supplied datatypes, specifying the length or the precision and scale, as appropriate. You cannot override the length, precision, or scale in a create table or alter table statement.
- A user-defined datatype name must be unique in the database, but user-defined datatypes with different names can have the same definitions.
- If nchar or nvarchar is specified as the <phystype>, the maximum length of columns created with the new type is the length specified in sp_addtype multiplied by the value of <@@ncharsize> at the time the type was added.
- If unichar or univarchar is specified as the <phystype>, the maximum length of columns created with the new type is the length specified in sp_addtype multiplied by the value of 2 at the time the type was added.
- Each system type has a *hierarchy*, stored in the systypes system table. User-defined datatypes have the same datatype hierarchy as the physical types on which they are based. In a mixed-mode expression, all types are converted to a common type, the type with the lowest hierarchy.
  Use the following query to list the hierarchy for each system-supplied and user-defined type in your database:

```
select name, hierarchy
from systypes
order by hierarchy
```

- If a user-defined datatype is defined with the IDENTITY property, all columns created from it are IDENTITY columns. You can specify IDENTITY, NOT NULL, or neither in the create or alter table statement. Following are three different ways to create an IDENTITY column from a user-defined datatype with the IDENTITY property:

```
create table new_table (id_col IdentType)
```

```
create table new_table (id_col IdentType identity)
```

```
create table new_table (id_col IdentType not null)
```

  When you create a column with the create table or alter table statement, you can override the null type specified with the sp_addtype system procedure:
  - Types specified as NOT NULL can be used to create NULL or IDENTITY columns.
  - Types specified as NULL can be used to create NOT NULL columns, but not to create IDENTITY columns.

> **i Note**
>
> If you try to create a null column from an IDENTITY type, the create or alter table statement fails.

See also:

- create default, create rule, create table in *Reference Manual: Commands*

- *User-Defined Datatypes* in *Reference Manual: Building Blocks*

Permissions

Any user can execute sp_addtype. Permission checks do not differ based on the granular permissions settings.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_bindefault [page 107]
sp_bindrule [page 115]
sp_dboption [page 228]
sp_droptype [page 324]
sp_rename [page 692]
sp_unbindefault [page 821]
sp_unbindrule [page 828]

1.27 sp_addumpdevice

Adds a dump device to the SAP ASE server.

Syntax

```
sp_addumpdevice {"tape" | "disk"}, <logicalname>,
    <physicalname>[, <tapesize>]
```

Parameters

"tape"

for tape drives. Enclose `tape` in quotes.

"disk"

is for a disk or a file device. Enclose `disk` in quotes.

<logicalname>

is the "logicalF dump device name. It must be a valid identifier. Once you add a dump device to `sysdevices`, you can specify its logical name in the `load` and `dump` commands.

<physicalname>

is the physical name of the device. You can specify either an absolute path name or a relative path name. During dumps and loads, the Backup Server resolves relative path names by looking in the SAP ASE server's current working directory. Enclose names containing non-alphanumeric characters in quotation marks. For UNIX platforms, specify a non-rewinding tape device name.

<tapesize>

is the capacity of the tape dump device, specified in megabytes. Platforms require this parameter for tape devices but ignore it for disk devices. The `<tapesize>` should be at least five database pages (each page requires 2048 bytes). You should specify a capacity that is slightly below the rated capacity for your device.

Examples

Example 1

Adds a 40 MB tape device. Dump and load commands can reference the device by its physical name, `/dev/nrmt8`, or its logical name, `mytapedump`:

```
sp_addumpdevice "tape", mytapedump, "/dev/nrmt8", 40
```

Example 2

Adds a disk device named `mydiskdump`. Specify an absolute or relative path name and a file name:

```
sp_addumpdevice "disk", mydiskdump, "/dev/rxy1d/dump.dat"
```

Usage

There are additional considerations when using `sp_addumpdevice`:

- `sp_addumpdevice` adds a dump device to the `master.dbo.sysdevices` table. Tape devices are assigned a `cntrltype` of 3; disk devices are assigned a `cntrltype` of 2.

- To use an operating system file as a dump device, specify a device of type disk and an absolute or relative path name for the <physicalname>. Omit the <tapesize> parameter. If you specify a relative path name, dumps are made to — or loaded from — the current SAP ASE server working directory at the time the dump or load command executes.
- Ownership and permission problems can interfere with the use of disk or file dump devices. sp_addumpdevice adds the device to the sysdevices table, but does not guarantee that you can create a file as a dump device or that users can dump to a particular device.
- The with capacity = <megabytes> clause of the dump database and dump transaction commands can override the <tapesize> specified with sp_addumpdevice. On platforms that do not reliably detect the end-of-tape marker, the Backup Server issues a volume change request after the specified number of megabytes have been dumped.
- When a dump device fails, use sp_dropdevice to drop it from sysdevices. After replacing the device, use sp_addumpdevice to associate the logical device name with the new physical device. This avoids updating backup scripts and threshold procedures each time a dump device fails.
- To add database devices to sysdevices, use the disk init command.

See also disk init, dump database, dump transaction, load database, load transaction in *Reference Manual: Commands*.

Permissions

The permission checks for sp_addumpdevice differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with manage disk privilege.
Disabled	With granular permissions disabled, you must be a user with sso_role.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_dropdevice [page 292]
sp_helpdevice [page 446]

1.28 sp_adduser

Adds a new user to the current database.

Syntax

```
sp_adduser <loginame> [, <name_in_db> [, <grpname>]]
```

Parameters

<loginame>

is the user's name in `master.dbo.syslogins`.

<name_in_db>

is a new name for the user in the current database.

<grpname>

adds the user to an existing group in the database.

Examples

Example 1

Adds "margaret" to the database. Her database user name is the same as her SAP ASE login name, and she belongs to the default group, "public":

```
sp_adduser margaret
```

Example 2

Adds "haroldq" to the database. When "haroldq" uses the current database, his name is "harold." He belongs to the `fort_mudge` group, as well as to the default group "public":

```
sp_adduser haroldq, harold, fort_mudge
```

Usage

There are additional considerations when using `sp_adduser`:

- The database owner executes `sp_adduser` to add a user name to the `sysusers` table of the current database, enabling the user to access the current database under his or her own name.

- Specifying a <name_in_db> parameter gives the new user a name in the database that is different from his or her login name in SAP ASE. The ability to assign a user a different name is provided as a convenience. It is not an alias, as provided by sp_addalias, since it is not mapped to the identity and privileges of another user.
- A user and a group cannot have the same name.
- A user can be a member of only one group other than the default group, "public". Every user is a member of the default group, "public". Use sp_changegroup to change a user's group.
- In order to access a database, a user must either be listed in sysusers (with sp_adduser) or mapped to another user in sysalternates (with sp_addalias), or there must be a "guest" entry in sysusers.

See also grant, revoke, and use in *Reference Manual: Commands*.

Permissions

The permission checks for sp_adduser differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with manage any user privilege.
Disabled	With granular permissions disabled, you must be the database owner, a user with sa_role, or a user with sso_role.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_addalias [page 26]
sp_addgroup [page 42]
sp_changegroup [page 135]
sp_dropalias [page 281]
sp_dropgroup [page 304]
sp_helpuser [page 494]

1.29 sp_altermessage

Enables and, possibly, disables the logging of a system-defined or user-defined message in the SAP ASE error log.

Syntax

```
sp_altermessage {<message_id | severity_level>}, <parameter>, <parameter_value>
```

Parameters

<message_id | severity_level>

is the message number of the message to be altered, or the severity level at which you want messages sent to the error log. The <message_id> is the number of the message as it is recorded in the error column in the sysmessages or sysusermessages system table. Indicate the <severity_level> by including a negative sign before the number. That is, -16 indicates that all error messages of severity level 16 that are displayed to the client are included in the error log as well.

<parameter>

is the message parameter to be altered. The maximum length is 30 bytes. The only valid parameter is with_log.

<parameter_value>

is the new value for the parameter specified in <parameter>. Valid values are true and false.

Examples

Example 1

Specifies that message number 2000 in sysmessages should be logged in the SAP ASE error log and also in the Windows Event Log (if logging is enabled):

```
sp_altermessage 2000, 'with_log', 'TRUE'
```

Example 2

Specifies that error messages of severity level 16 are included in the error log:

```
sp_altermessage -16, "with_log", true
go
3611 Messages altered.
(return status = 0)
```

For example, after this change running the non-existent sp_test system procedure results in a severity-level 16 error message:

```
sp_test
go
Msg 2812, Level 16, State 5:
Line 1:
Stored procedure 'sp_test' not found. Specify owner.objectname or use sp_help
to check whether the object
exists (sp_help may produce lots of output).
```

This results in the server writing error message 2812 (severity level 16) to the error log:

```
00:0006:00000:00023:2018/02/02 13:19:29.10 server  Error: 2812, Severity: 16,
State: 5
00:0006:00000:00023:2018/02/02 13:19:29.10 server  Stored procedure 'sp_test'
not found. Specify owner.objectname or use sp_help to check whether the
object exists (sp_help may produce lots of output).
```

Usage

If the <parameter_value> is true, the specified message is always logged. If it is false, the default logging behavior is used; the message may or may not be logged, depending on the severity of the error and other factors. Setting the <parameter_value> to false produces the same behavior that would occur if sp_altermessage had not been called.

On Windows servers, sp_altermessage also enables and disables logging in the Windows Event Log.

Permissions

The permission checks for sp_altermessage differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be the database owner or a user with own database privilege.
Disabled	With granular permissions disabled, you must be the database owner or a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide > Auditing*.

Related Information

sp_addmessage [page 47]
sp_dropmessage [page 309]

1.30 sp_audit

Allows a system security officer to configure auditing options.

Syntax

```
sp_audit <option>, <login_role_name>, <object_name> [,<setting>]
```

The syntax for manually restarting auditing is:

```
sp_audit restart
```

Parameters

<option>

is a global, user-specific, database-specific, or object-specific option.

```
  { "adhoc" | "all" | "allow" | "alter" | "autotuning_rule" |
"bcp" | "bind" | "cluster" | "cmdtext"
  | "config_history" | "create" | "dbaccess" | "dbcc" |
"delete" | "deny" | "disk" | "drop" | "dump"
  | "dump_config" | "encryption_key" | "errors" | "errorlog" |
"exec_procedure" | "exec_trigger"
  | "func_obj_access" | "func_dbaccess" | "grant" | "insert" |
"install" | "load" | "login" | "login_admin"
  | "login_locked" | "logout" | "mount" | "password" |
"quiesce" | "reference" | "remove" | "revoke"
  | "role" | "role_locked" | "rpc" | "security" |
"security_profile" | "select" | "setuser" | "sproc_auth"
  | "table_access" | "thread_pool" | "transfer_table" |
"truncate" | "unbind" | "unmount"
  | "update" | "view_access" },
```

Table 2: Auditing Options

Option	Description
adhoc	Allows users to use sp_addauditrecord to add their own user-defined audit records to the audit trail.

Option	Description
all	Audits all actions.
allow	Audits the command allow.
alter	Audits the execution of the commands: alter database, alter index, alter role, alter table, alter...modify owner (including alter encryption key modify owner)
bcp	Audits the execution of the bcp in utility.
bind	Audits the execution of: sp_bindefault, sp_bindmsg, sp_bindrule
cluster	Audits cluster commands.
cmdtext	Audits the SQL text entered by a user. System stored procedures and command password parameters can be replaced with a fixed-length string of asterisks for security purposes.
config_history	Audits configuration history.
create	Audits the create commands: create database, create default, create function, create index, create procedure, create role, create rule, create service, create table, create trigger, create view
dbaccess	Audits access to the database from another database.
dbcc	Audits the execution of all dbcc commands.
delete	Audits the deletion of rows from a table or view.
deny	Audits the deny command.
disk	Audits the execution of these commands: disk init, disk mirror, disk refit, disk reinit, disk remirror, disk resize, disk unmirror
drop	Audits the executions of the commands: drop database, drop default, drop function, drop index, drop procedure, drop role, drop rule, drop service, drop table, drop trigger, drop view, sp_dropmessage
dump	Audits the execution of the commands: dump database, dump database...cumulative, dump transaction
dump_config	Audits the execution of the dump configuration tocommand.
encryption_key	Audits the execution of the commands: alter encryption key, create encryption key, drop encryption key, sp_encryption
errors	Audits fatal error and non-fatal errors.
errorlog	Audits changes to the error log.
exec_procedure	Audits the execution of a stored procedure.

Option	Description
`exec_trigger`	Audits any command that fires the trigger.
`func_dbaccess`	Audits access to a database using built-in functions.
`func_obj_access`	Audits access to an object using built-in functions.
`grant`	Audits the execution of the `grant`, and `grant role`commands.
`insert`	Audits the insertion of rows into a table or view using the `insert` command.
`install`	Audits the installation of Java classes using the `installjava` command.
`load`	`load database`, Audits the execution of the commands: `load database..cumulative` `load transaction`
`login`	Audits the execution of Audits a login attempt to the server for all logins or roles, a specific login, or a specific role (both system defined and user defined roles).
`login_admin`	Audits the execution of the commands `alter login`, `create login`, `drop login` by login administrators.
`login_locked`	Audits the host name and network IP address when a login account is locked due to exceeding the configured number of failed login attempts.
`logout`	Audits any logout from an SAP ASE server.
`mount`	Audits the execution of the `mount database` command.
`password`	Audits the events for global password and login policy options.
`quiesce`	Audits the execution of the `quiesce database`, `prepare database` commands.
`reference`	Audits the references between tables using the `create table` or `alter table` commands.
`remove`	Audits the removal of Java classes.
`revoke`	Audits the execution of the `revoke`, `revoke role` commands.
`role`	Audits the execution of the `alter role`, `create role`, `drop role`, `grant role`, `revoke role`, `set role` commands.
`role_locked`	Audits the `alter role..lock` command.
`rpc`	Audits remote procedure calls (either in or out)
`security`	Audits the server-wide security-relevant events.
`security_profile`	Audits the `alter login profile`, `create login profile`, `drop login profile` commands.
`select`	Audits the execution of the `select` command for a table or view.
`setuser`	Audits the execution of the `setuser` command.

Option	Description
sproc_auth	Audits the authorization checks that are done inside system stored procedures.
table_access	Audits access to any table by a specific user for the select, delete, update, or insert commands.
thread_pool	Audits the execution of the alter thread pool, create thread pool, drop thread pool commands.
transfer_table	Audits the execution of the transfer table command.
truncate	Audits the execution of the truncate table command.
unbind	Audits the execution of the sp_unbindefault, sp_unbindrule, sp_unbindmsg commands.
unmount	Audits the execution of the unmount database commands.
update	Audits updates to rows in a table or view.
view_access	Audits the access to any view by a specific user using the select, delete, insert, or update commands.

<login_role_name>

determines the logins or roles to audit.

```
{ "all" | <login_name> | <role_name> },
```

all all roles and logins.

<login_name> login to audit when the first parameter <option> is all. You can audit login attempts of the specified login when you use the global option login as the first parameter for <option>.

<role_name> logins granted to the specified role (both system and user define roles) when the first parameter <option> is all. You can audit login attempts of the logins granted to the role when you use the global option login for <option>.

<object_name>

valid objects to audit.

```
{ "all" | "default table" | "default view" | "default
procedure" | "default trigger"  | <object_name> }
```

all all valid objects.

default table is a valid value when you specify delete, insert, select, or update for <option> as the first parameter.

default view is a valid value when you specify delete, insert, select, or update for <option> as the first parameter.

default procedure is valid when you specify the `exec_procedure` for `<option>` as the first parameter.

default trigger is valid when you specify the `exec_trigger` for `<option>` as the first parameter.

<object_name> is the name of a specific object to be audited. Valid values depend on the value you specified for the global option.

You can specify the object name and include the owner's name if you do not own the object. For example, to audit a table named `inventory` that is owned by Joe, you would specify `joe.inventory` for `<object_name>`.

<setting>

determines the settings for the audit events. The server generates audit records for events controlled by this option, whether the event passes or fails permission checks.

```
[, "off" | "on" | "pass" | "fail" ]
```

off deactivates auditing for the specified option.

on activates auditing for the specified option.

pass activates auditing for events that pass permission checks.

fail activates auditing for events that fail permission checks.

restart

If the audit process is forced to terminate due to an error, you can manually restart auditing by using the `restart` option.

The audit process can be restarted provided that no audit was currently running, but that the audit process has been configured to run by entering `sp_configure “auditing” 1`.

Examples

Example 1

Sets the `login_locked` audit option to initiate auditing of hostname and network IP addresses when a login account is locked due to exceeding the configured number of failed login attempts:

```
sp_audit "login_locked","all","all","on"
```

If the audit tables are full and the event cannot be logged, a message with the information is sent to the errorlog.

Monitoring the audit logs for the `Locked Login` event (112) helps to identify attacks on login accounts.

Example 2

Initiates auditing for SSL security-relevant events. Both successful and failed events are audited:

```
sp_audit "security", "all", "all", "on"
```

```
sample records added:
```

To view the events from `sybsecurity`:

```
select * from sybsecurity..sysaudits_01 where event=99
```

Example 3

Displays the setting of the `security` auditing option:

```
sp_audit "security", "all", "all"
```

Example 4

Initiates auditing for the creation of objects in the `master` database, including `create database`.

```
sp_audit "create", "all", master, "on"
```

Example 5

Audits commands in the `pubs2` database:

```
sp_audit "encryption_key", "all", pubs2, "on"
```

Example 6

Initiates auditing for the creation of all objects in the `db1`database:

```
sp_audit "create", "all", db1, "on"
```

Example 7

Initiates auditing for all failed executions by a system administrator.

```
sp_audit "all", "sa_role", "all", "fail"
```

Example 8

Initiates auditing for all updates to future tables in the current database. For example, if the current database is `utility`, all new tables created in `utility` are audited for updates. The auditing for existing tables is not affected.

```
sp_audit "update", "all", "default table", "on"
```

Example 9

Initiates auditing for all transfer table commands entered for the `titles` table:

```
use pubs2
sp_audit "transfer_table", "all", titles, "on"
```

Example 10

Initiates auditing for the `deny` command:

```
sp_audit "deny", "all", "master", "on"
```

Example 11

Audits all attempts to unmount or create a manifest file with any database:

```
sp_audit "unmount", "all", "all", "on"
```

Example 12

Turns on auditing for successful and failed role creations in the `master` database:

```
sp_audit "alter", "all", "master", "on"
```

Example 13

This example turns on auditing for successful role alterations in the `master` database:

```
sp_audit "alter", "all", "master", "pass"
```

Example 14

This example turns off auditing for dropping roles in the `master` database:

```
sp_audit "drop", "all", "master", "off"
```

Example 15

This example turns off auditing for granting roles and permissions in the `master` database:

```
sp_audit "grant", "all", "master", "off"
```

Auditing is performed using the `grant` or `role` audit option generating event 85 audit record.

Example 16

This example turns on auditing for revoking roles:

```
sp_audit "revoke", "all", "master", "on"
```

Auditing is performed using the `revoke` or `role` audit option generating event 85 audit record.

Example 17

This example shows how to audit all failed deletions on the projects table in the `company_operations` database and for all new tables in the database. You can use the object-specific `delete` option for the `projects` table and use `default table` for all future tables in the database. You must be in the object's database before you execute `sp_audit` to set object-specific auditing options:

```
use company_operations
go
sp_audit "delete", "all", "projects", "fail"
go
sp_audit "delete", "all", "default table", "fail"
go
```

Example 18

This example audits all table accesses by the login "tonyb":

```
sp_audit "table_access", "tonyb", "all", "on"
```

Example 19

This example audits the procedure `sp_addlogin`:

```
use sybsystemprocs
go
sp_audit "exec_procedure", "all", "sp_addlogin", "on"
go
```

Example 20

Initiates auditing for all login attempts for logins with roles: `doc_role` and `nurse_role`.

```
sp_audit "login", "doc_role", "all", "on"
```

```
sp_audit "login", "nurse_role", "all", "on"
```

Example 21

Initiates auditing for all logins with the role `doc_role`.

```
sp_audit "all", "doc_role", "all", "on"
```

Usage

- `sp_audit` determines what is audited when auditing is enabled. No actual auditing takes place until you use `sp_configure` to set the `auditing` parameter to `on`. Then, all auditing options that have been configured with `sp_audit` take effect. For more information, see `sp_configure`.
- If you are not the owner of the object being specified, qualify the `<object_name>` parameter value with the owner's name, in the following format:

```
"<ownername>.<objname>"
```

- You cannot activate default auditing for the following options in the `tempdb` database:
    - `delete`
    - `exec_procedure`
    - `exec_trigger`
    - `insert`
    - `select`
    - `update`
- The configuration parameters that control auditing are:
    - `auditing` – enables or disables auditing for the server.
    - `audit queue size` – establishes the size of the audit queue.
    - `current audit table` – sets the current audit table. The SAP ASE server writes all audit records to that table.

    - suspend auditing when full – controls the behavior of the audit process when an audit device becomes full.

  All auditing configuration parameters are dynamic and take effect immediately.
- If you do not specify a value for the forth parameter, SAP ASE displays the current auditing setting for the option. If you specify pass for an option and later specify fail for the same option, or vice versa, the result is equivalent to specifying on. The SAP ASE server generates audit records regardless of whether events pass or fail permission checks.
    - on or off – apply to all auditing options
    - pass and fail – apply to all options except cmdtext, errors, and adhoc. For these options, only on or off applies. The initial, default value of all options is off. If you select the cmdtext option to either pass or fail, the SAP ASE server replaces the value with on.

Permissions

The permission checks for sp_audit differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with manage auditing privilege.
Disabled	With granular permissions disabled, you must be a user with sso_role.

Auditing

You can enable config_history auditing option to audit this procedure. Values in event and extrainfo columns from the sysaudits table are:

Audit option	Event	Command or access audited	Information in extrainfo:
config_history	154	sp_audit	• *Roles* – Current active roles • *Keywords or options* – NULL • *Previous value* – NULL • *Current value* – NULL • *Other information* – Includes procedure name, parameter name, old value, new value, mode (static or active), and instance ID • *Proxy information* – Original login name, if set proxy in effect

Example of extrainfo after executing sp_configure "auditing", 1 and sp_configure "enable granular permissions", 1:

```
select event, extrainfo from sybsecurity..sysaudits_01 where event = 154
go
event  extrainfo
```

```
-----  -----------------------------------------------------------
154    ; ; ; ; ^01^1AUDIT^2config history auditing^3^4^5off^6on^7^8^9; ; ;
154    ; ; ; ; ^01^1SERVER^2sp_configure^3^4enable granular permissions^50^61^
        7dynamic^8^9; ; ;
```

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_configure [page 203]

sp_addauditrecord [page 28]

1.30.1 Auditing Options

Specify values for auditing options and requirements.

The values you can specify for the `<login_role_name>` and `<object_name>` parameters to `sp_audit` depend on the type of auditing option you specify:

- Global options apply to commands that affect the entire server, such as booting the server, disk commands, and allowing ad hoc, user-defined audit records. Option settings for global events are stored in the `sybsecurity..sysauditoptions` system table.
  All global audit options support auditing at the login and role level (both system defined and user defined roles).
- Database-specific options apply to a database. Examples include altering a database, bulk copy (`bcp in`) of data into a database, granting or revoking access to objects in a database, and creating objects in a database. Option settings for database-specific events are stored in the `master..sysdatabases` system table.
- Object-specific options apply to a specific object. Examples include selecting, inserting, updating, or deleting rows of a particular table or view and the execution of a particular trigger or procedure. Option settings for object-specific events are stored in the `sysobjects` system table in the relevant database.
- User-specific options apply to a specific user or system role. Examples include accesses by a particular user to any table or view or all actions performed when a particular system role, such as `sa_role`, is active. Option settings for individual users are stored in `master..syslogins`. The settings for system roles are stored in `master..sysauditoptions`.
  The `all` option supports a specific login, logins granted a user defined role, or logins granted a system role.
- The `role` audit option audits all role-related commands, and audit options `create`, `alter`, and `drop` are used to audit role-definition commands, while `grant` and `revoke` are used to audit the granting/revoking of roles to/from subjects. The settings for role-specific option are stored in `master..sysauditoptions`. The `master` database is specified for audit options that require an object name parameter.
- Granular auditing is supported for all global options (with the exception of `cluster`), and the user-specific option `all`. Granular auditing provides fine-grained security-related auditing and is used to generate audit records only for the specified logins and roles. Both system roles and user defined roles can be specified.

The default value for all options is off.

The *Auditing Options, Requirements, and Examples* table shows:

- Valid values for the <option> and the type of each option – global, database-specific, object-specific, or user-specific
- Valid values for the <login_role_name> and <object_name> parameters for each option
- The database to be in when you set the auditing option
- The command or access that is audited when you set the option
- An example for each option

Table 3: Auditing Options, Requirements, and Examples

<table>
<tr><th>Option (option type)</th><th><i>login_role_name</i></th><th><i>object_name</i></th><th>Database to be in to set the option</th><th>Command or access being audited</th></tr>
<tr><td rowspan="3">adhoc
(global)</td><td>all, <login>, or <role></td><td>all</td><td>Any</td><td>Allows users to use sp_addauditrecord</td></tr>
<tr><td colspan="4">This example enables ad hoc user-defined auditing records:
sp_audit "adhoc", "all", "all", "on"</td></tr>
<tr><td colspan="4">This example enables ad hoc user-defined auditing records for intern_role:
sp_audit "adhoc", "intern_role", "all", "on"</td></tr>
<tr><td rowspan="2">all
(user-specific)</td><td>, <login>, or <role></td><td>all</td><td>Any</td><td>A particular login or logins granted to a role</td></tr>
<tr><td colspan="4">This example turns auditing on for all actions in which the sa_role is active:
sp_audit "all", "sa_role", "all", "on"</td></tr>
<tr><td rowspan="2">allow
(database-specific)</td><td>all</td><td>all</td><td>Any</td><td>allow</td></tr>
<tr><td colspan="4">This example turns auditing on for the command allow:
sp_audit "allow", "all", "master", "on"</td></tr>
<tr><td rowspan="2">alter
(database-specific)</td><td>all</td><td>Database to be audited</td><td>Any</td><td>alter database, alter index, alter role, alter table, alter...modify owner (including alter encryption key modify owner)</td></tr>
<tr><td colspan="4">This example turns auditing on for all executions of alter commands in the master database:
sp_audit @option = "alter", @login_name = "all",
@object_name = "master", @setting = "on"</td></tr>
<tr><td>bcp
(database-specific)</td><td>all</td><td>Database to be audited</td><td>Any</td><td>bcp in</td></tr>
</table>

Option (option type)	*login_role_name*	*object_name*	Database to be in to set the option	Command or access being audited
	This example returns the status of `bcp` auditing in the `pubs2` database: `sp_audit "bcp", "all", "pubs2"` If you do not specify a value for `<setting>`, SAP ASE returns the status of auditing for the option you specify)			

`bind`
(database-specific)
	`all`	Database to be audited	Any	`sp_bindefault`
				`sp_bindmsg`
				`sp_bindrule`

	This example turns bind auditing off for the `planning` database: `sp_audit "bind", "all", "planning", "off"`			
`cluster` (global)	`all`, `<login>`, or `<role>`	`all`	Any	Cluster commands
	This example turns on auditing for cluster commands: `sp_audit "cluster", "all", "all", "on"`			
`cmdtext` (user-specific)	Login name of the user to be audited	`all`	Any	SQL text entered by a user. (Does not reflect whether or not the text in question passed permission checks or not. `<eventmod>` always has a value of 1.)
	This example turns text auditing off for database owners: `sp_audit "cmdtext", "sa", "all", "off"`			
`config_history` (global)	`all`, `<login>`, or `<role>`	`all`	Any	Configuration history
	This example turns on auditing for configuration history: `sp_audit "config_history", "all", "all", "on"`			
`create` (database-specific)	`all`	Database to be audited	Any	`create database`, `create default`,`create function`, `create index`, `create procedure`, `create role`, `create rule`, `create service`, `create table`, `create trigger`, `create view`, `sp_addmessage`

<table>
<tr><th>Option (option type)</th><th><em>login_role_name</em></th><th><em>object_name</em></th><th>Database to be in to set the option</th><th>Command or access being audited</th></tr>
<tr><td></td><td colspan="4">i Note
Specify master for <object_name> to audit create database. You are also auditing the creation of other objects in master.
This example turns on auditing of successful object creations in the planning database:
sp_audit "create", "all", "planning", "pass"
The current status of auditing create database is not affected because you did not specify the master database.)</td></tr>
<tr><td>dbaccess
(database-specific)</td><td>all</td><td>Database to be audited</td><td>Any</td><td>Any access to the database from another database</td></tr>
<tr><td></td><td colspan="4">This example audits all external accesses to the project database:
sp_audit "dbaccess", "all", "project", "on"</td></tr>
<tr><td>dbcc
(global)</td><td>all, <login>, or <role></td><td>all</td><td>Any</td><td>All dbcc commands</td></tr>
<tr><td></td><td colspan="4">This example audits all executions of the dbcc command:
sp_audit "dbcc", "all", "all", "on"</td></tr>
<tr><td>delete
(object-specific)</td><td>all</td><td>Name of the table or view to be audited, or default view or default table</td><td>The database of the table or view (except tempdb)</td><td>delete from a table, delete from a view</td></tr>
<tr><td></td><td colspan="4">This example audits all delete actions for all future tables in the current database:
sp_audit "delete", "all", "default table", "on"</td></tr>
<tr><td>deny
(database-specific)</td><td>all</td><td>all</td><td>Any</td><td>deny</td></tr>
<tr><td></td><td colspan="4">This example turns auditing on for the command deny:
sp_audit "deny", "all", "master", "on"</td></tr>
</table>

Option (option type)	*login_role_name*	*object_name*	Database to be in to set the option	Command or access being audited
disk (global)	all, <login>, or <role>	all	Any	disk init, disk mirror, disk refit, disk reinit, disk remirror, disk resize, disk unmirror
	This example audits all disk actions for the server: `sp_audit "disk", "all", "all", "on"`			
drop (database-specific)	all	Database to be audited	Any	drop database, drop default, drop function, drop index, drop procedure, drop role, drop rule, drop service, drop table, drop trigger, drop view, sp_dropmessage
	This example audits all drop commands in the financial database that fail permission checks: `sp_audit "drop", "all", "financial", "fail"`			
dump (database-specific)	all	Database to be audited	Any	dump database, dump database...cumulative, dump transaction
	This example audits dump commands in the pubs2 database: `sp_audit "dump", "all", "pubs2", "on"`			
dump_config (global)	all, <login>, or <role>	all	Any	dump configuration to
	This example enables auditing for dump configuration to command: `sp_audit "dump_config", "all", "all", "pass"`			
encryption_key (database-specific)	all	Database to be audited	Any	alter encryption key create encryption key drop encryption key sp_encryption
	This example audits all the above commands in the pubs2 database: `sp_audit "encryption_key", "all", "pubs2", "on"`			

Option (option type)	*login_role_name*	*object_name*	Database to be in to set the option	Command or access being audited
`errors` (global)	`all`, `<login>`, or `<role>`	`all`	Any	Fatal error, non-fatal error

	This example audits errors throughout the server:
	`sp_audit "errors", "all", "all", "on"`
	This example audits errors for the role `intern_role`:
	`sp_audit "errors", "intern_role", "all", "on"`			

`errorlog` (global)	`all`, `<login>`, or `<role>`	`all`	Any	`sp_errorlog`
	This example audits attempts to "change log" to move to a new SAP ASE error log file: `sp_audit "errorlog", "all", "all", "on"`			
`exec_procedure` (object-specific)	`all`	Name of the procedure to be audited or `default procedure`	The database of the procedure (except `tempdb`)	`execute`
	This example turns automatic auditing off for new procedures in the current database: `sp_audit "exec_procedure", "all", "default procedure", "off"`			
`exec_trigger` (object-specific)	`all`	Name of the trigger to be audited or `default trigger`	The database of the trigger (except `tempdb`)	Any command that fires the trigger
	This example audits all failed executions of the `trig_fix_plan` trigger in the current database: `sp_audit "exec_trigger", "all", "trig_fix_plan",  "fail"`			
`func_dbaccess` (database-specific)	`all`	Name of the database you are auditing	Any	Access to a database using built-in functions.

	This example audits accesses to the `strategy` database via built-in functions:
	`sp_audit @option="func_dbaccess", @login_name="all",`
	`@object_name = "strategy", @setting = "on"`			

`func_obj_access` (object-specific)	`all`	Name of any object that has an entry in `sysobjects`	Any	Access to an object using built-in functions.

Option (option type)	*login_role_name*	*object_name*	Database to be in to set the option	Command or access being audited
	This example audits accesses to the `customer` table via built-in functions: `sp_audit @option="func_obj_access", @login_name="all", @object_name = "customer", @setting = "on"`			
`grant` (database-specific)	`all`	Name of the database to be audited	Any	`grant`, `grant role`
	This example audits all grants in the `planning` database: `sp_audit @option="grant", @login_name="all", @object_name = "planning", @setting = "on"`			
`insert` (object-specific)	`all`	Name of the view or table to which you are inserting rows, or `default view` or `default table`	The database of the object (except `tempdb`)	`insert` into a table, `insert` into a view
	This example audits all inserts into the `dpt_101_view` view in the current database: `sp_audit "insert", "all", "dpt_101_view", "on"`			
`install` (database-specific)	`all`	Database to be audited	Any	`installjava`
	This example audits the installation of java classes in database `planning`: `sp_audit "install", "all", "planning", "on"`			
`load` (database-specific)	`all`	Database to be audited	Any	`load database`, `load database..cumulative` `load transaction`
	This example audits all failed executions of database and transaction loads in the `projects_db` database: `sp_audit "load", "all", "projects_db", "fail"`			
`login` (global)	`all`, `<login>`, or `<role>`	`all`	Any	Any login attempt to SAP ASE.

Option (option type)	*login_role_name*	*object_name*	Database to be in to set the option	Command or access being audited

	This example audits all failed attempts to log in to the server by logins granted to role1:
	`sp_audit "login", "role1", "all", "fail"`
	This example audits all logins with the role `intern_role`:
	`sp_audit "all", "intern_role", "all", "on"`			

`login_admin` (global)	`all`, `<login>`, or `<role>`	`all`	Any	`alter login`, `create login`, `drop login`
	This example enables auditing for login administration: `sp_audit "login_admin", "all", "all", "on"`			
`login_locked` (global)	`all`, `<login>`, or `<role>`	`all`	Any	The host name and network IP address when a login account is locked due to exceeding the configured number of failed login attempts
	This example shows that the login is locked because of exceeding the configured number of failed login attempts: `sp_audit "login_locked", "all", "all", "on"`			
`logout` (global)	`all`, `<login>`, or `<role>`	`all`	Any	Any logout from SAP ASE
	This example turns auditing off of logouts from the server: `sp_audit "logout", "all", "all", "off"`			
`mount` (global)	`all`, `<login>`, or `<role>`	`all`	Any	`mount database`
	This example audits all `mount database` commands issued: `sp_audit "mount", "all", "all", "on"`			
`password` (global)	`all`, `<login>`, or `<role>`	`all`	Any	Setting of global password and login policy options
	This example turns auditing on for passwords: `sp_audit "password", "all", "all", "on"`			
`quiesce` (global)	`all`, `<login>`, or `<role>`	`all`	Any	`quiesce database`, `prepare database`

<table>
<tr><th>Option (option type)</th><th><i>login_role_name</i></th><th><i>object_name</i></th><th>Database to be in to set the option</th><th>Command or access being audited</th></tr>
<tr><td></td><td colspan="4">This example turns auditing on for quiesce database commands:
sp_audit "quiesce", "all", "all", "on"</td></tr>
<tr><td>reference
(object-specific)</td><td>all</td><td>Name of the view or table to which you are inserting rows, or default view or default table</td><td>Any</td><td>Referencing a table with create table or alter table</td></tr>
<tr><td></td><td colspan="4">This example turns off auditing of the creation of references to the titles table:
sp_audit "reference", "all", "titles", "off"</td></tr>
<tr><td>remove
(database-specific)</td><td>all</td><td>all</td><td>Any</td><td>The removal of Java classes</td></tr>
<tr><td></td><td colspan="4">This example audits the removal of Java classes in the planning database:
sp_audit "remove", "all", "planning", "on"</td></tr>
<tr><td>revoke
(database-specific)</td><td>all</td><td>Database to be audited</td><td>Any</td><td>revoke, revoke role</td></tr>
<tr><td></td><td colspan="4">This example turns off auditing of the execution of revoke in the payments_db database:
sp_audit "revoke", "all", "payments_db", "off"</td></tr>
<tr><td>role
(global)</td><td>all, <login>, or <role></td><td>all</td><td>Any</td><td>alter role, create role, drop role, grant role, revoke role, set role</td></tr>
<tr><td></td><td colspan="4">This example turns on auditing for role-related commands:
sp_audit "role", "all", "all", "on"</td></tr>
<tr><td>role_locked
(global)</td><td>all, <login>, or <role></td><td>all</td><td>Any</td><td>alter role..lock</td></tr>
<tr><td></td><td colspan="4">This example turns on auditing for locking roles:
sp_audit "role_locked", "all", "all", "on"</td></tr>
</table>

Option (option type)	*login_role_name*	*object_name*	Database to be in to set the option	Command or access being audited
rpc (global)	all, <login>, or <role>	all	Any	Remote procedure calls (either in or out)
	This example audits all remote procedure calls out of or into the server: `sp_audit "rpc", "all", "all", "on"`			
security (global)	all, <login>, or <role>	all	Any	Server-wide security-relevant events.
	This example audits server-wide security-relevant events in the server: `sp_audit "security", "all", "all", "on"`			
security_profile (global)	all, <login>, or <role>	all	Any	alter login profile, create login profile, drop login profile
	This example enables auditing for login profile commands: `sp_audit "security_profile", "all", "all", "on"`			
select (object-specific)	all	Name of the view or table to which you are inserting rows, or default view or default table	The database of the object (except tempdb)	select from a table, select from a view
	This example audits all failed selects from the customer table in the current database: `sp_audit "select", "all", "customer", "fail"`			
setuser (database-specific)	all	all	Any	setuser
	This example audits all executions of setuser in the projdb database: `sp_audit "setuser", "all", "projdb", "on"`			
sproc_auth (global)	all, <login>, or <role>	all	Any	Auditing for authorization checks that are done inside system stored procedures.

Option (option type)	*login_role_name*	*object_name*	Database to be in to set the option	Command or access being audited
	This example enables `sproc_auth`: `sp_audit 'sproc_auth','all','all','on'`			
`table_access` (user-specific)	Login name of the user to be audited.	`all`	Any	`select`, `delete`, `update`, or `insert`
	This example audits all table accesses by the login named "smithson": `sp_audit "table_access", "smithson", "all", "on"`			
`thread_pool` (global)	`all`, `<login>`, or `<role>`	`all`	Any	`alter thread pool`, `create thread pool`, `drop thread pool`
	This example enables auditing for thread pool commands: `sp_audit "thread pool", "all", "all", "on"`			
`transfer_table` (object-specific)	`all`	Table to be audited	Any	`transfer table`.
	This example audits transfer-relevant events in the server: `sp_audit "transfer_table", "all", "t1", "on"`			
`truncate` (database-specific)	`all`	Database to be audited	Any	`truncate table`
	This example audits all table truncations in the `customer` database: `sp_audit "truncate", "all", "customer", "on"`			
`unbind` (database-specific)	`all`	Database to be audited	Any	`sp_unbindefault`, `sp_unbindrule`, `sp_unbindmsg`
	This example audits all failed attempts of unbinding in the `master` database: `sp_audit "unbind", "all", "master", "fail"`			
`unmount` (global)	`all`, `<login>`, or `<role>`	`all`	Any	`unmount database`
	This example audits all attempts to unmount or create a manifest file with any database: `sp_audit "unmount", "all", "all", "on"`			

Option (option type)	*login_role_name*	*object_name*	**Database to be in to set the option**	**Command or access being audited**
`update` (object-specific)	`all`	Name specifying the object to be audited, `default table` or `default view`	The database of the object (except `tempdb`)	`update` to a table, `update` to a view
	This example audits all attempts by users to update the `projects` table in the current database: `sp_audit "update", "all", "projects", "on"`			
`view_access` (user-specific)	Login name of the user to be audited	`all`	Any	`select`, `delete`, `insert`, or `update` to a view
	This example turns off view auditing of user "joe": `sp_audit "view_access", "joe", "all", "off"`			

1.31 sp_autoconnect

(Component Integration Services only) Defines a passthrough connection to a remote server for a specific user, which allows the named user to enter passthrough mode automatically at login.

Syntax

```
sp_autoconnect <server>, {true | false}[, <loginame>]
```

Parameters

`<server>`

is the name of a server to which an automatic passthrough connection is made. `<server>` must be the name of a remote server already added by `sp_addserver`. This server cannot be the local server.

`true | false`

determines whether the automatic passthrough connection is enabled or disabled for `<server>`. `true` enables the automatic connection. `false` disables it.

`<loginame>`

specifies the name of the user for which automatic connection is required. If no `<loginame>` is supplied, the autoconnect status is modified for the current user.

Examples

Example 1

The current user is automatically connected to the server MYSERVER the next time that user logs in. The user's connection is placed in passthrough mode:

```
sp_autoconnect MYSERVER, true
```

Example 2

Disables the autoconnect feature for the user “steve”:

```
sp_autoconnect MYSERVER, false, steve
```

Usage

- `sp_autoconnect` defines a passthrough connection to a remote server for a specific user, which allows the named user to enter passthrough mode automatically at login.
- Use `sp_autoconnect` only when Component Integration Services is installed and configured.
- Do not change the autoconnect status of the “sa” login account.
- Changing the autoconnect status does not occur immediately for users who are currently connected. They must disconnect from the local server, then reconnect before the change is made.
- Use `disconnect` to exit passthrough mode.

See also `connect to...disconnect`, `grant` in *Reference Manual: Commands*.

Permissions

The permission checks for `sp_autoconnect` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `manage any login` privilege. Any user can execute `sp_autoconnect` for themselves.
Disabled	With granular permissions disabled, you must be a user with sa_role.

Setting	Description
	Any user can execute sp_autoconnect for themselves.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_addlogin [page 47]
sp_addserver [page 58]
sp_passthru [page 644]
sp_remotesql [page 689]

1.32 sp_autoformat

A utility stored procedure that produces readable result set data, sp_autoformat reformats the width of variable-length character data to display only non-blank characters. Trailing blanks are truncated in the output.

Syntax

```
sp_autoformat <fulltabname>[, <selectlist>, <whereclause>, <orderby>]
```

Parameters

<fulltabname>

specifies the name of table from which data is being selected. Use owner names if the object owner is not the user running the command.

<selectlist>

specifies the comma-separated list of columns to be selected in the result set. Columns in the table can be renamed using the <name> = <column> notation. See examples. If

<selectlist> is not provided, all columns in the table specified are output in column ID order.

<whereclause>

is a search predicate, specified as a `where` clause, that filters out rows from the table being selected.

<orderby>

is an optional `order by` clause that specifies the order in which the output result set is presented.

Examples

Example 1

Returns a result set from a `select` statement similar to `select id, colid, name from syscolumns where id = 3`, where the character columns are autoformatted:

```
1> sp_autoformat "syscolumns", "id, colid, name", "where id = 3"
2> go
```

```
id           colid  name
------------ ------ -----------
           3      1 id
           3      2 number
           3      3 colid
           3      4 status
           3      5 type
           3      6 length
           3      7 offset
           3      8 usertype
           3      9 cdefault
           3     10 domain
           3     11 name
           3     12 printfmt
           3     13 prec
           3     14 scale
           3     15 remote_type
           3     16 remote_name
           3     17 xstatus
           3     18 xtype
           3     19 xdbid
           3     21 accessrule
           3     22 status2
```

Example 2

Renames the output columns using the following syntax:

```
[ <AS-Name label of Column> ][ ]*=[ ]*<column name>
```

`<AS-Name label of Column>` is optional, and you can use white spaces around the = separator:

```
1> sp_autoformat syscolumns, "'Object Id' = id, 'Column Name'=name,
     'Column ID'=colid", "where id = 3"
2> go
```

```
 Object Id   Column Name Column ID
```

```
------------ ----------- ---------
           3 id                  1
           3 number              2
           3 colid               3
           3 status              4
           3 type                5
           3 length              6
           3 offset              7
           3 usertype            8
           3 cdefault            9
           3 domain             10
           3 name               11
           3 printfmt           12
           3 prec               13
           3 scale              14
           3 remote_type        15
           3 remote_name        16
           3 xstatus            17
           3 xtype              18
           3 xdbid              19
           3 accessrule         21
           3 status2            22
(1 row affected)
```

Example 3

Uses the `<orderby>` parameter to specify an ordering in the result output:

```
sp_autoformat @fulltabname = 'syscolumns',
              @selectlist = "id, name",
              @orderby = "ORDER BY name"
```

Example 4

Generates an autoformatted result when you select from multiple tables, or if you have a complex SQL `select` statement with expressions in the `select` list, you must:

1. Use temporary tables to generate the result set:
   The following generates the list of the columns with the highest column ID on all system catalogs:

   ```
   select o.id, o.name, c.colid, c.name
   from sysobjects o, syscolumns c
   where o.id < 100 and o.id = c.id
     and c.colid = (select max(c2.colid) from syscolumns c2
                   where c2.id = c.id)
   order by o.name
   ```

   The following generates the same result set with auto-formatting of character data using a temporary table to produce readable output, and includes minor changes to provide column names in the temporary table:

   ```
   select o.id, ObjectName = o.name, c.colid, ColumnName = c.name
   into #result
   from sysobjects o, syscolumns c
   where o.id < 100 and o.id = c.id
     and c.colid = (select max(c2.colid) from syscolumns c2
                    where c2.id = c.id)
   ```

2. Use `sp_autoformat` on that temporary table to produce formatted output:

   ```
   1> exec sp_autoformat @fulltabname = #result, @orderby = "order by
      ObjectName"
   2> go
   ```

```
id       ObjectName        colid ColumnName
-------- ----------------- ------ -------------
      11 sysalternates         2 altsuid
      21 sysattributes        13 comments
      55 syscertificates       6 suid
      45 syscharsets           8 sortfile
       3 syscolumns           22 status2
       6 syscomments           8 status
      37 sysconfigures         9 value4
      17 sysconstraints        7 spare2
      38 syscurconfigs        15 type
      30 sysdatabases         19 status4
      12 sysdepends           10 readobj
      35 sysdevices            7 mirrorname
      43 sysengines           12 starttime
      ...
(1 row affected)
(return status = 0)
```

The `order by` clause in the original `select` statement is skipped when generating the temporary table, and is instead added to the call to `sp_autoformat` when generating the output result

You can further process the temporary table to report only on the required output for selected tables, as shown below:

```
1> exec sp_autoformat #result, "id, 'Object Name' = ObjectName,
   'Column Name' = ColumnName", "where id < 5"
2> go
```

```
id      Object Name Column Name
------- ----------- -----------
      1 sysobjects  loginame
      2 sysindexes  crdate
      3 syscolumns  status2
      4 systypes    accessrule
```

Usage

- In SAP ASE version 15.0.3 and higher, `sp_autoformat` accepts columns of datatypes `int` (`smallint`, `bigint`, `tinyint`, `unsigned int`), `numeric`, `money`, `date/time`, and `float`, `real`, and `double` precision.
- `sp_autoformat` looks for an object only in the current database. To use `sp_autoformat` on temporary tables, issue the procedure from `tempdb`.
- `sp_autoformat` does not validate that the columns referenced in any of the parameters actually exist in the table specified by the `<fulltabname>` parameter. `sp_autoformat` fails if you reference any nonexistent columns.
- Provide only one instance of a column in the `select` list.

Return codes are:

- 0 – successful completion
- 1 – internal error, or usage error in invocation
- Other – any other errors raised by the SAP ASE server during the execution of the generated SQL statement are returned back to the caller.

Restrictions for `sp_autoformat` are:

- sp_autoformat uses internal SQL variables to generate SQL statements that are then executed using execute immediate. The length of the generated SQL statement is limited to 2K bytes. Auto-formatting result sets for a large column list, or columns with long names can sometimes cause an error due to insufficient size of the buffer for the generated SQL statement.
- Quoted identifiers are not supported for either the table or column names. If you have result sets that use quoted identifiers and that need autoformatting:
  1. Generate the required data in a temporary table, where the columns in the temporary table do not have any quoted identifiers.
  2. Use sp_autoformat to produce the required output using the temporary table.
  3. Rename the columns in the <selectlist> in the desired output format.

Permissions

No permission checks are performed for sp_autoformat. Permission checks do not differ based on the granular permissions settings. Users selecting from the tables must have appropriate select privileges.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide > Auditing*.

1.33 sp_bindcache

Binds a database, table, index, text object, or image object to a data cache.

Syntax

```
sp_bindcache <cachename>, <dbname>
    [, [<ownername>.]<tablename>
    [, <indexname> | "text only"]]
```

Parameters

<cachename>

is the name of an active data cache.

`<dbname>`

is the name of the database to be bound to the cache or the name of the database containing the table, index, `text` or `image` object to be bound to the cache.

`<ownername>`

is the name of the table's owner. If the table is owned by "dbo", the owner name is optional.

`<tablename>`

is the name of the table to be bound to the cache, or the name of the table with an index, `text` object, or `image` object that is to be bound to the cache.

`<indexname>`

is the name of the index to be bound to the cache.

`text only`

binds `text` or `image` objects to a cache. When this parameter is used, you cannot give an index name at the same time.

Examples

Example 1

Binds the `titles` table to the cache named `pub_cache`:

```
sp_bindcache pub_cache, pubs2, titles
```

Example 2

Binds the clustered index `titles.title_id_cix` to the `pub_ix_cache`:

```
sp_bindcache pub_ix_cache, pubs2, titles, title_id_cix
```

Example 3

Binds `pubs2` to the `tempdb_cache`:

```
sp_bindcache tempdb_cache, pubs2
```

Example 4

Binds the `pubs2` transaction log, `syslogs`, to the cache named `logcache`:

```
sp_bindcache logcache, pubs2, syslogs
```

Example 5

Binds the `image` chain for the `au_pix` table to the cache named `pub_cache`:

```
sp_bindcache pub_cache, pubs2, au_pix, "text only"
```

Usage

- A database or database object can be bound to only one cache. You can bind a database to one cache and bind individual tables, indexes, `text` objects, or `image` objects in the database to other caches. The database binding serves as the default binding for all objects in the database that have no other binding. The data cache hierarchy for a table or index is as follows:
  - If the object is bound to a cache, the object binding is used.
  - If the object is not bound to a cache, but the object's database is bound to a cache, the database binding is used.
  - If neither the object nor its database is bound to a cache, the default data cache is used.
- The cache and the object or database being bound to it must exist before you can execute `sp_bindcache`. Create a cache with `sp_cacheconfig` and, if the operation is not dynamic, restart the SAP ASE server before binding objects to the cache.
- Cache bindings take effect immediately, and do not require a restart of the server. When you bind an object to a data cache:
  - Any pages for the object that are currently in memory are cleared.
  - When the object is used in queries, its pages are read into the bound cache.
- You can bind an index to a different cache than the table it references. If you bind a clustered index to a cache, the binding affects only the root and intermediate pages of the index. It does not affect the data pages (which are, by definition, the leaf pages of the index).
- To bind a database, you must be using the `master` database. To bind tables, indexes, `text` objects, or `image` objects, you must be using the database where the objects are stored.
- To bind any system tables in a database, you must be using the database and the database must be in single-user mode. Use the command:

  ```
  sp_dboption <db_name>, "single user", true
  ```

  For more information, see `sp_dboption`.
- You do not have to unbind objects or databases in order to bind them to a different cache. Issuing `sp_bindcache` on an object that is already bound drops the old binding and creates the new one.
- `sp_bindcache` needs to acquire an exclusive table lock when you are binding a table or its indexes to a cache so that no pages can be read while the binding is taking place. If a user holds locks on a table, and you issue `sp_bindcache` on that object, the task doing the binding sleeps until the locks are released.
- When you bind or unbind an object, all stored procedures that reference the object are recompiled the next time they are executed. When you change the binding for a database, all stored procedures that reference objects in the bound database are recompiled the next time they are executed.
- When you drop a table, index, or database, all associated cache bindings are dropped. If you re-create the table, index, or database, you must use `sp_bindcache` again if you want it bound to a cache.
- If a database or a database object is bound to a cache, and the cache is dropped, the cache bindings are marked invalid, but remain stored in the `sysattributes` system table(s). Warnings are printed in the error log when the SAP ASE server is restarted. If a cache of the same name is created, the bindings become valid when the SAP ASE server is restarted.
- The following procedures provide information about the bindings for their respective objects: `sp_helpdb` for databases, `sp_help` for tables, and `sp_helpindex` for indexes. `sp_helpcache` provides information about all objects bound to a particular cache.

- Use `sp_spaceused` to see the current size of tables and indexes, and `sp_estspace` to estimate the size of tables that you expect to grow. Use `sp_cacheconfig` to see information about cache size and status, and to configure and reconfigure caches.
- Although you can still use `sp_bindcache` on a system `tempdb`, the binding of the system `tempdb` is now non-dynamic. Until you restart the server:
  - The changes do not take effect
  - `sp_helpcache` reports a status of "P" for pending, unless you have explicitly bound the system `tempdb` to the default data cache, in which case the status as "V" for valid, because by default the system `tempdb` is already bound to the default datacache.

Restrictions for `sp_bindcache` are:

- The `sysattributes` system table cannot be bound to a named cache. For example:

```
1> sp_bindcache 'systables_cache', pubs2, sysattributes
2> go
Msg 867, Level 16, State 1:
Server 'marina_157', Procedure 'sp_bindcache', Line 409:
The system table Sysattributes or its indices may not be bound to a named
cache.
(1 row affected)
Msg 19828, Level 16, State 1:
Server 'marina_157', Procedure 'sp_bindcache', Line 416:
Cache binding failed for database 'pubs2'.
(return status = 1)
```

- The `master` database, the system tables in `master`, and the indexes on the system tables in `master` cannot be bound to a cache. You can bind non-system tables from `master`, and their indexes, to caches.
- You cannot bind a database or an object to a cache if:
  - Isolation level 0 reads are active on the table
  - The task doing the binding currently has a cursor open on the table
- If a cache has the type `log only`, you can bind a `syslogs` table only to that cache. Use `sp_cacheconfig` to see a cache's type.

Permissions

The permission checks for `sp_bindcache` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `manage data cache` privilege.
Disabled	With granular permissions disabled, you must be a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_cacheconfig [page 118]
sp_configure [page 203]
sp_dboption [page 228]
sp_estspace [page 359]
sp_help [page 396]
sp_helpcache [page 420]
sp_helpdb [page 438]
sp_helpindex [page 454]
sp_poolconfig [page 669]
sp_spaceused [page 781]
sp_unbindcache [page 817]
sp_unbindcache_all [page 820]

1.34 sp_bindefault

Binds a user-defined default to a column or user-defined datatype.

Syntax

```
sp_bindefault <defname>, <objname> [, futureonly]
```

Parameters

`<defname>`

is the name of a default created with `create default` statements to bind to specific columns or user-defined datatypes.

`<objname>`

is the name of the table and column, or user-defined datatype, to which the default is to be bound. If the `<objname>` parameter is not of the form "`<table>.<column>`", it is assumed to be a user-defined datatype. If the object name includes embedded blanks or punctuation, or is a reserved word, enclose it in quotation marks.

Existing columns of the user-defined datatype inherit the default `<defname>`, unless you specify `futureonly`.

You cannot bind defaults to computed columns.

`futureonly`

prevents existing columns of a user-defined datatype from acquiring the new default. This parameter is optional when you are binding a default to a user-defined datatype. It is never used to bind a default to a column.

Examples

Example 1

Assuming that a default named `today` has been defined in the current database with `create default`, this command binds it to the `startdate` column of the `employees` table:

```
sp_bindefault today, "employees.startdate"
```

Each new row added to the `employees` table has the value of the `today` default in the `startdate` column, unless another value is supplied.

Example 2

Assuming that a default named `def_ssn` and a user-defined datatype named `ssn` exist, this command binds `def_ssn` to `ssn`:

```
sp_bindefault def_ssn, ssn
```

The default is inherited by all columns that are assigned the user-defined datatype `ssn` when a table is created. Existing columns of type `ssn` also inherit the default `def_ssn`, unless you specify `futureonly` (which prevents existing columns of that user-defined datatype from inheriting the default), or unless the column's default has previously been changed (in which case the changed default is maintained).

Example 3

Binds the default `def_ssn` to the user-defined datatype `ssn`:

```
sp_bindefault def_ssn, ssn, futureonly
```

Because the `futureonly` parameter is included, no existing columns of type `ssn` are affected.

Usage

There are additional considerations when using `sp_bindefault`:

- You can create column defaults in two ways: by declaring the default as a column constraint in the `create table` or `alter table` statement or by creating the default using the `create default` statement and binding it to a column using `sp_bindefault`. Using `create default`, you can bind that default to more than one column in the database.
- You cannot bind a default to an SAP ASE server-supplied datatype.
- You cannot bind a default to a system table.
- Defaults bound to a column or user-defined datatype with the IDENTITY property have no effect on column values. Each time you insert a row into the table, the SAP ASE server assigns the next sequential number to the IDENTITY column.

- If binding a default to a column, give the `<objname>` argument in the form "`<table>.<column>`". Any other format is assumed to be the name of a user-defined datatype.
- If a default already exists on a column, you must remove it before binding a new default. Use `sp_unbindefault` to remove defaults created with `sp_bindefault`. To remove defaults created with `create table` or `alter table`, use `alter table` to replace the default with NULL.
- Existing columns of the user-defined datatype inherit the new default unless you specify `futureonly`. New columns of the user-defined datatype always inherit the default. Binding a default to a user-defined datatype overrides defaults bound to columns of that type; to restore column bindings, unbind and rebind the column default.
- Statements that use a default cannot be in the same batch as their `sp_bindefault` statement.

See also `create default`, `create table`, `drop default` in *Reference Manual: Commands*.

Permissions

You must be the table owner or the user datatype owner to execute `sp_bindefault`. Permission checks do not differ based on the granular permissions settings.

Auditing

You can enable `bind` auditing option to audit this procedure. Values in `event` and `extrainfo` columns from the `sysaudits` table are:

Information	Value
Audit option	`bind`
Event	6
Command or access audited	`sp_bindefault`
Information in **`extrainfo`**	• **Roles** – Current active roles • **Keywords or options** – NULL • **Previous value** – NULL • **Current value** – NULL • **Other information** – Name of the default • **Other information** – Original login name, if `set proxy` in effect

Example of `extrainfo` for after executing `sp_bindefault`:

```
sa_role sso_role oper_role sybase_ts_role mon_role; ; ; ; test_default; ; s
    a/ase;
```

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_unbindefault [page 821]

1.35 sp_bindexeclass

Associates an execution class with a client application, login, stored procedure, or default execution class.

Syntax

```
sp_bindexeclass "<object_name>", "<object_type>", "<scope>", "<classname>"
```

Parameters

`<object_name>`

is the name of the client application, login, or stored procedure to be associated with the execution class, `classname`. If `<object_type>` is `df`, it should be null.

`<object_type>`

identifies the type of `object_name`. Use:

- `ap` for application
- `df` for user-defined default execution class
- `lg` for login
- `pr` for stored procedure
- `sv` for a service task (valid only in threaded mode)

`<scope>`

is the name of a client application or login, or it can be NULL for `ap`, `df`, `lg`, or `sv` objects. For objects, scope is the name of the stored procedure owner (user name). When the object with `object_name` interacts with the application or login, `classname` attributes apply for the `<scope>` you set.

`<classname>`

specifies the type of class to associate with `object_name`. Values are:

- `EC1`, `EC2`, or `EC3`
- The name of a user-defined execution class
- `ANYENGINE`

Examples

Example 1

This statement specifies that Transact-SQL applications execute with EC3 attributes for any login or application process (because the value of <scope> is NULL) that invokes isql, unless the login or application is bound to a higher execution class:

```
sp_bindexeclass 'isql', 'ap', NULL, 'EC3'
```

Example 2

This statement specifies that when a login with the system administrator role executes Transact-SQL applications, the login process executes with EC1 attributes. If you have already executed the statement in the first example, then any other login or client application that invokes isql executes with EC3 attributes:

```
sp_bindexeclass 'sa', 'lg', 'isql', 'EC1'
```

Example 3

This statement assigns EC3 attributes to the stored procedure named my_proc owned by user kundu:

```
sp_bindexeclass 'my_proc', 'PR', 'kundu', 'EC3'
```

Example 4

This statement assigns CLASS1 attributes to all tasks that are running with default execution attributes:

```
sp_bindexeclass NULL, 'DF', NULL, 'CLASS1'
```

Example 5

Binds the license heartbeat operation to the core execution task:

```
sp_bindexeclass "License Heartbeat", sv, NULL, core
```

Usage

There are additional considerations when using sp_bindexeclass:

- When binding an execution class to a default execution class, all tasks running with default execution attributes run with attributes of the new class.
- You can bind service tasks to existing execution classes created to manage user tasks. That is, service tasks and user tasks can coexist in the same execution class.
- The monServiceTask monitoring table includes all services tasks, including their name and current binding.
- sp_bindexeclass associates an execution class with a client application, login, or stored procedure. It can also associate an execution class to the default execution class. Use sp_addexeclass to create execution classes.
- When scope is NULL, object_name has no scope. classname’s execution attributes apply to all of its interactions. For example, if object_name is an application name, the attributes apply to any login process that invokes the application. If object_name is a login name, the attributes apply to a particular login process for any application invoked by the login process.

- When binding a stored procedure to an execution class, you must use the name of the stored procedure owner (user name) for the `scope` parameter. This narrows the identity of a stored procedure when there are multiple invocations of it in the same database.
- Due to precedence and scoping rules, the execution class being bound may or may not have been in effect for the object called `object_name`. The object automatically binds itself to another execution class, depending on other binding specifications, precedence, and scoping rules. If no other binding is applicable, the object binds to the default execution class. If you do not specify a user-defined default execution class, then the object binds to the system-defined execution class `EC2`.
- You can use `sp_bindexeclass` to bind a RepAgent thread to an execution class using `rep agent` as the application without generating an error. However, because of restrictions in the SAP ASE server, the priority attribute is set to medium, and the binding has no effect.
- Binding fails when you attempt to bind an active process to an engine group with no online engines.
- The SAP ASE server creates a row in the `sysattributes` table containing the object ID and user ID in the row that stores data for the binding.
- A stored procedure must exist before it can be bound.
- Stored procedure bindings must be done in the database in which the stored procedure resides. Therefore, when binding system procedures, execute `sp_bindexeclass` from within the `sybsystemprocs` database.
- Only the “priority attribute” of the execution class is used when you bind the class to a stored procedure.
- The name of the owner of a stored procedure must be supplied as the `scope` parameter when you are binding a stored procedure to an execution class. This helps to uniquely identify a stored procedure when multiple stored procedures with the same name (but different owners) exist in the database.

See also `isql` in the *Utility Guide*.

Permissions

The permission checks for `sp_bindexeclass` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `manage any execution class` privilege. For ECO, you must be a user with `manage any execution class` and sybase_ts_role.
Disabled	With granular permissions disabled, you must be a user with sa_role. For ECO, you must be a user with sa_role and sybase_ts_role.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide > Auditing*.

Related Information

sp_addexeclass [page 35]
sp_showexeclass [page 743]
sp_unbindexeclass [page 824]

1.36 sp_bindmsg

Binds a user message to a referential integrity constraint or check constraint.

Syntax

```
sp_bindmsg <constrname>, <msgid>
```

Parameters

<constrname>

is the name of the integrity constraint to which you are binding a message. Use the `constraint` clause of the `create table` command, or the `add constraint` clause of the `alter table` command to create and name constraints.

<msgid>

is the number of the user message to be bound to an integrity constraint. The message must exist in the `sysusermessages` table in the local database prior to calling `sp_bindmsg`.

Examples

Example 1

Binds user message number 20100 to the `positive_balance` constraint:

```
sp_bindmsg positive_balance, 20100
```

Usage

There are additional considerations when using sp_bindmsg:

- sp_bindmsg binds a user message to an integrity constraint by adding the message number to the constraint row in the sysconstraints table.
- Only one message can be bound to a constraint. To change the message for a constraint, just bind a new message. The new message number replaces the old message number in the sysconstraints table.
- You cannot bind a message to a unique constraint because a unique constraint does not have a constraint row in sysconstraints (a unique constraint is a unique index).
- Use the sp_addmessage procedure to insert user messages into the sysusermessages table.
- The sp_getmessage procedure retrieves message text from the sysusermessages table.
- sp_help <tablename> displays all constraint names declared on <tablename>.

See also alter table, create table in *Reference Manual: Commands*.

Permissions

You must be the constraint owner to execute sp_bindmsg. Permission checks do not differ based on the granular permissions settings.

Auditing

You can enable bind auditing option to audit this procedure. Values in event and extrainfo columns from the sysaudits table are:

Information	Value
Audit option	bind
Event	7
Command or access audited	sp_bindmsg
Information in **extrainfo**	● **Roles** – Current active roles ● **Keywords or options** – NULL ● **Previous value** – NULL ● **Current value** – NULL ● **Other information** – Message ID ● **Proxy information** – Original login name, if set proxy in effect

Example of extrainfo after executing sp_bindmsg:

```
sa_role sso_role oper_role sybase_ts_role mon_role; ; ; ; 21000; ; s
     a/ase;
```

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide > Auditing*.

Related Information

sp_addmessage [page 47]
sp_getmessage [page 390]
sp_unbindmsg [page 826]

1.37 sp_bindrule

Binds a rule to a column or user-defined datatype.

Syntax

```
sp_bindrule <rulename>, <objname>[, futureonly]
```

Parameters

`<rulename>`

is the name of a rule. Create rules with `create rule` statements and bind rules to specific columns or user-defined datatypes with `sp_bindrule`.

`<objname>`

is the name of the table and column, or user-defined datatype, to which the rule is to be bound. If `<objname>` is not of the form "`<table>.<column>`", it is assumed to be a user-defined datatype. If the object name has embedded blanks or punctuation, or is a reserved word, enclose it in quotation marks.

`futureonly`

prevents existing columns of a user-defined datatype from inheriting the new rule. This parameter is optional when you bind a rule to a user-defined datatype. It is meaningless when you bind a rule to a column.

Examples

Example 1

Assuming that a rule named today has been created in the current database with create rule, this command binds it to the startdate column of the employees table. When a row is added to employees, the data for the startdate column is checked against the rule today:

```
sp_bindrule today, "employees.startdate"
```

Example 2

Assuming the existence of a rule named rule_ssn and a user-defined datatype named ssn, this command binds rule_ssn to ssn. In a create table statement, columns of type ssn inherit the rule rule_ssn. Existing columns of type ssn also inherit the rule rule_ssn, unless ssn's rule was previously changed (in which case the changed rule is maintained in the future only):

```
sp_bindrule rule_ssn, ssn
```

Example 3

The rule rule_ssn is bound to the user-defined datatype ssn, but no existing columns of type ssn are affected. futureonly prevents existing columns of type ssn from inheriting the rule:

```
sp_bindrule rule_ssn, ssn, futureonly
```

Usage

There are additional considerations when using sp_bindrule:

- Create a rule using the create rule statement. Then execute sp_bindrule to bind it to a column or user-defined datatype in the current database.
- Rules are enforced when an insert is attempted, not when sp_bindrule is executed. You can bind a character rule to a column with an exact or approximate numeric datatype, even though such an insert is illegal.
- You cannot use sp_bindrule to bind a check constraint for a column in a create table statement.
- You cannot bind a rule to an SAP ASE server-supplied datatype or to a text or an image column.
- You cannot bind a rule to a system table.
- You cannot bind a rule to a computed column.
- If you are binding to a column, the <objname> argument must be of the form "<table>.<column>". Any other format is assumed to be the name of a user-defined datatype.
- Statements that use a rule cannot be in the same batch as their sp_bindrule statement.
- You can bind a rule to a column or user-defined datatype without unbinding an existing rule. Rules bound to columns always take precedence over rules bound to datatypes. Binding a rule to a column replaces a rule bound to the datatype of that column; however, binding a rule to a datatype does not replace a rule bound to a column of that user-defined datatype.
- Existing columns of the user-defined datatype inherit the new rule unless their rule was previously changed, or the value of the optional third parameter is futureonly. New columns of the user-defined datatype always inherit the rule.

See also `create rule`, `drop rule` in *Reference Manual: Commands*.

Permissions

You must be the table owner or user datatype owner to execute `sp_bindmsg`. Permission checks do not differ based on the granular permissions settings.

Auditing

You can enable `bind` auditing option to audit this procedure. Values in `event` and `extrainfo` columns from the `sysaudits` table are:

Information	Value
Audit option	`bind`
Event	8
Command or access audited	`sp_bindrule`
Information in **`extrainfo`**	- **Roles** – Current active roles - **Keywords or options** – NULL - **Previous value** – NULL - **Current value** – NULL - **Other information** – Name of the rule - **Proxy information** – Original login name, if `set proxy` in effect

Example of `extrainfo` after executing `sp_bindrule`:

```
sa_role sso_role oper_role sybase_ts_role mon_role; ; ; ; test_rule; ; s
    a/ase;
```

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide > Auditing*.

Related Information

sp_unbindrule [page 828]

1.38 sp_cacheconfig

Creates, configures, reconfigures, and drops data caches, and provides information about them.

Syntax

```
sp_cacheconfig [<cachename> [, "<cache_size>
     [P | K | M | G]"]
    [, logonly | mixed | inmemory_storage | lockless data cache | row_storage][,
strict | relaxed]]
    [, "cache_partition=[1 | 2 | 4 | 8 | 16 | 32 | 64 | 128 | 256]"]
    [, instance <instance_name>]
```

Parameters

<cachename>

is the name of the data cache to be created or configured. Cache names must be unique, and can be up to 30 characters long. A cache name does not have to be a valid SAP ASE identifier, that is, it can contain spaces and other special characters.

<cache_size> [P | K | M | G]

is the size of the data cache to be created or, if the cache already exists, it is the new size of the data cache. The minimum size of a `row_cache` is 265 times the logical page size of the server. Size units can be specified with `P` for pages, `K` for kilobytes (the default), `M` for megabytes, or `G` for gigabytes. For megabytes and gigabytes, you can specify floating-point values. The cache size is in multiples of the logical page size.

logonly | mixed | inmemory_storage | lockless data cache | row_storage

specifies the type of cache.

- `logonly` – indicates the cache is only for log.
- `mixed` – indicates the cache is for log and data.
- `inmemory_storage` – indicates that you are creating a cache for an in-memory or relaxed-durability database.
- `lockless data cache` – indicates that you are creating a lockless cache with `relaxed` cache replacement policy.
- `row_storage` – indicates you are creating a cache for in-memory row storage and storing data as rows, rather than in pages or buffers

.

strict | relaxed

specifies the cache replacement policy.

cache_partition=[1 | 2 | 4 | 8 | 16 | 32 | 64 | 128 | 256]

specifies the number of partitions to create in the cache.

instance **`<instance_name>`**

(in cluster environments) is the name of the instance with a cache that you are adjusting.

Examples

Example 1

Creates the data cache `pub_cache` with 10 MB of space. All space is in the default logical page size memory pool:

```
sp_cacheconfig pub_cache, "10M"
```

Example 2

Reports the current configuration of `pub_cache` and any memory pools in the cache:

```
sp_cacheconfig pub_cache
```

Example 3

Drops `pub_cache` at the next start of the SAP ASE server:

```
sp_cacheconfig pub_cache, "0"
```

Example 4

Creates `pub_log_cache` and sets its type to `logonly` in a single step:

```
sp_cacheconfig pub_log_cache, "2000K", logonly
```

Example 5

The first command creates the cache `pub_log_cache` with the default type `mixed`. The second command changes its status to `logonly`. The resulting configuration is the same as that in example 4:

```
sp_cacheconfig pub_log_cache, "2000K"
sp_cacheconfig pub_log_cache, logonly
```

Example 6

Creates a cache and sets the size, type, replacement policy and number of cache partitions:

```
sp_cacheconfig 'newcache', '50M', mixed, strict, "cache_partition=2"
```

Example 7

Creates an in-memory storage named `pubs3_imdb`:

```
sp_cacheconfig pubs_imdb, '500M', inmemory_storage
```

Example 8

(In cluster environments) Displays the cache for instance blade1:

```
sp_cacheconfig 'instance blade1'
```

Example 9

(In cluster environments) Sets the size of the Sales Cache size on blade1 to 100 MB:

```
sp_cacheconfig 'Sales Cache', '100M', 'instance blade1'
```

Example 10

(In cluster environments) Sets the size of the Sales Cache size on blade1 to 0 megabytes, effectively dropping the cache.

```
sp_cacheconfig 'Sales Cache', '0M', 'instance blade1'
```

Example 11

Creates a 20-gigabyte row storage cache for the `pubs2` database:

```
sp_cacheconfig "pubs2_row_cache", "20G", "row_storage"
```

Example 12

Reports on the `imrs_pub_cache`:

```
sp_cacheconfig imrs_pub_cache
 Cache Name                    Status           Type
         Config Value                 Run Value
 ---------------------------- ---------------- ----------------------
         ---------------------------- ------------------------
 imrs_pub_cache                Active           Row Storage
            500.00 Mb                    500.00 Mb
(1 row affected)
                                   ------------ ------------
                        Total      500.00 Mb    500.00 Mb
==========================================================================
Cache: imrs_pub_cache,   Status: Active,   Type: Row Storage
      Config Size: 500.00 Mb,   Run Size: 500.00 Mb
      Config Replacement: none,   Run Replacement: none
      Config Partition:            1,   Run Partition:            1
(return status = 0)
```

Example 13

Increases the size of the `pubs2_row_cache`:

```
sp_cacheconfig "pubs2_row_cache", "30g"
```

Example 14

Decreases the size of the pubs2_row_cache (requires a server restart to take effect):

```
sp_cacheconfig "pubs2_row_cache", "10g"
```

26 sp_cacheconfig "pubs2_vlink_cache", "10g"

Example 15

Grows the `imrs_pub_cache` to 500MB:

```
sp_cacheconfig imrs_pub_cache, "500M", "row_storage"
```

Example 16

Creates a 1-gigabyte lockless data cache named sys_cache:

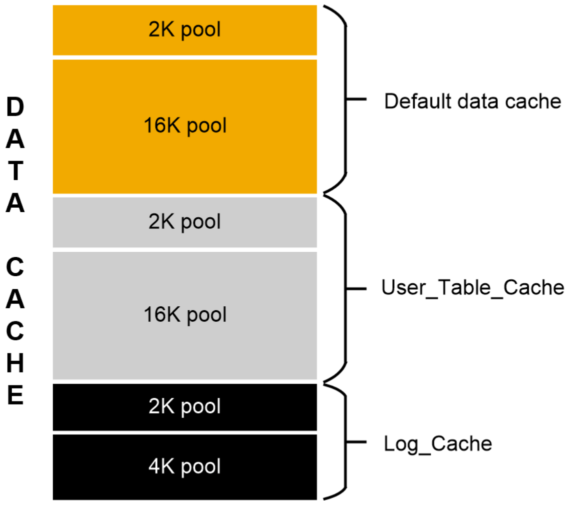
```
sp_cacheconfig "sys_cache", "1G", "lockless data cache", "relaxed"
```

Usage

- The minimum cache size of the row_cache is 265MB.
- If the SAP ASE server is unable to allocate all the memory requested while you are creating a new cache or adding memory to an existing cache, it allocates all the available memory. However, this additional memory is allocated at the next restart of the SAP ASE server.
- If there are objects bound to cache (including the default cache), you cannot delete the cache until you unbind the objects.
- (In cluster environments) If you do not specify an instance_name, the cache for the cluster is displayed.
- Some of the actions you perform with sp_cacheconfig are dynamic (do not require a restart of the SAP ASE server) and some are static (require a reboot). The dynamic and static actions are:

Dynamic sp_cacheconfig Actions	Static sp_cacheconfig Actions
Adding a new cache	Changing the number of cache partitions
Adding memory to an existing cache	Reducing a cache size
Deleting a cache	Changing the replacement policy
Changing a cache type	

- When you first create a data cache:
  - All space is allocated to the logical page size memory pool.
  - The default type is mixed.
- This figure shows a data cache for a 2K server with two user-defined data caches configured and the following pools:
  - The default data cache with a 2K pool and a 16K pool
  - A user cache with a 2K pool and a 16K pool
  - A log cache with a 2K pool and a 4K pool



- The default data cache must always have the type `default`, and no other cache can have the type `default`.
- The SAP ASE housekeeper task does not do any buffer washing in caches with a type of `logonly` or in caches with a relaxed LRU replacement policy.
- The following commands perform only 2K I/O: `disk init`, some `dbcc` commands, and `drop table`. The `dbcc checkdb` and `dbcc checktable` commands can perform large I/O for tables, but perform 2K I/O on indexes. Cache usage for Transact-SQL commands, depending on the binding of the database or object, are:

Command	Database Bound	Table or Index is Bound	Database or Object Not Bound
`create index`	Bound cache	N/A	Default data cache
`disk init`	N/A	N/A	Default data cache
`dbcc checkdb`	Bound cache	N/A	Default data cache
`dbcc checktable`, `indexalloc`, `tablealloc`	Bound cache	Bound cache	Default data cache
`drop table`	Bound cache	Bound cache	Default data cache

- Recovery uses only the logical page size pool of the default data cache. All pages for all transactions that must be rolled back or rolled forward are read into and changed in this pool. Be sure that your default logical page size pool is large enough for these transactions.
- When you use `sp_cacheconfig` with no parameters, it reports information about all of the caches on the server. If you specify only a cache name, it reports information about only the specified cache. If you use a fragment of a cache name, it reports information for all names matching "%`<fragment>`%".
  All reports include a block of information that reports information about caches, and a separate block of data for each cache that provides information about the pools within the cache.
  The output below, from a server using 2K, shows the configuration for:

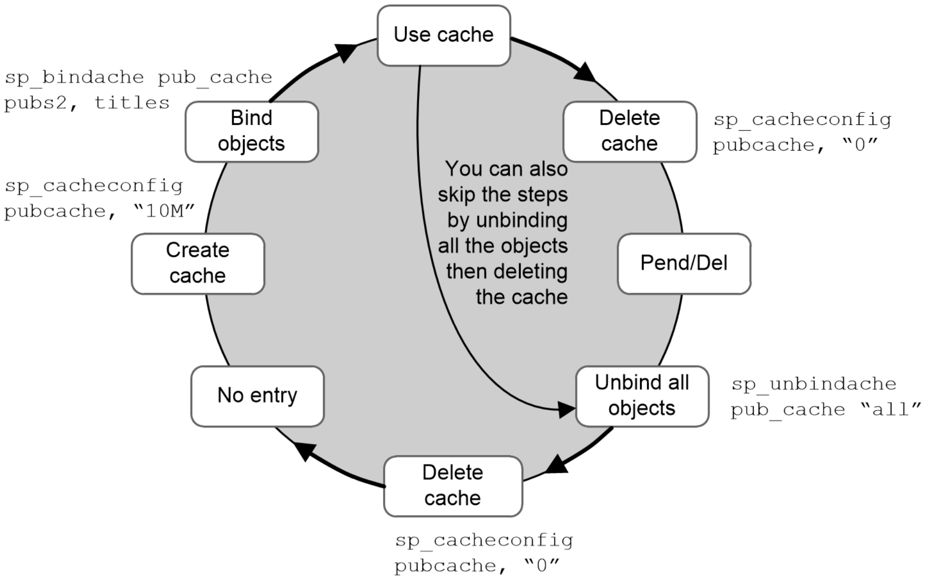
- The default data cache with two pools: a 2K pool and a 16K pool. The default data cache has 2 partitions.
- `pubs_cache` with two pools: 2K and 16K
- `pubs_log`, with the type set to `logonly` and cache replacement policy set to `relaxed`, with a 2K pool and a 4K pool

```
Cache Name               Status    Type     Config Value  Run Value
 ----------------------- --------- -------- ------------ --------
default data cache        Active   Default      0.00 Mb   26.09 Mb
pubs_cache               Active    Mixed        10.00 Mb  10.00 Mb
pubs_log                 Active    Log Only      2.40 Mb    2.40 M
                                              ------------- --------
                                      Total     12.40 Mb   38.49 Mb
===================================================================
Cache: default data cache,   Status: Active,   Type: Default
      Config Size: 0.00 Mb,   Run Size: 26.09 Mb
      Config Replacement: strict LRU,   Run Replacement: strict LRU
      Config Partition:            2,   Run Partition:            2
 IO Size  Wash Size Config Size  Run Size     APF Percent
 -------- --------- ------------ ------------ -----------
     2 Kb   3704 Kb      0.00 Mb     18.09 Mb     10
    16 Kb   1632 Kb      8.00 Mb      8.00 Mb     10
===================================================================
Cache: pubs_cache,   Status: Active,   Type: Mixed
      Config Size: 10.00 Mb,   Run Size: 10.00 Mb
      Config Replacement: strict LRU,   Run Replacement: strict LRU
      Config Partition:            1,   Run Partition:            1
 IO Size  Wash Size Config Size  Run Size     APF Percent
 -------- --------- ------------ ------------ -----------
     2 Kb   1228 Kb      0.00 Mb      6.00 Mb     10
    16 Kb    816 Kb      4.00 Mb      4.00 Mb     10
===================================================================
Cache: pubs_log,   Status: Active,   Type: Log Only
      Config Size: 2.40 Mb,   Run Size: 2.40 Mb
      Config Replacement: relaxed LRU,   Run Replacement: relaxed LRU
      Config Partition:            1,   Run Partition:            1
 IO Size  Wash Size Config Size  Run Size     APF Percent
 -------- --------- ------------ ------------ -----------
     2 Kb    206 Kb      0.00 Mb      1.01 Mb     10
    16 Kb    272 Kb      1.40 Mb      1.39 Mb     10
```

The meaning of the columns in the output are:

Column	Meaning
Cache Name	The name of the cache.
Status	One of the following: ○ "Active" ○ "Pend/Act" ○ "Pend/Del" The status "Pend" is short for pending. It always occurs in combination with either "Act" for Active or "Del" for Delete. It indicates that a configuration action has taken place, but that the server must be restarted in order for the changes to take effect.
Type	"Mixed" or "Log Only" for user-defined caches, "Default" for the default data cache.
I/O Size	The size of I/O for a memory pool. This column is blank on the line that shows that cache configuration.

Column	Meaning
Wash Size	The size of the wash area for the pool. As pages enter the wash area of the cache, they are written to disk. This column is blank on the line that shows the cache configuration.
Config Value or Config Size	The size that the cache or pool. If the value is 0, the size has not been explicitly configured, and a default value is used.
Run Value or Run Size	The size of the cache or pool now in use on the SAP ASE server.
Config/ Run Replacement	The cache policy (strict or relaxed) that is used for the cache after the next restart, and the current replacement policy. These differ only if the policy has been changed since the last reboot.
Config/Run Partition	The number of cache partitions that is used for the cache, and the current number of partitions. These differ if `sp_cacheconfig` has been used to change the number of partitions since the last reboot.
APF Percent	The percentage of buffers in the pool that can hold buffers that have been fetched by asynchronous prefetch, but have not been used.
Total	The total size of data cache, if the report covers all caches, or the current size of the particular cache, if you specify a cache name. The following figure illustrates the effects of restarts and `sp_cacheconfig` on Cache Status:


Use cache
Delete cache
sp_cacheconfig pubcache, "0"
Pend/Del
Unbind all objects
sp_unbindache pub_cache "all"
Delete cache
sp_cacheconfig pubcache, "0"
No entry
Create cache
sp_cacheconfig pubcache, "10M"
Bind objects
sp_bindache pub_cache pubs2, titles
You can also skip the steps by unbinding all the objects then deleting the cache

- You can also configure caches and pools by editing the configuration file. For more information, see the *System Administration Guide*.

Permissions

The permission checks for `sp_cacheconfig` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `manage data cache` privilege. Any user can execute `sp_cacheconfig` to view cache configurations
Disabled	With granular permissions disabled, you must be a user with sa_role. Any user can execute `sp_cacheconfig` to view cache configurations

Auditing

You can enable `config_history` auditing option to audit this procedure. Values in `event` and `extrainfo` columns from the `sysaudits` table are:

Information	Value
Audit option	`config history`
Event	154
Command or access audited	`sp_cacheconfig`
Information in **`extrainfo`**	• **Roles** – Current active roles • **Keywords or options** – NULL • **Previous value** – NULL • **Current value** – NULL • **Other information** – Includes procedure name, parameter name, old value, new value, mode (static or active), and instance ID • **Proxy information** – Original login name, if `set proxy` in effect

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_bindcache [page 103]
sp_helpcache [page 420]
sp_poolconfig [page 669]
sp_unbindcache [page 817]
sp_unbindcache_all [page 820]

1.38.1 Data Cache Memory

When the SAP ASE server is first installed, all data cache memory is assigned to the logical page size pool of the cache named `default data cache`. The default data cache is used by all objects that are not explicitly bound to a data cache with `sp_bindcache` or with databases that are not bound to a cache.

- When you create data caches, the memory allocation is validated against `max memory`. Memory for caches is allocated out of the memory allocated to the SAP ASE server with the `total logical_memory` configuration parameter. To increase the amount of space available for caches, increase `total logical memory`, or decrease other configuration settings that use memory. If the sum of `total logical memory` and additional memory requested is greater than `max memory`, then the SAP ASE server issues and error and does not perform the changes.
  The default cache is used for all objects, including system tables, that are not bound to another cache, and is the only cache used during recovery. For more information, see the *System Administration Guide*.
- A data cache requires a small percentage of overhead for structures that manage the cache. All cache overhead is taken from free memory. To see the amount of overhead required for a specific size of cache, use `sp_helpcache`, giving the size:

  ```
  sp_helpcache "200M"
  ```

  ```
  10.38Mb of overhead memory will be needed to manage
  a cache of size 200M
  ```

  This is only an estimate of the overhead. The actual overhead may be larger because of runtime issues.

1.38.2 Creating Cache for In-Memory Databases

Information about creating cache for in-memory databases.

- The cache name cannot be longer than 127 bytes.
- The minimum size of in-memory storage cache is 256 logical pages (512K on a server using 2K logical pages).
- You cannot:
  - Include the `strict` or `relaxed` replacement strategies for in-memory storage. By default, `sp_cacheconfig` uses a replacement strategy of `none` for in-memory storage cache.
  - Create large I/O pools for in-memory storage cache (in-memory databases do not perform I/O). The SAP ASE server issues an error if you use `sp_poolconfig` to create buffer pools an in-memory storage cache.
  - Change the cache type from `mixed` to `logonly`, or vice versa.
  - Each cachlet in an in-memory cache must contain a full allocation unit of 256 pages. If the amount of space you request does not completely full all the allocation units, the server reduces the amount of space allocated until all remaining cachlets are full. The page size of the server determines the amount of space reduced. For example, on a server using 2K logical pages, `sp_cacheconfig` allocates 96MB of 100MB requested:

    ```
     sp_cacheconfig tempdb_user_cache, "100M", "inmemory_storage",
    "cache_partition=32"
    go
    ```

```
sp_cacheconfig tempdb_user_cache
go
 Cache Name                          Status
         Type                               Config Value
         Run Value
 ---------------------------------- ----------------
         ---------------------------------- ----------------------------
         ------------------------
 tempdb_user_cache                   Active
         In-Memory Storage                     100.00 Mb
             96.00 Mb
(1 row affected)
                                            ------------ ------------
                           Total     100.00 Mb     96.00 Mb
==========================================================================
Cache: tempdb_user_cache,   Status: Active,   Type: In-Memory Storage
      Config Size: 100.00 Mb,   Run Size: 96.00 Mb
      Config Replacement: none,   Run Replacement: none
      Config Partition:           32,   Run Partition:           32
 IO Size          Wash Size                  Config Size
         Run Size                 APF Percent
 ---------------- -------------------------- ------------------------
         ------------------------ ------------------
     2 Kb                  0 Kb                 96.00 Mb
             96.00 Mb                 0
(return status = 0)
```

However, on a server that uses 8K logical pages, `sp_cacheconfig` allocates 64MB of the 100MB requested:

```
 sp_cacheconfig tempdb_user_cache, "100M", "inmemory_storage",
"cache_partition=32"
go
sp_cacheconfig tempdb_user_cache
go
 Cache Name                          Status
         Type                               Config Value
         Run Value
 ---------------------------------- ----------------
         ---------------------------------- ----------------------------
         ------------------------
 tempdb_user_cache                   Active
         In-Memory Storage                     100.00 Mb
             64.00 Mb
(1 row affected)
                                            ------------ ------------
                           Total     100.00 Mb     64.00 Mb
==========================================================================
Cache: tempdb_user_cache,   Status: Active,   Type: In-Memory Storage
      Config Size: 100.00 Mb,   Run Size: 64.00 Mb
      Config Replacement: none,   Run Replacement: none
      Config Partition:           32,   Run Partition:           32
 IO Size          Wash Size                  Config Size
         Run Size                 APF Percent
 ---------------- -------------------------- ------------------------
         ------------------------ ------------------
     8 Kb                  0 Kb                 64.00 Mb
             64.00 Mb                 0
(return status = 0)
```

Consequently, if you issue a command to create a 100MB cache: For this issue to show up, it requires larger page size and large cache partition values. in this example, for an 8K server, 2M of space is needed for an allocation unit of 256 pages. With 32 cache partitions, that means that the the inmemory cache has to be divisible by 64 (32 x 2). Hence the 100M is rounded down to 64M.

1.38.3 Creating Cache for In-Memory Row Storage

Information on creating cache for in-memory row storage.

- Creating in-memory row storage reserves system memory, so you must configure `max memory` to provide an adequate amount of memory. If the system has insufficient space to create an in-memory row storage for the specified size, it issues an error message prompting the user to increase the value for `max memory`.
- If you specify `<cache_size>` as a number of pages, `sp_cacheconfig` converts this page number to an amount of memory using the `@@maxpagesize` variable for the current installation.

Creating caches for in-memory row storage includes these restrictions:

- The cache name must be unique within the server installation (including across all other caches of any type).
- You cannot change an in-memory row storage cache to another type of cache. Instead, drop and then redeploy the memory to another cache type. Similarly, you cannot change other caches types to in-memory row storage caches.
- You can increase the size of an in-memory row storage cache, subject to available system memory. However, you cannot decrease its size without restarting the server, at which time the cache is resized to the lower limit.

  > **i Note**
  >
  > Avoid storing a large number of rows in the cache and then reducing its size as there may not be sufficient memory when the server attempts to instantiate the contents of the in-memory row storage when the server restarts.

- You may dedicate a row storage cache exclusively to one database, and vice-versa. That is, you can create multiple in-memory row storage caches in a server, but they cannot be shared across databases. .
- You cannot use the `cache_partition` or `instance` arguments when you create in-memory row storage caches.
- Each cachlet in an in-memory cache must contain a full allocation unit of 256 pages. If the amount of space you request does not completely full all the allocation units, the server reduces the amount of space allocated until all remaining cachlets are full. The page size of the server determines the amount of space reduced. For example, on a server using 2K logical pages, `sp_cacheconfig` allocates 96MB of 100MB requested:

```
 sp_cacheconfig tempdb_user_cache, "100M", "inmemory_storage",
"cache_partition=32"
go
sp_cacheconfig tempdb_user_cache
go
 Cache Name                         Status
         Type                               Config Value
         Run Value
 ---------------------------------- ----------------
         ---------------------------------- ----------------------------
         ------------------------
 tempdb_user_cache                  Active
         In-Memory Storage                     100.00 Mb
             96.00 Mb
(1 row affected)
                                            ------------ ------------
                           Total     100.00 Mb     96.00 Mb
==========================================================================
Cache: tempdb_user_cache,   Status: Active,   Type: In-Memory Storage
      Config Size: 100.00 Mb,   Run Size: 96.00 Mb
      Config Replacement: none,   Run Replacement: none
      Config Partition:           32,   Run Partition:           32
 IO Size          Wash Size                  Config Size
         Run Size                APF Percent
 ---------------- -------------------------- ------------------------
         ------------------------ ------------------
     2 Kb                 0 Kb                 96.00 Mb
             96.00 Mb                0
(return status = 0)
```

However, on a server that uses 8K logical pages, `sp_cacheconfig` allocates 64MB of the 100MB requested:

```
 sp_cacheconfig tempdb_user_cache, "100M", "inmemory_storage",
"cache_partition=32"
go
sp_cacheconfig tempdb_user_cache
go
 Cache Name                          Status
         Type                            Config Value
         Run Value
 ----------------------------------- ----------------
         ----------------------------------- -----------------------------
         ------------------------
 tempdb_user_cache                   Active
         In-Memory Storage                  100.00 Mb
             64.00 Mb
(1 row affected)
                                             ------------ ------------
                           Total     100.00 Mb     64.00 Mb
============================================================================
Cache: tempdb_user_cache,   Status: Active,   Type: In-Memory Storage
      Config Size: 100.00 Mb,   Run Size: 64.00 Mb
      Config Replacement: none,   Run Replacement: none
      Config Partition:           32,   Run Partition:           32
 IO Size          Wash Size                  Config Size
         Run Size                APF Percent
 ---------------- -------------------------- ------------------------
         ------------------------ ------------------
     8 Kb                 0 Kb                 64.00 Mb
             64.00 Mb                0
(return status = 0)
```

Consequently, if you issue a command to create a 100MB cache: For this issue to show up, it requires larger page size and large cache partition values. in this example, for an 8K server, 2M of space is needed for an allocation unit of 256 pages. With 32 cache partitions, that means that the the inmemory cache has to be divisible by 64 (32 x 2). Hence the 100M is rounded down to 64M.

1.38.4 Changing Existing Caches

To change the size of an existing cache, specify the cache's name and the new size.

If you increase the size of an existing cache, all of the added space is placed in the smallest pool.

To reduce the size of an existing cache, all of the space must be available in the logical page size pool. You may need to use `sp_poolconfig` to move space from other pools to this pool.

If you have a database or any nonlog objects bound to a cache, you cannot change its type to `logonly`.

1.38.5 Using Cache Partitions

Cache partitions can be used to reduce cache spinlock contention without needing to create separate caches and bind database objects to them.

For more information on monitoring cache spinlock contention, see the *Performance and Tuning Guide*.

You can set the default number of cache partitions for all caches with the configuration parameter `global cache partition number`. See the *System Administration Guide*.

1.38.6 Dropping Caches

To drop or delete a data cache, change its size to 0. When you set a cache's size to 0, the cache is marked for deletion. The cache remains active, and all objects that are bound to that cache continue to use it.

- You cannot drop the default data cache.
- If you delete a data cache, and there are objects bound to the cache, the cache is left as-is in memory and the SAP ASE server issues the following message:

  ```
  Cache (nmc3) not deleted dynamically. Objects are bound to the cache. Use
  sp_unbindcache_all to unbind all objects bound to the cache.
  ```

  The entry corresponding to the cache in the configuration file is deleted, as well as the entries corresponding to the cache in `sysconfigures`, and the cache is deleted the next time the SAP ASE server is restarted.
- You cannot run `sp_cacheconfig` within a transaction.

1.39 sp_cachestrategy

Enables or disables prefetching (large I/O) and MRU cache replacement strategy for a table, index, `text` object, or `image` object.

Syntax

```
sp_cachestrategy <dbname>, [<ownername>.]<tablename>
    [, <indexname> | "text only" | "table only"
    [, {prefetch | mru}, {"on" | "off"}]]
```

Parameters

`<dbname>`

is the name of the database where the object is stored.

<ownername>

is the name of the table's owner. If the table is owned by "dbo", the owner name is optional.

<tablename>

is the name of the table.

<indexname>

is the name of the index on the table.

text only

changes the cache strategy for a `text` or `image` object.

table only

changes the cache strategy for a table.

prefetch | mru

is `prefetch` or `mru`, and specifies which setting to change. Use the `mru` strategy in all caches, regardless of available I/O size. Setting `prefetch "on"` has no effect on tables or indexes that are read into a cache that allows only 2K I/O.

on | off

specifies the setting, `"on"` or `"off"`, enclosed in quotes.

Examples

Example 1

Displays information about cache strategies for the `titles` table:

```
sp_cachestrategy pubs2, titles
```

```
object name        index name     large IO   MRU
------------------ -------------- --------   --------
dbo.titles         titleidind     ON          ON
```

When you use `sp_cachestrategy` without specifying the strategy and setting, it reports the current settings for the object.

Example 2

Displays information about cache strategies for the `titleind` index:

```
sp_cachestrategy pubs2, titles, titleind
```

Example 3

Disables prefetch on the `titleind` index of the `titles` table:

```
sp_cachestrategy pubs2, titles, titleind, prefetch, "off"
```

Example 4

Re-enables MRU replacement strategy on the `authors` table:

```
sp_cachestrategy pubs2, authors, "table only", mru, "on"
```

Example 5

Re-enables prefetching on the text pages of the `blurbs` table:

```
sp_cachestrategy pubs2, blurbs, "text only", prefetch, "on"
```

Usage

- If memory pools for large I/O are configured for the cache used by a table or an index, the optimizer can choose to prefetch data or index pages by performing large I/Os of up to eight data pages at a time. This `prefetch` strategy can be used on the data pages of a table or on the leaf-level pages of a nonclustered index. By default, prefetching is enabled for all tables, indexes, and `text` or `image` objects. Setting the `prefetch` option to "`off`" disables prefetch for the specified object.
- The optimizer can choose to use MRU replacement strategy to fetch and discard buffers in cache for table scans and index scans for I/O of any size. By default, this strategy is enabled for all objects. Setting `mru` to "`off`"disables this strategy. If you turn `mru` off for an object, all pages are read into the MRU/LRU chain in cache, and they remain in the cache until they are flushed by additional I/O. For more information on cache strategies, see the *Performance and Tuning Guide*.
- You can change the cache strategy only for objects in the current database.
- To see the size, status and I/O size of all data caches on the server, use `sp_cacheconfig`.

See also `delete`, `select`, `set`, `update` in *Reference Manual: Commands*.

Permissions

The permission checks for `sp_cachestrategy` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be the object owner or a user with `manage data cache` privilege.
Disabled	With granular permissions disabled, you must be the object owner or a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_cacheconfig [page 118]
sp_poolconfig [page 669]

1.39.1 Overrides

If prefetching is turned on for a table or an index, you can override the prefetching for a session with set prefetch "off". If prefetching is turned off for an object, you cannot override that setting.

The prefetch, lru, and mru options to the select, delete, and update commands suggest the I/O size and cache strategy for individual statements. If prefetching or MRU strategy is enabled for a table or an index, you can override it for a query by specifying I/O the size of the logical page size for prefetch, and by specifying lru strategy. For example, the following command forces LRU strategy, logical page size I/O, and a table scan of the titles table:

```
select avg(advance)
from titles (index titles prefetch 2 lru)
```

If you request a prefetch size, and the object's cache is not configured for I/O of the requested size, the optimizer chooses the best available I/O size.

If prefetching is enabled for an object with sp_cachestrategy, using a prefetch specification of the logical page size in a select, delete, or update command overrides an earlier set prefetch "on" statement. Specifying a larger I/O size in a select, delete, or update command does not override a set prefetch "off" command.

1.40 sp_changedbowner

Changes the owner of a user database.

Syntax

```
sp_changedbowner <loginame>[, true]
```

Parameters

<loginame>

is the login name of the new owner of the current database.

true

transfers aliases and their permissions to the new database owner. Values are "true" and "TRUE".

Examples

Example 1

Makes the user "albert" the owner of the current database:

```
sp_changedbowner albert
```

Usage

There are additional considerations when using sp_changedbowner:

- The new owner must not already be known as either a user or alias (that is, the new owner must not already be listed in sysusers or sysalternates). Executing sp_changedbowner with the single parameter <loginame> changes the database ownership to <loginame> and drops aliases of users who could act as the old "dbo."
- After executing sp_changedbowner, the new owner is known as the database owner inside the database.
- sp_changedbowner cannot transfer ownership of the system databases.
- The new owner must already have a login name in the SAP ASE server, but **cannot** have a database user name or alias name in the database. To assign database ownership to such a user, drop the user name or alias entry before executing sp_changedbowner.
- To grant permissions to the new owner, a system administrator must grant them to the database owner, since the user is no longer known inside the database under any other name.

See also create database in *Reference Manual: Commands*.

Permissions

The permission checks for sp_changedbowner differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with own any database privilege.
Disabled	With granular permissions disabled, you must be a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_addlogin [page 47]
sp_dropalias [page 281]
sp_dropuser [page 326]
sp_helpdb [page 438]

1.41 sp_changegroup

Changes a user's group.

Syntax

```
sp_changegroup <grpname>, <username>
```

Parameters

`<grpname>`

is the name of the group. The group must already exist in the current database. If you use "public" as the `<grpname>`, enclose it in quotes, because it is a keyword.

`<username>`

is the name of the user to be added to the group. The user must already exist in the current database.

Examples

Example 1

The user "albert" is now a member of the "fort_mudge" group, regardless of what group "albert" belonged to before:

```
sp_changegroup fort_mudge, albert
```

Example 2

To remove someone from a group without making that user a member of a new group, use sp_changegroup to change the user's group to "public". For example, the following removes"albert" from the group he belonged to without making him a member of a new group (all users are always members of "public"):

```
sp_changegroup "public", albert
```

Usage

There are additional considerations when using sp_changegroup:

- Executing sp_changegroup adds the specified user to the specified group. The user is dropped from the group he or she previously belonged to and is added to the one specified by <grpname>.
- New database users can be added to groups at the same time they are given access to the database with sp_adduser.
- Groups are used as a collective name for granting and revoking privileges. Every user is always a member of the default group, "public", and can belong to only one other group.
- When a user changes from one group to another, the user loses all permissions that he or she had as a result of belonging to the old group and gains the permissions granted to the new group.

See also grant, revoke in *Reference Manual: Commands*.

Permissions

The permission checks for sp_changegroup differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with manage any user privilege.
Disabled	With granular permissions disabled, you must be the database owner, a user with sa_role, or a user with sso_role.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_addgroup [page 42]
sp_adduser [page 73]
sp_dropgroup [page 304]
sp_helpgroup [page 452]

1.42 sp_checknames

Checks the current database for names that contain characters not in the 7-bit ASCII set.

Syntax

```
sp_checknames [help | silent]
```

Parameters

`help`

shows information about the system tables that are scanned.

`silent`

checks the current database in a silent mode, returning one of the following:

- 0 – if there are no names with non-7 bit ASCII characters
- 1 – if there is at least one name with a non-7 bit ASCII character

Examples

Example 1

Checks the `master` database for names that contain characters not in the 7-bit ASCII set:

```
sp_checknames
```

```
Looking for non 7-bit ASCII characters in the system tables of database:
"master"
================================================================
Table.Column name: "syslogins.password"

The following logins have passwords that contain non 7-bit
ASCII characters.  If you wish to change them use "sp_password";
Remember, only the sa and the login itself may examine or change
the syslogins.password column:

 suid   name
 ------ ------------------------------
      1 sa
      2 probe
      3 bogususer
```

Example 2

Displays information about the system tables scanned:

```
1> sp_checknames help
2> go
```

```
sp_checknames is used to search for non 7-bit ASCII characters
several important columns of system tables. The following
columns are searched:
In "master":
    sysdatabases.name
    sysdevices.name
    syslogins.name
    syslogins.dbname
    syslogins.password
    sysremotelogins.remoteusername
    sysservers.srvname
    sysservers.srvnetname
In all databases:
    syscolumns.name
    sysindexes.name
    sysobjects.name
    syssegments.name
    systypes.name
    sysusers.name
(return status = 0)
1>
```

Example 3

Suppresses the output of system table names, and displays just the return status:

```
1> sp_checknames silent
2> go
```

```
(return status = 1)
```

Usage

There are additional considerations when using `sp_checknames`:

- `sp_checknames` examines the names of all objects, columns, indexes, user names, group names, and other elements in the current database for characters outside of the 7-bit ASCII set. It reports illegal names and gives instructions to make them compatible with the 7-bit ASCII set.
- Run `sp_checknames` in every database on your server after upgrading from a SQL Server of release 4.0.x or 4.2.x, and after using a default character set that was not 7-bit ASCII.
- Follow the instructions in the `sp_checknames` report to correct all non-ASCII names.

See also `update` in *Reference Manual: Commands*.

Permissions

Any user can execute `sp_checknames`. Permission checks do not differ based on the granular permissions settings.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_password [page 646]
sp_rename [page 692]
sp_renamedb [page 696]

1.43 sp_checkreswords

Detects and displays identifiers that are Transact-SQL reserved words. Checks server names, device names, database names, segment names, user-defined datatypes, object names, column names, user names, login names, and remote login names.

Syntax

```
sp_checkreswords [<user_name_param>]
```

Parameters

<user_name_param>

is the name of a user in the current database. If you supply <user_name_param>, sp_checkreswords checks only for objects that are owned by the specified user.

Examples

Example 1

Shows the results if sp_checkreswords is executed in the master database:

```
1> /* executed in the master database */
2> sp_checkreswords
```

```
Reserved Words Used as Database Object Names for Database master

Upgrade renames sysobjects.schema to sysobjects.schemacnt.

Owner
 ------------------------------
 dbo
 Table                          Reserved Word Column Names
 ------------------------------ ------------------------------
 authorization                  cascade
 Object Type                    Reserved Word Object Names
 ------------------------------ ------------------------------
 rule                           constraint
 stored procedure               check
 user table                     arith_overflow
 user table                     authorization

 -------------------------------------------------------------
 -------------------------------------------------------------
 Owner
 ------------------------------
 lemur
 Table                          Reserved Word Column Names
 ------------------------------ ------------------------------
 key                            close
 Table                          Reserved Word Index Names
 ------------------------------ ------------------------------
 key                            isolation
 Object Type                    Reserved Word Object Names
 ------------------------------ ------------------------------
 default                        isolation
 rule                           level
 stored procedure               mirror
 user table                     key
 Reserved Word Datatype Names
 ------------------------------
 identity
 -------------------------------------------------------------
 -------------------------------------------------------------
 Database-wide Objects
 ---------------------
 Reserved Word User Names
 ------------------------------
 at
 identity
 Reserved Word Login Names
 ------------------------------
 at
 identity
 Reserved Word as Database Names
 ------------------------------
 work
 Reserved Word as Language Names
 ------------------------------
 national
 Reserved Word as Server Names
 ------------------------------
 mirror
 primary
 Reserved Word ServerNetNames
 --------------------------------
 mirror
 primary
```

Example 2

Shows the results if `sp_checkreswords` is executed in the user database `user_db`:

```
1> /* executed in the user database, user_db */
2> sp_checkreswords
```

```
Reserved Words Used as Database Object Names for Database user_db

 Upgrade renames sysobjects schema to sysobjects.schemacnt.

 Owner
 ------------------------------
 tamarin
 Table                          Reserved Word Column Names
 ------------------------------ ------------------------------
 cursor                         current
 endtran                        current
 key                            identity
 key                            varying
 schema                         primary
 schema                         references
 schema                         role
 schema                         some
 schema                         user
 schema                         work
 Table                          Reserved Word Index Names
 ------------------------------ ------------------------------
 key                            double
 Object Type                    Reserved Word Object Names
 ------------------------------ ------------------------------
 default                        escape
 rule                           fetch
 stored procedure               foreign
 user table                     cursor
 user table                     key
 user table                     schema
 view                           endtran
 -------------------------------------------------------------
 -------------------------------------------------------------
 Database-wide Objects
 ---------------------
Found no reserved words used as names for database-wide objects.
```

Usage

- `sp_checkreswords` reports the names of existing objects that are reserved words. Transact-SQL does not allow words that are part of any command syntax to be used as identifiers, unless you are using delimited identifiers. Reserved words are pieces of SQL syntax, and they have special meaning when you use them as part of a command. For example, in pre-release 10.0 SQL Server, you could have a table called `work`, and select data from it with this query:

  ```
  select * from work
  ```

  `work` was a new reserved word in SQL Server release 10.0, part of the command `commit work`. Issuing the same `select` statement in release 10.0 or later causes a syntax error. `sp_checkreswords` finds identifiers that would cause these problems.
- `sp_checkreswords` also finds reserved words, used as identifiers, that were created using the `set quoted_identifier` option.
- Use `sp_checkreswords` before or immediately after upgrading to a new release of SAP ASE. For information on installing and running this procedure before performing the upgrade, see the installation documentation for your platform.
  Run `sp_checkreswords` in the `master` database and in each user database. Also run it in `model` and `sybsystemprocs`, if you have added users or objects to those databases.
- The return status indicates the number of items found.
- If you supply a user name, `sp_checkreswords` checks for all of the objects that can be owned by a user tables, indexes, views, procedures, triggers, rules, defaults, and user-defined datatypes. It reports all identifiers that are reserved words.
- If your current database is not the `master` database, and you do not provide a user name, `sp_checkreswords` checks for all of the objects above, with a separate section in the report for each user name. It also checks `sysusers` and `syssegments` for user names and segment names that are reserved words. You only need to check `model` and `sybsystemprocs` if you have added objects, users, or user-defined datatypes.
- If your current database is `master`, and you do not provide a user name, `sp_checkreswords` performs all of the checks above and also checks `sysdatabases`, `syslogins`, `syscharsets`, `sysservers`, `sysremotelogins`, `sysdevices`, and `syslanguages` for reserved words used as the names of databases, local or remote logins, local and remote servers, character sets, and languages.

To change the name of a database, use `sp_renamedb`. The database must be in single-user mode. Drop and re-create any procedures, triggers, and views that explicitly reference the database name. For more information, see `sp_renamedb`.

See also:

- `set` in *Reference Manual: Commands*
- `defncopy` in the *Utility Guide*

Permissions

Any user can execute `sp_checkreswords`. Permission checks do not differ based on the granular permissions settings.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_configure [page 203]
sp_depends [page 253]
sp_rename [page 692]
sp_renamedb [page 696]

1.43.1 Handling Reported Instances of Reserved Words

If `sp_checkreswords` reports that reserved words are used as identifiers, you have two options.

- Use `sp_rename`, `sp_renamedb`, or update the system tables to change the name of the identifier.
- Use `set quoted_identifier on` if the reserved word is a table name, view name, or column name. If most of your applications use stored procedures, you can drop and re-create these procedures with `set quoted_identifier on`, and quote all identifiers. All users can run the procedures, without having to use `set quoted_identifier on` for their session. You can use `set quoted_identifier on`, create views that give alternative names to tables or columns, and change your applications to reference the view instead.
  The following example provides alternatives for the new reserved words "key", "level", and "work":

  ```
  create view keyview
  ```

```
as
select lvl = "level", wrk = "work"
from "key"
```

The syntax for the `set` command is:

```
set quoted_identifier on
```

If you do not either change the identifiers or use delimited identifiers, any query that uses the reserved words as identifiers reports an error, usually a syntax error. For example:

```
select level, work from key
```

```
Msg 156, Level 15, State 1:
Server 'rosie', Line 1:
Incorrect syntax near the keyword 'level'.
```

> **Note**
>
> The quoted identifier option is a SQL92 option and may not be supported by many client products that support other SAP ASE features. For example, you cannot use `bcp` on tables with names that are reserved words.
>
> Before choosing the quoted identifier option, perform a test on various objects using all the tools you use to access the SAP ASE server. Use `set quoted_identifier on`, create a table with a reserved word for a name and reserved words for column names. If the client product generates SQL code, it must enclose identifiers in double quotes (if they are reserved words) and character constants in single quotes.

Procedures, triggers, and views that depend on objects with names that have been changed may work after the name change, but stop working when the query plan is recompiled. Recompilation takes place for many reasons, without notification to the user. To avoid unsuspected loss of functionality, change the names of objects in procedures, triggers, and views immediately after you change the object name.

Whether you change the object names or use delimited identifiers, you must change all stored procedures, views, triggers, and applications that include the reserved word. If you change object names, you must change identifiers; if you use delimited identifiers, you must add the `set quoted_identifier` option and quotation marks.

If you do not have the text of your procedures, triggers, views, rules, and defaults saved in operating system files, you can use `defncopy` to copy the definitions from the server to files. See `defncopy` in the *Utility Guide*.

1.43.2 Changing Identifiers

If you change the names of the items reported by `sp_checkreswords`, you must change the names in all procedures, triggers, views, and applications that reference the object using the reserved word.

Dump your database before changing identifier names. After you change the identifier names, run `dbcc` to determine that there are no problems, and dump the database again.

If you are changing identifiers on an active production database:

- Perform the changes when the system is least busy, so that you disrupt as few users as possible.

- Prepare carefully by finding all Open Client DB-Library programs, windowing applications, stored procedures, triggers, and scripts that use a particular identifier. This way, you can make the edits needed in the source code, then change the identifiers and replace the procedures and code as quickly as possible.

The procedure `sp_depends` can help find procedures, views, and triggers that use table and view names.

1.43.3 Using sp_rename to Change Identifiers

The system procedure `sp_rename` renames tables, indexes, views, procedures, triggers, rule, defaults, user-defined datatypes, and columns. Use `sp_renamedb` to rename databases.

The types of identifiers that you can change with `sp_rename` and the changes you need to make on the server and in your application programs are:

Types	Changes to Make
Table name	• Drop all procedures, triggers and views that reference the table, and re-create them with the new name. Use `sp_depends` to find the objects that depend on the table. • Change all applications or SQL source scripts that reference the table to use the new table name. • Change `dbcc` scripts that perform table-level checks using table names.
Index name	• Drop any stored procedures that create or drop the index, and re-create them with the new name. • Change all applications or SQL source scripts that create or drop the index. • Change `dbcc` scripts that perform index-level checks using index names.
View name	• Drop all procedures, triggers, and views that reference the view, and re-create them with the new name. Use `sp_depends` to find the objects that depend on the view. • Change all applications or SQL source scripts that reference the view to use the new view name.
Procedure name	• Drop and re-create with the new procedure name all procedures and triggers that reference the procedure. • Change all applications or SQL source scripts that execute the procedure to use the new name. • If another server remotely calls the procedure, change applications on the remote server to use the new procedure name.
	Trigger name – change any SQL source scripts that create the trigger.
	Rule name – change any SQL source scripts that create the rule.
Default name	Change any SQL source scripts that create the default.
User-defined datatype name	• Drop all procedures that create tables with user-defined datatypes, and re-create them with the new name. • Change any applications that create tables with user-defined datatypes.

Types — Changes to Make

Column name

- Drop all procedures, triggers and views that reference the column, and re-create them with the new column name.
  sp_depends cannot find column name references. The following query displays the names of procedures, triggers, and views that reference a column named “key”:

  ```
  select distinct sysobjects.name
  from sysobjects, syscomments
  where sysobjects.id = syscomments.id
  and syscomments.text like "%key%"
  ```
- Change all applications and SQL source scripts that reference the column by name.

To change the name of the view isolation to isolated, use:

```
sp_rename "isolation", isolated
```

To change the name of a column in the renamed view isolated, use:

```
sp_rename "isolated.key", keyname
```

Use sp_depends to get a list of all views, procedures, and triggers that references a view, procedure, or table that is renamed. To use sp_depends after renaming an object, give the new name. For example:

```
sp_depends <new_name>
```

1.43.4 Changing Other Identifiers

To change user names, login names, device names, remote server names, remote server user names, segment names, and character set and language names, determine whether you can drop the object or user, then add or create it again.

If you cannot drop the object or user, issue the following to allow direct updates to system tables:

```
sp_configure "allow updates to system tables", 1
```

Only a system security officer can set the allow updates to system tables configuration parameter.

Errors during direct updates to system tables can create severe problems in the SAP ASE server. Determine whether you can drop the objects or user, then re-create them:

Identifier Type — Suggested Actions to Avoid Updates to System Tables

User names and login names

To change the name of a user with no objects:

1. Use sp_helprotect <username> in each database to record the user's permissions.
2. Drop the user from all of the databases (sp_dropuser).
3. Drop the login (drop login).
4. Add the new login name (create login).

Identifier Type	Suggested Actions to Avoid Updates to System Tables
	5. Add the new user name to the databases (sp_adduser). 6. Restore the user's permissions with grant.
Device names	If this device is completely allocated, you need not use its name in a create database command, so you can leave the name unchanged.
Remote server names	Unless there are large numbers of remote login names from the remote server, drop the remote server (sp_dropserver) and add it with a new name (sp_addserver).
Remote server logins	Drop the remote login with sp_dropremotelogin, add it with a new name using sp_addremotelogin, and restore the user's permission to execute procedures with grant.
Segment names	These are rarely used, once objects have been created on the segments.
Character set and language names	Languages and character sets have reserved words as identifiers only if a system administrator has created alternative languages with sp_addlanguage. Drop the language with sp_droplanguage, and add it with a new name.

This table shows possible dependencies on this set of identifiers. See this table for possible dependencies, whether you choose to upgrade by dropping and re-creating objects, by using delimited identifiers, or by performing direct updates to system tables.

⚠ Caution

Direct updates to system tables can be very dangerous. You can make mistakes that make it impossible for the SAP ASE server to run or make it impossible to access objects in your databases. Undertake this effort when you are calm and collected, and when little or no production activity is taking place on the server. If possible, use the alternative methods described in the following table.

Considerations when changing identifiers:

Identifier	Remember To
Login name	Change the user name in each database where this person is a user.
User name	Drop, edit, and re-create all procedures, triggers, and views that use qualified (<owner_name>.<object_name>) references to objects owned by this user. Change all applications and SQL source scripts that use qualified object names to use the new user name. You do not have to drop the objects themselves; sysusers is linked to sysobjects by the column that stores the user's ID, not the user's name.
Device name	Change any SQL source scripts or applications that reference the device name to use the new name.
Remote server name	Change the name on the remote server. If the name that sp_checkreswords reports is the name of the local server, you must restart the server before you can issue or receive remote procedure calls.

Identifier	Remember To
Remote server network name	Change the server's name in the interfaces files.
Remote server login name	Change the name on the remote server.
Segment name	Drop and re-create all procedures that create tables or indexes on the segment name. Change all applications that create objects on segments to use the new segment name.
Character set name	None.
Language name	Change both `master.dbo.syslanguages` and `master.dbo.syslogins`. The update to `syslogins` may involve many rows. Also, change the names of your localization files.

This example shows a "safe" procedure for updating a user name, with all data modification preceded by a `begin transaction` command. The system security officer executes:

```
sp_configure "allow updates to system tables", 1
```

Then you can execute:

```
begin transaction
update sysusers
set name = "workerbee"
where name = "work"
```

At this point, run the query, and check to be sure that the command affected only the row that you intended to change. The only identifier change that affects more than one row is changing the `language` name in `syslogins`. If the query affected:

- Only the correct row – use `commit transaction`.
- More than one row or the incorrect row – use `rollback transaction`, determine the source of the problem, and execute the command correctly.

When you are finished, the system security officer turns off the `allow updates to system tables` configuration parameter with this command:

```
sp_configure "allow updates to system tables", 0
```

> ⚠ Caution
>
> Only update system tables in a single database in each user defined transaction. Do not issue a `begin transaction` command and then update tables in several databases. Such actions can make recovery extremely difficult.

The following table shows the system tables and columns that you should update to change reserved words. The tables preceded by "`master.dbo.`" occur only in the `master` database. All other tables occur in `master` and in user databases. Be certain you are using the correct database before you attempt the update. You can check for the current database name with this command:

```
select db_name()
```

Table 4: System Table Columns to Update When Changing Identifiers

Type of identifier	Table to update	Column name
User name	sysusers	name
Login names	master.dbo.syslogins	name
Segment names	syssegments	name
Device name	sysdevices	name
Remote server name	sysservers	srvname
Remote server network name	sysservers	srvnetname
Character set names	master.dbo.syscharsets	name
Language name	master.dbo.syslanguages master.dbo.syslogins	name language

1.43.5 Using Delimited Identifiers

Consideration for using delimited identifiers.

- You can use delimited identifiers for table names, column names, and view names. You cannot use delimited identifiers for other object names.
- If you choose to use delimited identifiers, use `set quoted_identifier on`, and drop and re-create all the procedures, triggers, and views that use the identifier. Edit the text for those objects, enclosing the reserved words in double quotes and enclosing all character strings in single quotes.
  The following example shows the changes to make to queries in order to use delimited identifiers. This example updates a table named `work`, with columns named `key` and `level`. Here is the pre-release 10.0 query, which encloses character literals in double quotes, and the edited version of the query for use with delimited identifiers:

```
/* pre-release 10.0 version of query */
update work set level = "novice"
    where key = "19-732"
```

```
/* 10.0 or later version of query, using
** the quoted identifier option
*/
update "work" set "level" = 'novice'
    where "key" = '19-732'
```

- All applications that use the reserved word as an identifier must be changed as follows:
  - The application must set the quoted identifier option on.
  - All uses of the reserved word must be enclosed in double quotes.
  - All character literals used by the application while the quoted identifier option is turned on must be enclosed in single quotes. Otherwise, the SAP ASE server attempts to interpret them as object names.

In the following example, this query results in an error message:

```
set quoted_identifier on
select * from titles where title_id like "BU%"
```

The correct query is:

```
select * from titles where title_id like 'BU%'
```

- Stored procedures that you create while the delimited identifiers are in effect can be run without turning on the option. (The `allow updates to system tables` option also works this way.) This means that you can turn on quoted identifier mode, drop a stored procedure, edit it to insert quotation marks around reserved words used as identifiers, and re-create the procedure. All users can execute the procedure without using `set quoted_identifier`.

1.44 sp_checksource

Checks for the existence of the source text of compiled objects such as views, defaults, rules, triggers, procedures, declarative defaults, check constraints, computed columns, function-based indexes and predicates. The predicate name may be a user-defined or internal name.

Syntax

```
sp_checksource [<objname>[, <tabname>[, <username>]]]
```

Parameters

`<objname>`

is the compiled object to be checked for the existence of its source text.

`<tabname>`

is the name of the table or view to be checked for the existence of all check constraints, defaults, and triggers defined on it.

`<username>`

is the name of the user who owns the compiled objects to be checked for the existence of the source text.

Examples

Example 1

Checks for the existence of the source text of all compiled objects in the current database:

```
sp_checksource
```

Example 2

Checks for the existence of the source text of the view named `titleview`:

```
sp_checksource titleview
```

Example 3

Checks for the existence of the source text of the view named `titls_vu` that is owned by Mary:

```
sp_checksource title_vu, @username = Mary
```

Example 4

Checks for the existence of the source text of the custom stored procedure `list_phone_proc`:

```
sp_checksource list_phone_proc
```

Example 5

Checks for the existence of the source text of all the check constraints, triggers, and declarative defaults defined on the table named `my_tab`:

```
sp_checksource @tabname = "my_tab"
```

Example 6

Checks for the existence of the source text of the view `my_vu` and all check constraints, triggers, and defaults defined on the table `my_tab`:

```
sp_checksource @objname = "my_vu", @tabname = "my_tab"
```

Example 7

Checks for the existence of the source text of all compiled objects owned by Tom:

```
sp_checksource @username = "Tom"
```

Example 8

Checks for the existence of the source text for the "pred1" predicate:

```
sp_checksource pred1
```

Usage

There are additional considerations when using `sp_checksource`:

- `sp_checksource` checks for the existence of the source text of the specified compiled object. If the source text exists for the specified object, `sp_checksource` returns 0. If the source text does not exist for the specified object, `sp_checksource` returns 1.
- If you do not provide any parameters, `sp_checksource` checks the existence of the source text for all compiled objects in the current database.
- To use `sp_checksource` with no parameters, you must be the database owner or system administrator.
- `sp_checksource` encrypts the text of user-defined functions.

Permissions

The permission checks for `sp_checksource` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `manage database` privilege to check for the existence of the source text of compiled objects that are owned by another user. Any user can execute `sp_checksource` to check for the existence of the source text for his or her own compiled objects.
Disabled	With granular permissions disabled, you must be the database owner or a user with sa_role to check for the existence of the source text of compiled objects that are owned by another user. Any user can execute `sp_checksource` to check for the existence of the source text for his or her own compiled objects.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_hidetext [page 496]

1.45 sp_chgattribute

Changes the max_rows_per_page, fillfactor, reservepagegap, or exp_row_size value for future space allocations of a table or an index; sets the concurrency_opt_threshold for a table. Provides the user interface for optimistic index locking.

Syntax

```
sp_chgattribute <objname>,
    {"max_rows_per_page" | "fillfactor" | "reservepagegap" |
    "exp_row_size" | "concurrency_opt_threshold" |
    "optimistic_index_lock" | "identity_burn_max" | "plldegree"
    "ptn_locking" | "fact_min" | "fact_max" | "fact_unit" | optimistic_LFB },
<value>, < optvalue>
    {"identity_gap", <set_number> | "recompile_factor",  0, <value> |
    "dealloc_first_txtpg", 0 | 1 | 2}
    ['<view_name>', 'materialize', 1 | 0]
```

Parameters

<objname>

is the name of the table or index for which you want to change attributes.

max_rows_per_page

specifies the row size. Use this for tables with variable-length columns.

fillfactor

value for future spacespecifies how full the SAP ASE server makes each page when it is re-creating an index or copying table pages as a result of a reorg rebuild command or an alter table command to change the locking scheme. The fillfactor percentage is relevant only at the time the index is rebuilt. Valid values are 0–100.

reservepagegap

specifies the ratio of filled pages to empty pages that are to be left during extent I/O allocation operations. For each specified <num_pages>, an empty page is left for future expansion of the table. Valid values are 0–255. The default value is 0.

recompile_factor

sets a factor for row growth that, when reached, triggers the server to recompile the query plan. For example, if you set recompile_factor to 20, the query plan is recompiled every factor of 20. That is, the first recompile is at 20 rows, the next at 400 rows, the third at 8,000 row, the next 160,000 rows, and so on.

exp_row_size

reserves a specified amount of space for the rows in data-only locked tables. Use this option to reduce the number of rows being forwarded, which can be expensive during updates. Valid values are 0, 1, and any value between the minimum and maximum row length for the table. 0 means a server-wide setting is applied, and 1 means to fully pack the rows on the data pages.

concurrency_opt_threshold

specifies the table size, in pages, at which access to a data-only-locked table should begin optimizing for reducing I/O, rather than for concurrency. If the table is smaller than the number of pages specified by `concurrency_opt_threshold`, the query is optimized for concurrency by always using available indexes; if the table is larger than the number of pages specified by `concurrency_opt_threshold`, the query is optimized for I/O instead. Valid values are -1 to 32767. Setting the value to 0 disables concurrency optimization. Use -1 to enforce concurrency optimization for tables larger than 32767 pages. The default is 15 pages.

optimistic_index_lock

enables a performance optimization that eliminates contention on the root page of an index. If the root page must change because of index splits, an exclusive table is acquired. For this reason, `optimistic_index_lock` is appropriate for tables where the number of modifications is relatively small. Valid values are 1 to turn on optimistic index locking or 0 to turn off optimistic index locking which is the default.

fact_min

Used on table objects in conjunction with `fact_table` hint to filter the number of rows on hinted fact tables. You can use `fact_min` in an abstract plan clause to configure a fact table hint to be applied only if the row count of the fact table is greater than the value of `fact_min` (boundary points not included). If the value is less than `fact_min`, the reason for failure is returned as FACTTBL_REASON_SMALLTBL. The default value is 1. The value of `fact_min` is scaled by a factor specified by `fact_unit`.

fact_max

Used on table objects in conjunction with `fact_table` hint to filter the number of rows on hinted fact tables. You can use `fact_max` in an abstract plan clause to configure the fact table hint to be applied only if the row count of the fact table is less than the value of `fact_max` (boundary points not included). If the value is greater than `fact_max`, the reason for failure is returned as FACTTBL_REASON_HUGETBL. The default value is 1000000. The value of `fact_max` is scaled by a factor specified by `fact_unit`.

fact_unit

`fact_unit` is used as a scaling factor for `fact_min` and `fact_max`. `fact_unit` can also be used to forcibly reject the fact_table hint by setting the `fact_unit` value to -1. The reason for rejection is returned as FACTTBL_REASON_FORCEDREJECT. The default value is 1000.

optimistic_LFB

configures the index to use only delta updates for non-leaf pages.

identity_burn_max

allows you to reset the internal counter for the identity column. The value set represents the highest value already generated; the next automatically generated value is one larger than the value you specify. The value is passed as a varchar datatype in the fourth parameter.

identity_gap

indicates that you want to change the identity gap.

<value>

is the numeric input value for the various options you specify in the `sp_chgattribute`.

<optvalue>

is the new value. Valid values and default values depend on which parameter is specified. This parameter is only used by the `identity_burn_max` parameter. For other parameters, this value is NULL.

<set_number>

is the new size of the identity gap.

dealloc_first_txtpg

updates a text or image column to null. Sets the corresponding text pointer to null after deallocating the previously referenced `text` or `image` pages. This result in reduced space allocation for null `text/images` columns. Valid values are:

- 0 – default, existing value, if either the table option setting is 1, or the database option `deallocate first text page` is TRUE, then deallocate the first text page after NULL update; otherwise, do not deallocate the first text page.
- 1 – deallocate the first text page after NULL update (overriding the setting of the database option `deallocate first text page`).
- 2 – do not deallocate the first text page after NULL update (overriding the setting of the database option `deallocate first text page`).

Whether the first text page will be deallocated after NULL update depends on the combination of this table parameter and the database option `deallocate first text page`.

```
DB setting (deallocate first text page)    |   0   1   2
----------------------------------------------------------
dealloc_first_txtp - true                  |   Y   Y   N
dealloc_first_txtp - false                 |   N   N   N
```

- Y – deallocate first text page after null update
- N – not deallocate first text page after null update

The output from `sp_help` indicates whether first text page will be deallocated.

plldegree

specifies the maximum number of threads the query optimizer can use.

ptn_locking

specifies whether to enable (1) or disable (0) locking at the partition level. By default, partition locking is disabled.

'<view_name>', 'materialize', 1 | 0]

Enables or disables forced view materialization. Where:

- `<view_name>` – name of the view on which you are enabling or disabling forced materialization.
- `materialize` – indicates you are enabling or disabling forced materialization.
- `0 | 1` – a value of `0` disables forced view materialization; a value of `1` forces view materialization.

Examples

Example 1

Sets the max_rows_per_page to 1 for the authors table for all future space allocations:

```
sp_chgattribute authors, "max_rows_per_page", 1
```

Example 2

Sets the max_rows_per_page to 4 for the titleidind index for all future space allocations:

```
sp_chgattribute "titles.titleidind", "max_rows_per_page", 4
```

Example 3

Specifies a fillfactor of 90 percent for pages in title_ix:

```
sp_chgattribute "titles.title_ix", "fillfactor", 90
```

Example 4

Sets the exp_row_size to 120 for the authors table for all future space allocations:

```
sp_chgattribute "authors", "exp_row_size", 120
```

Example 5

Sets the reservepagegap to 16 for the titleidind index for all future space allocations:

```
sp_chgattribute "titles.titleidind", "reservepagegap", 16
```

Example 6

Turns off concurrency optimization for the titles table:

```
sp_chgattribute "titles", "concurrency_opt_threshold", 0
```

Example 7

Sets the identity gap for mytable to 20:

```
sp_chgattribute "mytable", "identity_gap", 20
```

Example 8

Changes mytable to use the identity burning set factor setting instead of the identity_gap setting:

```
sp_chgattribute "mytable", "identity_gap", 0
```

Example 9

Sets the value of sp_chgattribute to 1, turning the optimistic index locking feature on.

```
sp_chgattribute "mytable", "optimistic_index_lock", 1
```

Example 10

Sets the value of sp_chgattribute to 0, turning the optimistic index locking feature off.

```
sp_chgattribute "mytable", "optimistic_index_lock", 0
```

Example 11

Switches the deallocation for text and image space on using `dealloc_first_txtpg`:

```
sp_chgattribute "mytable", "dealloc_first_txtpg", 1
```

To switch the feature off:

```
sp_chgattribute "mytable", "dealloc_first_txtpg", 0
```

Example 12

The output from `sp_help` indicates whether the first text page will be deallocated:

```
> sp_chgattribute  mytab, "dealloc_first_txtpg", 1
'dealloc_first_txtpg' attribute of object 'mytab' changed to 1.
(return status = 0)
1>
2> sp_help mytab
 Name Owner Object_type     Object_status            Create_date
----- ----- ----------- -------------------------- -------------------
mytab  dbo  user table  deallocate first text page  Jan 22 2013 9:45PM

> sp_chgattribute  mytab, "dealloc_first_txtpg", 2
'dealloc_first_txtpg' attribute of object 'mytab' changed to 2.
(return status = 0)
1>
2> sp_help mytab
  Name Owner Object_type     Object_status         Create_date
----- ----- ------------- -------------------- --------------------
mytab  dbo   user table   keep first text page  Jan 22 2013  9:45PM
```

Example 13

Changes the `identity_burn_max` value for the `authors` table to 5:

```
sp_chgattribute "authors", "identity_burn_max", 0, "5"
```

Example 14

Tells the query optimizer to use a maximum of four threads:

```
sp_chgattribute my_table, "plldegree", 4
```

The query optimizer may choose less than four threads if it does not find enough resources. The same mechanism can be applied to an index. For example, the following example uses an index called `auth_ind` exists on `authors` to use two threads to access it:

```
sp_chgattribute "authors.auth_ind", "plldegree", 4
```

You must run `sp_chgatttribute` from the current database.

Example 15

Enables partition-level locking for the `authors` table:

```
sp_chgattribute authors, "ptn_locking", 1
```

To disable partition-level locking:

```
sp_chgattribute authors, "ptn_locking", 0
```

Example 16

For the fact_table hint to be successfully applied, both the conditions on `fact_min` and on `fact_max` need to be fulfilled.

With these values, the fact_table hint will depend on the row count from the table as follows:

```
sp_chgattribute myTable, fact_min, 100
sp_chgattribute myTable, fact_max, 4000
sp_chgattribute myTable, fact_unit, 500
```

Table Row Count	fact_table hint
row_count <= 100 * 500	Not applied (reason: FACTTBL_REASON_SMALLTBL)
100 * 500 < row_count < 4000 * 500	Applied
row_count => 4000 * 500	Not applied (reason: FACTTBL_REASON_HUGETBL)

Example 17

Sets `fact_unit` to -1 to force the fact_table hint rejection.

```
sp_chgattribute myTable, fact_unit, -1
```

The fact_table hint is rejected with FACTTBL_REASON_FORCEDREJECT.

Example 18

Enables forced view materialization for view `big_important_view`:

```
sp_chgattribute 'big_important_view', 'materialize', 1
```

Example 19

Sets the recompile factor for the titles table to 12:

```
sp_chgattribute titles, recompile_factor, 0, '12'
```

Example 20

Configures the `pubs2` database to use delta updates for non-leaf pages on the `titleind` index of the `titles` table:

```
sp_chgattribute 'titles.titleind', 'optimistic_LFB', 1
```

Usage

There are additional considerations when using `sp_chgattribute`:

- You cannot change attributes for virtually hashed tables. For example, if you attempt to change the attributes for table `order_line` (a virtually-hashed table) like this:

```
sp_chgattribute 'order_line', 'exp_row_size', 1
```

The SAP ASE server issues an error message similar to:

```
sp_chgattribute is not allowed for order_line, as it is a virtually hashed
table.
```

- (Cluster Edition only) You cannot use `sp_chgattribute` to change the value of `<identity_gap>` at runtime.
- `sp_chgattribute` changes the `max_rows_per_page`, `fillfactor`, `reservepagegap`, `exp_row_size`, or `dealloc_first_txtpg` value for future space allocations or data modifications of the table or index. It does not affect the space allocations of existing data pages. You can change these values for an object only in the current database.
- Use `sp_help` to see the stored space management values for a table. Use `sp_helpindex` to see the stored space management values for an index.
- Setting `max_rows_per_page` to 0 tells the SAP ASE server to fill the data or index pages and not to limit the number of rows—this is the default behavior of the SAP ASE server if you do not set `max_rows_per_page`.
- Both the `identity_burn_max` value stored in `sysobjects` and the current identity value are set to the new value.
- If the table is:
    - Not empty – the new value of `identity_burn_max` must be greater than or equal to the current maximum value of the `identity` column.
    - Empty – you can set the value to any positive value in the valid range.
- Low values of `max_rows_per` page cause page splits. Page splits occur when new data or index rows need to be added to a page, and there is not enough room for the new row. Usually, the data on the existing page is split fairly evenly between the newly allocated page and the existing page.
  To approximate the maximum value for a nonclustered index, subtract 32 from the page size and divide the resulting number by the index key size. The following statement calculates the maximum value of `max_rows_per_page` for the nonclustered index `titleind`:

```
select
    (select @@pagesize - 32) / minlen
    from sysindexes where name = "titleind"
```

```
-----------
        288
```

- If you specify an incorrect value for `max_rows_per_page`, `fillfactor`, `reservepagegap`, or `exp_row_size`, `sp_chgattribute` returns an error message specifying the valid values.
- You cannot run this stored procedure from within a transaction.
- Only a user with `sa_role` privileges can execute this stored procedure.
- You cannot set the optimistic index locking option for tables with datapages or datarow locking schemes.
- You cannot set the optimistic index locking option for tables in system databases, such as `master` or `tempdb`. You can set it only on user-defined tables.
- `text` and `image` pages are allocated space even when you perform a NULL update. You can use `dealloc_first_txtpg` to remove these empty text pages from the table.
  A new update to the column results in reallocation of a `text` or `image` page.

See also:

- `alter table`, `create index`, `create table` in *Reference Manual: Commands*

- For more information on max_rows_per_page, fillfactor, reservepagegap, exp_row_size, and concurrency_opt_threshold, see the *Performance and Tuning Guide*.
  For more information about identity gaps, see *Transact-SQL User's Guide > Managing Identity Gaps in Tables*.

Permissions

The permission checks for sp_chgattribute differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be the object owner.
Disabled	With granular permissions disabled, you must be the object owner.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide > Auditing*.

Related Information

sp_helpindex [page 454]

1.46 sp_cleanpwdchecks

sp_cleanpwdchecks is a custom stored procedure that allows you to define when and how to remove login and password-related attributes stored in user-defined tables.

Syntax

```
sp_cleanpwdchecks, <login_name>
```

Parameters

<login_name>

specifies the login name of the cleanup to be performed.

Usage

sp_cleanpwdchecks is user-defined, and is dynamically called in the master database when you drop a login.

Permissions

sp_cleanpwdchecks is not executed directly. It is a custom stored procedure and executed by the SAP ASE server internally.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide > Auditing*.

1.47 sp_clearpsexe

Clears the execution attributes of an SAP ASE session that was set by sp_setpsexe.

Syntax

```
sp_clearpsexe <spid>, <exeattr>
```

Parameters

<spid>

is the process ID of the session for which execution attributes are to be cleared.

<exeattr>

identifies the execution attributes to be cleared. Values for `exeattr` are "`priority`" and "`enginegroup`".

Examples

Example 1

Drops the engine group entry for process 12.

```
sp_clearpsexe 12, 'enginegroup'
```

Usage

There are additional considerations when using `sp_clearpsexe`:

- If the execution attributes are not cleared during the lifetime of the session, they are cleared when the session exits or terminates abnormally.
- `sp_clearpsexe` fails if there are no online engines in the associated engine group.
- When you drop an engine group entry, the session executes on an engine group determined by a class definition or by the default class.
- Use `sp_who` to list process IDs (`spids`).

See also *Performance and Tuning Guide*.

Permissions

The permission checks for `sp_clearpsexe` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `manage any execution class` privilege. Any user can execute `sp_clearpsexe` to clear the priority attributes of tasks owned by that user.
Disabled	With granular permissions disabled, you must be a user with sa_role. Any user can execute `sp_clearpsexe` to clear the priority attributes of tasks owned by that user.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_addexeclass [page 35]
sp_bindexeclass [page 110]
sp_dropexeclass [page 296]
sp_showexeclass [page 743]
sp_unbindexeclass [page 824]

1.48 sp_clearstats

Initiates a new accounting period for all server users or for a specified user. Prints statistics for the previous period by executing sp_reportstats.

Syntax

```
sp_clearstats [<loginname>]
```

Parameters

<loginname>

is the user's login name.

Examples

Example 1

Initiates a new accounting period for all users:

```
sp_clearstats
```

```
Name    Since           CPU  Percent CPU     I/O    Percent I/O
------  --------     ------  ----------- -------    -------------
probe   Jun 19 1990       0           0%       0         0%
julie   Jun 19 1990   10000     24.9962%    5000         24.325%
jason   Jun 19 1990   10002     25.0013%    5321         25.8866%
ken     Jun 19 1990   10001     24.9987%    5123         24.9234%
kathy   Jun 19 1990   10003     25.0038%    5111         24.865%
(5 rows affected)
Total CPU   Total I/O
---------      ---------
40006       20555
5 login accounts cleared.
```

Example 2

Initiates a new accounting period for the user "kathy":

```
sp_clearstats kathy
```

```
Name  Since         CPU     Percent CPU     I/O     Percent I/O
----- -----------   -----   ------------    -----   -----------
KATHY Jul 24 1990   498     49.8998%        483924  9.1829%
(1 row affected)
Total CPU   Total I/O
---------   ----------
998         98392
1 login account cleared.
```

Usage

sp_clearstats creates an accounting period and should be run only at the end of a period.

Because sp_clearstats clears out the accounting statistics, you must record the statistics **before** running the procedure.

sp_clearstats updates the syslogins field accdate and clears the syslogins fields totcpu and totio.

Permissions

The permission checks for sp_clearstats differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with manage server privilege.
Disabled	With granular permissions disabled, you must be a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_reportstats [page 699]

1.49 sp_client_addr

Displays the IP (Internet Protocol) address of every SAP ASE task with an attached client application, including the `spid` and the client host name.

Syntax

```
sp_client addr [<spid>]
```

Parameters

<spid>

specifies one task for which you require an IP address.

Examples

Example 1

Lists IP addresses for all tasks:

```
sp_client_addr
```

```
---------
spid   hostname  ipaddr
-----------------------------
11     FRED      162.66.131.36
21     BARNEY    162.66.100.233
```

```
22     WILMA     162.66.100.206
23     BETTY     162.66.100.119
24     PEBBLES   162.66.100.125
25     BAMBAM    162.66.100.124
(6 rows affected)
(return status = 0)
```

Example 2

Shows IP addresses for `spid` 21:

```
sp_client_addr 21
```

```
----------
spid   hostname  ipaddr
-----------------------------
21     BARNEY    162.66.100.233
(1 row affected)
(return status = 0)
```

Example 3

Shows the result when a client application is not connected via IP:

```
sp_client_addr 11
```

```
----------
spid   hostname  ipaddr
-----------------------------
11     FRED      0.0.0.0
(1 row affected)
(return status = 0)
```

Example 4

Shows the result of a task with no attached client; for example, Housekeeper:

```
sp_client_addr 9
```

```
----------
spid   hostname  ipaddr
-------------------------------
9                NULL
(1 row affected)
(return status = 0)
```

Example 5

Shows the result when an incorrect `spid` is specified:

```
sp_client_addr 99
```

```
----------
Msg 18934, Level 16, State 1:
Procedure "sp_client_addr", Line 32:
spid not found
(return status = 1)
```

Usage

If the client application is not attached by IP, the address appears as 0.0.0.0. The SAP ASE server does not support display of addresses of protocols other than IP.

If a task has no attached client (Housekeeper, for instance), the IP address appears as "NULL". Tasks with no attached client are not listed when you use `sp_client_addr` with no parameter.

Permissions

Any user can execute `sp_client_addr`. Permission checks do not differ based on the granular permissions settings.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_who [page 846]

1.50 sp_cluster

(Cluster environments only) Performs a number of procedures related to clusters.

Syntax

- To migrate a connection to a different logical cluster or instance:

```
sp_cluster connection, migrate, <lc_name>, <instance_name>, "<spid_list>"
```

- To determine if previous connection migrations to a new instance are pending, and terminates the migrations if they are:

```
sp_cluster connection, ["migrate_status" | "migrate_cancel'"][, "<spid_list>"]
```

- To modify an outstanding action, such as canceling the action or changing the timing of the action:

```
sp_cluster logical, "action", <lc_name>, {
    cancel, <action_handle> |
    modify_time, <action_handle>, <wait_option>[, <timeout> ] |
    release, <action_handle }>
```

- To add a resource or one or more routes to the logical cluster:

```
sp_cluster logical, "add", <lc_name>, {
     route, <route_type>, <key_list> |
    instance, <instance_list> | failover, <instance_list |>
    database, <database_name> [, with nowait] }
```

- To move a route from one logical cluster to another:

```
sp_cluster logical, "alter", <lc_name>, route, <route_type>, <key_list>
```

- To create a new logical cluster:

```
sp_cluster logical, "create", <lc_name> [, for single instance access]
```

- To stop the logical cluster on one or more instances or the entire logical cluster, and places the instances or the cluster in the inactive state:

```
sp_cluster logical, "deactivate", <lc_name>, {
    "cluster" | "instance", <instance_list> }
   [, <wait_option>[, <timeout>,[, @handle output ]]]
```

- To drop a logical cluster, or one or more resources from the logical cluster:

```
sp_cluster logical, "drop", <lc_name>,
    {cluster | instance, <instance_list> |
     failover, <instance_list> | route, <route_type>, <key_list> |
    database, <database_name> }
```

- To reverse a manual failover, reinstating the original base instances:

```
sp_cluster logical, "failback", <lc_name>, {
    cluster<[, wait_option>[, <timeout>[, @handle output ]]] |
    instance, <from_instance_list>, <to_instance_list>[, <wait_option>[,
     <timeout>[, @handle output ]]] }
```

- To initiate a manual failover from base instances to failover instances.

```
sp_cluster logical, "failover", <lc_name>, {cluster
    [, <to_instance_list[, wait_option>[, <timeout>[, @handle output ]]]
    | instance, <from_instance_list>, <to_instance_list>[, <wait_option>[,
     <timeout>[, "sync" [, @handle output ]]]] }
```

- To manually gather and migrate a group of connections to a different logical cluster:

```
sp_cluster logical, "gather", <lc_name>
```

- To display complete syntax for `sp_cluster logical`:

```
sp_cluster logical, "help"
```

- To stop the logical cluster on one or more instances or the entire logical cluster:

```
sp_cluster logical, "offline", <lc_name>,
    {cluster | instance, <instance_list>}
    [, <wait_option>[, <timeout>[, @handle output ]]]
```

- To start the default logical cluster on one or more instances:

```
sp_cluster logical, "online", {<lc_name>[, <instance_list>]}
```

- To set logical cluster rules: the open logical cluster, the failover mode, the system view, the start-up mode, and the load profile:

```
sp_cluster logical, "set", <lc_name>, { open
        | failover, <failover_mode> | system_view, <view_mode>
        | startup, { automatic | manual } | load_profile, <profile_name> }
      login_distribution, { affinity | "round-robin" }
```

- To display information about a logical cluster:

```
sp_cluster logical, "show"
[, <lc_name>[, {<action>[, <state>] | route[, <type>[, <key>]]}]]
```

- To set up and manage the load profile for the logical cluster:

```
sp_cluster profile, ["show"[, <profile_name> ]
    | "create", <profile_name> | "drop", <profile_name>
    | "set", <profile_name>[, weight[, <wt_metric>[, <wt_value> ]
    | threshold[, <thr_metric>[, <thr_value> ] ] ]
```

- To set up and manage the load profile for the logical cluster:

```
sp_cluster profile, [ "show"[, <profile_name>] | "create", <profile_name> |
"drop", <profile_name> | "set", <profile_name> [, weight [, <wt_metric> [,
<wt_value> ] | threshold [, <thr_metric> [, <thr_value> ] ] ]
```

Parameters

`sp_cluster connection, migrate, <lc_name>, <instance_name>, "<spid_list>"`

- `<lc_name>` – is the name of the logical cluster.
- `<instance_name>` – is the name of the instance.
- `<spid_list>` – is the list of spids you are migrating. Separate multiple spids with semicolons.

`sp_cluster connection, ['migrate_status' | 'migrate_cancel' ][, '<spid_list>']`

- `<spid_list>` – is the list of spids you are investigating.
- `migrate_cancel` – indicates you are terminating the connection migrations.
- `migrate_status` – indicates you are investigating the status of connection migrations.

`sp_cluster logical, "action", <lc_name>, {cancel, <action_handle> | modify_time, <action_handle>, <wait_option>[, <timeout> ] | release, <action_handle>}`

- `cancel` – specifies an action to be canceled.
- `<action_handle>` – is the action identifier.
- `modify_time` – specifies that the time of the action is to be modified.
- `<wait_option>` – is how the time of the action is to be modified. Values are:

    - wait – indicates that existing connections are given a specified amount of time (or an infinite amount of time if no <timeout> is given) to migrate or disconnect.
    - nowait – indicates that existing connections are migrated or disconnected immediately.
    - until – indicates that existing connections are given until a specific time of day to migrate or disconnect.
- <timeout> – is a specific amount of time (when used with wait) or a specific time (when used with until). The format is "hh:mm:ss" according to a 24-hour clock. For example, <timeout> records "11:30 p.m" (or "11:30pm") as "23:30:00".
- release – specifies that all resources held by a completed action are to be released.

sp_cluster logical, "add", <lc_name>, { route, <route_type>, <key_list> | instance, <instance_list> | failover, <instance_list> | database <database_name> [, with nowait]}

- <lc_name> – is the name of a logical cluster.
- route – specifies that one or more routes are to be added to the logical cluster
- <route_type> – is the type of route to be added. Values are:
    - application – specifies a route for an application name to the logical cluster.
    - login – specifies a route for a login name to the logical cluster.
    - alias – specifies a route for a server name alias to the logical cluster.
- <key_list> – is a list of applications, logins, or aliases, depending on the route type. Elements in the key list are delimited by semicolons.
- instance – specifies that one or more base instances are to be added to the logical cluster.
- <instance_list> – is the list of instances to be added. Separate multiple instances with semicolons.
- failover – specifies that one or more failover instances are to be added to the logical cluster.
- database – specifies a database to be added to the logical cluster.
- <database_name> – is the name of the database.
- with nowait – indicates that existing connections are migrated or disconnected immediately.

sp_cluster logical, "alter", <lc_name>, route, <route_type>, <key_list>

- <lc_name> – is the name of a logical cluster.
- route – specifies a route is to be altered.
- <route_type> – is the type of route to be altered. Values are:
    - application – specifies a route for an application name to the logical cluster.
    - login – specifies a route for a login name to the logical cluster.
    - alias – specifies a route for a server name alias to the logical cluster.
- <key_list> – is a list of applications, logins, or aliases, depending on the route type. Elements in a key list are delimited with semicolons.

sp_cluster logical, "create", <lc_name>[, for single instance access]

- `<lc_name>` – is name of the logical cluster.
- `for single instance access` – creates a single-instance logical cluster. By default, creating the logical clusters sets these parameters:
  - `down_routing` - "disconnect"
  - `failover` - "instance"
  - `fail_to_any` - "off"

sp_cluster logical, "deactivate", <lc_name>, { "cluster" | "instance", <instance_list> } [, <wait_option>[, <timeout>,[, @handle output]]]

- `<lc_name>` – name of a logical cluster.
- `cluster` – specifies the entire cluster.
- `instance` – specifies that only certain instances in the logical cluster are to be placed in the inactive state.
- `<instance_list>` – list of selected instances in the logical cluster.
- `<wait_option>` – the valid options are:
  - `wait` – indicates that existing connections are given a specified amount of time (or an infinite amount of time if no `<timeout>` is given) to migrate or disconnect.
  - `nowait` – indicates that existing connections are migrated or disconnected immediately.
  - `until` – indicates that existing connections are given until a specific time of day to migrate or disconnect.
- `<timeout>` – a specific amount of time (when used with `wait`) or a specific time (when used with `until`). The format is "hh:mm:ss" according to a 24-hour clock. For example, `<timeout>` records 11:30 p.m. as 23:30:00.
- `@handle output` – specifies that an action handle is to be retrieved for the action.

sp_cluster logical, "drop", <lc_name>, { cluster | instance, <instance_list> | failover, <instance_list> | route, <route_type>, <key_list> | database <database_name>}

- `<lc_name>` – name of a logical cluster.
- `cluster` – specifies the entire cluster.
- `instance` – specifies that only certain instances in the logical cluster are to be placed in the inactive state.
- `<instance_list>` – list of selected instances in the logical cluster.
- `database` – specifies a database to be added to the logical cluster.
- `<database_name>` – is the name of the database.

sp_cluster logical, "failback", <lc_name>, { cluster[, <wait_option>[, <timeout>[, @handle output]]] | instance, <from_instance_list>, <to_instance_list>[, <wait_option>[, <timeout>[, @handle output]]] }

- `<lc_name>` – name of a logical cluster.
- `cluster` – specifies the entire cluster.
- `<to_instance_list>` – list of predefined failover instances. A value of NULL activates the first failover group.
- `<from_instance_list>` – list of instances that are to be taken offline.

- `<wait_option>` – where the valid options are:
  - ○ `wait` – indicates that existing connections are given a specified amount of time (or an infinite amount of time if no `<timeout>` is given) to migrate or disconnect.
  - ○ `nowait` – indicates that existing connections are migrated or disconnected immediately.
  - ○ `until` – indicates that existing connections are given until a specific time of day to migrate or disconnect.
- `<timeout>` – a specific amount of time (when used with `wait`) or a specific time (when used with `until`). The format is "hh:mm:ss" according to a 24-hour clock. For example, `<timeout>` records 11:30 p.m. as 23:30:00.
- `@handle output` – specifies that an action handle is to be retrieved for the action.

`sp_cluster logical, "failover", <lc_name>, {cluster[, <to_instance_list[, wait_option>[, <timeout>[, @handle output ]]] | instance, <from_instance_list>, <to_instance_list>[, <wait_option>[,<timeout>[, "sync"[, @handle output ] ] ] ] }`

- `<lc_name>` – name of a logical cluster.
- `cluster` – specifies the failover of the entire logical cluster.
- `<to_instance_list>` – list of predefined failover instances. A value of NULL activates the first failover group.
- `<wait_option>` – how the time of the action is to be recorded. Values are:
  - ○ `wait` – indicates that existing connections are given a specified amount of time (or an infinite amount of time if no `<timeout>` is given) to migrate or disconnect.
  - ○ `nowait` – indicates that existing connections are migrated or disconnected immediately.
  - ○ `until` – indicates that existing connections are given until a specific time of day to migrate or disconnect.
- `<timeout>` – is a specific amount of time (when used with `wait`) or a specific time (when used with `until`). The format is "hh:mm:ss" according to a 24-hour clock. For example, `<timeout>` records 11:30 pm as 23:30:00.
- `@handle output` – specifies that an action handle is to be retrieved for the failover.
- `instance` – specifies that only selected instances in the logical cluster are to fail over.
- `<from_instance_list>` – list of instances that are to be taken offline

`sp_cluster logical, "gather", <lc_name>`

- `gather` – indicates you are gathering a set of qualified connections to migrate them to another logical cluster.
- `<lc_name>` – name of a logical cluster to which you are migrating the connections.

`sp_cluster logical, "offline", <lc_name>, { cluster | instance, <instance_list> } [, <wait_option>[, <timeout>[, @handle output ]]]`

- `<lc_name>` – name of a logical cluster.
- `cluster` – specifies the entire cluster.

- instance – specifies that only selected instances in the logical cluster are to taken offline.
- <instance_list> – list of selected instances in the logical cluster.
- <wait_option> – how the time of the action is to be specified. Values are:
  - wait – indicates that existing connections are given a specified amount of time (or an infinite amount of time if no <timeout> is given) to migrate or disconnect.
  - nowait – indicates that existing connections are migrated or disconnected immediately.
  - until – indicates that existing connections are given until a specific time of day to migrate or disconnect.
- <timeout> – is a specific amount of time (when used with wait) or a specific time (when used with until). The format is "hh:mm:ss" according to a 24-hour clock. For example, <timeout> records 11:30 pm as 23:30:00.
- @handle output – specifies that an action handle is to be retrieved for the action.
- <from_instance_list> – list of instances that are to be taken offline

sp_cluster logical, "online", { <lc_name>[, <instance_list>]}

- <lc_name> – name of a logical cluster.
- <instance_list> – list of selected instances in the logical cluster.

sp_cluster logical, "set", <lc_name>, {open | failover, <failover_mode> | system_view, <view_mode> | startup, { automatic | manual } | load_profile, <profile_name> | action_release, { automatic | manual } | gather, { automatic | manual } | login_distribution, { affinity | "round-robin" }

- <lc_name> – name of a logical cluster.
- open – sets the open logical cluster. Unrouted connections are sent to the open logical cluster.
- failover <failover_mode> – sets the failover mode of the logical cluster. Values for <failover_mode> are:
  - instance – specifies a 1:1 failover strategy; every time a base instance fails, a failover resource is brought online.
  - group – specifies that failover resources are brought online only after all base instances in the cluster fail.
- system_view <view_mode> – sets the default system view for tasks running in the logical cluster. Values for <view_mode> are:
  - instance – specifies that monitoring and informational tools such as sp_who, sp_lock, and monitoring tables describe an instance.
  - cluster – specifies that monitoring and informational tools such as sp_who, sp_lock, and monitoring tables describe the whole cluster.
- startup { automatic | manual} – sets the start-up mode of the logical cluster.
  - automatic – specifies that the logical cluster is started automatically when the cluster starts.
  - manual – specifies that the logical cluster must be started manually.

- login_distribution – specifies how the Cluster Edition distributes connections when a logical cluster spans multiple instances.
- action_release – enables or disables the automatic releasing and clearing of these logical cluster actions—online, offline, failover, and failback—after they are completed or cancelled.
  - automatic – specifies that logical cluster actions are cleared automatically.
  - manual – specifies that logical cluster actions are not cleared after they are completed or cancelled. This is the default.
- gather – enables or disables the movement of groups of connections to a different logical cluster when one of these predefined actions occurs—online, add route, alter route, or drop route.
  - automatic – specifies that the connections are moved automatically.
  - manual – specifies that the connections are not moved automatically. This is the default.
- @handle output – specifies that an action handle is to be retrieved for the action.
- <from_instance_list> – list of instances that are to be taken offline

```
sp_cluster logical, "show"[, <lc_name>[, {<action>[, <state>] | route[,
<type>[, <key>]]}]]
```

- <lc_name> – name of the logical cluster. If NULL is entered, summary information for all logical clusters is displayed.
- action – specifies information about administrative actions: failover, failback, online, offline, deactivate.
- <state> – one of: cancelled, complete, or active.
- route – specifies information about routes.
- <type> – is one of: application, alias, or login.
- <key> – a specific login, alias, or application name.

```
sp_cluster profile, [ "show" [, <profile_name> ] | "create", <profile_name> |
"drop", <profile_name> | "set", <profile_name>[, weight[, <wt_metric>[,
<wt_value> ] | threshold[, <thr_metric> [, <thr_value> ] ] ]
```

- show – displays configured load profiles and their settings.
- <profile_name> – name of a load profile.
- creates – creates a new load profile.
- drop – drops a load profile.
- set – specifies attributes of a load profile. You must set each attribute individually.
- weight – specifies a weight attribute.
- <wt_metric> – specifies an individual weight metric. Values are:
  - user connections – the capacity of an instance to accept a new connection, based on resource availability.
  - cpu utilization – the capacity of an instance to accept a new connection, based on resource availability.
  - run queue – the capacity of an instance to accept a new connection, based on resource availability.
  - io load – outstanding asynchronous I/Os.

    - engine deficit – the difference in the number of online engines among instances in the cluster.

        > i Note
        >
        > engine deficit is measurable only when instances in the cluster have unequal numbers of engines. engine deficit adds a metric for maximum relative capacity to the load score.

    - user metric – an optional, user-supplied metric.
- <wt_value> – specifies a weight value. Valid values are 0 to 255. A weight of zero (0) excludes the metric from calculation.
- threshold – specifies a threshold attribute.
- <thr_metric> – specifies a particular threshold attribute. Values are:
    - dynamic – specifies a threshold for dynamic load distribution.
    - login – specifies a threshold for login redirection
    - hysteresis – specifies a minimum load score for any connection redirection.
- <thr_value> – depends on value of <thr_metric>. When <thr_metric> is:
    - dynamic or login – <thr_value> is the percentage difference between the load scores of two instances. Valid values are 0 to 100. A weight of zero (0) disables this form of load distribution.
    - hysteresis – <thr_value> is the minimum load score for the target instance that must be met before dynamic load distribution or login redirection can occur.

Examples

Example 1

Moves the connection with a spid of 73 into the SalesLC cluster:

```
sp_cluster connection, migrate, SalesLC, NULL, '73'
```

Example 2

Moves the current connection to the "ase3" instance:

```
sp_cluster connection, migrate, NULL, ase3
```

Example 3

Moves connections with spid values of 73 and 75 into "ase3" instance and the SalesLC cluster:

```
sp_cluster connection, migrate, SalesLC, ase3, '73;75'
```

Example 4

Determines if there is a connection migration occurring on spid 73; if there is, the Cluster Edition cancels the migration:

```
sp_cluster connection, 'migrate_cancel', '73'
```

Example 5

Checks the status of migrated connections for connections with a spid value of 73:

```
sp_cluster connection, 'migrate_status', '73'
```

```
SPID LogicalCluster Instance MigrationLogicalCluster MigrationInstance Command
---- -------------- -------- ----------------------- ------------------
 -------
  73 SystemLC        ase1      SalesLC                   ase3    connection
migrate
```

Example 6

Cancels a timed action on the "SalesLC" logical cluster. The action handle is 4390.

```
sp_cluster logical, "action", SalesLC, cancel, "4390"
```

Example 7

Changes the wait option for existing action 5364 to `nowait`.

```
sp_cluster logical, "action", SalesLC, modify_time, "5364", nowait
```

Example 8

Releases action 3456 for the "SalesLC" logical cluster.

```
sp_cluster logical, "action", SalesLC, release, "3456"
```

Example 9

Releases all completed or cancelled actions for the "SalesLC" logical cluster.

```
sp_cluster logical, "action", SalesLC, release, "all"
```

Example 10

Adds instances "ase1" and "ase2" to the "SalesLC" logical cluster.

```
sp_cluster logical, "add", SalesLC, instance, "ase1;ase2"
```

Example 11

Creates one failover group with "ase3" for "SalesLC".

```
sp_cluster logical, "add", SalesLC, failover, ase3
```

Example 12

Routes the logins "tom", "dick", and "harry" to the "SalesLC" logical cluster

```
sp_cluster logical, "add", SalesLC, route, login, "tom;dick;harry"
```

Example 13

Routes the field_sales application to the "SalesLC" logical cluster.

```
sp_cluster logical, "add", SalesLC, route, application, field_sales
```

Example 14

Creates a route of type alias to logical cluster "lc1" with the alias "SalesLC". Then, changes the logical cluster association of the route from "lc1" to "lc2". The route is identified by its route type (alias) and its key (SalesLC).

```
sp_cluster logical, "add", "lc1", "route", "alias", "SalesLC"
sp_cluster logical, "alter", "lc2", "route", "alias", "SalesLC"
```

Example 15

Creates a logical cluster named "SalesLC":

```
sp_cluster logical, "create", SalesLC
```

Example 16

Immediately stops all instances in the "SalesLC" logical cluster, and places "SalesLC" in the inactive state:

```
sp_cluster logical, "deactivate", SalesLC, cluster, nowait
```

Example 17

Stops the "ase1" and "ase2" instances, and places "SalesLC" in the inactive state:

```
sp_cluster logical, "deactivate", SalesLC, instance, "ase1;ase2"
```

Example 18

Drops the "SalesLC" logical cluster:

```
sp_cluster logical, "drop", SalesLC, cluster
```

Example 19

Drops the base instances "ase1" and "ase2" from the "SalesLC" logical cluster.

```
sp_cluster logical, "drop", SalesLC, instance, "ase1;ase2"
```

Example 20

Drops the routes from the applications field_sales and web_sales from the "SalesLC" logical cluster.

```
sp_cluster logical "drop", SalesLC, route, application,
    "field_sales;web_sales"
```

Example 21

Fails back the "SalesLC" logical cluster:

```
sp_cluster logical, "failback", SalesLC, cluster
```

Example 22

"SalesLC" is running on "ase3" and "ase1". In this example, "ase3" fails back to "ase1", and "SalesLC" continues to run on "ase2". The action takes place in two minutes:

```
declare @out_handle varchar(15)
execute
sp_cluster logical, "failback", SalesLC, instance,
ase3, ase1, wait, "00:02:00", @handle = @out_handle
output
```

Example 23

Fails over the "SalesLC" logical cluster to the first group of predefined failover resources. The failover waits 2 minutes before terminating connections.

```
declare @out_handle varchar(15)
execute
sp_cluster logical, "failover", SalesLC, cluster, NULL, wait, "00:02:00",
@handle = @out_handle output
```

```
Action '2' has been issued for the 'failover cluster' command.Logical Cluster
Handle      Action                           From     To
         State            InstancesWaiting ConnectionsRemaining WaitType
         StartTime                  Deadline         CompleteTime
 --------------- ----------- -------------------------------- -------- --
         ---------------- ---------------- -------------------- --------
         -------------------- -------------------- -----------------------
SalesLC                 2 failover cluster    2, 4     NULL
complete                        0                      0 wait
         Nov 15 2007  3:23PM     Nov 15 2007  3:25PM    Nov 15 2007  3:23PM
Remember to issue the 'sp_cluster logical, action, <logical cluster name>,
release, <handle>' command for any cancelled or completed actions.
```

Example 24

"SalesLC" is running on "ase1" and "ase2". In this example, "ase1" fails over to "ase3", and "SalesLC" continues to run on "ase2". No wait option is specified, so it defaults to an indefinite wait.

```
sp_cluster logical, "failover", SalesLC, instance, ase1, ase3
```

```
Action '1' has been issued for the 'failover instance' command.
Logical Cluster Handle   Action               From
To    State     InstancesWaiting
   ConnectionsRemaining  WaitType    StartTime            Deadline  CompleteTi
me
------- ---------------  -------              ---- ----  ---------
 ----------------
   --------------------- ----------- ------------------  ---------
----------------
SalesLC              1   failover
instance       1  4    complete               0
                      0  infinite    Nov 15 2007  3:06PM  NULL  Nov 15 2007
3:06PM
Remember to issue the `sp_cluster logical, action, <logical cluster name>,
release, <handle>' command for any cancelled or completed actions.
```

Example 25

Gathers and migrates a group of connections to the "new_stores" logical cluster:

```
sp_cluster logical, 'gather', new_stores
```

Example 26

Displays syntax for the `sp_cluster logical` stored procedures.

```
sp_cluster logical, "help"
```

```
Usage for sp_cluster 'logical':
sp_cluster 'logical', 'help' [, <module>]
To show the logical cluster configuration:
sp_cluster 'logical', 'show'
sp_cluster 'logical', 'show', <lcname>
sp_cluster 'logical', 'show', <lcname> | NULL, 'action' [, <state>]
sp_cluster 'logical', 'show', <lcname> | NULL, 'route' [, <type [, <key>]]
To create a logical cluster:
sp_cluster 'logical', 'create', <lcname>
To add resources to a logical cluster:
sp_cluster 'logical', 'add', <lcname>, 'failover', <instance_list> [,<group>]
sp_cluster 'logical', 'add', <lcname>, 'instance', <instance_list
sp_cluster 'logical', 'add', <lcname>, 'route', <route_type>, <key_list>
To drop resources from a logical cluster:
sp_cluster 'logical', 'drop', <lcname>, 'cluster'
sp_cluster 'logical', 'drop', <lcname>, 'failover', <instance_list>
sp_cluster 'logical', 'drop', <lcname>, 'instance', <instance_list>
sp_cluster 'logical', 'drop', <lcname>, 'route', <route_type>, <key_list>
Argument details:
<lcname> is a logical cluster nam
 <instance_list> is a ';' separated list of instance
<route_type> is one of {'user', 'application', 'alias
 <key_list> is a ';' separated list of keys
To set attributes of a logical cluster:
sp_cluster 'logical', 'set', <lcname>, 'open'
sp_cluster 'logical', 'set', <lcname>, 'down_routing', 'disconnect' |
'system' |
    'open'
sp_cluster 'logical', 'set', <lcname>, 'failover', 'instance' | 'group'
sp_cluster 'logical', 'set', <lcname>, 'load_profile', <profile_name>
sp_cluster 'logical', 'set', <lcname>, 'startup', 'automatic' | 'manual'
sp_cluster 'logical', 'set', <lcname>, 'system_view', 'instance' | 'cluster'
To start and stop a logical cluster:
sp_cluster 'logical', 'online', <lcname>[, <instance_list>]
sp_cluster 'logical', 'offline', <lcname>, 'cluster'[, <wait_option>[,<time>[,
    @handle output]]]
sp_cluster 'logical', 'offline', <lcname>, 'instance',
    <instance_list>[,<wait_option>[, <time>[, @handle output]]]
To failover and failback a logical cluster:
sp_cluster 'logical', 'failover', <lcname>, 'cluster'[, <instance_list>[,
    <wait_option>[, <time>[, @handle output]]]]
sp_cluster 'logical', 'failover', <lcname>, 'instance', <from_instance_list>,
    <instance_list>[, <wait_option>[,<time>[, @handle output]]]
sp_cluster 'logical', 'failback', <lcname>, 'cluster'[,<instance_list>[,
    <wait_option>[, <time>[, @handle output]]]]
sp_cluster 'logical', 'failback', <lcname>, 'instance', <from_instance_list>,
    <instance_list>[, <wait_option>[,<time>[, @handle output]]]
To work with action handles:
sp_cluster 'logical', 'action', <lcname>, 'cancel', <handle>
sp_cluster 'logical', 'action', <lcname>, 'modify_time', <handle>,
<wait_option>[,
    <time>]
sp_cluster 'logical', 'action', <lcname>, 'release', <handle>
Argument details:
<wait_option> is one of {'nowait', 'wait', 'until'}
<time> is a time in hh:mm:ss format
<handle> is an action handle
```

Example 27

Immediately stops all instances in the "SalesLC", and places "SalesLC" in the offline state.

```
sp_cluster logical, "offline", SalesLC, cluster, nowait
```

Example 28

Stops the "ase1" and "ase2" instances in "SalesLC", and places "SalesLC" in the offline state.

```
sp_cluster logical, "offline", SalesLC, instance, "ase1;ase2"
```

Example 29

Starts all base instances in the "SalesLC" logical cluster, and brings the cluster online.

```
sp_cluster logical, "online", SalesLC
```

Example 30

Starts the "ase1" instance in "SalesLC", and brings the cluster online.

```
sp_cluster logical, "online", SalesLC, ase1
```

Example 31

Sets the load profile for the "SalesLC" logical cluster to the Sybase profile `sybase_profile_oltp`:

```
sp_cluster logical, "set", SalesLC, load_profile,
sybase_profile_oltp
```

Example 32

Sets the default system view to `cluster`:

```
sp_cluster logical, "set", SalesLC, system_view, cluster
```

Example 33

Displays summary information for all configured logical clusters.

```
sp_cluster logical, "show", NULL
```

```
 ID  Name           State   Online Instances   Connections--- -------
        ------- ------------------
---------------1   mycluster      online        4                  1
2   SalesLC        online        2                  0
3   HRLC           online        1                  0
4   CatchallLC     offline       0                  0
Logical cluster 'mycluster' is the system logical cluster.
Logical cluster 'CatchallLC' is the open logical cluster.
Logical Cluster  Instance    State   Type      Connections     Load Score
---------------- --------   ------    ------   --------------      -----------
HRLC               silk      online     base              0           0.01
SalesLC            cotton    offline    failover          0           0.00
SalesLC            linen     online     base              0           0.00
SalesLC            silk      offline    failover          0           0.01
SalesLC            wool      online     base              0           0.01
mycluster          cotton    online     base              0           0.00
mycluster          linen     online     base              0           0.00
mycluster          silk      online     base              0           0.01
mycluster          wool      online     base              1           0.01
```

Example 34

Displays a list of all outstanding actions.

```
sp_cluster logical, "show", NULL, action
```

Example 35

Displays information for the `SalesLC` logical cluster.

```
sp_cluster logical, "show", SalesLC
```

```
ID          Name           State         Online Instances      Connections
----------- -------------- ------------  ----------------      ----------
2           OrderLC        online       1                0
Instance         State       Type     Connections Load Score  Failover Gro
---------------  ----------  -------  ----------- ----------  -----------
asedemo1         online      base              0        0.78  NU
Attribute                             Setting
------------------                    ------------------------------------
Down Routing Mode                     system
Failover Mode                         instance with fail_to_any
LC Roles                              none
Load Profile                          sybase_profile_oltp
Login Distribution                    affinity
Startup Mode                          automatic
System View                           cluster
Route Type             Route Key
---------------------- ------------------
application            order_app
Logical cluster 'OrderLC' has no associated actions.
(return status = 0)
```

Example 36

Creates the load profile "my_profile":

```
sp_cluster profile, "create", my_profile
```

Example 37

Specifies the metric weights for "my_profile." "user connections" is set to zero, which excludes that metric from the profile:

```
sp_cluster profile, "set", my_profile, weight, "user connections", '0'
sp_cluster profile, "set", my_profile, weight, cpu utilization, '20'
sp_cluster profile, "set", my_profile, weight, runqueue, '30'
sp_cluster profile, "set", my_profile, weight, io load, '10'
sp_cluster profile, "set", my_profile, weight, engine deficit, '10'
sp_cluster profile, "set", my_profile, weight, user metric, '30'
```

Example 38

Sets the login redirection threshold to 80 and the hysteresis value to 10 for "my_profile:"

```
sp_cluster profile, "set", my_profile, threshold, login, '80'
sp_cluster profile, "set", my_profile, threshold, hysteresis, '10'
```

Example 39

Displays information about a configured profile:

```
sp_cluster profile, "show", my_profile
```

```
ID    Profile      Type    Connections   CPU Run   Queue
----  ------------ ------- ------------- --- ---   ---- ---- --- --- --- ---
100   my_profile   user               0  20  30  10  10  30  30  0  20
Profile                    Logical Cluster
-------------------------  --------------
my_profile                 SalesLC
Profile                    Logical Cluster Instance
         Load Score        Connections Score
         CPU Score         Run Queue Score
         IO Load Score     User Score
---------------------------------- ------------------   -----------
    ------------------------------------ ------------------------------
    ------------------------------------ ------------------------------
    ------------------------------------ ------------------------------
----------------------------------
my_profile                          SalesLC          ase1
                                    0.028871                0.000000
                                    0.028871                0.000000
                                    0.000000                0.000000
                                    0.000000
my_profile                                           ase2
                                    0.029474                0.000000
                                    0.029474                0.000000
                                    0.000000                0.000000
                                    0.000000
my_profile                                           ase3
                                    0.019503                0.000000
                                    0.019503                0.000000
                                    0.000000                0.000000
                                    0.000000
my_profile                                           ase4
                                    0.582675                0.000000
                                    0.290930                0.291745
                                    0.000000                0.000000
                                    0.000000
```

Example 40

Creates a single-instance logical cluster named "tech":

```
sp_cluster logical, "create", tech, for single instance access
```

Example 41

Removes the binding between a single-instance database named "automotive" and a single-instance logical cluster named "tech":

```
sp_cluster logical, "drop", tech, database automotive
```

Usage

The parameter usage for `sp_cluster` is:

Parameter	Usage Consideration
sp_cluster connection	• To migrate the current spid, omit `<spid_list>` from `sp_cluster connection, migrate`.
sp_cluster logical, action	• Retrieve an action handle by querying the `monLogicalClusterAction` table or executing: `sp_cluster logical, "show", NULL, action` • Any client that does not support migration is disconnected when it completes a SQL batch and has no open transactions, or when the `<timeout>` period expires, which ever comes first. • Any client remaining at the end of the `<timeout>` period is disconnected.

Parameter | Usage Consideration

- Cancelling an action does not roll back the action. Additional tasks may be necessary to restore the configuration to the original state.
- Only completed actions can be released. Releasing an action removes the completed action from the system and from the `monLogicalClusterAction` table.

sp_cluster logical, 'add'

- You cannot add a base instance or a failover resource to the system logical cluster.
- Separate multiple instance, failover resources, or applications with semicolons.
- Create multiple failover groups by enclosing the group in parenthesis, and separating groups with a comma. If you do not specify group, a new group is created and the instances are added to that group. You can specify a group into which the instances are placed (the group number must be quoted).
  For example:

```
1> sp_cluster logical, 'add', tempLC, failover,
"asedemo3;asedemo2"
2> go
```

```
Added failover instance 'asedemo3' to group 1 for logical
cluster 'tempLC'.
Added failover instance 'asedemo2' to group 1 for logical
cluster 'tempLC'.
```

And then add the instances to the group:

```
1> sp_cluster logical, 'add', tempLC, failover, asedemo4, "4"
2> go
```

```
Added failover instance 'asedemo4' to group 4 for logical
cluster 'tempLC'.
```

sp_cluster logical, "deactivate"

- You cannot use the `deactivate` command for the system logical cluster.
- `offline` is identical to the `deactivate`, except `deactivate` places stopped instances or clusters in the inactive state and `offline` places them in the offline state.

sp_cluster logical "drop"

- You must place an instance or failover resource in the offline state before dropping it.
- Dropping a cluster also drops all routes, resources, and settings associated with the cluster.

sp_cluster logical "failback"

- To initiate a failback, the logical cluster must first be failed over.

sp_cluster logical "gather"

- The logical cluster must be online to gather connections manually
- The logical cluster must have defined routes to gather connections

Parameter	Usage Consideration
`sp_cluster logical, "offline"`	• You cannot use the `offline` command for the system logical cluster. • `offline` is identical to `deactivate`, except `deactivate` places stopped instances or clusters in the inactive state.
`sp_cluster logical "online"`	• You cannot use the `online` command for the system logical cluster.
`sp_cluster logical "set"`	• Only one logical cluster can have the open property. When you set the open property to a new logical cluster, the open property is removed from the previous open logical cluster.
`sp_cluster profile`	• The user metric value must be normalized so that it is compatible with values for metrics provided by SAP. Consider a user metric that measures response times. If the maximum acceptable response time is 10 seconds and the measured value is 5, the metric value is 50 (5/10 x 100 = 50). • Threshold metrics let you configure at what point a load imbalance should cause connections to be redirected from one instance to another. The workload manager redirects connections when the load score difference (as a percent) between the target instance and the least loaded instance meets or exceeds the threshold value. The hysteresis value guards against redirection when the load score difference meets the threshold value, but the instance load scores (for example, 2 and 8) are so low that redirection is not appropriate.
Adding or dropping single-instance databases	• The single-instance logical cluster definitions must exist before issuing `sp_cluster logical 'drop' | 'add'`. • All logical clusters to which you are adding and dropping single-instance databases must be single-instance logical clusters. You cannot use single-instance databases with regular logical clusters. • performs a database migration when you change a database's bindings to another logical cluster that uses a different node. This migration may take significantly longer than without database migration because `sp_cluster` must drain the connections on the present node and migrate them to the new node. However, if it is acceptable to drop client connections, you may use the `with nowait` parameter for better performance. • Connections from one logical cluster are not migrated to another. If both single-instance logical clusters have the same base node, connections from either logical cluster can access the single-instance database. However, if they have different base nodes, once the database has been migrated to the second logical clusters base node, the first logical cluster cannot access the single-instance database. • All connections to the host node may access its single-instance database.

Permissions

The permission checks for `sp_cluster` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `manage cluster` privilege or ha_role.
Disabled	With granular permissions disabled, you must be a user with sa_role or ha_role.

1.51 sp_clusterlockusage

(Cluster environments only) Reports on the free, used, and retained locks in the cluster.

Syntax

```
sp_clusterlockusage
```

Examples

Example 1

Reports the locks currently used in the cluster:

```
Lock Usage                         count    % of total
-------------------------  ------------  ------------
Total Locks                        95039           n/a
  Free Locks                       85807       90.29 %
  Used Locks                        9232        9.71 %
    Object Locks                    4032        4.24 %
    Physical Locks                   233        0.25 %
    Partition Locks                    9        0.00 %
    Table Locks                        0        0.00 %
    Page Locks                         0        0.00 %
    Row Locks                         17        0.02 %
    Others                           501        0.53 %
  Retention Used                       0        0.00 %
```

Usage

`Retention Used` reports on the number of locks that are not owned by any task, but are owned at the cluster level because of lock retention.

Permissions

The permission checks for `sp_clusterlockusage` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `manage cluster privilege` or a user with ha_role.
Disabled	With granular permissions disabled, you must be a user with sa_role or ha_role.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

1.52 sp_cmp_all_qplans

Compares all abstract plans in two abstract plan groups.

Syntax

```
sp_cmp_all_qplans <group1>, <group2>[, <mode>]
```

Parameters

`<group1>`, `<group2>`

are the names of the two abstract plan groups.

`<mode>`

is the display option. The modes and what information they report are:

- `counts` – the default mode, this option reports plans that:
  - Are the same
  - Have the same association key, but different groups
  - Exist in one group, but not the other
- `brief` – the information provided by counts, plus:

    - The IDs of the abstract plans in each group where the plans are different, but the association key is the same
    - The IDs of plans that are in one group, but not in the other.
- `same` – all counts, plus the IDs, queries, and plans for all abstract plans where the queries and plans match.
- `diff` – all counts, plus the IDs, queries, and plans for all abstract plans where the queries and plans are different.
- `first` – all counts, plus the IDs, queries, and plans for all abstract plans that are in the first plan group, but not in the second plan group.
- `second` – all counts, plus the IDs, queries, and plans for all abstract plans that are in the second plan group, but not in the first plan group.
- `offending` – all counts, plus the IDs, queries, and plans for all abstract plans that have different association keys or that do not exist in both groups. This is the combination of the `diff`, `first`, and `second` modes
- `full` – all counts, plus the IDs, queries, and plans for all abstract plans. This is the combination of `same` and `offending` modes.

Examples

Example 1

Generates a default report on two abstract plan groups:

```
sp_cmp_all_qplans dev_plans, prod_plans
```

```
If the two query plans groups are large, this might take some time.
Query plans that are the same
 count
 -----------
          49
Different query plans that have the same association key
 count
 -----------
           1
Query plans present only in group 'dev_plans':
 count
 -----------
           1
Query plans present only in group 'prod_plans':
 count
 -----------
           0
```

Example 2

Generates a report using the `brief` mode:

```
sp_cmp_all_qplans dev_plans, prod_plans, brief
```

Usage

There are additional considerations when using sp_cmp_all_qplans:

- Use sp_cmp_all_qplans to check for differences in abstract plans in two groups of plans.
- sp_cmp_all_qplans matches pairs of plans where the plans in each group have the same user ID and query text. The plans are classified as follows:
  - Plans that are the same
  - Plans that have the same association key in both groups, but have different abstract plans. The association key is the group ID, user ID and query text.
  - Plans that exist in one group, but do not exist in the other group
- To compare two individual abstract plans, use sp_cmp_qplans. To see the names of abstract plan groups, use sp_help_qpgroup.
- When a system administrator or database owner runs sp_cmp_all_qplans, it reports on all plans in the two groups. When another user executes sp_cmp_all_qplans, it reports only on plans that have the user's ID.

Permissions

The permission checks for sp_cmp_all_qplans differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with manage abstract plans privilege or a user with monitor qp performance privilege. Any user can compare plans that they own.
Disabled	With granular permissions disabled, you must be the database owner or a user with sa_role. Any user can compare plans that they own.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide > Auditing*.

Related Information

sp_cmp_qplans [page 189]

sp_help_qpgroup [page 410]

1.53 sp_cmp_qplans

Compares two abstract plans.

Syntax

```
sp_cmp_qplans <id1>, <id2>
```

Parameters

<id1>, **<id2>**

are the IDs of two abstract plans.

Examples

Example 1

Compares abstract plan 411252620 to 1383780087:

```
sp_cmp_qplans 411252620, 1383780087
```

```
The queries are the same.
The query plans are the same.
```

Example 2

Compares abstract plan 2091258605 to 647777465:

```
sp_cmp_qplans 2091258605, 647777465
```

```
The queries are the same.
The query plans are different.
```

Usage

There are additional considerations when using `sp_cmp_qplans`:

- `sp_cmp_qplans` compares the queries, abstract plans, and hash keys of two abstract plans, and reports whether the queries are the same, and whether the plans are the same. It prints one of these messages for the query:

    - The queries are the same.
    - The queries are different.
    - The queries are different but have the same hash key.

  It prints one of these messages for the abstract plan:
    - The query plans are the same.
    - The query plans are different.
- `sp_cmp_qplans` also prints a return status showing the results of the comparison. The status values 1, 2 and 10 are additive. The status values and their meanings are:
    - 0 – The query text and abstract plans are the same.
    - +1 – The queries and hash keys are different.
    - +2 – The queries are different, but the hash keys are the same.
    - +10 – The abstract plans are different.
    - 100 – One or both of the plan IDs does not exist.
- To find the ID of a plan, use `sp_help_qpgroup` or `sp_find_qplan`. Plan IDs are also returned by `create plan` and are included in `showplan` output.

Permissions

The permission checks for `sp_cmp_qplans` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `manage abstract plans` privilege or `monitor qp performance` privilege. Any user can compare plans that they own.
Disabled	With granular permissions disabled, you must be the database owner or a user with sa_role. Any user can compare plans that they own.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide > Auditing*.

Related Information

sp_cmp_all_qplans [page 186]
sp_help_qpgroup [page 410]

1.54 sp_commonkey

Defines a common key — columns that are frequently joined — between two tables or views.

Syntax

```
sp_commonkey <tabaname>, <tabbname>, <col1a>, <col1b>
    [, <col2a>, <col2b>, ..., <col8a>, <col8b>]
```

Parameters

<tabaname>
is the name of the first table or view to be joined.

<tabbname>
is the name of the second table or view to be joined.

<col1a>
is the name of the first column in the table or view `<tabaname>` that makes up the common key. Specify at least one pair of columns (one column from the first table or view and one from the second table or view).

<col1b>
is the name of the partner column in the table or view `<tabbname>` that is joined with `<col1a>` in the table or view `<tabaname>`.

Examples

Example 1

Defines a common key on `titles.titleid` and `titleauthor.titleid`:

```
sp_commonkey titles, titleauthor, title_id, title_id
```

Example 2

Assumes two tables, `projects` and `departments`, each with a column named `empid`. This statement defines a frequently used join on the two columns:

```
sp_commonkey projects, departments, empid, empid
```

Usage

There are additional considerations when using sp_commonkey:

- Common keys are created in order to make explicit a logical relationship that is implicit in your database design. The information can be used by an application. sp_commonkey does not enforce referential integrity constraints; use the primary key and foreign key clauses of the create table or alter table command to enforce key relationships.
- Executing sp_commonkey adds the key to the syskeys system table. To display a report on the common keys that have been defined, use sp_helpkey.
- You must be the owner of at least one of the two tables or views in order to define a common key between them.
- The number of columns from the first table or view must be the same as the number of columns from the second table or view. Up to eight columns from each table or view can participate in the common key. The datatypes of the common columns must also agree. For columns that take a length specification, the lengths can differ. The null types of the common columns need not agree.
- The installation process runs sp_commonkey on appropriate columns of the system tables.
- You cannot use a Java datatype with sp_commonnkey.

See also alter table, create table, create trigger in *Reference Manual: Commands*.

Permissions

You must be the table owner to execute sp_commonkey. Permission checks do not differ based on the granular permissions settings

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide > Auditing*.

Related Information

sp_dropkey [page 306]
sp_foreignkey [page 387]
sp_helpjoins [page 460]
sp_helpkey [page 462]
sp_primarykey [page 676]

1.55 sp_companion

Run from the secondary companion, `sp_companion` performs cluster operations such as configuring SAP ASE as a secondary companion in a high availability system and moving a companion server from one failover mode to another.

Syntax

```
sp_companion
    [<server_name>
    {, configure
        [, {with_proxydb | NULL}]
        [, < srvlogin>]
        [, <server_password>]
        [, <cluster_login>]
        [, <cluspassword>]]
   | drop
   | suspend
   | resume
   | prepare_failback
   | do_advisory}
       {, all
       | help
       | <group_attribute_name>
       | <base_attribute_name>}
```

Parameters

`<server_name>`

is the name of the SAP ASE server on which you are performing a cluster operation.

`configure`

configures the server specified by `<server_name>` as the primary companion in a failover configuration.

`drop`

permanently drops a companion from failover configuration. After the command has completed, the servers are in single-server mode.

`suspend`

temporarily removes the companions from a failover configuration. After the command is completed, the companions are in suspended mode.

`resume`

reverses the `suspend` command and resumes normal companion mode between the companions.

`prepare_failback`

prepare the secondary companion to relinquish the primary companion's resources so it can failback.

do_advisory

verifies that the secondary companion is compatible for successfully performing the primary companion's functions during failover mode.

- all – causes do_advisory the investigate all the parameters.
- help – displays information and syntax about the do_advisory parameter.
- <group_attribute_name> – is the name of the group attribute upon which sp_companion reports
- <base_attribute_name> – is the name of the base attribute upon which you want sp_companion do_advisory reports.

with_proxydb

creates proxy databases on the secondary companion for all database other than the system databases – and all subsequent databases that are added – when this parameter is included in the initial configuration of the companion servers. By default, with_proxydb is disabled.

<srvlogin>

is a user's login to access the companion server. By default, the value of srvlogin is "sa".

<srvpassword>

is the user's password to access the companion server. By default, the value of srvpassword is null.

<cluster_login>

is the user's login to log into the cluster. By default, the value of cluster_login is "sa".

<cluspassword>

is the user password you must provide to log into the cluster. By default, the value of cluspassword is null.

Examples

Example 1

Configures the SAP ASE MONEY1 as the primary companion:

```
sp_companion "MONEY1", configure
```

Example 2

Configures the SAP ASE MONEY1 as the primary companion and creates proxy databases on the secondary companion:

```
sp_companion "MONEY1", configure, with_proxydb, "sa", "sapsswd"
```

Example 3

Drops the SAP ASE PERSONEL1 from the failover configuration. After the command has completed, both the primary companion and the secondary companion are in single-server mode:

```
sp_companion "PERSONEL1", "drop"
```

Example 4

Resumes normal companion mode for the companion server (in this example, MONEY1):

```
sp_companion "MONEY1", "resume"
```

Example 5

Prepares the primary companion (in this example, PERSONEL1) to change to normal companion mode and resume control of the SAP ASE server that failed over:

```
sp_companion "PERSONEL1", "prepare_failback"
```

Example 6

Checks to make sure a cluster operation with the PERSONEL1 companion is successful. Because `do_advisory` in this example uses the `all` parameter, it checks all the `do_advisory` attributes of PERSONEL1 to make sure that none of them prevent a successful cluster operation, and that the secondary companion can successfully perform the primary companion's operations after failover is complete:

```
sp_companion "PERSONEL1", do_advisory, "all"
```

Example 7

Checks to make sure that none of the attributes for the Component Integration Services (CIS) on the companion server is compatible with the local server:

```
sp_companion "PERSONEL1", do_advisory, "CIS"
```

Usage

`sp_companion` performs cluster operations such as configuring SAP ASE as a secondary companion in a high availability system. `sp_companion` also moves companion servers from one failover mode to another (for example, from failover mode back to normal companion mode). `sp_companion` is run from the secondary companion.

`sp_companion` is installed with the `installhasvss` (`insthasv` on Windows), not the `installmaster` script. `installhasvss` is located in the `scripts` subdirectory in `$SYBASE_ASE`.

`sp_companion` automatically disables SAP's mirroring. You should use a third-party mirroring software to protect your data from disk failures.

For complete information, see *Using Failover in A High Availability System*. Before running the `do_advisory` command, make sure to read the configuration chapter of this book as well as the `do_advisory` chapter.

Permissions

You must be user with ha_role to execute `sp_companion`. Permission checks do not differ based on the granular permissions settings

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

1.56 sp_compatmode

Verifies whether full `compatibility mode` can be used.

Syntax

```
sp_compatmode
```

Examples

Example 1

Verifies whether full compatibility mode can be used:

```
1> sp_compatmode
```

```
------------------
Compatibility mode is enabled.
WARNING: Compatibility mode may not be used when
statement cache and literalautoparam are enabled.
WARNING: The configuration option 'histogram tuning
factor' is configured with value '20', which is not the
default value in ASE 12.5. This may lead to different
accuracy of statistics and different query plans.
(return status = 0)
1>
```

Usage

This query reports whether `compatibility mode` is enabled or not. You see a warning if there are conflicts with the use of `enable compatibility mode`.

For more information, see the *Migration Technology Guide*.

Permissions

Any user can execute `sp_compatmode`. Permission checks do not differ based on the granular permissions settings.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

1.57 sp_config_dump

Allows you to list, add, or change dump configurations.

Syntax

```
sp_config_dump
    [@config_name = '<configuration_name>'
    [, {
        [@stripe_dir = '<stripe_dir_name>',]
        [@ext_api = '<external_api>',]
        [@num_stripes = '<number_of_stripes>',]
        [@retry = '<number_of_retries>',]
        [@blocksize = '<number_of_bytes>',]
        [@compression = '<compression_level>',]
        [@retaindays = '<number_of_days>',]
        [@init = '[noinit | init]',]
        [@verify = '[header | full]',]
        [@notify = '[client | operator_console]',]
        [@backup_srv_name = <backup_server_name>',]
        } | ['delete']
    ] ]
```

Parameters

@config_name = '<configuration_name>'

is a unique dump configuration name that is required for adding or changing any specific dump configuration. The SAP ASE server lists all dump configurations when you do not include `'<configuration_name>'`. Additional parameters, when supplied, are changed to new values.

@stripe_dir = '<stripe_dir_name>'

is a file system directory in which files are archived during the dump operation. Archived files are typically named using this format:

`database_name.dump_type.date-timestamp.stripeID`

`@stripe_dir` defaults to the directory where the Backup Server is started.

`@stripe_dir` cannot be a tape device.

@ext_api = '<external_api>'

is the name of the external API (byte stream device) used for the dump operation. By default, this parameter is unused. Provide `<external_api>` in this format:

```
external_API_name::additional_options
```

@num_stripes = '<number_of_stripes>'

is the number of stripe devices used during the dump operation. The default is 1.

@retry = '<number_of_retries>'

is the number of times the server tries the dump operation for nonfatal errors. Valid values are 0 to 5; the default is 0 (which indicates no retry).

@blocksize = '<number_of_bytes>'

is the block size for the dump device, overriding the default block size for the device. The value must be at least 1 database page (2048 bytes for most systems), and an exact multiple of the database page size. For optimal performance, specify `blocksize` as a power of 2 (such as 65,536, 131,072, or 262,144).

@compression = '<compression_level>'

is the compression level for compressed dumps. By default, compression is disabled.

@retaindays = '<number_of_days>'

is the number of days that Backup Server prevents a dump from being overwritten. Backup Server requires you to confirm any overwrite requests on an unexpired volume. By default, value is 0, meaning dumps can be overwritten.

@init = '[noinit | init]'

specifies whether to initialize the volume. The default is `noinit`.

@verify = '[header | full]'

specifies whether you want Backup Server to perform a minimal page-header or full structural row check on the data pages as they are copied to archives. There is no structural check made to global allocation map (GAM), object allocation map (OAM), allocation pages, indexes, text, or log pages. By default, there is no verification of data pages during archiving.

@notify = '[client | operator_console]'

specifies whether Backup Server routes messages to the client terminal that initiated the dump, or to the operator-console terminal where the Backup Server is running.

@backup_srv_name = '<backup_server_name>'

specifies the network name of the remote Backup Server running on the machine to which the dump device is attached. Do not use `backup_server_name` to dump to SYB_BACKUP, the default Backup Server. You can specify up to 32 remote Backup Servers using this option.

For platforms that use interfaces files, the Backup Server name must appear in the interfaces file.

'delete'

specifies the dump configuration to be deleted.

Examples

Example 1

Lists all dump configurations:

```
sp_config_dump
go
```

```
Configuration name
-------------------
dmp_cfg1
dmp_cfg2
dmp_cfg3
```

Example 2

Lists parameter values for a dump configuration called `dmp_cfg1`:

```
sp_config_dump 'dmp_cfg1'
go
```

```
Dump configuration: dmp_cfg1
Option name            Option value
-----------            -------------
compression           5
num_stripes           3
stripe_dir            /work/dump_dir
```

Example 3

Creates a new dump configuration called `dmp_cfg2` that specifies that a dump operation creates 5 stripes in the `/work1/dmp_dir` stripe directory, and that retries once if it fails with a nonfatal error:

```
sp_config_dump 'dmp_cfg2',
   @stripe_dir='/work1/dmp_dir', @num_stripes='5',
   @retry='1'
```

Example 4

Changes the stripe directory of an existing dump configuration:

```
sp_config_dump 'dmp_cfg2',
   @stripe_dir='/work2/dmp_dir'
```

Example 5

Deletes a dump configuration:

```
sp_config_dump 'dmp_cfg2', 'delete'
```

Usage

The `sp_config_dump` procedure does not support tape devices.

See also:

- `dump`, `load`, `genddlonly` in *Reference Manual: Commands*
- For information about dump operations, see the *System Administration Guide*.

Permissions

The permission checks for `sp_config_dump` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `manage dump configuration` privilege.
Disabled	With granular permissions disabled, you must be a user with sa_role or oper_role.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

1.58 sp_confighistory

Creates the ch_events view and displays changes made to SAP ASE configuration.

Syntax

```
sp_confighistory create_view
    <begin_date>[, <end_date>]]
    last[<items_num>]
    {area | type | target | element}[, <item_name>]
    help
```

Parameters

create_view

indicates you are creating the ch_events view.

<begin_date>, [<end_date>]

displays all items from <begin_date> value to the <end_date> value.

last

displays the latest configuration history items.

<items_num>

number of items to show from the list of latest configuration history items.

area | type | target | element

displays items from the specified area:

- area – area in which the auditable event occurs. One of:
  - server – server-level events.
  - database – database-level events.
  - cache – cache-level events.
  - traceflag – dbcc traceflag and set switch events.
  - SUSD – startup/shutdown.
  - audit – auditing state changes.
- type – type of auditable event. One of:
  - sp_configure
  - sp_serveroption
  - sp_dboption
  - sp_cacheconfig
  - sp_poolconfig
  - create thread pool

    - `alter thread pool`
    - `drop thread pool`
    - `dbcc traceflag`
    - `set switch`
    - configuration file change
    - startup
    - shutdown
    - shutdown with wait
    - shutdown with nowait
    - abrupt shutdown
    - global auditing
    - config history auditing
- `target` – name of the target objects to which the change applies (for example, server, cache, thread pool, and database names, traceflag number, and so on).
- `element` – configuration or other option name (for example, "`enable monitoring`", "`config pool: 4K, option: wash size`", and so on).

`help`

displays usage information for `sp_confighistory`.

Permissions

- Only the system administrator (users with sa_role) can use this procedure to create the `ch_events` view.
- Only the system administrator (users with sa_role) and users with mon_role can use this procedure to query the `ch_events` view.

The permission checks differ, based on your granular permission settings:

Setting	Description
Enabled	With granular permissions enabled, only users with: • `select any audit table` permission can query against the `ch_events` view. • `manage auditing` permission can change the option state of configuration history auditing • `select any audit table` permission can query against the `ch_events` view. • `select any audit table` permission can query the audit tables.
Disabled	With granular permissions disabled, only: • System security officers (users with sso_role) can change the option state of configuration history auditing • Only system administrators (users with sa_role) and users with mon_role can query against the `ch_events` view.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide > Auditing*.

1.59 sp_configure

Displays configuration parameters by group, their current values, their non-default value settings, the value to which they have most recently been set, and the amount of memory used by this setting. Displays only the parameters with a display level that is the same as or below that of the user.

Syntax

```
sp_configure [<configname> [, <configvalue>] | <group_name> |
    <non_unique_parameter_fragment>] 'drop instance'
    [, <instance_name>] 'snapshot isolation timeout'
    [, <timeout_value>] [display_nondefault_settings]
```

```
sp_configure "configuration file", 0, {"write" | "read" | "verify" | "restore"}
    "<file_name>"
```

Parameters

`<configname>`

displays the current value, default value, most recently changed value, and amount of memory used by the setting for all parameters matching `<parameter>`.

`<configvalue>`

resets `<configname>` to `<configvalue>` and displays the current value, default value, configured value, and amount of memory used by `<configname>`.

`sp_configure <configname,> 0, "default"` resets `<configname>` to its default value and displays current value, default value, configured value, and amount of memory used by `<configname>`.

`<group_name>`

displays all configuration parameters in `<group_name>`, their current values, their default values, the value (if applicable) to which they have most recently been set, and the amount of memory used by this setting.

`<non_unique_parameter_fragment>`

displays all parameter names that match <non_unique_parameter_fragment>, their current values, default values, configured values, and the amount of memory used.

drop instance

allows you to drop an instance-specific configuration setting

<instance_name>

(in cluster environments) indicates the instance for which you are setting the instance-specific options.

snapshot isolation timeout

Allows you to set the upper limit of time (in seconds) until which a statement can remain idle in the system, before it is preempted in a `transaction snapshot`. The default timeout value is 0 (zero) seconds, which means the statement will *not* be preempted.

For `statement snapshot`, transactions are preempted after 60 seconds, and such transactions later re-register themselves.

<timeout_value>

the value (in seconds) for the parameter `snapshot isolation timeout`

display_nondefault_settings

displays configuration options for which the configuration or run value is different from the default value.

write

creates <file_name> from the current configuration. If <file_name> already exists, a message is written to the error log and the existing file is renamed using the convention <file_name>.001, <file_name>.002, and so on. If you have changed a static parameter but have not restarted your server, "`write`" gives you the currently running value for that parameter.

read

performs validation checking on values contained in <file_name> and reads those values that pass validation into the server. If any parameters are missing from <file_name>, the current running values for those parameters are used.

verify

performs validation checking on the values in <file_name>.

restore

creates <file_name> with the values in `sysconfigures`. This is useful if all copies of the configuration file have been lost and you need to generate a new copy.

<file_name>

is the name of the file you want to use `sp_configure` on.

Examples

Example 1

Displays all configuration parameters by group, their current values, their default values, the value (if applicable) to which they have most recently been set, and the amount of memory used by this setting:

```
sp_configure
```

Example 2

Displays all configuration parameters that include the word "identity":

```
sp_configure "identity"
```

```
Configuration option is not unique.
Parameter Name     Default Memory Used Config Value Run Value Unit Type
--------------     ------- ----------- ------------ --------- ------ ----
identity burning set     1         0           1        1     id    static
identity grab size       0         0           0        0     id    dyna
size of auto identit    10         0          10       10     bytes dyna
. . .
```

Example 3

Sets the system `recovery interval in minutes` to 3 minutes:

```
sp_configure "recovery interval in minutes", 3
```

```
Parameter Name      Default Memory Used Config Value Run Value Unit Type
--------------       ------- ----------- ------------ --------- ------ ----
recovery interval   5        0          3            3         min   dyn
Configuration option changed. The SQL Server need not be rebooted since the
option is dynamic.
```

Example 4

Resets the value for `number of devices` to the SAP ASE default:

```
sp_configure "number of device", 0, "default"
```

Example 5

Configures four databases to be recovered concurrently:

```
sp_configure "max concurrently recovered db", 4
```

Example 6

Starts four checkpoint tasks:

```
sp_configure "number of checkpoint tasks", 4
```

Example 7

Captures Query Processing metrics (qp metrics) at the server level:

```
sp_configure "enable metrics capture", 1
```

Example 8

Performs validation checking on the values in the file `srv.config` and reads the parameters that pass validation into the server. Current run values are substituted for values that do not pass validation checking:

```
sp_configure "configuration file", 0, "read",
    "srv.config"
```

Example 9

Runs validation checking on the values in the file `restore.config`:

```
sp_configure "configuration file", 0, "restore",
    "generic.config"
```

Example 10

Creates the file `my_server.config` and writes the current configuration values the server is using to that file:

```
sp_configure "configuration file", 0, "write",
    "my_server.config"
```

Example 11

Performs a validation check on the values in `$SYBASE/backup_config.cfg`:

```
sp_configure "configuration file", 0, "verify",
    "backup_config.cfg"
```

Example 12

Set the snapshot isolation timeout to 60 seconds. After 60 seconds of idle time, the statement is preempted in the `transaction snapshot`. The output is illustrated below:

```
sp_configure 'snapshot isolation timeout', 60
```

```
Parameter Name               Default   Memory Used  Config Value   Run Value
Unit     Type
--------------------------   -------   ------------ ------------   ----------
-------  -------
snapshot isolation timeout   0         0            60             60
seconds  dynamic
(1 row affected)
Configuration option changed. ASE need not be rebooted since the option is
dynamic.
Changing the value of 'snapshot isolation timeout' to '60' increases the
amount
of memory ASE uses by 12 K.
(return status = 0)
```

Usage

- Any user can execute `sp_configure` to display information about parameters and their current values, but not to modify parameters. System administrators can execute `sp_configure` to change the values of most configuration parameters. Only system security officers can execute certain parameters. These are listed under "Permissions" in this section.

- `sp_configure` allows you to specify the value for configuration parameters in unit specifiers. The unit specifiers are `p` or `P` for pages, `m` or `M` for megabytes, `g` or `G` for gigabytes, and `t` or `T` for terabytes. If you do not specify a unit, and you are configuring a parameter that controls memory, the SAP ASE server uses the logical page size for the basic unit.
- Files created with `sp_configure` have restricted permissions.
- When you execute `sp_configure` to modify a dynamic parameter:
  - The configuration and run values are updated.
  - The configuration file is updated.
  - The change takes effect immediately.
- When you execute `sp_configure` to modify a static parameter:
  - The configuration value is updated.
  - The configuration file is updated.
  - The change takes effect only when you restart the SAP ASE server.
- When issued with no parameters, `sp_configure` displays a report of all configuration parameters by group, their current values, their default values, the value (if applicable) to which they have most recently been set, and the amount of memory used by this setting:
  - The `default` column in the report displays the value SAP ASE is shipped with. If you do not explicitly reconfigure a parameter, it retains its default value.
  - The `memory used` column displays the amount of memory used by the parameter at its current value in kilobytes. Some related parameters draw from the same memory pool. For instance, the memory used for `stack size` and `stack guard size` is already accounted for in the memory used for `number of user connections`. If you added the memory used by each of these parameters separately, it would total more than the amount actually used. In the `memory used` column, parameters that "share" memory with other parameters are marked with a hash mark (#).
  - The `config_value` column displays the most recent value to which the configuration parameter has been set with `sp_configure`.
  - The `run_value` column displays the value being used by the SAP ASE server. It changes after you modify a parameter's value with `sp_configure` and, for static parameters, after you restart the SAP ASE server. This is the value stored in `syscurconfigs.value`.

  > **i Note**
  >
  > If the server uses a case-insensitive sort order, `sp_configure` with no parameters returns a list of all configuration parameters and groups in alphabetical order with no grouping displayed.

- Each configuration parameter has an associated display level. There are three display levels:
  - The "basic" level – displays only the most basic parameters. It is appropriate for very general server tuning.
  - The "intermediate" level – displays parameters that are somewhat more complex, as well as showing you all the "basic" parameters. This level is appropriate for a moderately complex level of server tuning.
  - The "comprehensive" level – (default) displays all parameters, including the most complex ones. This level is appropriate for users who do highly detailed server tuning.
    Setting one of the other display levels lets you work with a subset of the configuration parameter, shortening the amount of information displayed by `sp_configure`.

  The syntax for showing your current display level is:`sp_displaylevel`.
- `sp_configure` can run in sessions using chained transaction mode if there are no open transactions.

See also:

- For information on the individual configuration parameters, see the *System Administration Guide*.
- `set` in *Reference Manual: Commands*
- For more information on `max concurrently recovered db` and `number of checkpoint tasks`, see *System Administration Guide > Backing up and Restoring User Databases*.

Permissions

The permission checks for `sp_configure` differ based on your granular permissions settings. Any user can display information about parameters and their current values.

Setting	Description
Enabled	With granular permissions enabled: • Only a user with `manage security configuration` privilege can execute `sp_configure` to modify values for parameters in `table <table number>`. • You must have the manage server configuration privilege to execute sp_configure to modify values for other configuration parameters.
Disabled	With granular permissions disabled: • Only user with sso_role can execute `sp_configure` to modify values for parameters in `table <table number>`. • You must have sa_role to execute `sp_configure` to modify values for other configuration parameters: ○ `allow procedure grouping` ○ `allow remote access` ○ `allow sendmsg` ○ `allow updates to system tables` ○ `audit queue size` ○ `auditing` ○ `automatic master key access` ○ `check password for digit` ○ `curread change w/ open cursors` ○ `current audit table` ○ `enable encrypted columns` ○ `enable granular permissions` ○ `enable ldap user auth` ○ `enable logins during recovery` ○ `enable pam user auth` ○ `enable predicated privileges` ○ `enable ssl` ○ `FIPS login password encryption` ○ `log audit logon failure`

Setting	Description
	○ `log audit logon success` ○ `maximum failed logins` ○ `minimum password length` ○ `msg confidentiality reqd` ○ `msg integrity reqd` ○ `net password encryption reqd` ○ `restricted decrypt permission` ○ `secure default login` ○ `select on syscomments.text` ○ `SQL Perfmon Integration` ○ `suspend auditing when device full` ○ `syb_sendmsg port number` ○ `systemwide password expiration` ○ `unified login required` ○ `use security services`

Auditing

You can enable the following auditing options to audit this procedure. Values in `event` and `extrainfo` columns from the `sysaudits` table are:

Information	Value
Audit option	`config_history`
Event	154
Command or access audited	`sp_configure`
Information in **`extrainfo`**	• **Roles** – Current active roles • **Keywords or options** – NULL • **Previous value** – NULL • **Current value** – NULL • **Other information** – Includes procedure name, parameter name, old value, new value, mode (static or active), and instance ID • **Proxy information** – Original login name, if `set proxy` in effect

Information	Value
Audit option	`security`
Event	82
Command or access audited	`sp_configure`

Information	Value
Information in **`extrainfo`**	• **Roles** – Current active roles • **Keywords or options** – Name of the configuration parameter • **Previous value** – Old parameter value if command is setting a new value • **Current value** – New parameter value if command is setting a new value • **Other information** – Number of configuration parameter, if a parameter is being set; name of configuration file, if a configuration file is being used to set parameters • **Proxy information** – Original login name, if `set proxy` in effect

Information	Value
Audit option	(Automatically audited event not controlled by an option)
Event	72
Command or access audited	`sp_configure "auditing", 1`
Information in **`extrainfo`**	• **Roles** – Current active roles • **Keywords or options** – NULL • **Keywords or options** – NULL • **Current value** – NULL • **Other information** – NULL • **Proxy information** – Original login name, if `set proxy` in effect

Information	Value
Audit option	(Automatically audited event not controlled by an option)
Event	73
Command or access audited	`sp_configure "auditing", 0`
Information in **`extrainfo`**	• **Roles** – Current active roles • **Keywords or options** – NULL • **Keywords or options** – NULL • **Current value** – NULL • **Other information** – NULL • **Proxy information** – Original login name, if `set proxy` in effect

Example of `extrainfo` for event 72 or 73:

```
sa_role sso_role oper_role sybase_ts_role mon_role; ; ; ; ; ; sa/ase;
```

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide > Auditing*.

Related Information

sp_dboption [page 228]
sp_displaylevel [page 268]
sp_helpconfig [page 424]
sp_monitorconfig [page 610]

1.59.1 Configuring Parallel Checkpoints

The `number of checkpoint tasks` parameter configures parallel checkpoints.

Parallel checkpoints depend on the layout of the databases and performance of underlying I/O sybsystems. Tune this parameter depending on the number of active databases and the ability of the I/O subsystem to handle writes.

This configuration parameter is dynamic. When the value for this parameter is reduced, checkpoint tasks drain out, and when the value is increased, additional tasks are created.

1.59.2 Configuring Degree of Parallelism During Database Recovery

The `max concurrently recovered db` parameter determines the degree of parallelism during database recovery:

When the SAP ASE server is not in recovery, this configuration parameter takes effect statically. However when the SAP ASE server is in recovery, a system administrator can force serial recovery dynamically.

The effectiveness of `max concurrently recovered db` depends on the database layout and the performance of underlying I/O subsystem.

1.59.3 Setting Configuration Parameters for Clusters Using sp_configure

Considerations for configuring clusters.

- If you do not specify a configuration option or instance name, the information displayed depends on the `system_view` setting.
- If you do not specify a configuration option but specify the instance name, the SAP ASE server displays all instance-specific configuration settings for the specified instance.
- If you specify the configuration option, but not the configuration value and instance name, the SAP ASE server displays the current settings for the specified option for all instances under the “cluster” view. If you specify the instance name, the SAP ASE server displays configuration information for the specified instance.

- If you specify the configuration option and value, but not the instance, the SAP ASE server configures the cluster-wide setting for the option. If, however, you specify the instance name, the SAP ASE server sets the configuration value only for the instance. The syntax is:

  ```
  sp_configure <configuration_name>, <config_value>, NULL, <instance_name>
  ```
- You cannot set configuration options from inside a local temporary database.
- If an instance already has instance-specific setting for a configuration parameter set, you can reconfigure this parameter for a cluster-wide setting.
- A user can reconfigure only those instances to which they are connected.

1.60 sp_copy_all_qplans

Copies all plans for one abstract plan group to another group.

Syntax

```
sp_copy_all_qplans <src_group>, <dest_group>
```

Parameters

<src_group>

is the name of the source abstract plan group.

<dest_group>

is the name of the abstract plan group to which the plans are to be copied.

Examples

Example 1

Copies all of the abstract plans in the dev_plans group to the ap_stdin group:

```
sp_copy_all_qplans dev_plans, ap_stdin
```

Usage

There are additional considerations when using sp_copy_all_qplans:

- The destination group must exist before you can copy plans into it. It may contain plans.
- sp_copy_all_qplans calls sp_copy_qplan for each plan in the source group. Each plan is copied as a separate transaction, so any problem that keeps sp_copy_all_qplans from completing does not affect the plans that have already been copied.
- sp_copy_qplan prints messages when it cannot copy a particular abstract plan. You also see these messages when running sp_copy_all_qplans.
- If the query text for a plan in the destination group exactly matches the query text in the source group and the user ID is the same, the plan is not copied, and a message giving the plan ID is sent to the user, but the copying process continues with the next plan in the source group.
- Copying a very large number of abstract plans can take considerable time, and also requires space on the system segment in the database and space to log the changes to the database. Use sp_spaceused to check the size of sysqueryplans, and sp_helpsegment for the system and logsegment to check the space available.

Permissions

The permission checks for sp_copy_all_qplans differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with manage abstract plans privilege. Any user can execute sp_copy_all_qplans to copy an abstract plan that they own.
Disabled	With granular permissions disabled, you must be the database owner or a user with sa_role. Any user can execute sp_copy_all_qplans to copy an abstract plan that they own.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_copy_qplan [page 214]
sp_help_qpgroup [page 410]

1.61 sp_copy_qplan

Copies one abstract plan to an abstract plan group.

Syntax

```
sp_copy_qplan <src_id>, <dest_group>
```

Parameters

<src_id>

is the ID of the abstract plan to copy.

<dest_group>

is the name of the destination abstract plan group.

Examples

Example 1

Copies the abstract plan with ID 2140534659 to the ap_stdin abstract plan group:

```
sp_copy_qplan 2140534659, ap_stdin
```

Usage

There are additional considerations when using `sp_copy_qplan`:

- The destination group must exist before you can copy an abstract plan into it. You do not need to specify a source group, since plans are uniquely identified by the plan ID.
- A new plan ID is generated when the plan is copied. The plan retains the ID of the user who created it, even if the system administrator or database owner copies the plan. To assign a different user ID, a system administrator or database owner can use `sp_export_qpgroup` and `sp_import_qpgroup`.
- If the query text for a plan in the destination group exactly matches the query text in the source group and the user ID, the plan is not copied, and a message giving the plan IDs is sent to the user.
- To copy all of the plans in an abstract plan group, use `sp_copy_all_qplans`.

Permissions

The permission checks for sp_copy_qplans differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with manage abstract plans privilege. Any user execute sp_copy_qplan to copy a plan that they own.
Disabled	With granular permissions disabled, you must be the database owner or a user with sa_role. Any user execute sp_copy_qplan to copy a plan that they own.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide > Auditing*.

Related Information

sp_copy_all_qplans [page 212]
sp_help_qpgroup [page 410]
sp_help_qplan [page 412]
sp_import_qpgroup [page 499]

1.62 sp_countmetadata

Displays the number of indexes, objects, or databases in the SAP ASE server.

Syntax

```
sp_countmetadata "<configname>"[, <dbname>]
```

Parameters

<configname>

is "number of open databases", "number of open objects", "number of open indexes", or "number of open partitions".

<dbname>

is the name of the database on which to run sp_countmetadata. If no database name is given, sp_countmetadata provides a total count for all databases.

Examples

Example 1

Reports on the number of user objects in the SAP ASE server. Use this value to set the number of objects allowed in the database, plus space for additional objects and temporary tables:

```
sp_configure "number of open objects", 310
```

```
sp_countmetadata "open objects"
```

```
There are 283 user objects in all database(s), requiring
117.180 Kbytes of memory. The 'open objects'
configuration parameter is currently set to a run value
of 500.
```

Example 2

Reports on the number of indexes in the SAP ASE server:

```
sp_countmetadata "open indexes", pubs2
```

```
There are 21 user indexes in pubs2 database(s),
requiring 8.613 kbytes of memory. The 'open indexes'
configuration parameter is currently set to 600.
```

Usage

There are additional considerations when using sp_countmetadata:

- sp_countmetadata displays the number of indexes, objects, databases, or partitions in the SAP ASE server, including the number of system databases such as model and tempdb.
- Avoid running sp_countmetadata during SAP ASE peak times. It can cause contention on the sysindexes, sysobjects, sysdatabases, and syspartitions system tables.
- You can run sp_countmetadata on a specified database if you want information on a particular database. However, when configuring caches for indexes, objects, databases, or partitions, run sp_countmetadata without the <database_name> option.

- The information on memory returned by sp_countmetadata can vary by platform. For example, a database on an SAP ASE server for Windows could have a different sp_countmetadata result than the same database on Sun Solaris. Information on the number of user indexes, objects, databases, or partitions should be consistent, however.
- sp_countmetadata does not include temporary tables in its calculation. Add 5 percent to the open objects value and 10 percent to the open indexes or open partitions value to accommodate temporary tables.
- If you specify a non-unique fragment of "open indexes", "open objects", "open databases", or "open partitions" for <configname>, sp_countmetadata returns a list of matching configuration parameter names with their configured values and current values. For example:

```
sp_countmetadata "open"
```

```
Configuration option is not unique.
 option_name                    config_value run_value
 ------------------------------ ------------ -----------
 curread change w/ open cursors           1            1
 number of open databases                12           12
 number of open indexes                 500          500
 number of open objects                 500          500
 open index hash spinlock ratio         100          100
 open index spinlock ratio              100          100
 open object spinlock ratio             100          100
```

Permissions

The permission checks for sp_countmetadata differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with manage server privilege.
Disabled	With granular permissions disabled, you must be a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_configure [page 203]

sp_helpconfig [page 424]

sp_monitorconfig [page 610]

1.63 sp_cursorinfo

Reports information about a specific cursor or all execute cursors that are active for your session.

Syntax

```
sp_cursorinfo [{<cursor_level> | null}][, <cursor_name>]
```

Parameters

<cursor_level> | null

is the level at which the SAP ASE server returns information for the cursors. You can specify the following for `<cursor_level>`:

- `<N>` – any cursors declared inside stored procedures at a specific procedure nesting level. You can specify any positive number for its level.
- `0` – any cursors declared outside stored procedures.
- `1` – any cursors from either of the above. You can substitute any negative number for this level.

For information about cursors with a specific `<cursor_name>` regardless of cursor level, specify `null` for this parameter.

<cursor_name>

is the specific name for the cursor. The SAP ASE server reports information about all active cursors that use this name at the `<cursor_level>` you specify. If you omit this parameter, the SAP ASE server reports information about all the cursors at that level.

Examples

Example 1

Displays the information about the cursor named `c` at level 0:

```
1> declare c cursor
2> for select au_id,au_lname, au_fname from authors
3> go
1> sp_cursorinfo
2> go
```

```
Cursor name 'c' is declared at nesting level '0'.
The cursor is declared as NON-SCROLLABLE cursor.
The cursor id is 917505.
The cursor has been successfully opened 0 times.
The cursor will remain open when a transaction is
committed or rolled back.
The number of rows returned for each FETCH is 1.
The cursor is updatable.
This cursor is using 5389 bytes of memory.
(return status = 0)
```

Example 2

Displays information on the cursor’s scrollability and sensitivity, in this case a semi-sensitive scrollable cursor `css`:

```
sp_cursorinfo 0, cursor_css
```

```
-------------
Cursor name 'css' is declared at nesting level '0'.
The cursor is declared as SEMI_SENSITIVE SCROLLABLE cursor.
The cursor id is 786434.
The cursor has been successfully opened 1 times.
The cursor was compiled at isolation level 1.
The cursor is currently scanning at a nonzero isolation level.
The cursor is positioned on a row.
There have been 1 rows read, 0 rows updated and 0 rows deleted through this
cursor.
The cursor will remain open when a transaction is committed or rolled back.
The number of rows returned for each FETCH is 1.
The cursor is read only.
This cursor is using 19892 bytes of memory.
There are 2 columns returned by this cursor.
The result columns are:
Name = 'c1', Table = 't1', Type = INT, Length = 4 (not updatable)
Name = 'c2', Table = 't1', Type = INT, Length = 4 (not updatable)
```

Usage

There are additional considerations when using `sp_cursorinfo`:

- If you do not specify either `<cursor_level>` or `<cursor_name>`, the SAP ASE server displays information about all active cursors. Active cursors are those declared by you and allocated by the SAP ASE server.
- The SAP ASE server reports the following information about each cursor:
  - The cursor name, its nesting level, its cursor ID, and the procedure name (if it is declared in a stored procedure).
  - The number of times the cursor has been opened.
  - The isolation level (0, 1, or 3) in which it was compiled and in which it is currently scanning (if open).
  - Whether the cursor is open or closed. If the cursor is open, it indicates the current cursor position and the number of rows fetched.
  - Whether the open cursor closes if the cursor’s current position is deleted.
  - Whether the cursor remains open or be closed if the cursor’s current transaction is committed or rolled back.
  - The number of rows returned for each fetch of that cursor.
  - Whether the cursor is updatable or read-only.
  - The number of columns returned by the cursor. For each column, it displays the column name, the table name or expression result, and whether it is updatable.

The output from sp_cursorinfo varies, depending on the status of the cursor. In addition to the information listed, sp_cursorinfo displays the showplan output for the cursor. For more information about showplan, see the *Performance and Tuning Guide*.

See also:

- declare cursor, set in *Reference Manual: Commands*

Permissions

Any user can execute sp_cursorinfo. Permission checks do not differ based on the granular permissions settings.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

1.64 sp_dbextend

Allows you to install automatic database expansion procedures on database/segment pairs and devices; define site-specific policies for individual segments and devices; and simulate execution of the database expansion machinery, to study the operation before engaging large volume loads.

These policies are stored in the sysattributes table in master database.

All arguments are string arguments:

Syntax

```
sp_dbextend 'help'[, <command>]
```

```
sp_dbextend [ ['set', ['threshold', <dbname>, <segmentname>, <freespace> |
    'database', <dbname>, <segmentname>{[[, <growby>][, <maxsize> ] ]} |
    'device', <devicename>{[[, <growby >][, <maxsize> ] ] }] |
    'clear', 'threshold', <dbname>, <segmentname>
```

```
sp_dbextend 'clear', 'database'[, <dbname>[, <segmentname>] ]
```

```
sp_dbextend 'clear', 'device'[, <devicename>]
sp_dbextend 'modify', 'database', <dbname>, <segmentname>,
    { 'growby' | 'maxsize' }, <newvalue>
```

```
sp_dbextend 'modify', 'device', <devicename>, { 'growby' | ' maxsize ' },
    <newvalue>
```

```
sp_dbextend { 'list' | 'listfull' }[, 'database'[, <dbname>[, <segmentname>
    [, <order_by_clause> ] ] ] ]
```

```
sp_dbextend { 'list' | 'listfull' }[, 'device'[, <devicename>[,
<order_by_clause>] ] ]
```

```
sp_dbextend { 'list' | 'listfull' }, [ 'threshold'[ , @<dbname>
    [ , @<segmentname> ] ] ]
```

```
sp_dbextend 'check', 'database'[, <dbname>[, <segmentname>] ]
```

```
sp_dbextend {'simulate' | 'execute'}, <dbname>, <segmentname>[, <iterations> ]
```

```
sp_dbextend 'trace', {'on' | 'off'}
```

```
sp_dbextend 'reload [defaults]'
```

```
sp_dbextend { 'enable' | 'disable' }, 'database'[, <dbname>[, <segmentname>] ]
```

```
sp_dbextend 'who'[, '<spid>' | 'block' | 'all' ]
```

Parameters

set

sets the threshold at which a database, segment, or device should fire. The arguments are:

- `'threshold', <dbname>, <segmentname>, <freespace>` – specifies the free space level at which to install the threshold on a specified database and segment.
  Specify `<freespace>` in size unit specifiers, such as megabytes. If you specify no size units, the value of `<freespace>` is treated as the number of kilobytes in the segment.
- `'database', <dbname>, <segmentname> {[ [, <growby> ] [, <maxsize> ] ]}` – specifies the name of the database/segment pair, the size by which to alter the database, and the maximum size of the database, at which the expansion process stops.
  - `<growby>` – is the rate, in unit specifiers or percentage values, at which the database grows at each expansion attempt.
  - `<maxsize>` – is the maximum size of the segment, after which no further expansion occurs. Both are optional parameters.

- 'device', <devicename> { [[, <growby >] [, <maxsize>]] }] – defines the growth rate and maximum size of a device, in unit specifiers or percentage values, at which the device can grow. <maxsize> in devices is subject to OS disk limitations.

clear

clears any previously set rules of expansion for a specified database and segment or for a specified device.

modify

modifies previously set site-specific policies, such as <growby> and <maxsize>, for a database and segment.

Use <newvalue> to specify the new value you set for automatic expansion.

list

lists briefly existing rules for a specified database, segment, device, or thresholds on specified segments, and presents the data from master.dbo.sysattributes in a readable format. Allows you to view rules on a per-database or per-device basis.

Presents the current rules in effect.

Use <order_by_clause> to generate listings in a different order from the default ordering of name, type.

Use threshold to display all the thresholds that are currently installed on the specified database (using the @dbname) and segment (using @segment name).

listfull

lists fully the site-specific policy rules, and includes a comment column in the sysattributes table that displays a datetime stamp for when the rule was set, and when it was last modified.

check

examines current policies and verifies that they are consistent with the current space layout in each segment. If any policy settings appear redundant, ineffective, or incorrect, a warning message appears.

simulate

simulates executing the database or device expansion schemes executed at runtime, according to the set of current policies implemented by the set command.

<iterations> specifies the number of times you simulate the expansion.

execute

performs the actual database/segment, or device, expansion, using the current set of policies.

reload [defaults]

reinitializes sysattributes with the system-supplied defaults for <growby> and <maxsize> in all databases, segments, and devices, and reverts the databases or devices to the original default behavior.

reload does not delete user-specified policies.

help

provides help information for all command parameters, such as `set` or `list`, or help information for any single command.

`trace`

traces the threshold procedure execution logic in all expansion processes.

`enable | disable`

enables or disables the automatic expansion procedures on a specified database segment or device.

`who`

shows any active expansion processes running currently. Use:

- '`<spid>`' restricts the output for a particular spid.
- `block` – shows tasks that currently cause blocking of the expansion process.
- `all` – shows all currently active tasks.

`<freespace>`

specifies the free space value at which the threshold procedure is installed on the specified segment. Always use size unit specifiers, such as megabytes, to specify `<freespace>`.

`<dbname>`

is the name of the database in which the threshold is being installed.

`<segmentname>`

is the segment contained in database `<dbname>`.

`<devicename>`

is the logical name of the affected device.

`<newvalue>`

specifies the new value you set for automatic expansion when you modify a policy for a database/segment pair or device.

`<order_by_clause>`

generates listings in a different order from the default ordering in the `<list>` command. The default order is name, type.

`<iterations>`

specifies the number of times an expansion is simulated or executed.

`<growby>`

specifies the rate, in unit specifiers or percentage values, at which a specified database segment or device grows each time the threshold procedures are attempted.

`<maxsize>`

is the maximum size of a segment/database pair or device, the size at which automatic expansion must stop.

`<maxsize>` is the maximum size of the segment at which the automatic expansion process stops, not the maximum size of the database.

You can set `<maxsize>` to a value larger than the total amount of disk space available on the device, but actual expansion is limited to the available disk space at the time expansion is attempted.

Examples

Set Thresholds

Installs the space expansion threshold on a log segment in the database pubs2 at 100 MB:

```
sp_dbextend 'set', 'thresh', pubs2, logsegment, '100m'
```

Set Database

Installs a policy for the logsegment segment, at a growth rate of 100 MB per expansion attempt:

```
sp_dbextend 'set', 'database', pubs2, logsegment, '100m'
```

Set Device

Expands this device until either the OS disk space limitation or the device size of 4 TB is reached:

```
sp_dbextend 'set', 'device', pubs2-datadev1, '100m'
```

Clear

Shows how to clear all space-expansion thresholds previously installed in pubs2, logsegment:

```
sp_dbextend 'clear', 'thresh', pubs2, logsegment
```

You can also the space-expansion threshold for segment dataseg1 in pubs2, installed at a free space of 200 MB:

```
sp_dbextend 'clear', 'thresh', pubs2, dataseg1, '200m'
```

Modify

Defines the rate of growth as 5% of current value, in each expansion attempt:

```
sp_dbextend 'modify', 'da', pubs2, logsegment, 'growby', '5%'
```

A command can fail when <maxsize> is not previously defined:

```
sp_dbextend 'modify', 'device', pubs2_log_dev, 'maxsize', '2.3g'
```

List

Lists briefly the rules for all databases and devices:

```
sp_dbextend 'list'
```

This lists rules for all databases with names similar to 'pubs%':

```
sp_dbextend 'list', 'database', 'pubs%'
```

Listfull

Lists the rules for all databases and devices, including a comment column showing a datetime stamp:

```
sp_dbextend 'listfull'
```

List Threshold

When issued from the `pubs2` database, this lists the thresholds setup on various segments in the `pubs2` database:

```
sp_dbextend 'list', 'threshold'
```

To examine the thresholds on a particular segment, use as:

```
sp_dbextend 'list', 'threshold', pubs2, 'logsegment'
```

Simulate

Simulates an expansion twice, without tripping the thresholds:

```
sp_dbextend 'simulate', pubs2, logsegment, '2'
```

Execute

Executes an automatic expansion procedure:

```
sp_dbextend 'execute', pubs2, logsegment
```

Help

Obtains help for a specific command:

```
sp_dbextend help, 'set'
```

Usage

There are additional considerations when using `sp_dbextend`:

- You can only set one automatic expansion threshold on any given database/segment pair. If you try to install another instance of the threshold procedure, even at a different free space value, an error is raised.
- You cannot set system-supplied defaults, only modify them. After you modify system defaults you can reset them by re-running the `installdbextend` script, or by using the `reload defaults` command.
- To disallow any automatic growth in a particular segment, either specify 0 for `<growby>` or `<maxsize>`, or do not install the threshold procedure at all. If you specify NULL for this parameter, defaults to the system-specified default `<growby>` rate is used.
- By default, if the size of the device is greater than 40MB, the size of the database is increased by 10 percent. If your database is smaller than 40 MB, the size of the database is increased by 4 MB. However, you can specify database resizing limits that match the needs of your site
- There is no system-specified maximum size for the `default` database. If no `<maxsize>` value is specified, the size of the database is limited only by the physical limitations of the database device.
- To turn off the automatic growth feature on a particular device, specify 0 for `<growby>` or `<maxsize>`. If you do not specify a value for `<growby>`, the default expansion rate is used.
- When you use this stored procedure to clear a threshold, `<dbname>` and `<segmentname>` are required arguments.
- When you use this stored procedure to clear a database, and provide no `<dbname>` and `<segmentname>`, all policy rules — that is, all the relevant rows in `master.dbo.sysattributes` — for the current database and all segments in it are deleted. This is a good way to reverse all settings to default and restart.

- When you use this stored procedure to clear a device, if you do not provide a value for <devicename>, no policy rules are cleared. You can clear out the policy rules for a single device by providing <devicename >or using "%" to clear policies for all devices.
- You can specify <dbname>, <devicename>, and <segmentname> using patterns, so that names with patterns that match the specified pattern are considered for the clear, enable, disable, and list operations.
- You must have set a value or property before you can modify it. modify fails if no value was previously set. <growby> and <maxsize> are modified to the new value specified by <newvalue>
- The new value specified in <newvalue> remains in effect throughout subsequent attempts to expand either the database or device. Even if <newvalue> is less than the current size of the database, segment, or device, the object does not shrink. <newvalue> specifies only future expansion, and does not affect current sizes.
- Provide <dbname> and <segmentname> to obtain policy rules for individual databases and for the segments inside them.
- When you use list for a database and provide no <dbname> or <segmentname>, all the policy rules (that is, rows in master.dbo.sysattributes) for all segments in the current database are listed.
- When you use list for a device name and provide no <devicename>, default policy rules for all devices are listed. You can filter this to list the policy rules for a single device by providing <devicename> or use pattern specifiers for the <devicename>.
- You can simulate the expansion of only one database/segment pair at a time. Both <dbname> and <segmentname> are required arguments. You cannot use wildcard patterns in <dbname> or <segmentname> for execute or simulate commands.
- The maximum size of a device is 4TB.
- Use <reload> to re-initialize your databases and devices after using modify and simulate. <reload> deletes any existing rows in master.dbo.sysattributes that describe system default behavior, and loads new rows.
- trace turns the trace facility on or off throughout the server. If trace is on, messages appear in the server error log when a threshold fires. Use trace only for troubleshooting.

See also alter database, create database, disk init, and disk resize in *Reference Manual: Commands*.

Permissions

If the automatic expansion procedures are installed on a segment by a database owner without sa_role privilege, the devices do not expand, because the user cannot run the disk resize command. A user with sa_role privilege should run the set threshold command when installing the threshold procedure.

The following permission checks for sp_dbextend differ based on your granular permissions settings

Setting	Description
Enabled	With granular permissions enabled, you must be:

Setting	Description
	• `sp_dbextend clear database` – a user with `own any database` privilege, or for the specified database, be the database owner or a user with `own database` privilege on the database. • `sp_dbextend clear device` – a user with `manage disk` privilege . • `sp_dbextend clear threshold` – the database owner or a user with `own database` privilege on the database. • `sp_dbextend execute` – the database owner or be a user with `own database` privilege on the specified database, and have `manage disk` privilege. • `sp_dbextend simulate` – the database owner or a user with `own database` privilege. • `sp_dbextend enable/disable` – a user with `own any database` privilege or the database owner or have the `own database` privilege on the specified database. • `sp_dbextend list database` – a user with `own any database` privilege when `%` pattern is specified. • `sp_dbextend list @ verbose=2` – a user with `own any database` privilege. • `sp_dbextend modify database` – the database owner or a user with `own database` privilege on the specified database or a user with `own any database` privilege for `sp_dbextend 'modify', 'database', 'default'`. • `sp_dbextend modify device` – the database owner or a user with `manage disk` privilege. • `sp_dbextend reload defaults` – a user with `own any database` privilege. • `sp_dbextend set database` – the database owner or a user with `own database` privilege on the specified database. • `sp_dbextend set device` – a user with `manage disk` privilege. • `sp_dbextend set threshold` – the database owner or a user with `own database` on the specified database and you must have the `manage disk` privilege. • `sp_dbextend trace` – a user with `set switch` privilege.
Disabled	With granular permissions disabled, you must be: • `sp_dbextend clear database` – the database owner or a user with sa_role. • `sp_dbextend clear device` – a user with sa_role. • `sp_dbextend clear threshold` – the database owner or a user with sa_role. • `sp_dbextend execute` – a user with sa_role. • `sp_dbextend simulate` – the database owner or a user with sa_role. • `sp_dbextend enable/disable` – the database owner or a user with sa_role. • `sp_dbextend list database` – a user with sa_role permission when `%` pattern is specified. • `sp_dbextend list @ verbose=2` – a user with sa_role. • `sp_dbextend modify database` – the database owner or a user with sa_role if `dbname` equals default. • `sp_dbextend modify device` – the database owner or a user with sa_role. • sp_dbextend reload defaults – the database owner or a user with sa_role. • `sp_dbextend set database` – the database owner or a user with sa_role. • `sp_dbextend set device` – the database owner or a user with sa_role. • `sp_dbextend set threshold` – the database owner or a user with sa_role.

Setting	Description
	• sp_dbextend trace – a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_dropthreshold [page 323]
sp_modifythreshold [page 597]

1.65 sp_dboption

Displays or changes database options, and enables the asynchronous log service feature.

Syntax

```
sp_dboption [<dbname>, <optname>, <optvalue>[, <dockpt>]]
```

Parameters

<dbname>

is the name of the database in which the option is to be set. You must be using master to execute sp_dboption with parameters (that is, to change a database option). You cannot, however, change option settings in the master database.

<optname>

is the name of the option to be set. The SAP ASE server understands any unique string that is part of the option name. Use quotes around the option name if it is a keyword or includes embedded blanks or punctuation.

You can turn on more than one database option at a time. You cannot change database options inside a user-defined transaction.

<optvalue>

is the value of the setting. `true` turns the option on, and `false` turns it off.

<dockpt>

specifies whether `sp_dboption` performs the `checkpoint` command on `<dbname>`. The default value is 1, which automatically performs `checkpoint`. You can run `checkpoint` on the `<dbname>` by manually executing the `checkpoint`.

Examples

Example 1

Displays list of database options:

```
sp_dboption
```

```
Settable database options
```

```
 database_options
 ------------------------
abort on low memory
abort tran on log full
allow incremental dumps
allow nulls by default
allow wide dol rows
async log service
auto identity
auto imrs partition tuning
dbo use only
ddl in tran
deallocate first text page
deferred table allocation
delayed commit
enforce dump tran sequence
erase residual data
full logging for all
full logging for alter table
full logging for reorg rebuild
full logging for select into
identity in nonunique index
no chkpt on recovery
no free space acctg
read only
scratch database
select into/bulkcopy/pllsort
single user
trunc log on chkpt
trunc. log on chkpt.
unique auto_identity index
```

Example 2

Makes database `pubs2` read-only:

```
1> use pubs2
2> go
```

```
1> master..sp_dboption pubs2, "read", true
2> go
```

```
Database option 'read only' turned ON for database 'pubs2'.
Running CHECKPOINT on database 'pubs2' for option 'read only' to take effect.
(return status = 0)
```

The `read` string uniquely identifies the `read only` option from among all available database options. Note the use of quotes around the keyword `read`.

Example 3

Makes the database `pubs2` writable again, but by specifying 0 for the `<dockpt>` option, you see `Run the CHECKPOINT command in the database that was changed`:

```
1> use pubs2
2> go
1> master..sp_dboption pubs2, "read", false, 0
2> go
```

```
Database option 'read only' turned OFF for database 'pubs2'.
Run the CHECKPOINT command in the database that was changed.
(return status = 0)
```

To manually perform a checkpoint on `pubs2`, enter:

```
1> checkpoint
2> go
```

Example 4

Allows `select into`, `bcp`, parallel sort operations on tables in `pubs2`. The `select into` string uniquely identifies the `select into/bulkcopy` option from among all available database options:

```
use pubs2
go
master..sp_dboption pubs2, "select into", true
go
```

> **Note**
>
> Quotes are required around the option because of the embedded space.

Example 5

Automatically defines 10-digit IDENTITY in new tables created in `mydb`. The IDENTITY column, `SYB_IDENTITY_COL`, is defined in each new table that is created without specifying either a primary key, a `unique` constraint, or an IDENTITY column:

```
use mydb
go
master..sp_dboption mydb, "auto identity", true
go
```

Example 6

Automatically includes an IDENTITY column in the index keys of `mydb` tables, provided these tables already have an IDENTITY column. All indexes created on the tables are internally unique:

```
use master
```

```
go
sp_dboption mydb, "identity in nonunique index", true
go
use mydb
go
```

Example 7

Automatically includes IDENTITY With unique, nonclustered index for new tables in `pubs2`:

```
use master
go
sp_dboption pubs2, "unique auto_identity index", true
go
use pubs2
go
```

Example 8

Sets asynchronous log service (ALS) in a specified database, enabling the user log cache and the log writer threads.

```
sp_dboption "mydb", "async log service", true
use mydb
```

Example 9

Disables ALS in a specified database:

```
sp_dboption "mydb", "async log service", false
use mydb
```

Example 10

Enforces a dump transaction sequence for `big_db`:

```
sp_dboption 'big_db', 'enforce dump tran sequence',
true
```

Example 11

Enables full logging for `select into` and `alter table` in `mydb`:

- The `create database` command creates `mydb`:

  ```
  create database mydb on datadev=20 log on logdev=10
  go
  ```

  ```
  CREATE DATABASE: allocating 10240 logical pages (20.0 megabytes) on disk
  'datadev' (10240 logical pages requested).
  CREATE DATABASE: allocating 5120 logical pages (10.0 megabytes) on disk
  'logdev' (5120 logical pages requested).
  Database 'mydb' is now online.
  ```

- Turns on the full-logging option for `select into` in `mydb`:

  ```
  sp_dboption "mydb", "full logging for select into", "true"
  go
  ```

  ```
  Database option 'full logging for select into' turned ON for database
  'mydb'.
  Running CHECKPOINT on database 'mydb' for option 'full logging for select
  into' to take effect.
  ```

```
(return status = 0)
```

- Turns on the full-logging option for `alter table` in `mydb`:

  ```
  sp_dboption "mydb", "full logging for alter table", "true"
  go
  ```

  ```
  Database option 'full logging for alter table' turned ON for database
  'mydb'.
  Running CHECKPOINT on database 'mydb' for option 'full logging for alter
  table' to take effect.
  (return status = 0)
  ```

- Running `sp_helpdb` shows the settings for `mydb`:

  ```
  sp_helpdb mydb
  go
  ```

  ```
   name db_size owner dbid created      durability status
   ---- ------- ----- ---- ------------ --------- -----------------------
   mydb 30.0 MB  sa      5 Dec 16, 2010 full       full logging for select
                                                   into/alter table
  (1 row affected)
   device_fragments size    usage      created              free kbytes
  ----------------- ------- ---------- ------------------- --------------
   datadev          20.0 MB data only  Dec 16 2010 6:08PM  18696
   logdev           10.0 MB log only   Dec 16 2010 6:08PM  not applicable
  --------------------------------------------------------------
  log only free kbytes = 10184
  (return status = 0)
  1>
  ```

Example 12

Enables back-up and restoration of cumulative dumps:

```
sp_dboption mydb, "allow incremental dumps", true
```

Example 13

Enables deferred table creation for `pubs2`:

```
sp_dboption pubs2, "deferred table allocation", true
```

Example 14

The syntax to enable the removal of residual data at the database level for these two examples is:

```
sp_dboption <dbname>, "erase residual data", true
```

The first example use these two tables:

- **`create table t1 (col1 int) with erase residual data on`**
- **`create table t2 (col1 int) with erase residual data off`**

> **i Note**
>
> The `sp_dboption` procedure requires quote marks for `“erase residual data”`, but `create table … with erase residual data on | off` does not use quotes. Using quote marks in `create table` causes a syntax error.

The option to erase residual data is turned on for table `t1` because it is set at the database level, so that both the `drop table` and `truncate table` commands for `t1` result in the cleanup of all residual data from its pages.

Table `t2`, however, has the `erase residual data` option turned off explicitly, as it was created with the `erase residual data off` clause. Residual data is not removed, even though the "`erase residual data`" option is set to `true` at the database level. As a result, residual data remains, even after running `drop table` and `truncate table` on `t2`:

```
create database db1
go
sp_dboption db1, "erase residual data", true
go
use db1
go
create table t1 (col int)
go
insert t1 values ...
go
create table t2 (col1 int, col2 char(10)) with erase residual data off
go
truncate table t1
go
drop table t1
go
truncate table t2
go
drop table t2
go
```

The second example uses the following:

```
create database db1
go
use db1
go
create table t1 (col int)
go
sp_dboption db1, "erase residual data", true
go
create table t2 (col1 int, col2 char(10))
go
create table t3 (col1 int, col2 char(10)) with erase residual data off
go
truncate table t1
go
truncate table t2
go
truncate table t3
go
```

- Table `t1` does not have `erase residual data off` set explicitly, but does have it set at the database level, resulting in the removal of residual data from `t1` when you run `truncate table t1`.
- Table `t2` is set to erase residual data because the option was set at the database level. This results in the removal of residual data from `t2` when you run `truncate table t2`.
- Table `t3` is marked with `erase residual data off` explicitly, so that even though `sp_dboption` sets "`erase residual data`" to true, residual data is not removed when SAP ASE runs `truncate table t3`.

Example 15

Deallocate the first text page after a NULL update:

```
sp_dboption mydb, "deallocate first text page", true
```

Example 16

Configure automatically disabling and re-enabling IMRS usage for an IMRS-enabled table.

```
sp_dboption mydb, "auto imrs partition tuning", true
```

Usage

- When you enable the `"erase residual data"` setting at the database level, any operation that results in deallocation is followed by the cleaning of its pages. By default, this option is disabled
- You cannot change `master` database option settings.
- If you enter an ambiguous value for `<optname>`, an error message appears. For example, two of the database options are `dbo use only` and `read only`. Using "only" for the `<optname>` parameter generates a message because it matches both names. The complete names that match the string supplied are printed out so that you can see how to make the `<optname>` more specific.
- To display a list of database options, execute `sp_dboption` with no parameters from inside the `master` database.
- For a report on which database options are set in a particular database, execute `sp_helpdb`.
- The `no chkpt on recovery` option disables the `trunc log on chkpt` option when both are set with `sp_dboption` for the same database. This conflict is especially possible in the `tempdb` database which has `trunc log on chkpt` set to `on` as the default.
- The database owner or system administrator can set or unset particular database options for all new databases by executing `sp_dboption` on `model`.
- After `sp_dboption` has been executed, the change does not take effect until the `checkpoint` command is issued in the database for which the option was changed.

See also:

- `alter table`, `checkpoint`, `create default`, `create index`, `create procedure`, `create rule`, `create schema`, `create table`, `create trigger`, `create view`, `drop default`, `drop index`, `drop procedure`, `drop rule`, `drop table`, `drop trigger`, `drop view`, `grant`, `revoke`, `select` in *Reference Manual: Commands*
- See the *System Administration Guide* for more information on database options.
- `bcp` in the *Utility Guide*
- Using `sp_dboption` on IMRS-enabled tables:
  - Occasionally, an IMRS-enabled table may consume a large amount of row storage cache without improving the performance. When `auto imrs partition tuning` is enabled, the server internally monitors the transaction workload accesses to the data and disables row storage usage for them. However, the disabled row storage usage may later improve by using row storage. The server monitors these cases and may re-enable the row storage usage if it finds that the performance for the workload improves by storing data in row storage.
    For example, a table that rarely updates may initially load data in row storage. However, since the table is seldom updated, doing so may not improve performance, but may waste row storage cache for the

partition. When auto imrs partition tuning is enabled, the server disables row storage use for these updates on the partition.

- Use sp_imrs or the monIMRSPartitionActivity monitoring table to see when the server decides to disable IMRS usage. For example:

```
sp_imrs 'show', 'effectiveness', 'imrscache'
CacheName DBName     ObjectName  PartitionName       DisabledRowTypes
--------- ---------  ---------   ------------------  ------------------
imrscache      mydb          t1                  p1            Migrated
```

- You cannot use auto imrs partition tuning on snapshot isolation-enabled tables, which continue to use row storage regardless of their workload access, providing the snapshot isolation required to create versions in row storage for all the DMLs issued against these tables.
- Once auto imrs partition tuning is disabled, the server does not make any new internal decisions to disable or re-enable row storage for different operations on the partitions in the database. However, any decisions made before disabling auto imrs partition tuning are applied to determine if rows storage is used for an operation on the partition.

Permissions

The permission checks for sp_dboption differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be the database owner or a user with own database privilege on the database. Any user can display database options.
Disabled	With granular permissions disabled, you must be the database owner or a user with sa_role. Any user can display database options. A user aliased to the database owner cannot execute sp_dboption to change database options.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_configure [page 203]
sp_helpdb [page 438]
sp_helpindex [page 454]

sp_helpjoins [page 460]

1.65.1 Full Logging and sp_dboption

By default, `select into`, certain types of `alter table`, and `reorg rebuild` are run in minimally logged mode. Before executing these commands, first set the `select into/bulk copy` database option to `true` to allow the SAP ASE server to break the dump sequence—that is, to perform operations that prevent the ability to use `dump transaction`.

When you use the `full logging for [select into | alter table | reorg rebuild | all]` parameters, the command is run with full logging. Any previously set value of `select into/bulk copy` becomes irrelevant for any of the now-fully logged commands.

Full logging for fast `bcp` and parallel sort is not supported, and cannot take place unless you set `select into/bulk copy` to true.

Once the operation is set to run with full logging, you can run `dump transaction/load transaction` and recovery for these operations, just like any other fully logged operation.

The syntax to fully log commands that are, by default, minimally logged is:

```
sp_dboption <dbname>, "full logging for
    [select into | alter table | reorg rebuild | all]",
    true | false
```

where:

- `full logging for select into` – in order to have a `select into proxy table` fully logged, set the "`full logging for select into`" option to true on the remote server that hosts the actual table. If you set the `full logging for select into` option to false on the server that hosts the actual table, the command is then executed with minimal logging in that database and the dump transaction sequence breaks.
- `pll create index` – enables full logging when a parallel sort is done. Parallel sorting is required when you create a clustered index on a round-robin-partitioned table
- `full logging for alter table` – enables full logging for these versions of `alter table` that require data movement:
    - `alter table add <column> not null`
    - `alter table drop <column> not null`
    - `alter table modify <datatype> of not null <column>`
    - `alter table partition`

  Other variants of `alter table` are already executed in fully logged mode.

  > **i Note**
  >
  > Changing the locking scheme between an allpages-locked table and a datapages-locked/data rows-locked table by `alter table lock` requires data movement, however, this behavior is not supported by `full logging for alter table`.

- `full logging for reorg rebuild` – involves table data movement. This has no impact on the `reorg rebuild` index command, which is already fully logged. This parameter enables `full logging for` `reorg rebuild` table statements. When you do not set this option (or set this option to false), the SAP ASE server executes the `reorg rebuild` table command with minimal logging.

- `full logging for all` – enables all the above full logging options. Setting `all` to false disables all the full logging options.

> i Note
>
> The syntax requires that you specify what you want to fully log; "`full logging`" by itself is not a valid option.

When you use any of the `full logging for` option, the command is run with full logging. Any previously set value of `select into/bulk copy/pllsort` becomes irrelevant for any of the now-fully logged commands. Full logging for fast `bcp` and parallel sort is not supported and cannot take place unless you set `select into/bulk copy/pllsort` to true.

Once the operation is set to run with full logging, you can run `dump transaction/load transaction` and recovery for these operations, just like any other fully logged operation.

The `dboption` is "`full logging for all`" and not just "`full logging`" on its own.

> i Note
>
> The execution of a fully logged `select into`, `alter table`, or `reorg rebuild` command may require a significant amount of log space to accommodate the transaction log.

1.65.2 Shrinking the Log

Issuing `select into`, `alter table`, and `reorg rebuild` when full logging is enabled can greatly increase the demand for log space, particularly for large tables. You may need to increase the size of the log. Once you have completed the command, you may remove the extra log space using the `alter database log off` command.

See `alter database` and *System Administration Guide Volume I > Shrinking Log Space*.

You cannot set full logging for `select into`, `alter database`, or `reorg rebuild` for:

- The `master` database
- In-memory databases

You can change the settings of:

- Any database that has mixed log and data segments, but the option is ignored until such time as the database is altered to no longer have mixed log and data segments.
- A database that does not have a durability level of full, but the option is ignored until the database is altered to have full durability.

These restrictions apply because none of the databases allow you to execute a `dump transaction` command. The use of fully recoverable DDLs enables `dump transaction`.

1.65.3 Allowing Wide Rows Using sp_dboption

allow wide dol rows configures databases to allow wide, variable-length, data-only locked (DOL) rows.

- You must enable allow wide dol rows separately for each database.
- You can set the allow wide dol rows database option in user databases only. You cannot set the allow wide dol rows database option for the master database.
- Enabling allow wide dol rows in an the SAP ASE server configured with page size of 8K or less has no effect.
- Disabling allow wide dol rows prevents SAP ASE from creating wide, variable-length DOL rows; it does not prevent you from selecting data that includes such rows. However, until you enable allow wide dol rows, you cannot change rows that contain wide data, unless the change produces rows that no longer contain wide data.
- Temporary databases cannot use wide DOL worktables until you enable their allow wide dol rows setting. If you use tempdb groups, enable allow wide dol rows either for all databases in the group or for none of them, so worktable and query processing behavior is consistent across the group, regardless of the tempdb to which a particular user session is bound.

1.65.4 Asynchronous Log Service (ALS) Options

Enabling async log service (ALS) allows for greater scalability in the SAP ASE server, providing higher throughput in logging subsystems for high-end symmetric multiprocessor systems.

- The ALS option is disabled by default.
- You cannot enable the ALS option in system databases, such as master or model.
- The ALS option is persistent; once you enable ALS on a specified database, you can dump and reload the database without disabling ALS. To disable this feature, you must use sp_dboption to set the parameter to false.

1.65.5 Using enforce dump tran sequence

enforce dump tran sequence prevents operations that disallow a subsequent dump transaction.

- false – (the default) does not affect operations that interfere with dump transactions.
- true – disallows operations that prevent a dump transaction.

You can set this option to true, only if the database:

- Is a dedicated log database.
- Is not an archive database.
- Is not a local or global temporary database.
- Is not read-only.
- Was not brought online for standby access.
- Has full durability. Databases with at_shutdown and no_recovery durability are not allowed.

- Has select into/bulk copy/pllsort or trunc log on chkpt set to false. If any of these options are true, they automatically reset to false.
- Does not need a dump database due to one of the following reasons. Perform a dump database before setting this database option to true.
    - A partially logged update has been done, for example, select into, alter table modify, reorg rebuild, fast bcp, and writetext.
    - The transaction log was truncated.
    - It is a newly created or upgraded database.

  If the database option enforce dump tran sequence is true, you cannot:
    - Set select into/bulk copy/pllsort to true. Commands with partial logging are not allowed.
    - Set trunc log on chkpt to true. The log cannot be truncated by the checkpoint process.
    - Execute dump tran with truncate_only or dump tran with no_log. The log cannot be truncated without dumping it to an archive device.
    - Mark the database as read-only.
    - Change durability from full to at_shutdown or no_recovery.
    - Change to be a mixed-log-and-data database. In cases like load database and dbcc findstranded where the database may be changed to mixed log and data.

1.65.6 Database Options and sp_dboption

There are additional considerations when using the database options of sp_dboption.

- The abort tran on log full option determines the fate of a transaction that is running when the last-chance threshold is crossed in the log segment of the specified database. The default value is false, meaning that the transaction is suspended and is awakened only when space has been freed. If you change the setting to true, all user queries that need to write to the transaction log are killed until space in the log has been freed.
- Setting the allow nulls by default option to true changes the default value of a column from not null to null, in compliance with the SQL standards. The Transact-SQL default value for a column is not null, meaning that null values are not allowed in a column unless null is specified in the create table or alter table column definition. allow nulls by default true reverses this.
  You cannot use allow nulls by default to change the nullibility of a column during select into statements. Instead, use convert to specify the nullibility of the resulting columns.
- While the auto identity option is set to true (on), a 10-digit IDENTITY column is defined in each new table that is created without specifying either a primary key, a unique constraint, or an IDENTITY column. The column is not visible when you select all columns with the select * statement. To retrieve it, you must explicitly mention the column name, SYB_IDENTITY_COL, in the select list.
  To set the precision of the automatic IDENTITY column, use the size of auto identity column configuration parameter.
  Though you can set auto identity to true in tempdb, it is not recognized or used, and temporary tables created there do not automatically include an IDENTITY column.
  For a report on indexes in a particular table that includes the IDENTITY column, execute sp_helpindex.
- While the dbo use only option is set to true (on), only the database's owner can use the database.
- When the ddl in tran option is set to true (on), you can use certain data definition language commands in transactions. If ddl in tran is true in a particular database, commands such as create

table, grant, and alter table are allowed inside transactions in that database. If ddl in tran is true in the model database, the commands are allowed inside transactions in all databases created after ddl in tran was set in model.

> ⚠ Caution
>
> Data definition language (DDL) commands hold locks on system tables such as sysobjects. Avoid using them inside transactions; if you must use them, keep the transactions short.
>
> Using any DDL commands on tempdb within transactions may cause your system to grind to a halt. Always leave ddl in tran set to false in tempdb.

- You can use these commands inside a user-defined transaction when the ddl in tran option is set to true:
  - alter table – clauses other than partition and unpartition are allowed
  - create default
  - create index
  - create procedure
  - create rule
  - create schema
  - create table
  - create trigger
  - create view
  - drop default
  - drop index
  - drop procedure
  - drop rule
  - drop table
  - drop trigger
  - drop view
  - grant
  - revoke
- You can never use these commands inside a user-defined transaction:
  - alter table
  - alter table...lock
  - alter table...partition
  - alter table...unpartition
  - create database
  - disk init
  - dump database
  - dump transaction
  - drop database
  - load database
  - load transaction
  - select into
  - truncate table

  - update statistics

  In addition, system procedures that create temporary tables or change the master database cannot be used inside user-defined transactions.
- You may enable deferred table allocation for the model database, but not for any other system databases, including master, sybsystemprocs, sybsystemdb, or for any temporary databases.
- identity in nonunique index automatically includes an IDENTITY column in a table's index keys, so that all indexes created on the table are unique. This database option makes logically nonunique indexes internally unique, and allows these indexes to be used to process updatable cursors and isolation level 0 reads.

  The table must already have an IDENTITY column for the identity in nonunique index option to work, either from a create table statement or by setting the auto identity database option to true before creating the table.

  Use identity in nonunique index if you plan to use cursors and isolation level 0 reads on tables with nonunique indexes. A unique index ensures that the cursor is positioned at the correct row the next time a fetch is performed on that cursor. If you plan to use cursors on tables with unique indexes and any isolation level, you may want to use the unique auto_identity index option.

  Do not confuse the identity in nonunique index option with unique auto_identity index, which is used to add an IDENTITY column with a unique, nonclustered index to new tables.

  For a report on indexes in a particular table that includes the IDENTITY column, execute sp_helpindex.
- no free space acctg suppresses free-space accounting and execution of threshold actions for data segments. Setting no free space acctg to true speeds recovery time because speeds recovery time because the free-space counts are not recomputed for data segments.
- When the no chkpt on recovery option is enabled, SAP ASE does not issue a checkpoint after performing recovery on an online database, and, as a side effect, prevents the truncate log on chkpt option from working. Prior to the concept of offline databases and the online database command introduced in version 11.0, the no chkpt on recovery option was used to facilitate loading transaction log dumps. Because SAP ASE no longer checkpoints offline databases, this option is no longer needed, but still exists for backward compatibility.
- The read only option means that users can retrieve data from the database, but cannot modify any data.
- select into/bulkcopy/pllsort must be set to on to perform operations that do not keep a complete record of the transaction in the log, which include:
  - Using the writetext utility.
  - Doing a select into a permanent table.
  - Doing a “fast” bulk copy with bcp. By default, fast bcp is used on tables that do not have indexes.
  - Performing a parallel sort.

  A transaction log dump cannot recover these minimally logged operations, so dump transaction to a dump device is prohibited. However, you can still use dump transaction...with no_log and dump transaction...with truncate_onlyAfter non-logged operations are completed, set select into/bulk copy/pllsort to false (off) and issue dump database.

  Issuing the dump transaction statement after unlogged changes have been made to the database with select into, bulk copy, or parallel sort produces an error message instructing you to use dump database instead. The writetext command does not have this protection.

  You do not have to set the select into/bulkcopy/pllsort option to true in order to select into a temporary table, since tempdb is never recovered. The option need not be set to true in order to run bcp on a table that has indexes, because tables with indexes are always copied with the slower version of bulk copy and are logged.

Setting `select into/bulkcopy/pllsort` does not block log dumping, but making minimally logged changes to data does block the use of a regular `dump transaction`.
By default, `select into/bulkcopy/pllsort` is turned off in newly created databases. To change the default, turn this option on in the `model` database.

- When `single user` is set to `true`, only one user at a time can access the database (single-user mode). You cannot set `single user` to `true` in a user database from within a stored procedure or while users have the database open. You cannot set `single user` to `true` for `tempdb`.
- The `trunc log on chkpt` option means that if the transaction log has more than 50 rows of committed transactions, the transaction log is truncated (the committed transactions are removed) every time the `checkpoint` checking process occurs (usually more than once per minute). When the database owner runs `checkpoint` manually, however, the log is **not** truncated. It may be useful to turn this option on while doing development work, to prevent the log from growing.
  While the `trunc log on chkpt` option is on, `dump transaction` to a dump device is prohibited, since dumps from the truncated transaction log cannot be used to recover from a media failure. Issuing the `dump transaction` statement produces an error message instructing you to use `dump database` instead.
  `trunc log on chkpt` is off in newly created databases. To change the default, turn this option on in the `model` database.

  > ⚠ Caution
  >
  > If you set `trunc log on chkpt` on in `model`, and you need to load a set of database and transaction logs into a newly created database, be sure to turn the option off in the new database.

- The `delayed commit` option is disabled by default. When this is enabled, all local transactions use delayed commits. That is, at the time of commit, control returns to the client without waiting for the I/O on the log pages to complete, and the I/O is not issued on the last log buffer for delayed commit transactions. Delayed commits are not used when both `delayed commit` and ALS options are enabled for a database.
- When the `unique auto_identity index` option is set to `true`, it adds an IDENTITY column with a unique, nonclustered index to new tables. By default, the IDENTITY column is a 10-digit numeric datatype, but you can change this default with the `size of auto identity column` configuration parameter. As with `auto identity`, the IDENTITY column is not visible when you select all columns with the `select *` statement. To retrieve it, you must explicitly mention the column name, `SYB_IDENTITY_COL`, in the select list.
  If you need to use cursors or isolation level 0 reads with nonunique indexes, use the `identity in nonunique index` option.
  Though you can set `unique auto_identity index` to `true` in `tempdb`, it is not recognized or used, and temporary tables created there do not automatically include an IDENTITY column with a unique index.
  The `unique auto_identity index` option provides a mechanism for creating tables that have an automatic IDENTITY column with a unique index that can be used with updatable cursors. The unique index on the table ensures that the cursor is positioned at the correct row after a `fetch`. (If you are using isolation level 0 reads and need to make logically nonunique indexes internally unique so that they can process updatable cursors, use the `identity in nonunique index` option.)
  In some cases, the `unique auto_identity index` option can avoid the Halloween problem for the following reasons:
  - Users cannot update an IDENTITY column; hence, it cannot be used in the cursor update.
  - The IDENTITY column is automatically created with a unique, nonclustered index so that it can be used for the updatable cursor scan.

For more information about the Halloween problem, IDENTITY columns, and cursors, see *Transact-SQL Users Guide > Cursors: Accessing Data* and *Performance and Tuning Series: Query Processing and Abstract Plans > Optimization for Cursors*.
Do not confuse the `unique auto_identity index` option with the `identity in nonunique index` option, which is used to make all indexes in a table unique by including an IDENTITY column in the table's index keys.

1.65.7 Considerations for In-Memory Row Storage

Setting the `sp_dboption ... abort on low memory` option allows you to avoid loosing transactions.

Set `sp_dboption ... abort on low memory` to:

- `true` – the statement or transaction is rolled back after the server fails to find free memory for a request.
- `false` – after all attempts to acquire memory fail, the task is suspended, but the statement is not aborted. Once memory is made available to the system, any sleeping tasks are woken up and executed. There are no loss of transactions with this setting.

The default value is set to:

- `true` – for regular, non-in-memory row storage databases, and for in-memory row storage-enabled databases that contain only data-row cached-enabled tables.
- `false` – the database contains any snapshot isolation-enabled tables (that is, rollback are avoided, but tasks are suspended).
  Creating an snapshot isolation-enabled table in a database automatically changes `abort on low memory` to false. However, dropping the last snapshot isolation-enabled table from a database does not change a false `abort on low memory` value to true. You must manually change the option.

1.66 sp_dbrecovery_order

Specifies the order in which user databases are recovered and lists the user-defined recovery order of a database or all databases.

Syntax

```
sp_dbrecovery_order [<database_name>[, <rec_order>[, force[, relax | strict ]]]]
```

Parameters

`<database_name>`

is the name of the database being assigned a recovery order or the database with a user-defined recovery order that is to be listed.

<rec_order>

is the order in which the database is to be recovered. A <rec_order> of -1 deletes a specified database from the user-defined recovery sequence.

force

allows the user to insert a database into an existing recovery sequence without putting it at the end.

relax

specifies that the databases are made as they recover (default).

The default is relax, which means that databases are brought online immediately when recovery has completed.

strict

specifies that the databases are specified by the recovery order.

Examples

Example 1

Makes the pubs2 database the first user database to be recovered following a system failure:

```
sp_dbrecovery_order pubs2, 1
```

Example 2

Inserts the pubs3 database into third position in a user-defined recovery sequence. If another database was initially in third position, it is moved to fourth position, and all databases following it are moved accordingly:

```
sp_dbrecovery_order pubs3, 3, force
```

Example 3

Removes the pubs2 database from the user-defined recovery sequence. Subsequently, pubs2 is recovered after all databases with a user-specified recovery order have recovered:

```
sp_dbrecovery_order pubs2, -1
```

Example 4

Lists the current recovery order of all databases with a recovery order assigned through sp_dbrecovery_order:

```
sp_dbrecovery_order
```

Usage

There are additional considerations when using `sp_dbrecovery_order`:

- You must be in the `master` database to use `sp_dbrecovery_order` to enter or modify a user-specified recovery order. You can list the user-defined recovery order of databases from any database.
- To change the user-defined recovery position of a database, use `sp_dbrecovery_order` to delete the database from the recovery sequence, then use `sp_dbrecovery_order` to insert it into a new position.
- System databases are always recovered before user databases. The system databases and their recovery order are:
  1. `master`
  2. `model`
  3. `tempdb`
  4. `sybsystemdb`
  5. `sybsecurity`
  6. `sybsystemprocs`
- If no database is assigned a recovery order through `sp_dbrecovery_order`, all user databases are recovered in order, by database ID, after system databases.
- If `<database_name>`:
  - Is specified but no `<rec_order>` is given – `sp_dbrecovery_order` shows the user-defined recovery position of the specified database.
  - Is not specified – `sp_dbrecovery_order` lists the recovery order of all databases with a user-assigned recovery order.
- The order of recovery assigned through `sp_dbrecovery_order` must be consecutive, starting with 1 and containing no gaps between values. The first database assigned a recovery order must be assigned a `<rec_order>` of 1. If three databases have been assigned a recovery order of 1, 2, and 3, you cannot assign the next database a recovery order of 5.

Permissions

The permission checks for `sp_dbrecovery_order` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `manage server` privilege.
Disabled	With granular permissions disabled, you must be a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide > Auditing*.

1.67 sp_dbremap

Forces the SAP ASE server to recognize changes made by `alter database`. Run this procedure only when instructed to do so by an SAP ASE message.

Syntax

```
sp_dbremap <dbname>
```

Parameters

`<dbname>`

is the name of the database in which the `alter database` command was interrupted.

Examples

Example 1

An `alter database` command changed the database `sample_db`. This command makes the changes visible to the SAP ASE server:

```
sp_dbremap sample_db
```

Usage

There are additional considerations when using `sp_dbremap`:

- If an `alter database` statement issued on a database that is in the process of being dumped is interrupted, the SAP ASE server prints a message instructing the user to execute `sp_dbremap`.
- Any changes to `sysusages` during a database or transaction dump are not copied into active memory until the dump completes, to ensure that database mapping does not change during the dump. Running `alter database` makes changes to system tables on the disk immediately. In-memory allocations cannot be changed until a dump completes. This is why `alter database` pauses.
  When you execute `sp_dbremap`, it must wait until the dump process completes.
- If you are instructed to run `sp_dbremap`, but do not do it, the space you have allocated with `alter database` does not become available to the SAP ASE server until the next restart.

See also `alter database`, `dump database`, `dump transaction` in *Reference Manual: Commands*

Permissions

The permission checks for `sp_dbremap` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be the database owner or a user with `own database` privilege on the database.
Disabled	With granular permissions disabled, you must be the database owner or a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

1.68 sp_defaultloc

(Component Integration Services only) Defines a default storage location for objects in a local database.

Syntax

```
sp_defaultloc <dbname>, <defaultloc>, <defaulttype>
```

Parameters

`<dbname>`

is the name of a database being mapped to a remote storage location. The database must already have been defined by a `create database` statement. You cannot map system databases to a remote location.

`<defaultloc>`

is the remote storage location to which the database is being mapped. To direct the server to delete an existing default mapping for a database, supply NULL for this parameter. The value of `<defaultloc>` must end in a period (`.`), as follows:

```
<server>.<dbname>.<owner>.
```

`<defaulttype>`

is one of the values that specify the format of the object named by `<object_loc>`.The valid values are as follows. Enclose the `<defaulttype>` value in quotes:

- `table` – indicates that the object named by `<object_loc>` is a table accessible to a remote server. This value is the default for `<defaulttype>`.
- `view` – indicates that the object named by `<object_loc>` is a view managed by a remote server, processed as a table.
- `rpc` – indicates that the object named by `<object_loc>` is an RPC managed by a remote server; processes the result set from the RPC as a read-only table.

Examples

Example 1

`sp_defaultloc` defines the remote storage location `pubs.dbo.` in the remote server named MYSERVER. It maps the database `pubs` to the remote location. A `create table book1` statement would create a table named `book1` at the remote location. A `create existing table` statement for `bookN` would require that `pubs.dbo.bookN` already exist at the remote location, and information about table `bookN` would be stored in the local table `bookN`:

```
sp_defaultloc pubs, MYSERVER.pubs.dbo., table
create table pubs.dbo.book1 (bridges char(15))
```

Example 2

Removes the mapping of the database `pubs` to a remote location:

```
sp_defaultloc pubs, NULL
```

Example 3

Identifies the remote storage location `wallst.nasdaq.dbo` where "wallst" is the value provided for `<server_name>`, "nasdaq" is provided for `<database>`, and "dbo" is provided for `<owner>`. The RPC `sybase` must already exist at the remote location. A `create existing table sybase` statement would store information about the result set from RPC `sybase` in local table `ticktape`. The result set from RPC `sybase` is regarded as a read-only table. Inserts, updates and deletes are not supported for RPCs:

```
sp_defaultloc ticktape, wallst.nasdaq.dbo., rpc
create existing table sybase (bestbuy integer)
```

Usage

There are additional considerations when using `sp_defaultloc`:

- `sp_defaultloc` defines a default storage location for tables in a local database. It maps table names in a database to a remote location. It permits the user to establish a default for an entire database, rather than issue an `sp_addobjectdef` command before every `create table` and `create existing table` command.

- When `<defaulttype>` is `table`, `view`, or `rpc`, the `<defaultloc>` parameter takes the form:

  ```
  <server_name>.<dbname>.<owner>.
  ```

  - The `<defaultloc>` specification ends in a period (`.`).
  - `<server_name>` represents a server already added to `sysservers` by `sp_addserver`. The `<server_name>` parameter is required.
  - `<dbname>` might not be required. Some server classes do not support it.
  - `<owner>` should always be provided to avoid ambiguity. If it is not provided, the remote object actually referenced could vary, depending on whether the external login corresponds to the remote object owner.
- Issue `sp_defaultloc` before any `create table` or `create existing table` statement. When either statement is used, the server uses the `sysattributes` table to determine whether any table mapping has been specified for the object about to be created or defined. If the mapping has been specified, a `create table` statement directs the table to be created at the location specified by `<object_loc>`. A `create existing table` statement stores information about the existing remote object in the local table.
- If you issue `sp_defaultloc` on `defaulttype view` and then issue `create table`, Component Integration Services creates a new table, not a view, on the remote server.
- Changing the default location for a database does not affect tables that have previously been mapped to a different default location.
- After tables in the database have been created, all future references to tables in `<dbname>` (by `select`, `insert`, `delete`, and `update`) are mapped to the correct location.

See also `create existing table`, `create table` in *Reference Manual: Commands*.

Permissions

Any user can execute `sp_defaultloc`. Permission checks do not differ based on the granular permissions settings.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_addobjectdef [page 50]

sp_addserver [page 58]

sp_helpserver [page 481]

1.69 sp_deferred_index_recovery

Lists indexes in the specified table for which you have specified a deferred index recovery.

Syntax

```
sp_deferred_index_recovery [<option>] [,<database_name>] [,<table_name>]
[,<index_name>]]
```

Parameters

<option>

is one of:

- `list` – lists the set of indexes whose recovery has been deferred. This is the default option.
- `create` – re-creates the set of indexes listed
- `drop` – drops the set of indexes listed
- `help` – prints usage information for `sp_deferred_index_recovery`

<database_name>

Name of the database that contains the indexes. If you do not list a database, `sp_deferred_index_recovery`

<table_name>

Name of the table that holds the indexes

<index_name>

is the index name.

Examples

Example 1

This example lists the indexes in the titles table of the `pubs2` database with deferred recovery:

```
sp_deferred_index_recovery list, pubs2.titles
```

Permissions

Any user can execute `sp_deferred_index_recovery`.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

1.70 sp_deletesmobj

(Only when the TSM is licensed at your site) Deletes specified backup objects from the IBM Tivoli Storage Manager (TSM).

Syntax

```
sp_deletesmob "syb_tsm", "<server_name>"{, "<database_name>", "<object_type>",
"<dump_type>", "<until_time>", "<bs_name>"}
```

Parameters

`syb_tsm`

is the keyword that invokes the libsyb_tsm.so module that enables communication with TSM.

`<server_name>`

is the name of the SAP ASE server associated with the TSM backup objects to be deleted.

`<database_name>`

is the name of the database associated with the TSM backup objects to be deleted. An asterisk (*) indicates all databases.

`<object_name>`

is the name of the TSM backup object as provided in the `dump database` or `dump transaction` command. If this parameter is omitted, all backup objects are deleted. An asterisk (*) indicates all backup objects.

`<dump_type>`

is the backup object type to be deleted. Values are:

- DB – database backup objects created by the dump database command.
- XACT – database backup objects created by the dump transaction command.
- * – (default) all database backup objects.

<until_time>

is the date timestamp field. All backup objects matching the specified criteria and created before the <until_time> date are deleted.

<bs_name>

is the name of the remote Backup Server. If <bs_name> is omitted, the default is SYB_BACKUP.

Examples

Example 1

Removes all TSM backup objects created at the SAP ASE "svr1."

```
sp_deletesmobj "syb_tsm", "svr1"
```

Example 2

Removes all backup objects of the testdb database created by "svr1" before May 20, 2009, 10:51:43:866am. The backup object name is "obj1.dmp."

```
sp_deletesmobj "syb_tsm", "svr1", "testdb", "obj1.dmp",
    "*", "may 20, 2009 10:51:43:866am"
```

Example 3

Removes all backup objects of the "testdb" database created by "svr1" of dump database type before May 21, 2009, 10:51:43:866 a.m.

```
sp_deletesmobj "syb_tsm", "svr1", "’testdb", "*", "DB",
    "may 21, 2009 10:51:43:866am"
```

Example 4

Removes all backup objects of "testdb" created by "svr1" of dump transaction type before May 20, 2009, 10:51:43:866 a.m.

```
sp_deletesmobj "syb_tsm", "svr1", "testdb",
    "/tmp/obj1.dmp", "*", "XACT", "may 21, 2009
    10:51:43:866am"
```

Usage

See also *Using Backup Server with IBM Tivoli Storage Manager*.

Permissions

The permission checks for `sp_dbremap` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `dump any database` privilege.
Disabled	With granular permissions disabled, you must be a user with sa_role or oper_role.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_querysmobj [page 681]

1.71 sp_depends

Displays information about database object dependencies — the views, triggers, user-defined functions, procedures, and predicates — in the database that depend on a specified table or view, the tables and views in the database on which the specified view, trigger, procedure, or predicate depends, and multiple triggers associated with a table. Predicates cannot be granted in a view.

Also displays information about table column dependencies—the indexes, defaults, check constraints, rules, precomputed result sets, referential integrity constraints, and predicates—defined in either the column specified, if `<column_name>` is provided, or on all the columns in the table, if `<column_name>` is not provided.

Syntax

```
sp_depends <objname>[, <column_name>]
```

Parameters

<objname>

is the name of the table, view, Transact-SQL stored procedure, SQLJ stored procedure, SQLJ function, or trigger to be examined for dependencies. You cannot specify a database name. Use owner names if the object owner is not the user running the command and is not the database owner.

<column_name>

is the name of the column to be examined for dependencies.

Examples

Objects Dependent on a Table

Lists the database objects that depend on the table `sysobjects`:

```
sp_depends sysobjects
```

Objects Dependent on a View

Lists the database objects that depend on the `titleview` view, and the database objects on which the `titleview` view depends:

```
sp_depends titleview
```

```
Things that the object references in the current database.
object          type        updated selected
--------------  ----------- ------- -----
dbo.authors     user table  no      no
dbo.titleauthor user table  no      no
dbo.titles      user table  no      no
Things inside the current database that reference the object.
object          type
------------    ---------------
dbo.tview2      view
```

Objects Dependent on a Specific Table

Lists the database objects that depend on the `titles` table owned by the user “mary”. The quotes are needed, since the period is a special character:

```
sp_depends "mary.titles"
```

> **Note**
>
> As this example shows, objects owned by database users other than the user executing a command and the database owner must always be qualified with the owner’s name.

Precomputed Result Sets

The following examples assume that `prs1` and `view1` are created with the following dependency structure:

- `prs1` is defined on base table `tab1` (with unique constraint on column `c1`) and `view1` is defined on prs1

- `prs1` is configured for immediate refresh

This example displays the precomputed result sets that include dependencies for column `c1`:

```
sp_depends prs1,c1
```

```
Things the object references in the current database.
object       type           updated    selected
------------- -------------- ---------- ---------
dbo.tab1     user table     no         no
Things inside the current database that reference the object.
object             type
------------------ --------
dbo.view1          view
Dependent objects that reference column c1.
Columns referenced in stored procedures, views or triggers are not
included in this report.
Type  Property   Object Names or Column Names Also see/Use
command
----- ---------- ---------------------------- --------------------
index constraint prs1_10240036482 (c1)        sp_helpindex,
                                              drop index,
                                              sp_helpconstraint,
                                              alter table drop
                                              constraint
```

Dependencies Between Predicate and Table

Displays the dependencies between predicate `pred1` and any tables it references:

```
sp_depends pred1
```

```
Things the object references in the current database.
object           type                 updated        selected
---------------- -------------------- -------------- ----------------
dbo.tab1         user table           no             no
dbo.tab2         user table           no             no
```

Dependencies Between Predicate, Table, and Column

Displays the dependencies between predicates and table `tab1` and column `col1`:

```
sp_depends tab1, col1
```

```
Things inside the current database that reference the object.
object             type
------------------ ------------------
dbo.pred1          predicate
Dependent objects that reference column col1.
Columns referenced in stored procedures, views or triggers are not included
in this report.
Type                 Property
    Object Names or Column Names
       Also see/Use command
-------------------- --------------------
    -----------------------------------------------------------------
       ------------------------------------------------------
permission           permission
    column permission
       sp_helprotect, grant/revoke
```

Column-Level Dependencies

Shows the column-level dependencies for all columns of the `sysobjects` table:

```
sp_depends sysobjects
Things inside the current database that reference the object.
object                                   type
---------------------------------------- ----------------
dbo.sp_dbupgrade                         stored procedure
dbo.sp_procxmode                         stored procedure
Dependent objects that reference all columns in the table. Use sp_depends
on each column to get more information.
Columns referenced in stored procedures, views or triggers are not included
in this report.
Column           Type         Object Names or Column Names
----------------------- ------------ ------------------------------
cache            permission   column permission
ckfirst          permission   column permission
crdate           permission   column permission
deltrig          permission   column permission
expdate          permission   column permission
id               index        sysobjects (id)
id               logical RI   From syscolumns (id) To sysobjects (id)
id               logical RI   From syscomments (id) To sysobjects (id)
id               logical RI   From sysdepends (id) To sysobjects (id)
id               logical RI   From sysindexes (id) To sysobjects (id)
id               logical RI   From syskeys (depid) To sysobjects (id)
id               logical RI   From syskeys (id) To sysobjects (id)
id               logical RI   From sysobjects (id) To sysprocedures (id)
id               logical RI   From sysobjects (id) To sysprotects (id)
id               logical RI   sysobjects (id)
id               permission   column permission
indexdel         permission   column permission
instrig          permission   column permission
loginame         permission   column permission
name             index        ncsysobjects (name, uid)
name             permission   column permission
objspare         permission   column permission
schemacnt        permission   column permission
seltrig          permission   column permission
sysstat          permission   column permission
sysstat2         permission   column permission
type             permission   column permission
uid              index        ncsysobjects (name, uid)
uid              logical RI   From sysobjects (uid) To sysusers (uid)
uid              permission   column permission
updtrig          permission   column permission
userstat         permission   column permission
versionts        permission   column permission
```

Detailed Column-Level Dependencies

Shows more details about the column-level dependencies for the `id` column of the `sysobjects` table:

```
sp_depends sysobjects, id
Things inside the current database that reference the object.
object                                             type
------------------------------------               -------------
dbo.sp_dbupgrade                                   stored procedure
dbo.sp_procxmode                                   stored procedure
Dependent objects that reference column id.
Columns referenced in stored procedures, views or triggers are not included
in this report.
Type          Property     Object Names or Column Names
                           Also see/Use command
----------   ---------     ----------------------------------
                           ----------------------------------
```

```
index         index       sysobjects (id)
                          sp_helpindex, drop index,
                          sp_helpconstraint, alter table drop constraint
logical RI    primary     sysobjects (id)
                          sp_helpkey, sp_dropkey
logical RI    foreign     From syskeys (id) To sysobjects (id)
                          sp_helpkey, sp_dropkey
logical RI    common      From syscolumns (id) To sysobjects (id)
                          sp_helpkey, sp_dropkey
logical RI    common      From sysdepends (id) To sysobjects (id)
                          sp_helpkey, sp_dropkey
logical RI    common      From sysindexes (id) To sysobjects (id)
                          sp_helpkey, sp_dropkey
logical RI    common      From syskeys (depid) To sysobjects (id)
                          sp_helpkey, sp_dropkey
logical RI    common      From syscomments (id) To sysobjects (id)
                          sp_helpkey, sp_dropkey
logical RI    common      From sysobjects (id) To sysprotects (id)
                          sp_helpkey, sp_dropkey
logical RI    common      From sysobjects (id) To sysprocedures (id)
                          sp_helpkey, sp_dropkey
permission    permission  column permission
                          sp_helprotect, grant/revoke
```

Column-Level Dependencies for All Columns

Shows the column-level dependencies for all columns of the user-created table, `titles`:

```
1> sp_depends titlesThings inside the current database that reference the
object.
object                                type
-----------------------------------  ---------------
dbo.deltitle                          trigger
dbo.history_proc                      stored procedure
dbo.title_proc                        stored procedure
dbo.titleid_proc                      stored procedure
dbo.titleview                         view
dbo.totalsales_trig                   trigger
Dependent objects that reference all columns in the table. Use sp_depends
on each column to get more information.
Columns referenced in stored procedures, views or triggers are not included
in this report.
Column     Type         Object Names or Column Names
------     -----        ----------------------------------------
pub_id     logical RI   From titles (pub_id) To publishers (pub_id)
pubdate    default      datedflt
title      index        titleind (title)
title      statistics   (title)
title_id   index        titleidind (title_id)
title_id   logical RI   From roysched (title_id) To titles (title_id)
title_id   logical RI   From salesdetail (title_id) To titles (title_id)
title_id   logical RI   From titleauthor (title_id) To titles (title_id)
title_id   logical RI   titles (title_id)
title_id   rule         title_idrule
title_id   statistics   (title_id)
type       default      typedflt
```

Column-Level Dependencies for a Specific Column

Shows more details about the column-level dependencies for the `pub_id` column of the user-created `titles` table:

```
sp_depends titles, pub_id
Things inside the current database that reference the object.
object                                  type
------------------------------------    ----------------
dbo.deltitle                            trigger
dbo.history_proc                        stored procedure
dbo.title_proc                          stored procedure
dbo.titleid_proc                        stored procedure
dbo.titleview                           view
dbo.totalsales_trig                     trigger
Dependent objects that reference column pub_id.
Columns referenced in stored procedures, views or triggers are not
included in this report.
Type          Property    Object Names or Column Names
                          Also see/Use command
----------    ---------   ---------------------
                          ----------------------------
logical RI    foreign     From titles (pub_id) To publishers (pub_id)
                          sp_helpkey, sp_dropkey
```

Usage

- Executing `sp_depends` lists all objects in the current database that depend on `<objname>`, and on which `<objname>` depends. For example, views depend on one or more tables and can have procedures or other views that depend on them. An object that references another object is dependent on that object. References to objects outside the current database are not reported.
- Before you modify or drop a column, use `sp_depends` to determine if the table contains any dependent objects that could be affected by the modification. For example, if you modify a column to use a new datatype, objects tied to the table may need to be redefined to be consistent with the column's new datatype.
- The `sp_depends` procedure determines the dependencies by looking at the `sysdepends` table. If the objects were created out of order (for example, if a procedure that uses a view was created before the view was created), no rows exist in `sysdepends` for the dependencies, and `sp_depends` does not report the dependencies.
- The `updated` and `selected` columns in the report from `sp_depends` are meaningful if the object being reported on is a stored procedure or trigger. The values for the `updated` column indicate whether the stored procedure updates the object. The `selected` column indicates whether the object is being used for a read cursor or a data modification statement.

`sp_depends` follows these SAP ASE rules for finding objects:

- If the user does not specify an owner name, and the user executing the command owns an object with the specified name, that object is used.
- If the user does not specify an owner name, and the user does not own an object of that name, but the database owner does, the database owner's object is used.
- If neither the user nor the database owner owns an object of that name, the command reports an error condition, even if an object exists in the database with that object name, but with a different owner.
- If both the user and the database owner own objects with the specified name, and the user wants to access the database owner's object, the name must be specified, as in `<dbo.objectname>`.

See also `create procedure`, `create table`, `create view`, `execute` in *Reference Manual: Commands*.

Permissions

Any user can execute sp_depends. Permission checks do not differ based on the granular permissions settings.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_help [page 396]

1.71.1 Java Methods

SQLJ functions and SQLJ stored procedures are Java methods wrapped in SQL wrappers.

- SQLJ functions and SQLJ stored procedures are database objects for which you can list dependencies. The only dependencies of SQLJ stored procedures and SQLJ functions are Java classes.
- If <objname> is a SQLJ stored procedure or SQLJ function, sp_depends lists the Java class in the routine's external name declared in the create statement, not classes specified as the return type or datatypes in the parameter list.
- SQLJ stored procedures and SQLJ functions can be listed as dependencies of other database objects.

See *Java in Adaptive Server Enterprise* for more information.

1.72 sp_deviceattr

(UNIX platforms only) Changes the device parameter settings of an existing database device file.

Syntax

```
sp_deviceattr  <logicalname>, <optname>, <optvalue>
```

Parameters

<logicalname>

is the logical name of an existing database device. The device can be stored on either an operating system file or a raw partition, but the dsync setting is ignored for raw partitions.

<optname>

name of the attribute to change. Valid values are directio or dsync:

- directio – enables the SAP ASE server to write directly to disk, bypassing the operating system's buffer system. The SAP ASE server passes the device options to Backup Server, which enables Backup Server to access the database device with the appropriate directio option.
- dsync – enables updates to the device take place directly on the storage media, or are buffered by the UNIX file system

> i Note
>
> The directio and dsync options are mutually exclusive; you cannot specify "true" for both at the same time.

<optvalue>

can be either "true" or "false."

Examples

Example 1

Sets dsync on for the device named "file_device1":

```
sp_deviceattr file_device1, dsync, true
```

Usage

There are additional considerations when using sp_deviceattr:

- For database devices stored on UNIX files, dsync determines whether updates to the device take place directly on the storage media, or are buffered by the UNIX file system.
  When dsync is on, writes to the database device occur directly to the physical storage media, and the SAP ASE server can recover data on the device in the event of a system failure.
  When dsync is off, writes to the database device may be buffered by the UNIX file system. The UNIX file system may mark an update as being completed, even though the physical media has not yet been modified. In the event of a system failure, there is no guarantee that requests to update data have ever taken place on the physical media, and the SAP ASE server may be unable to recover the database.

- (UNIX only) On raw devices, you cannot set `directio` or `dsync` via the `sp_deviceattr` stored procedure to true.

  > i Note
  >
  > For HPUX, only the `dsync` option applies.

  Doing so returns a message such as the following:
  - `You cannot set option dsync for raw device 'dev/raw/raw235'`
  - `You cannot set attribute dsync for raw device 'myrawdisk1'`
- After using `sp_deviceattr` to change the `dsync` or `directio` setting, you must restart the SAP ASE server before the change takes affect.
- `sp_deviceattr` displays a warning message if the `dsync` option is disabled for a database device file.
- `dsync` is always on for the master device file. You cannot change the `dsync` setting for a master device file with `sp_deviceattr`.Therefore, you cannot set the `directio` option for the master device.
- Turn off the `dsync` value only when the databases on the device does not need to be recovered after a system failure. For example, you may consider turning `dsync` off for a device that stores only the `tempdb` database.
- The SAP ASE server ignores the `dsync` setting for devices stored on raw partitions; updates to those devices are never buffered, regardless of the `dsync` setting.
- `dsync` is not used on the Windows platform.

Permissions

The permission checks for `sp_deviceattr` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `manage disk` privilege.
Disabled	With granular permissions disabled, you must be a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_helpdevice [page 446]

1.73 sp_diskdefault

Specifies whether or not a database device can be used for database storage if the user does not specify a database device or specifies `default` with the `create database` or `alter database` commands.

Syntax

```
sp_diskdefault <logicalname,> {defaulton | defaultoff}
```

Parameters

`<logicalname>`

is the logical name of the device as given in `master.dbo.sysdevices.name`. The device must be a database device rather than a dump device.

`defaulton | defaultoff`

`defaulton` designates the database device as a default database device; `defaultoff` designates that the specified database device is not a default database device.

Use `defaulton` after adding a database device to the system with `disk init`. Use `defaultoff` to change the default status of the master device (which is designated as a default device when SAP ASE is first installed).

Examples

Example 1

The master device is no longer used by `create database` or `alter database` for default storage of a database:

```
sp_diskdefault master, defaultoff
```

Usage

There are additional considerations when using `sp_diskdefault`:

- A default database device is one that is used for database storage by `create database` or `alter database` if the user does not specify a database device name or specifies the keyword `default`.

- You can have multiple default devices. They are used in the order they appear in the `master.dbo.sysdevices` table (that is, alphabetical order). When the first default device is filled, the second default device is used, and so on.
- When you first install SAP ASE, the master device is the only default database device.

> i Note
>
> Once you initialize devices to store user databases, use `sp_diskdefault` to turn off the master device's default status. This prevents users from accidentally creating databases on the master device and simplifies recovery of the `master` database.

- To find out which database devices are default database devices, execute `sp_helpdevice`.

See also `alter database`, `create database`, `disk init` in *Reference Manual: Commands*.

Permissions

The permission checks for `sp_diskdefault` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `manage disk` privilege.
Disabled	With granular permissions disabled, you must be a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_helpdevice [page 446]

1.74 sp_displayaudit

Displays the status of audit options.

Syntax

```
sp_displayaudit ["procedure" | "object" | "login" | "database" | "global" |
    "default_object" | "default_procedure" | "role" [, "<name>"]]
```

Parameters

procedure

displays the status of audit options for the specified stored procedure or trigger. If you do not specify a value for `<name>`, the active audit options for all procedures and triggers in the current database are displayed.

object

displays the status of audit options for the specified table or view. If you do not specify a value for `<name>`, the active audit options for all tables and views in the current database are displayed.

login

displays the status of audit options for the specified user login. If you do not specify a value for `<name>`, the active audit options for all logins in the `master` database are displayed.

database

displays the status of audit options for the specified database. If you do not specify a value for `<name>`, the active audit options for all databases on the server are displayed.

global

displays the status of the specified global audit option. If you do not specify a value for `<name>`, the active audit options for all procedures and triggers in the current database are displayed.

default_object

displays the default audit options that are used for any new table or view created on the specified database. If you do not specify a value for `<name>`, the default audit options for all databases with active default audit settings are displayed.

default_procedure

displays the default audit options that are used for any new procedure or trigger created on the specified database. If you do not specify a value for `<name>`, the default audit options for all databases with active default audit settings are displayed.

role

displays the status of audit options for the specified role name. If you do not specify a value for <name>, the active audit options for all roles are displayed.

<name>

is the information for the specified parameter. The parameters and their values are:

procedure	Procedure or trigger name
object	Table or view name
login	User login
database	Database name
global	Global audit option
default_object	Database name
default_procedure	Database name
role	Role name

You cannot specify a value for <name> unless you first specify an object type parameter.

Examples

Example 1

Displays the status of each category and all auditing options when you do not specify a parameter:

```
sp_displayaudit
go
```

```
No sprocs/triggers currently have auditing enabled.
No databases currently have default sproc/trigger auditing enabled.
No objects currently have auditing enabled.
No databases currently have default table/view auditing enabled.
No logins currently have auditing enabled.
 Database Name    Audit Option       Value
 -------------- ------------------ ----------------------------
  master            allow            on
  master            create           on
  pubs2             create           on
  pubs2             encryption_key   on
(1 row affected)

 Audit Option      Value   Subject Name     Type of Subject
 ------------------------------------------------------------
     all          on       sa_role         role
     login        on       All             All logins and roles
     login        on       sa              login
     login        on       chris           login
     mount        on       All             All logins and roles
     security     on       All             All logins and roles
(1 row affected)
```

```
(return status = 0)
```

Example 2

Displays the status of all global audit options when you do not specify a global audit option:

```
sp_displayaudit "global"
go
```

```
 Audit Option      Value   Subject Name     Type of Subject
 ------------------------------------------------------------
     all          on       sa_role         role
     login        on       All             All logins and roles
     login        on       sa              login
     login        on       chris           login
     mount        on       All             All logins and roles
     security     on       All             All logins and roles
```

Example 3

Displays the status of all procedure audit options when you do not specify a procedure name:

```
use sybsystemprocs
go
sp_displayaudit "procedure"
go
```

```
Procedure/Trigger    Audit Option   Value Database
 -----------------   -------------- ----- ---------------------
 dbo.sp_altermessage exec_procedure on    sybsystemprocs
 dbo.sp_help         exec_procedure on    sybsystemprocs
 dbo.sp_who          exec_procedure on    sybsystemprocs
```

Example 4

Displays only the status of the procedure when you specify a name for a procedure:

```
use sybsystemprocs
go
sp_displayaudit "procedure", "sp_addlogin"
go
```

```
Procedure/Trigger Audit Option    Value Database
----------------- --------------- ----- ----------------------
dbo.sp_addlogin        exec_procedure  on    sybsystemprocs
```

Example 5

Displays the status of the global `login` option:

```
sp_audit "login", "intern_role", "all", "on"
go
sp_audit "login", "sa", "all", "on"
go
sp_displayaudit "global", "login"
go
Subject Name        Audit Option     Value       Type of Subject
----------------- ---------------- ----------- -----------------
     login           on            intern_role       role
     login           on            sa                login
```

Example 6

Displays the status of the audit option for `intern_role`:

```
sp_audit "all", "intern_role", "all", "fail"
go
sp_displayaudit "role", "intern_role"
go
```

```
Role Name    Audit Option   Value
 ----------------   -------------- -----
 intern_role         all            fail
```

Usage

The valid auditing options for each parameter are:

Object Type Parameter	Valid Auditing Options
procedure	exec_procedure, exec_trigger
object	delete, func_obj_access, insert, reference, select, update
login	all, cmdtext, table_access, view_access
database	alter, bcp, bind, create, dbaccess, drop, dump, dump_config, encryption_key, errorlog, errors, func_dbaccess, grant, load, revoke, setuser, truncate, unbind
global	adhoc, cluster, config_history, dbcc, disk, dtm_tm_role, errors, ha_role, hadr_admin_role, js_admin_role, js_client_role, js_user_role, keycustodian_role, login, login_admin, login_locked, logout, messaging role, mon_role, mount, navigator_role, oper_role, password, quiesce, replication_maint_role_gp, replication_role, role, role_locked, rpc, sa_role, security, security_profile, sproc_auth, sso_role, thread pool, unmount, webservices_role
default_object	delete, func_obj_access, insert, reference, select, update
default_procedure	exec_procedure, exec_trigger

Permissions

The permission checks for `sp_displayaudit` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with manage auditing privilege.
Disabled	With granular permissions disabled, you must be a user with sso_role.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_audit [page 77]

1.75 sp_displaylevel

Sets or shows which configuration parameters appear in sp_configure output.

Syntax

```
sp_displaylevel [<loginame>[, <level>]]
```

Parameters

<loginame>

is the SAP ASE login of the user for whom you want to set or show the display level.

<level>

sets the display level to one of the following:

- "basic" display level shows just the most basic configuration parameters. This level is appropriate for very general server tuning.
- "intermediate" display level shows configuration parameters that are somewhat more complex, as well as all the "basic" level parameters. This level is appropriate for moderately complex server tuning.

- "`comprehensive`" display level shows all configuration parameters, including the most complex ones. This level is appropriate for highly detailed server tuning.

Examples

Example 1

Shows the current display level for the user who invoked `sp_displaylevel`:

```
sp_displaylevel
```

```
The current display level for login 'sa' is 'comprehensive'.
```

Example 2

Shows the current display level for the user "jerry":

```
sp_displaylevel jerry
```

```
The current display level for login 'jerry' is 'intermediate'.
```

Example 3

Sets the display level to "comprehensive" for the user "jerry":

```
sp_displaylevel jerry, comprehensive
```

```
The display level for login 'jerry' has been changed to 'comprehensive'.
```

Usage

See the *System Administration Guide: Volume 1* for details about setting configuration parameters and display levels. See *Reference Manual: Configuration Parameters* for a list of configuration parameters.

Permissions

The permission checks for `sp_displaylevel` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `manage server configuration` privilege. Any user can execute `sp_displaylevel` to set and show their own configuration parameters.
Disabled	With granular permissions disabled, you must be a user with sso_role.

Setting	Description
	Any user can execute sp_displaylevel to set and show their own configuration parameters.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_configure [page 203]

1.76 sp_displaylogin

Displays information about a login account. By using a wildcard expression (%), you can also obtain information about matching logins. Also displays the encryption versions of the login password stored on disk.

Syntax

```
sp_displaylogin ['<user_id>' | '[<loginame> | <wildcard>]'
```

Parameters

<user_id>

is the server user ID.

<loginame>

is the user login account about which you want information. You must be a system security officer or system administrator to get information about someone else's login account.

<wildcard>

is the wildcard expression you use to obtain information about login accounts.

Examples

Display Information About Server Login Account

The password expiration is set to 0, indicating the password never expires:

```
1> sp_displaylogin 'sa'
2> go
```

```
Suid: 121
Loginame: sa
Fullname:
Configured Authorization:
        sa_role (default ON)
        sso_role (default ON)
        oper_role (default ON)
        sybase_ts_role (default ON)
Locked: NO
Date of Last Password Change: Aug 10 2010 11:17AM
Password expiration interval: 0
Password expired: NO
Minimum password length: 6
Maximum failed logins: 0
Current failed login attempts:
Login password encryption: SYB-PROP, SHA-256
Last login date : Aug 17 2010 5:55PM
Login Profile :emp_lp
```

Display Information About Login Account "susanne"

The information displayed varies, depending on the role of the user executing `sp_displaylogin`. There is not password expiration set for user "susanne", so the password does not expire:

```
sp_displaylogin susanne
```

```
Suid: 12
Loginame: susanne
Fullname:
Configured Authorization:
    supervisor (default OFF)
Locked: NO
Date of Last Password Change: July 26 2010 10:42AM
Login Profile :emp_lp
```

Display Login Security-Related Parameters Configured for a Login

Displays the login security-related parameters configured for a login, as well as a specified authentication mechanism. The password expires on November 29, 2010 at 3:46PM, and expires five days later, on December 5, 2010 at 3:46PM:

```
sp_displaylogin joe
```

```
Suid: 294
Loginame: joe
Fullname: Joseph Resu
Configured Authorization:
    intern_role (default OFF)
Locked: NO
Date of Last Password Change: Nov 24 2010 3:46PM
Password expiration interval : 5
Password expired : NO
Minimum password length:4
```

```
Maximum failed logins : 10
Current failed logins : 3
Login password encryption: SHA-256
Login Profile :emp_lp
```

Display Information About Login Account With Server User ID 1

```
sp_displaylogin '1'
-------------
Suid: 1
Loginame: sa
Fullname:
Configured Authorization:
       sa_role (default ON)
       sso_role (default ON)
       oper_role (default ON)
       sybase_ts_role (default ON)
Locked: NO
Date of Last Password Change: Dec 18 2010
Password expiration interval: 0
Login Profile :emp_lp
```

Use Wildcard to Indicate Any Server Login Account

This example uses a wildcard to indicate any server login account, as opposed to your own server login account:

```
sp_displaylogin '%'
```

```
--------------------
Suid  Loginname  Fullname  Locked  Date of Last Password Change
Password expiration interval  Password expired  Minimum password
length  Maximum failed logins  Current failed login attempts  Authenticate
with  Login Profile  Configured Authorization---- --------- ---------
--------------- ---------------- ----------------- --------
--------------------------- ---------------------------------------
--------------------------- ----------------------------------
-------------------------------- ----------------------------------------
----------------------------
------------------------------------------------------------------------------
--------------
2 probe NULL sybsystemdb NULL NULL NO Jan  8 2010 7:13AM 1 NO 6 0 0 NONE
NULL
1 sa NULL master NULL NULL NO Jan  8 2010 6:46AM 1 NO 6 0 0 NONE
```

Display Encrypted and Stored On-disk Login Password

The on-disk login password is encrypted and stored, using both the old Sybase proprietary encryption algorithm and the SHA-256 algorithm:

```
1> sp_displaylogin 'mylogin'
2> go
```

```
Suid: 121
Loginame: mylogin
Fullname:
Configured Authorization:
        sa_role (default ON)
        sso_role (default ON)
        oper_role (default ON)
        sybase_ts_role (default ON)
Locked: NO
Date of Last Password Change: Aug 10 2006 11:17AM
Password expiration interval: 0
Password expired: NO
Minimum password length: 6
Maximum failed logins: 0
Current failed login attempts:
Login password encryption: SYB-PROP, SHA-256
Last login date : Aug 17 2010 5:55PM
Login Profile :emp_lp
(return status = 0)
```

When the login password is stored on disk using the SHA-256 algorithm only, the output of `sp_displaylogin` has the line "`Login password encryption: SHA-256`":

```
1> sp_displaylogin 'mylogin'
2> go
```

```
Suid: 121
Loginame: mylogin
 ...
Authenticate with: NONE
Login password encryption: SHA-256
Last login date : Aug 17 2010 5:55PM
Login Profile :emp_lp
(return status = 0)
```

When a login has not occurred after upgrade from SAP ASE versions earlier than 15.0.2, the previous style of encryption is still in place, and the output of `sp_displaylogin` has the line "`Login password encryption: SYB-PROP`":

```
1> sp_displaylogin 'mylogin'
2> go
```

```
Suid: 121
Loginame: mylogin
 ...
Authenticate with: NONE
Login password encryption: SYB-PROP
Last login date : Aug 17 2006 5:55PM
(return status = 0)
```

When a login has been locked, `sp_displaylogin` shows the date, reason, and login that locked the account. The `lastlogindate` value is also displayed:

```
1> sp_displaylogin 'mylogin'
2> go
```

```
Suid: 121
Loginame: mylogin
Fullname:
Configured Authorization:
        sa_role (default ON)
        sso_role (default ON)
        oper_role (default ON)
        sybase_ts_role (default ON)
Locked: YES
        Date when locked: Aug 18 2010 9:15AM
        Reason: Account locked by SAP ASE due to failed login attempts
reaching max failed logins.
        Locking suid: mylogin
Date of Last Password Change: Aug 10 2010 11:17AM
Password expiration interval: 0
Password expired: NO
```

```
Minimum password length: 6
Maximum failed logins: 3
Current failed login attempts: 3
Login password encryption: SYB-PROP, SHA-256
Last login date : Aug 17 2010 5:55PM
Login Profile :emp_lp
(return status = 0)
```

Display Encryption Versions Used for a Login

Displays the encryption versions used for a login; this output includes information about the on-disk login password encryption the SAP ASE server uses:

```
sp_displaylogin sa
go
```

```
Suid: 1
Loginame: sa
Fullname:
Configured Authorization:
    sa_role (default ON)
    sso_role (default ON)
    oper_role (default ON)
    sybase_ts_role (default ON)
Locked: NO
Date of Last Password Change: Mar  8 2010 3:04PM
Password expiration interval: 0
Password expired: NO
Minimum password length: 6
Maximum failed logins: 0
Current failed login attempts:
Login Password Encryption: SHA-256
Login Profile :emp_lp
```

If the SAP ASE server uses encryption algorithms from SAP ASE versions earlier than 15.0.2 or the current release during a downgrade period, `sp_displaylogin` displays the earlier Sybase proprietary encryption algorithm and the new algorithm, SHA-256:

```
Login password encryption: SYB-PROP, SHA-256
```

Display Login and Password Policy Options of Current Login Account

```
sp_displaylogin
go
```

```
Suid: 5
Loginame: tammi
Fullname:
Configured Authorization:
    sa_role (default ON)
    sso_role (default ON)
    oper_role (default ON)
    sybase_ts_role (default ON)
Locked: NO
Date of Last Password Change: Mar  8 2010 3:04PM
Password expiration interval: 0
Password expired: NO
Minimum password length: 6
Maximum failed logins: 0
Current failed login attempts:
Authenticate with: ANY
Login Password Encryption: SHA-256
```

```
Exempt inactive lock: 0
```

```
Login Profile: emp_lp
```

Display Login Account for User with Suid 56

```
sp_displaylogin '56'
```

Display Login Account Information for All Users With Logins Begin With "st"

```
sp_displaylogin 'st%'
```

Usage

There are additional considerations when using `sp_displaylogin`:

- The `sp_passwordpolicy` security options are taken into consideration when displaying login information related to password expiration, maximum failed logins, and password length.
- `sp_displaylogin` displays the encryption version(s) used for a login. For example, when both old and new encryption is used during the password downgrade period, the output of `sp_displaylogin` has the new line "`Password encryption`."
- `sp_displaylogin` displays configured roles, so even if you have made a role inactive with the `set` command, it is displayed.
- Login triggers associated with the login in question are specified through a login profile. For more information, see *Managing Login Accounts and Login Profiles* in the *System Administration Guide*.
- When you use `sp_displaylogin` to get information about your own account, you do not need to use the `<loginame>` parameter. `sp_displaylogin` displays your server user ID, login name, login profile, full name, any roles that have been granted to you, date of last password change, and whether your account is locked.
- If you are a system security officer or system administrator, you can use the `<loginame>` parameter to access information about any account.

Permissions

The permission checks for `sp_displaylogin` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `manage any login` privilege or `manage sever` privilege. Any user can execute `sp_displaylogin` to display information about their own login account.
Disabled	With granular permissions disabled, you must be a user with sa_role or sso_role. Any user can execute `sp_displaylogin` to display information about their own login account.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide > Auditing*.

Related Information

sp_activeroles [page 15]
sp_displayroles [page 276]
sp_helprotect [page 471]

1.77 sp_displayroles

Displays all roles granted to another role, login or login profile, the entire hierarchy tree of roles in table format, and other login security-related parameters configured for the specified role, including the date when the role was locked, its reason, and the login server user ID (suid) that locked the role. For password-protected roles, also displays the role password encryption version.

Displays roles granted to logins through an associated login profile. A `grantee` column in the output displays the login profile name as applicable. This column is only displayed if the login has an associated login profile with roles granted to the login. The login profile association could be direct or through a default login profile.

Syntax

```
sp_displayroles [<grantee_name >[, <mode>]]
```

Parameters

`<grantee_name>`

is the login name of a user or login profile name with roles that you want information about, or the name of a role you want information about.

`<mode>`

is one of the following:

- `expand_up` – shows the role hierarchy tree for the parent levels
- `expand_down` – shows the role hierarchy tree for the child levels

- `display_info` – shows the login security-related parameters configured for the specified role

Examples

Example 1

Displays all roles granted to the user issuing the command:

```
sp_displayroles
```

```
Role Name
------------------------------
supervisor_role
```

Example 2

Displays all roles granted to `supervisor_role`:

```
sp_displayroles "supervisor_role"
```

```
Role Name
------------------------------
clerk
```

Example 3

Displays the roles granted to login “susanne” and the roles below it in the hierarchy:

```
sp_displayroles susanne, expand_down
```

```
Role Name          Parent Role Name       Level
----------------- ---------------------- ------
supervisor_role   NULL                     1
clerk_role       supervisor_role          2
```

Example 4

Displays the roles granted to `intern_role` and the roles above it in the hierarchy:

```
sp_displayroles "intern_role", expand_up
```

Example 5

Shows the login security-related parameters configured for the specified role:

```
sp_displayroles physician_role, "display_info"
```

```
Role name = physician_role
Locked : YES
    Date when locked: Jul 14 2007 9:15AM
    Reason: Role locked by SAP ASE due to failed login
    attempts reaching max failed logins.
    Locking suid: dr_john
Date of Last Password Change : Oct 31 1999 3:33PM
Password expiration interval = 5
Password expired : NO
Minimum password length = 4
```

```
Maximum failed logins = 10
Current failed logins = 3
Password encryption version: SHA-256
```

Example 6

Displays the roles granted to login “tom,” which is associated with the login profile named “sec_profile”:

```
grant role sec_role to sec_profile
create login tom with password C0mp13x login profile sec_profile
grant role emp_role to tom
go
sp_displayroles tom
go
```

```
Role Name                          Grantee
-------------------------------------------------
emp_role                           tom
sec_role                           sec_profile
```

Usage

When you specify the optional parameter `expand_up` or `expand_down` all directly granted roles contained by or containing the specified role name are displayed.

The `Grantee` column displays only when a login has an associated login profile, or the default login profile is applicable to the login with role(s) granted to it.

See also:

- `alter role`, `create role`, `drop role`, `grant`, `revoke`, `set` in *Reference Manual: Commands*
- *User-Defined Login Security* in the *System Administration Guide* for more information.

Permissions

The permission checks for `sp_displayroles` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `manage roles` or `manage server` privilege. Any can execute `sp_displayroles` to see the roles granted to themselves.
Disabled	With granular permissions disabled, you must be a user with sso_role. Any can execute `sp_displayroles` to see the roles granted to themselves.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide > Auditing*.

Related Information

sp_activeroles [page 15]
sp_displaylogin [page 270]
sp_helprotect [page 471]

1.78 sp_downgrade_esd

Validates readiness for downgrade for service packs and patch levels within the same version of SAP ASE. Also downgrades the system catalog changes that were modified with the current version of SAP ASE. `sp_downgrade_esd` downgrades a specified individual database to a specified previous version. This supports dumping that database in a form that could be loaded by the older version. The `online database` command can be used to re-upgrade the database after dump. You cannot downgrade a 16.0 or higher database back to a 15.x version.

Syntax

```
sp_downgrade_esd @<database_name>[, @<target_version>[, @verbose]]
```

Parameters

`<@database_name>`

is the name of the database you are downgrading.

`<@target_version>`

is a string that specifies what version of 16.0 to go back to. It accepts values "GA" (the default) or "SP0 PLxx" where "xx" is an integer. "GA" is an abbreviation for "SP0 PL0". The valid options are:

- `"GA"` – (default) for SAP ASE version 16.0.
- `"SP0 PL<xx>"` – where `<xx>` is an integer. Specifying `"SP0 PL0"` is the same as using `"GA"`

<@verbose>

- is an integer that, when used, displays the output in the verbose mode. Valid values are:
  - 1 – the procedure produces extra messages about what it is doing
  - 0 – produces no additional messages

Examples

Downgrades sybsystemprocs

This example downgrades `sybsystemprocs`:

```
1> sp_downgrade_esd sybsystemprocs, GA
2> go
Reverting database 'sybsystemprocs' to 'GA'.
Database 'sybsystemprocs' is now suitable for use by GA.
(return status = 0)
1>
2> sp_downgrade_esd sybsystemdb, GA
3> go
Reverting database 'sybsystemdb' to 'GA'.
Database 'sybsystemdb' is now suitable for use by GA.
(return status = 0)
1> sp_downgrade_esd model, GA
2> go
Reverting database 'model' to 'GA'.
Database 'model' is now suitable for use by GA.
(return status = 0)
1> sp_downgrade_esd MYASE_tdb_1, GA
2> go
Reverting database 'MYASE_tdb_1' to 'GA'.
Database 'LUMINOUS_tdb_1' is now suitable for use by GA.
(return status = 0)
1> sp_downgrade_esd master, GA
2> go
Reverting database 'master' to 'GA'.
Database 'master' is now suitable for use by GA.
(return status = 0)
1> shutdown
2> go
```

Permissions

A user must have sa_role and be in the `master` database to execute `sp_statistics`.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

1.79 sp_dropalias

Removes the alias user name identity established with sp_addalias.

Syntax

```
sp_dropalias <loginame>[, force]
```

Parameters

<loginame>

is the name (in master.dbo.syslogins) of the user who was aliased to another user.

force

allows you to drop an alias even if it owns database objects.

Examples

Example 1

Assuming that "victoria" was aliased (for example, to the database owner) in the current database, this statement drops "victoria" as an aliased user from the database:

```
sp_dropalias victoria
```

Example 2

Drops the alias "harry," which owns a procedure namelist. The SAP ASE server drops the alias but issues a warning message:

```
sp_dropalias harry, force
Warning: You have forced the drop of the alias for login 'harry' which owns
objects in the database. This may result in errors when those objects are
accessed from or contain references to another database.
Alias user dropped.(return status = 0)
```

Usage

Executing the sp_dropalias procedure deletes an alternate suid mapping for a user from the sysalternates table.

When a user’s alias is dropped, he or she no longer has access to the database for which the alias was created.

You can drop the alias of a user who owns objects in the database. You do not need to first drop the objects before dropping the login.

Permissions

The permission checks for sp_dropalias differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with manage any user privilege.
Disabled	With granular permissions disabled, you must be the database owner, a user with sso_role, or a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_addalias [page 26]
sp_adduser [page 73]
sp_droplogin [page 309]
sp_dropuser [page 326]
sp_helpuser [page 494]

1.80 sp_drop_all_qplans

Deletes all abstract plans in an abstract plan group.

Syntax

```
sp_drop_all_qplans <name>
```

Parameters

<name>

is the name of the abstract plan group from which to drop all plans.

Examples

Example 1

```
sp_drop_all_qplans dev_test
```

Usage

To drop individual plans, use `sp_drop_qplan`.

To see the names of abstract plan groups in the current database, use `sp_help_qpgroup`.

`sp_drop_all_qplans` silently drops all plans in the group that belong to the specified user, or all plans in the group, if it is executed by a system administrator or database owner.

Permissions

The permission checks for `sp_drop_all_qplans` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `manage abstract plans` privilege. Any user can execute `sp_drop_all_qplans` to drop plans that they own.
Disabled	With granular permissions disabled, you must be the database owner or a user with sa_role. Any user can execute `sp_drop_all_qplans` to drop plans that they own.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_drop_qplan [page 285]
sp_drop_qpgroup [page 284]

1.81 sp_drop_qpgroup

Drops an abstract plan group.

Syntax

```
sp_drop_qpgroup <group>
```

Parameters

<group>

is the name of the abstract plan group to drop.

Examples

Example 1

Drops the abstract plan group "dev_test":

```
sp_drop_qpgroup dev_test
```

Usage

You cannot:

- Drop the default groups, ap_stdin and ap_stdout.
- Drop a group that contains plans. To drop all of the plans in a group, use sp_drop_all_qplans. To see a list of groups and the number of plans they contain, use sp_help_qpgroup.
- Run sp_drop_qpgroup in a transaction.

Permissions

The permission checks for `sp_drop_qpgroup` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `manage abstract plans` privilege.
Disabled	With granular permissions disabled, you must be the database owner or a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_drop_all_qplans [page 282]
sp_help_qpgroup [page 410]

1.82 sp_drop_qplan

Drops an abstract plan.

Syntax

```
sp_drop_qplan <id>
```

Parameters

`<id>`

is the ID of the abstract plan to drop.

Examples

Example 1

The abstract plan with the specified ID is dropped:

```
sp_drop_qplan 1760009301
```

Usage

To find the ID of a plan, use `sp_help_qpgroup`, `sp_help_qplan`, or `sp_find_qplan`. Plan IDs are also returned by `create plan` and are included in `showplan` output.

To drop all abstract plans in a group, use `sp_drop_all_qplans`.

See also `create plan` in *Reference Manual: Commands*.

Permissions

The permission checks for `sp_drop_qplans` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `manage abstract plans` privilege. Any user can execute `sp_drop_qplans` to drop plans that they own.
Disabled	With granular permissions disabled, you must be the database owner or a user with sa_role. Any user can execute `sp_drop_qplans` to drop plans that they own.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_drop_all_qplans [page 282]
sp_find_qplan [page 374]
sp_help_qpgroup [page 410]

sp_help_qplan [page 412]

1.83 sp_drop_resource_limit

Removes one or more resource limits from the SAP ASE server.

Syntax

```
sp_drop_resource_limit {<name>, <appname>}
        [, <rangename>, <limittype>, <enforced>, <action>, <scope>]
```

Parameters

<name>

is the SAP ASE login to which the limit applies. To drop resource limits that apply to all users:

- Of a particular application, specify <appname> and NULL for <name>.
- Using any application, specify NULL for both <name> and <appname>.

<appname>

is the application to which the limit applies. To drop resource limits that apply to:

- All applications used by the specified login, specify <name> and NULL for <appname>.
- A particular application, specify the application name that the client program passes to the SAP ASE server in the login packet.
- All users using any application, specify NULL for both <name> and <appname>.

<rangename>

is the time range during which the limit is enforced. This must be an existing time range stored in the systimeranges system table or NULL to delete all resource limits for the specified <name>, <appname>, <limittype>, <action>, and <scope>, without regard to <rangename>.

<limittype>

is the type of resource being limited. Valid values are:

- row_count – drops only limits that restrict the number of rows a query can return.
- elapsed_time – drops only limits that restrict the number of seconds that a query batch or transaction can run.
- io_cost – drops only limits that restrict actual or estimated query processing cost.

- tempdb_space – drops only the limits of the number of tempdb database pages that a single session used or can have.
- NULL – drops all resource limits with the specified <name>, <appname>, <rangename>, enforcement time, <action>, and <scope>, without regard to <limittype>.

<enforced>

determines whether the limit is enforced prior to or during query execution. The valid values for each limit type are:

- 1 – drops only limits for which action is taken when the estimated cost of execution exceeds the specified limit.
- 2 – drops only limits for which action is taken when the actual row count, elapsed time, or cost of execution exceeds the specified limit.
- 3 – drops only limits for which action is taken when either the estimated cost (1) or the actual cost (2) exceeds the specified limit.
- NULL – drops all resource limits with the specified <name>, <appname>, <rangename>, <limittype>, and <scope>, without regard to when the <action> is enforced.

<action>

is the action taken when the limit is exceeded, and must be one of these:

- 1 – drops only limits that issue a warning.
- 2 – drops only limits that abort the query batch.
- 3 – drops only limits that abort the transaction.
- 4 – drops only limits that kill the session.
- NULL – drops all resource limits with the specified <name>, <appname>, <rangename>, <limittype>, enforcement time, and <scope>, without regard to the <action> they take.

<scope>

is the scope of the limit, and must be one of the following:

- 1 – drops only limits that apply to queries.
- 2 – drops only limits that apply to query batches.
- 4 – drops only limits that apply to transactions.
- 6 – drops only limits that apply to both query batches and transactions.
- NULL – drops all resource limits with the specified <name>, <appname>, <rangename>, <limittype>, enforcement time, and <action>, without regard to their <scope>.

Examples

Example 1

Drops the single resource limit that kills the session whenever joe's use of the `payroll` application runs a query during the `friday_afternoon` time range that results in excessive execution-time I/O cost:

```
sp_drop_resource_limit joe, payroll, friday_afternoon, io_cost, 2, 4, 1
```

> **i Note**
>
> If no resource limit matches these selection criteria, `sp_drop_resource_limit` returns without error.

Example 2

Drops all limits that apply to joe's use of the `payroll` application:

```
sp_drop_resource_limit joe, payroll
```

Example 3

Drops all limits that apply to the user "joe":

```
sp_drop_resource_limit joe
```

Example 4

Drops all resource limits that apply to the `payroll` application:

```
sp_drop_resource_limit NULL, payroll
```

Example 5

Drops all resource limits on the `payroll` application with an action that kills the session:

```
sp_drop_resource_limit NULL, payroll, NULL, NULL, NULL, 4, NULL
```

Example 6

Drops a resource limit on all users using any application with an action that kills the session:

```
sp_drop_resource_limit NULL, NULL, NULL, NULL, NULL, 4, NULL
```

Usage

To determine which resource limits apply to a given user, application, or time of day, use `sp_help_resource_limit`.

When you use `drop login` to drop an SAP ASE login, all resource limits associated with that login are also dropped.

The deletion of a resource limit causes the limits for each session for that login and/or application to be rebound at the beginning of the next query batch for that session.

See the *System Administration Guide* for more information on resource limits.

Permissions

The permission checks for `sp_drop_resource_limit` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `manage resource limit` privilege.
Disabled	With granular permissions disabled, you must be a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_add_resource_limit [page 18]
sp_droplogin [page 309]
sp_help_resource_limit [page 407]
sp_modify_resource_limit [page 586]

1.84 sp_drop_time_range

Removes a user-defined time range from the SAP ASE server.

Syntax

```
sp_drop_time_range <name>
```

Parameters

<name>

is the name of the time range to be dropped.

Examples

Example 1

Removes the "evenings" time range:

```
sp_drop_time_range evenings
```

Usage

There are additional considerations when using `sp_drop_time_range`:

- You cannot remove the "at all times" time range.
- You cannot drop a time range if a resource limit exists for that time range.
- Dropping a time range does not affect the active time ranges for sessions currently in progress.

For more information on time ranges, see the *System Administration Guide*.

Permissions

The permission checks for `sp_drop_time_range` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `manage resource limit` privilege.
Disabled	With granular permissions disabled, you must be a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_add_resource_limit [page 18]
sp_add_time_range [page 23]
sp_modify_time_range [page 589]

1.85 sp_dropdevice

Drops an SAP ASE database device or dump device.

Syntax

```
sp_dropdevice <logicalname>[, dropfile]
```

Parameters

<logicalname>

is the name of the device as listed in `master.dbo.sysdevices.name`.

dropfile

when specified, deletes the underlying operating system file.

Examples

Example 1

Drops the device named `tape5` from SAP ASE:

```
sp_dropdevice tape5
```

Example 2

Drops the database device named `fredsdata` from SAP ASE. The device must not be in use by any database:

```
sp_dropdevice fredsdata
```

Example 3

Drops the database device named fredsdata from SAP ASE as well as the file. The device must not be in use by any database:

```
sp_dropdevice fredsdata, dropfile
```

Usage

There are additional considerations when using sp_dropdevice:

- sp_dropdevice drops a device from SAP ASE, deleting the device entry from master.dbo.sysdevices.
- sp_dropdevice without the dropfile flag does not remove a file that is being dropped as a database device; it makes the file inaccessible to SAP ASE.
- To delete a file, either use dropfile or, after using sp_dropdevice, use operating system commands.

See also drop database in *Reference Manual: Commands*.

Permissions

The permission checks for sp_dropdevice differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with manage disk privilege.
Disabled	With granular permissions disabled, you must be a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_addumpdevice [page 70]
sp_helpdb [page 438]
sp_helpdevice [page 446]

1.86 sp_dropengine

Drops an engine from a specified engine group or, if the engine is the last one in the group, drops the engine group.

Considerations for Process Mode

sp_dropengine does not run in threaded mode.

Syntax

```
sp_dropengine <engine_number>[, <engine_group>][, <instance_id>]
```

Parameters

<engine_number>

is the number of the engine you are dropping from the group. Values are between 0 and a maximum equal to the number of configured online engines, minus one.

<engine_group>

is the name of the engine group from which to drop the engine.

<instance_id>

(Cluster environments only) is the ID of the instance from which you are dropping an engine or engine group.

Examples

Example 1

Drops engine number 2 from the group called DS_GROUP. If it is the last engine in the group, the group is also dropped:

```
sp_dropengine 2, DS_GROUP
```

Example 2

(Cluster environments only) Drops engine number 5 from instance ID 8:

```
sp_dropengine 5, 8
```

Usage

There are additional considerations when using sp_dropengine:

- You can invoke sp_dropengine only from the master database.
- If <engine_number> is the last engine in <engine_group>, SAP ASE also drops <engine_group>.
- (Cluster Edition only) if you set sp_cluster set <system_view> to:
    - cluster – you can drop an engine or engine group from any instance in the cluster.
    - instance – you can drop an engine or engine group only from a local instance.
- sp_dropengine can run in sessions using chained transactions after you use sp_procxmode to change the transaction mode to anymode.
- The <engine_number> you specify must exist in <engine_group>.

Permissions

The permission checks for sp_dropengine differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with manage any execution class privilege.
Disabled	With granular permissions disabled, you must be a user with sa_role

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide > Auditing*.

Related Information

sp_addengine [page 33]

1.87 sp_dropexeclass

Drops a user-defined execution class.

Syntax

```
sp_dropexeclass <classname>
```

Parameters

<classname>

is the name of the user-defined execution class to be dropped.

Examples

Example 1

This statement drops the user-defined execution class DECISION:

```
sp_dropexeclass 'DECISION'
```

Usage

An execution class helps define the execution precedence used by the SAP ASE server to process tasks. See the *Performance and Tuning Guide* for more information on execution classes and execution attributes.

<classname> must not be bound to any client application, login, stored procedure, or default execution class. Unbind the execution class first, using sp_unbindexeclass, then drop the execution class, using sp_dropexeclass.

You cannot drop system-defined execution classes.

Permissions

The permission checks for sp_dropexeclass differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `manage any execution class` privilege.
Disabled	With granular permissions disabled, you must be a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_addexeclass [page 35]
sp_bindexeclass [page 110]
sp_showexeclass [page 743]
sp_unbindexeclass [page 824]

1.88 sp_dropextendedproc

Removes an extended stored procedure.

Syntax

```
sp_dropextendedproc <esp_name>
```

Parameters

`<esp_name>`

is the name of the extended stored procedure to be dropped. `<esp_name>` is case-sensitive, and must precisely match the name with which the extended stored procedure was created.

Examples

Example 1

Removes xp_echo:

```
sp_dropextendedproc xp_echo
```

Usage

You can execute sp_dropextendedproc only from the master database.

Permissions

The permission checks for sp_dropextendedproc differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with manage any ESP privilege.
Disabled	With granular permissions disabled, you must be a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide > Auditing*.

Related Information

sp_addextendedproc [page 37]
sp_freedll [page 389]
sp_helpextendedproc [page 448]

1.89 sp_dropexternlogin

(Component Integration Services only) Drops the definition of a remote login previously defined by `sp_addexternlogin`.

Syntax

```
sp_dropexternlogin <server>[, <loginame>[, <rolename>]]
```

Parameters

<server>

is the name of the remote server from which the local server is dropping account access. The remote server is known to the local server by an entry in the `master.dbo.sysservers` table.

<loginame>

is a login account known to the local server. If `<loginame>` is not specified, the current account is used. `<loginame>` must exist in the `master.dbo.syslogins` table.

<rolename>

is the SAP ASE user's assigned role.

Examples

Example 1

Drops the definition of an external login to the remote server CIS1012 from "bobj". Only the "bobj" account and the "sa" account can add or modify a remote login for "bobj":

```
sp_dropexternlogin CIS1012, bobj
```

Example 2

Drops the definition of an external login to the remote server SSB from users with the sa_role:

```
sp_dropexternlogin SSB, NULL, sa_role
```

Usage

There are additional considerations when using `sp_dropexternlogin`:

- `sp_dropexternlogin` drops the definition of a remote login previously defined to the local server by `sp_addexternlogin`.
- You cannot execute `sp_dropexternlogin` from within a transaction.
- The remote server must be defined to the local server by `sp_addserver`.
- To add and drop local server users, use `sp_addalias`, `create login`, and `drop login`.

Permissions

The permission checks for `sp_dropexternlogin` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `manage any remote login` privilege. `sp_dropexternlogin` can be executed by users bound to `<loginname>`.
Disabled	With granular permissions disabled, you must be a user with sa_role. `sp_dropexternlogin` can be executed by users bound to `<loginname>`.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_addexternlogin [page 39]
sp_helpexternlogin [page 450]
sp_addlogin [page 47]
sp_droplogin [page 309]

1.90 sp_dropglockpromote

Removes lock promotion values from a table or database.

Syntax

```
sp_dropglockpromote {"database" | "table"}, <objname>
```

Parameters

database | table

specifies whether to remove the lock promotion thresholds from a database or table. The quotes are required because these are Transact-SQL keywords.

<objname>

is the name of the table or database from which to remove the lock promotion thresholds.

Examples

Example 1

Removes the lock promotion values from `titles`. Lock promotion for `titles` now uses the database or server-wide values:

```
sp_dropglockpromote "table", titles
```

Usage

There are additional considerations when using `sp_droplockpromote`:

- Use `sp_dropglockpromote` to drop lock promotion values set with `sp_setpglockpromote`.
- When you drop a database's lock promotion thresholds, tables that do not have lock promotion thresholds configured use the server-wide values.
- When a table's values are dropped, the SAP ASE server uses the database's lock promotion thresholds if they are configured or the server-wide values if they are not.
- Server-wide values can be changed with `sp_setpglockpromote`, but cannot be dropped.

Permissions

The permission checks for `sp_dropglockpromote` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `manage lock promotion threshold` privilege.
Disabled	With granular permissions disabled, you must be a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_setpglockpromote [page 718]

1.91 sp_dropglockpromote_ptn

Removes partition lock promotion values.

Syntax

- The syntax for dropping server-wide partition lock promotion settings is:

  ```
  sp_dropglockpromote_ptn "server"
  ```

- The syntax for dropping the partition lock promotion threshold at the database or table level is:

  ```
  sp_dropglockpromote_ptn {"database" | "table"}, objname
  ```

Parameters

server

removes server-wide values for the partition lock promotion thresholds.

"database" | "table"

specifies whether to remove the partition lock promotion thresholds for a database or table. These are Transact-SQL keywords and therefore, require quotes.

<objname>

is the name of the table or database from which to remove the partition lock promotion thresholds.

Examples

Example 1

Removes the partition lock promotion values from `titles`. Lock promotion for `titles` now uses the database or server-wide values:

```
sp_dropglockpromote_ptn "table", titles
```

Usage

There are additional considerations when using `sp_dropglockpromote_ptn`:

- Use `sp_dropglockpromote_ptn` to drop partition lock promotion values set with `sp_setpglockpromote_ptn`.
- When you drop a database’s partition lock promotion thresholds, tables that do not have partition lock promotion thresholds configured use the server-wide values.
- When a table’s values are dropped, the SAP ASE server uses the database’s lock promotion thresholds if they are configured or the server-wide values if they are not.
- When you drop server-wide partition lock promotion thresholds, partition lock promotion threshold values set at the table level will be used. Otherwise, partition lock promotion threshold values set at the database level will be used. If partition lock promotion threshold values are not set at either database or table level, then partition lock promotion is disabled. It can be enabled again using `sp_setrowlockpromote_ptn`.

Permissions

The permission checks for `sp_dropglockpromote_ptn` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `manage lock promotion threshold` privilege.
Disabled	With granular permissions disabled, you must be a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide > Auditing*.

1.92 sp_dropgroup

Drops a group from a database.

Syntax

```
sp_dropgroup <grpname>
```

Parameters

<grpname>

is the name of a group in the current database.

Examples

Example 1

The "purchasing" group has merged with the "accounting" group. These commands move "martha" and "george", members of the "purchasing" group, to other groups before dropping the group. The group name "public" is quoted because "public" is a reserved word:

```
sp_changegroup accounting, martha
sp_changegroup "public", george
sp_dropgroup purchasing
```

Usage

Executing sp_dropgroup drops a group name from a database's sysusers table.

You cannot drop a group if it has members. To drop the group, execute sp_changegroup for each member first.

Permissions

The permission checks for sp_dropgroup differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with manage any user privilege.
Disabled	With granular permissions disabled, you must be the database owner, a user with sa_role, or a user with sso_role.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide > Auditing*.

Related Information

sp_addgroup [page 42]

sp_changegroup [page 135]

sp_helpgroup [page 452]

1.93 sp_dropkey

Removes from the syskeys table a key that had been defined using sp_primarykey, sp_foreignkey, or sp_commonkey.

Syntax

```
sp_dropkey <keytype>, <tabname>[,< deptabname>]
```

Parameters

<keytype>

is the type of key to be dropped. The values are: primary, foreign, or common.

<tabname>

is the name of the key table or view that contains the key to be dropped.

<deptabname>

specifies the name of the second table in the relationship, if the <keytype> is foreign or common. If the <keytype> is primary, this parameter is unnecessary, since primary keys have no dependent tables. If the <keytype> is foreign, this is the name of the primary key table. If the <keytype> is foreign, give the two table names in the order in which they appear with sp_helpkey.

Examples

Example 1

Drops the primary key for the employees table. Any foreign keys that were dependent on the primary key for employees are also dropped:

```
sp_dropkey primary, employees
```

Example 2

Drops the common keys between the employees and projects tables:

```
sp_dropkey common, employees, projects
```

Example 3

Drops the foreign key between the titleauthor and titles tables:

```
sp_dropkey foreign, titleauthor, titles
```

Usage

There are additional considerations when using `sp_dropkey`:

- Executing `sp_dropkey` deletes the specified key from `syskeys`. Only the owner of a table can drop a key from that table.
- Keys are created to make explicit a logical relationship that is implicit in your database design. This information can be used by an application.
- Dropping a primary key automatically drops any foreign keys associated with it. Dropping a foreign key has no effect on a primary key specified on that table.
- Executing `sp_commonkey`, `sp_primarykey`, or `sp_foreignkey` adds the key to the `syskeys` system table. To display a report on the keys that have been defined, execute `sp_helpkey`.

Permissions

You must be the table owner to execute `sp_dropkey`. Permission checks do not differ based on the granular permissions settings.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_commonkey [page 191]
sp_foreignkey [page 387]
sp_helpkey [page 462]
sp_primarykey [page 676]

1.94 sp_droplanguage

Drops an alternate language from the server and removes its row from `master.dbo.syslanguages`.

Syntax

```
sp_droplanguage <language> [, dropmessages]
```

Parameters

`<language>`

is the official name of the language to be dropped.

`dropmessages`

drops all SAP ASE system messages in `<language>`. You cannot drop a language with associated system messages without also dropping its messages.

Examples

Example 1

This example drops French from the available alternate languages, if there are no associated messages:

```
sp_droplanguage french
```

Example 2

This example drops French from the available alternate languages, if there are associated messages:

```
sp_droplanguage french, dropmessages
```

Usage

Executing `sp_droplanguage` drops a language from a list of alternate languages by deleting its entry from the `master.dbo.syslanguages` table.

If you try to drop a language that has system messages, the request fails unless you supply the `dropmessages` parameter.

Permissions

The permission checks for `sp_droplanguage` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `manage server` privilege.
Disabled	With granular permissions disabled, you must be a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide > Auditing*.

Related Information

sp_addlanguage [page 43]
sp_helplanguage [page 464]

1.95 sp_droplogin

Deprecated by SAP ASE 15.7. To drop a login account in SAP ASE, use the `drop login` command. See *Reference Manual: Commands > Commands > drop login*.

1.96 sp_dropmessage

Drops user-defined messages from `sysusermessages`.

Syntax

```
sp_dropmessage <message_num>[, <language>]
```

Parameters

<message_num>

is the message number of the message to be dropped. Message numbers must have a value of 20000 or higher.

<language>

is the language of the message to be dropped.

When you include the optional <language> parameter, only the message with the indicated <message_num> in the indicated language is dropped. If you do not specify a <language>, all messages with the indicated <message_num> are dropped.

Examples

Example 1

Removes the French version of the message with the number 20002 from sysusermessages:

```
sp_dropmessage 20002, french
```

Permissions

The permission checks for sp_dropmessage differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be the user who created the message or the database owner, or a user with own database privilege on the current database.
Disabled	With granular permissions disabled, you must be the user who created the message, the database owner, or a user with sa_role.

Auditing

You can enable drop auditing option to audit this procedure. Values in event and extrainfo columns from the sysaudits table are:

Information	Value
Audit option	drop
Event	32

Information	Value
Command or access audited	`sp_dropmessage`
Information in **`extrainfo`**	- **Roles** – Current active roles - **Keywords or options** – NULL - **Previous value** – NULL - **Current value** – NULL - **Other information** – All input parameters - **Proxy information** – Original login name, if `set proxy` in effect

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_addmessage [page 47]
sp_getmessage [page 390]

1.97 sp_dropobjectdef

(Component Integration Services only) Deletes the external storage mapping provided for a local object.

Syntax

```
sp_dropobjectdef <tablename>
```

Parameters

`<tablename>`

has the form `<dbname>.<owner>.<object>`, where:

- `<dbname>` (optional) is the name of the database containing the object with a storage location that you are dropping. If present, it must be the current database, and the `<owner>` or a placeholder is required.
- `<owner>` is the name of the owner of the object with a storage location that you are dropping. `<owner>` is optional; it is required if `<dbname>` is specified.

- <object> is the name of the local table for which external storage mapping is to be dropped.

Examples

Example 1

Deletes the entry from sysattributes that provided the external storage mapping for a table known to the server as the colleges table in database personnel:

```
sp_dropobjectdef "personnel.dbo.colleges"
```

Example 2

Deletes the entry from sysattributes that provided the external storage mapping for the andrea.fishbone object, where andrea is the owner and the local table name is fishbone:

```
sp_dropobjectdef "andrea.fishbone"
```

Usage

There are additional considerations when using sp_dropobjectdef:

- sp_dropobjectdef deletes the external storage mapping provided for a local object. It replaces sp_droptabledef.
- Use sp_dropobjectdef after dropping a remote table with drop table.
- Dropping a table does not remove the mapping information from the sysattributes table if it was added using sp_addobjectdef. It must be explicitly removed using sp_dropobjectdef.
- The <tablename> can be in any of these forms:
  - <object>
  - <owner>.<object>
  - <dbname>..<object>
  - <dbname>.<owner>.<object>

See also create existing table, create table, drop table in *Reference Manual: Commands*.

Permissions

The permission checks for sp_dropobjectdef differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be the object owner or a user with drop any table privilege.

Setting	Description
Disabled	With granular permissions disabled, you must be the object owner, the database owner, or a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_addobjectdef [page 50]

1.98 sp_dropremotelogin

Drops a remote user login.

Syntax

```
sp_dropremotelogin <remoteserver>[,< loginame>[, <remotename>] ]
```

Parameters

<remoteserver>

is the name of the server that has the remote login to be dropped.

<loginame>

is the local server’s user name that is associated with the remote server in the sysremotelogins table.

<remotename>

is the remote user name that gets mapped to <loginame> when logging in from the remote server.

Examples

Example 1

Drops the entry for the remote server named GATEWAY:

```
sp_dropremotelogin GATEWAY
```

Example 2

Drops the entry for mapping remote logins from the remote server GATEWAY to the local user named "churchy":

```
sp_dropremotelogin GATEWAY, churchy
```

Example 3

Drops the login for the remote user "pogo" on the remote server GATEWAY that was mapped to the local user named "churchy":

```
sp_dropremotelogin GATEWAY, churchy, pogo
```

Usage

Executing `sp_dropremotelogin` drops a user login from a remote server, deleting the user's entry from `master.dbo.sysremotelogins`.

For a more complete discussion on remote logins, see `sp_addremotelogin`.

To add and drop local server users, use the commands `create login` and `drop login`.

Permissions

The permission checks for `sp_dropremotelogin` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `manage any remote login` privilege.
Disabled	With granular permissions disabled, you must be a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_addlogin [page 47]
sp_addremotelogin [page 53]
sp_addserver [page 58]
sp_droplogin [page 309]
sp_helpremotelogin [page 470]
sp_helpserver [page 481]

1.99 sp_droprowlockpromote

Removes row lock promotion threshold values from a database or table.

Syntax

```
sp_droprowlockpromote {"database" | "table"}, <objname>
```

Parameters

`database | table`

specifies whether to remove the row lock promotion thresholds from a database or table.

`<objname>`

is the name of the database or table from which to remove the row lock promotion thresholds.

Examples

Example 1

Removes the row lock promotion values from the `sales` table. Lock promotion for `sales` now uses the database or server-wide values:

```
sp_droprowlockpromote "table", "sales"
```

Usage

There are additional considerations when using sp_droprowlockpromote:

- Use sp_droprowlockpromote to drop row lock promotion values set with sp_setrowlockpromote.
- When you drop a database's row lock promotion thresholds, datarows-locked tables that do not have row lock promotion thresholds configured use the server-wide values. Use sp_configure to check the value of the row lock promotion configuration parameters.
- When a table's row lock promotion values are dropped, the SAP ASE server uses the database's row lock promotion thresholds, if they are configured, or the server-wide values, if no thresholds are set for the database.
- To change the lock promotion thresholds for a database, you must be using the master database. To change the lock promotion thresholds for a table in a database, you must be using the database where the table resides.
- You can change server-wide values with sp_setrowlockpromote. Since this changes the values in the row lock promotion configuration parameters, there is no corresponding server option for sp_droprowlockpromote.

Permissions

The permission checks for sp_droprowlockpromote differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with manage lock promotion threshold privilege.
Disabled	With granular permissions disabled, you must be a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_setrowlockpromote [page 725]

1.100 sp_droprowlockpromote_ptn

Removes partition lock promotion threshold values at server, database, or table levels.

Syntax

- The syntax for dropping server-wide partition lock promotion settings is:

  ```
  sp_droprowlockpromote_ptn "server"
  ```

- The syntax for dropping the partition lock promotion threshold at the database or table level is:

  ```
  sp_droprowlockpromote_ptn {"database" | "table"}, objname
  ```

Parameters

server

removes server-wide values for the partition lock promotion thresholds.

"database" | "table"

specifies whether to remove the partition lock promotion thresholds for a database or table. These are Transact-SQL keywords and therefore, require quotes.

<objname>

is the name of the table or database from which to remove the partition lock promotion thresholds.

Examples

Example 1

Removes the partition lock promotion values from the `sales` table. Partition lock promotion for `sales` now uses the database or server-wide values:

```
sp_droprowlockpromote_ptn "table", "sales"
```

Usage

There are additional considerations when using `sp_droprowlockpromote_ptn`:

- Use sp_droprowlockpromote_ptn to drop partition lock promotion values set with sp_setrowlockpromote_ptn.
- When you drop a database's partition lock promotion thresholds, datarows-locked tables that do not have partition lock promotion thresholds configured at table level use the server-wide values. Use sp_configure to check the value of the partition lock promotion configuration parameters.
- When a table's partition lock promotion values are dropped, the SAP ASE server uses the database's partition lock promotion thresholds, if they are configured, or the server-wide values, if no thresholds are set for the database.
- To change the partition lock promotion thresholds for a database, you must be using the master database. To change the partition lock promotion thresholds for a table in a database, you must be using the database where the table resides.
- When you drop server-wide partition lock promotion thresholds, partition lock promotion threshold values set at the table level will be used. Otherwise, partition lock promotion threshold values set at the database level will be used. If partition lock promotion threshold values are not set at either database or table level, then partition lock promotion is disabled. It can be enabled again using sp_setrowlockpromote_ptn.

Permissions

The permission checks for sp_droprowlockpromote_ptn differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with manage lock promotion threshold privilege.
Disabled	With granular permissions disabled, you must be a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

1.101 sp_dropsegment

Drops a segment from a database or unmaps a segment from a particular database device.

Syntax

```
sp_dropsegment <segname>, <dbname> [, <device>]
```

Parameters

<segname>

is the name of the segment to be dropped.

<dbname>

is the name of the database from which the segment is to be dropped.

<device>

is the name of the database device from which the segment <segname> is to be dropped. This parameter is optional, except when the system segment system, default, or logsegment is being dropped from a database device.

Examples

Example 1

This command drops the segment indexes from the pubs2 database:

```
sp_dropsegment indexes, pubs2
```

Example 2

This command unmaps the segment indexes from the database device dev1:

```
sp_dropsegment indexes, pubs2, dev1
```

Usage

There are additional considerations when using sp_dropsegment:

- You can drop a segment if it is not referenced by any table, index, or partition in the specified database.

- If you:
  - Do not supply `<device>` – the segment is dropped from the specified database.
  - Supply `<device>` – the segment is no longer mapped to the named database device, but the segment is not dropped.
- Dropping a segment drops all thresholds associated with that segment.
- You can only execute `sp_dropsegment` for the `logsegment` system segment in single-user mode.

  > i Note
  >
  > This command may take a long time to complete in very large databases.

- When you unmap a segment from one or more devices, the SAP ASE server drops any thresholds that exceed the total space on the segment. When you unmap the `logsegment` from one or more devices, the SAP ASE server recalculates the last-chance threshold.
- `sp_placeobject` changes future space allocations for a table or index from one segment to another, and removes the references from the original segment. After using `sp_placeobject`, you can drop the original segment name with `sp_dropsegment`.
- For the system segments `system`, `default`, and `logsegment`, you must specify the device name from which you want the segments dropped.

Permissions

The permission checks for `sp_dropsegment` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `manage database` privilege.
Disabled	With granular permissions disabled, you must be the database owner or a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_addsegment [page 56]

sp_addthreshold [page 62]

sp_helpsegment [page 478]

sp_helpthreshold [page 492]

sp_placeobject [page 664]

1.102 sp_dropserver

Drops a server from the list of known servers or drops remote logins and external logins in the same operation.

Syntax

```
sp_dropserver <server>[, droplogins]
```

Parameters

<server>

is the name of the server to be dropped.

droplogins

indicates that any remote logins for <server> should also be dropped.

Examples

Example 1

This command drops the remote server GATEWAY:

```
sp_dropserver GATEWAY
```

Example 2

Drops the entry for the remote server RDBAM_ALPHA and drops all remote logins and external logins for that server:

```
sp_dropserver RDBAM_ALPHA, droplogins
```

Usage

There are additional considerations when using sp_dropserver:

- Executing sp_dropserver drops a server from the list of known servers by deleting the entry from the master.dbo.sysservers table.

- Running sp_dropserver on a server that has associated entries in the master.dbo.sysremotelogins table results in an error message stating that you must drop the remote users before you can drop the server. To drop all remote logins for a server when dropping the server, use droplogins.
- Running sp_dropserver without droplogins against a server that has associated entries in the sysattributes table results in an error. You must drop the remote logins and external logins before you can drop the server.
- The checks against sysattributes for external logins and for default mapping to a server apply when Component Integration Services is configured.

Permissions

The permission checks for sp_dropserver differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with manage server privilege. When droplogins is specified, you must be a user with manage any remote login privilege. SAP ASE high availability – You must be a user with manage server privilege and ha_role. When droplogins is specified, you must be a user with manage any remote login privilege. SAP ASE shared-disk cluster – You must be a user with manage server and manage cluster privileges. When droplogins is specified, you must be a user with manage any remote login privilege.
Disabled	With granular permissions disabled, you must be a user with sso_role. SAP ASE high availability – You must be a user with sso_role permission and ha_role. SAP ASE shared-disk cluster – You must be a user with sso_role and sa_role permission.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide > Auditing*.

Related Information

sp_addserver [page 58]
sp_dropremotelogin [page 313]
sp_helpremotelogin [page 470]
sp_helpserver [page 481]

1.103 sp_dropthreshold

Removes a free-space threshold from a segment.

Syntax

```
sp_dropthreshold <dbname>, <segname>, <free_space>
```

Parameters

<dbname>

is the database from which you are dropping the threshold. This must be the name of the current database.

<segname>

is the segment with free space that is monitored by the threshold. Use quotes when specifying the "default" segment.

<free_space>

is the number of free pages at which the threshold is crossed.

Examples

Example 1

Removes a threshold from `segment1` of `mydb`. You must specify the database, segment, and amount of free space to identify the threshold:

```
sp_dropthreshold mydb, segment1, 200
```

Usage

You cannot drop the last-chance threshold from the log segment.

You can use the `no free space acctg` option of `sp_dboption` as an alternative to `sp_dropthreshold`. This option disables free-space accounting on non-log segments. You cannot disable free-space accounting on log segments.

Permissions

The permission checks for sp_dropthreshold differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with manage database privilege.
Disabled	With granular permissions disabled, you must be the database owner or a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_addthreshold [page 62]
sp_dboption [page 228]
sp_helpthreshold [page 492]
sp_thresholdaction [page 808]

1.104 sp_droptype

Drops a user-defined datatype.

Syntax

```
sp_droptype <typename>
```

Parameters

<typename>

is the name of a user-defined datatype that you own.

Examples

Example 1

Drops the user-defined datatype named `birthday`:

```
sp_droptype birthday
```

Usage

Executing `sp_droptype` deletes a user-defined datatype from `systypes`.

You cannot drop a user-defined datatype if it is referenced by tables or another database object.

See also *Reference Manual: Building Blocks* > *User-Defined Datatypes*.

Permissions

The permission checks for `sp_droptype` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be the datatype owner or a user with `manage database` privilege.
Disabled	With granular permissions disabled, you must be datatype owner or database owner.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_addtype [page 67]
sp_rename [page 692]

1.105 sp_dropuser

Drops a user from the current database.

Syntax

```
sp_dropuser <name_in_db>
```

Parameters

<name_in_db>

is the user's name in the current database's `sysusers` table.

Examples

Example 1

Drops the user "albert" from the current database. The user "albert" can no longer use the database:

```
sp_dropuser albert
```

Usage

There are additional considerations when using `sp_dropuser`:

- `sp_dropuser` drops a user from the current database by deleting the user's row from `sysusers`.
- You cannot drop:
  - A user who owns objects in the database. You can use `alter table modify owner` to change the ownership of tables before dropping the user. However there is no command to transfer ownerships for other types of objects, you must drop these objects first before dropping the user.
  - A user who has granted permissions to other users.
  - The database owner from a database.
- If other users are aliased to the user being dropped, their aliases are also dropped. They no longer have access to the database.
- You cannot drop a user from a database if the user owns a stored procedure that is bound to an execution class in that database. See `sp_bindexeclass`.

- sp_dropuser drops all key copies from sysencryptkeys for the specified user in the current database. sp_dropuser fails if the user owns an encryption key in any database. See the *Encrypted Columns Users Guide*.

See also grant, revoke, use in *Reference Manual: Commands*.

Permissions

The permission checks for sp_dropuser differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with manage any user privilege.
Disabled	With granular permissions disabled, you must be the datatype owner, a user with sa_role, or a user with sso_role.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_addalias [page 26]
sp_adduser [page 73]
sp_bindexeclass [page 110]
sp_droplogin [page 309]

1.106 sp_dump_history

Allows you to display and purge records from the dump history file.

Syntax

```
sp_dump_history
```

```
[ @operation = {'list' | 'purge' | 'listfiles' | 'help' | 'listpurgefiles' |
'purgefiles' |'delete' | 'upgrade' | 'downgrade' | 'create_table'}]
    [, @until_time = '<upper_date_ limit>']
    [, @name = '[<database_name> | <config_file_name>']
    [, @dump_type = {'database' | 'tran[saction]' | 'config[uration]' |
'cum[ulative]'}]
    [, @status = {'success' | 'fail' | 'deleted'}]
    [, @file = '<dump_history_filename>']
     [, @version = '1.0']
     [, @stripe_name = '<dump_stripe_name>']
     [, @dump_date = '<dump_begin_time>']
     [, @dump_end_time = '<dump_end_time>']
     [, @format = '[raw | count]'
```

Parameters

@operation = {'list' | 'purge' | 'listfiles' | 'help' | 'listpurgefiles' | 'purgefiles' |'delete' | 'upgrade' | 'downgrade' | 'create_table'}

operation performed by sp_dump_history. One of:

- list – displays the records from the dump history file. The list includes:
  - Dump_type – dump type.
  - Dbid – database ID.
  - Database_name – database name.
  - Stripes – total number of dump stripes.
  - Dump_instant – time the dump was made (this is the point in time up to which the database is recovered if the dump were loaded).
  - File – target stripe name.
  - Server_name – remote Backup Server name, if created using an at clause.
  - Compression_lvl – level of compression used for the dump.
  - Password – specifies whether the dump file was created using the with password option.
  - Status – status indicating whether the dump was a success or failure, and other information. The output shows Load, Success in records generated for load operations.
  - Label – indicates if the database was marked for replication.
  - Dump_begin_time – starting date and time of the dump.
  - Dump_end_time – ending date and time of the dump.
  - Dump_size – number of KB, MB, and GBs dumped during a dump database or written during a load database.
- purge – purges records from the dump history file. The records to be purged are selected based on criteria specified using the other sp_dump_history parameters. If you use the <until_time> date as purge criteria, dump entries are deleted up to this date. The original dump history file is backed up as original_name.<XXXXXXXXX>, where <XXXXXXXXX> represents an increasing numerical value from 000000001 to 999999999. Numbering restarts once the count reaches a value of 999999999.
- listfiles – displays the list of dump history file names using the format dumphist.*.

- help – shows the syntax for sp_dump_history.
- listpurgefiles – lists all the backup files that will be purged if you issue sp_dump_history with the purgefiles parameter.
- purgefiles – deletes all the backup files.
- delete – delete records affected by the selected criteria. A backup file is generated.
- upgrade – allows you to force an upgrade of the existing file from a previous version to the current version when a release changes the format of the dump history file.
- downgrade – allows you to downgrade the file to a previous version.
- create_table – creates a proxy table to allow access to the dump history file. The table name is optional.

<until_time>

specifies a date and time for the dump. If you are purging records, the value for <until_time> is used to purge all dump entries created before that time. By default, all dump records are purged.

<database_name>

affected records include only this database. By default, the dump records for all databases are included.

<dump_type>

specifies the type of dump record to select. One of:

- 'DATABASE' – database dump objects created by dump database.
- 'TRAN[SACTION]' – transaction dump objects created by dump transaction.
- 'CONFIG[URATION]' – server configuration objects created by dump configuration.

<status>

is one of success, fail, or deleted. By default, only successful dump records are included.

<file>

specifies the name of the dump history file to display records from. You must specify the path, or location, of the file as part of <file>. The default location of the dump history file is $SYBASE/$SYBASE_ASE (%SYBASE%\%SYBASE_ASE% in Windows).

<version>

is used only as an extra parameter for the downgrade operation.

<stripe_name>

applies only to records that contain this stripe name.

<dump_date>

applies only to records that contain this dump date.

<dump_end_time>

applies only to records that finish by this dump date.

<format>

One of the following:

- raw – returns unformatted output.
- count – returns the number of records affected.

Examples

Running sp_dump_history requires that you first enable SAP ASE to create the dump history files:

```
sp_configure 'enable dump history', 1
```

Example 1

Lists all dump records from the dump history file:

```
sp_dump_history 'list'
```

Example 2

Lists dump records of a specified database created before a specified time:

```
sp_dump_history 'list', 'mar 20, 2010 10:51:43:866am', 'testdb'
```

Example 3

Lists the transaction dump objects from the model database, specifying a full path for the dump history file:

```
sp_dump_history @operation='list', @database_name = 'model',
     @dump_type='TRAN', @status = 'success',
     @file = '/john_machine/john/ASE/ASE-16_0/dumphist'
```

Example 4

Creates a table called sysdumphist in the master database:

```
sp_dump_history create_table, 'master..sysdumphist'
go
The object sysdumphist has been successfully created in database master.
(return status = 0)
```

Usage

- SAP ASE does not create the dump history files by default. Use the enable dump history configuration parameter to configure SAP ASE to create the dump history files:

  ```
  sp_configure 'enable dump history', 1
  ```

  Once enabled, each server instance has a dump history file (located in $SYBASE/$SYBASE_ASE) with information about all database dumps and server configuration dumps, successful or not.
- The default behavior for sp_dump_history with no parameters is to display the output from its list parameter.
- The output for database and transaction dumps differs from that of configuration files.

- See also:
  - For information about dump operations, see the *System Administration Guide: Volume Two*.
  - `dump configuration`, `dump database`, `load database` in *Reference Manual: Commands*
  - `sp_config_dump`
  - The *Reference Manual: Configuration Parameters*.

Permissions

The permission checks for `sp_dump_history` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `manage dump configuration` privilege.
Disabled	With granular permissions disabled, you must be a user with sa_role or oper_role.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

1.106.1 Creating a Proxy Table

Use the `sp_dump_history` stored procedure with the `create_table` parameter to create a proxy table, which allows access to the dump history file.

Although the proxy table is created on a file, you don't have to first enable the external file access. If you don't specify a name for the proxy table, it is assigned the default name, `dumphis<random_number>`, in the `tempdb` database. For example:

```
sp_dump_history create_table
go
The object dumphist15870 has been successfully created in database tempdb.
(return status = 0)
```

To return all DUMP DATABASE records (`rec_type` = 2) from the dump history file, run:

```
sp_autoformat "tempdb..dumphist15870",null,"where rec_type=2"
go
```

The proxy table is treated as a user table instead of a system table. It becomes invalid if the dump history file name is changed.

1.107 sp_dump_info

The sp_dump_info system procedure displays the size of data and log that an uncompressed cumulative dump would contain at a specific point in time.

The size is reported in units of KB, MB, or GB, as appropriate. The size reported may be slightly smaller than the actual size of the archive file (or files, if using multiple stripes), because the archive contains some additional information by way of the labels, header, trailer and runlist pages. sp_dump_info can also only assume that an uncompressed dump is done; if a compressed dump is done, the size of the archive will clearly be smaller than that reported by sp_dump_info.

You cannot use sp_dump_info:

- Unless you allow incremental dumps of your database by using the allow incremental dumps parameter of sp_dboption.
- If the database has not yet been fully dumped since you enabled incremental dumps for your database.

Syntax

```
sp_dump_info <database_name>
```

Parameters

<database_name>

is the name of the database.

Examples

Data and log size

Displays the size of data and log that the cumulative dump of the test database contains

```
sp_dump_info test
go
 Data      Log    Database percentage  Allocation threshold
 -------  -----  --------------------  --------------------
 4368 KB  2 KB                      2                    40
(return status = 0)  (return status = 0)
```

The output indicates that if a cumulative dump were taken at this point in time, it would contain approximately 4,368KB of data and a single log page, which represents 2 percent of the total database size.

Compare this with the size if you performed a cumulative dump at this time:

```
dump database test cumulative to "c:/tmp/test.dmp"
go
Backup Server: 4.171.1.1: The current value of 'reserved pages
threshold' is 85%.
Backup Server: 4.171.1.2: The current value of 'allocated pages
threshold' is 40%.
Backup Server session id is: 10. Use this value when executing the
'sp_volchanged' system stored procedure after fulfilling any
volume change request from the Backup Server.
Backup Server: 6.28.1.1: Dumpfile name 'test122480F0EF ' section
number 1 mounted on disk file 'c:/tmp/test.dmp'
Backup Server: 4.188.1.1: Database test: 4328 kilobytes (3%) DUMPED.
Backup Server: 3.43.1.1: Dump phase number 1 completed.
Backup Server: 3.43.1.1: Dump phase number 2 completed.
Backup Server: 3.43.1.1: Dump phase number 3 completed.
Backup Server: 4.188.1.1: Database test: 4370 kilobytes (3%)
DUMPED.
Backup Server: 3.42.1.1: DUMP is complete (database test).
```

The corresponding size of the archive is 4,487,168 bytes, or 2191 pages. This differs from the estimate given by `sp_dump_info` by 29 pages (14 KB), which is the result of 8 pages for the dump labels, 1 page for the dump header, 1 page for the dump trailer and 19 pages containing run lists. The size of the dump labels, header and trailer are independent of the numbers of pages dumped, while the number of pages used by run lists is dependent on the numbers of pages dumped.

Error message

Displays an error message when incremental dumps are not enabled on `master`

```
sp_dump_info mydb
go
Msg 17154, Level 16, State 1:
Procedure 'sp_dump_info', Line 32:
Incremental dumps are not enabled in database mydb.
(return status = 1)
```

Usage

`sp_dump_info` fails if you do not allow incremental dumps, or you have not enabled incremental dumps for your database.

Permissions

Any user can execute `sp_dump_info`.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

1.108 sp_dumpoptimize

Specifies the amount of data dumped by Backup Server during a `dump database` operation.

Syntax

```
sp_dumpoptimize [ 'archive_space = {maximum | minimum | default }' ]
```

```
sp_dumpoptimize [ 'reserved_threshold = {<nnn> | default }' ]
```

```
sp_dumpoptimize [ 'allocation_threshold = {<nnn> | default }' ]
```

Parameters

`archive_space`

specifies the amount of the database you want dumped.

`maximum`

dumps the whole database without determining which pages are allocated or not. The total space used by the archive image or images is equal to the size of the database. Using this option has the same effect as using the options `reserved_threshold=0` and `allocation_threshold=0`.

`minimum`

dumps only the allocated pages, which results in the smallest possible archive image. This option is useful when dumping to archive devices for which the throughput is much smaller than that of the database devices such as QIC tape drives. Using this option has the same effect as using the options `reserved_threshold=100` and `allocation_threshold=100`.

`default`

specifies that default values should be used. When used with:

- `archive_space` – this option dumps the database with the `reserved_threshold` and `allocation_threshold` options set to their default values. Use this to reset Backup Server to the default configuration.

- reserved_threshold – default specifies 85 percent.
- allocation_threshold – default specifies 40 percent.

reserved_threshold

dumps all the pages belonging to the database in a database disk if the percentage of reserved pages in the disk is equal to or greater than <nnn>. For example, if you specify <nnn> as 60 and if a database disk has a percentage of reserved pages equal to or greater than 60 percent, then the entire disk is dumped without determining which pages within that disk are allocated. The default for this option is 85 percent.

<nnn>

an integer value between 0 and 100 that represents the value of the threshold. It is used to determine how much data to dump.

When used with reserved_threshold, if the percentage of reserved pages in the disk is greater than the value specified, all the pages of the database in a database disk are dumped.

When used with allocation_threshold, if the percentage of allocated pages in an allocation unit is greater than the percentage specified for allocation_threshold, all the pages within an allocation unit are dumped.

allocation_threshold

dumps all the pages in the allocation unit if the percentage of allocated pages in the unit is equal to or greater than <nnn>. For example, if <nnn> is specified as 70 and if the percentage of allocated pages in an allocation unit is equal to or greater than 70 percent, then the entire allocation unit is dumped without determining whether pages within that allocation unit are allocated or not. If the reserved_threshold setting causes the whole disk to be dumped, the allocation_threshold setting is ignored for the disk. The default for this option is 40 percent.

Examples

Example 1

Dumps the whole database:

```
sp_dumpoptimize 'archive_space=maximum'
```

```
Backup Server: 4.172.1.1: The value of 'reserved pages threshold' has been
set to 0%.
Backup Server: 4.172.1.2: The value of 'allocated pages threshold' has been
set to 0%.
```

Example 2

Dumps only the allocated pages, thereby resulting in the smallest archive image:

```
sp_dumpoptimize 'archive_space=minimum'
```

```
Backup Server: 4.172.1.1: The value of 'reserved pages threshold' has been
set to 100%.
Backup Server: 4.172.1.2: The value of 'allocated pages threshold' has been
```

```
set to 100%.
```

Example 3

Sets the reserved threshold to 85 percent and the allocation threshold to be set to 40 percent:

```
sp_dumpoptimize 'archive_space=default'
```

```
Backup Server: 4.172.1.1: The value of 'reserved pages threshold' has been
set to 85%.
Backup Server: 4.172.1.2: The value of 'allocated pages threshold' has been
set to 40%.
```

Example 4

Dumps disks in the database with a percentage of reserved pages that is greater than or equal to 60 percent without reading allocation pages on this disk. For the remaining disks, the allocation pages are read, and the last set value for the `allocation_threshold` is used. If the `allocation_threshold` was not set after Backup Server was started, default `allocation_threshold` of 40 percent is used:

```
sp_dumpoptimize 'reserved_threshold=60'
```

```
Backup Server: 4.172.1.3: The value of 'reserved pages threshold' has been
set to 60%.
```

Example 5

Causes the reserved threshold to be set to 85 percent. It does not affect the allocation page threshold:

```
sp_dumpoptimize 'reserved_threshold=default'
```

```
Backup Server: 4.172.1.3: The value of 'reserved pages threshold' has been
set to 85%.
```

Example 6

Reads allocation pages for those disks with a reserved page percentage that is less than the last set value for the `reserved_threshold` and if an allocation unit has 80 percent or more pages allocated, then the whole allocation unit is dumped:

```
sp_dumpoptimize 'allocation_threshold=80'
```

```
Backup Server: 4.172.1.4: The value of 'allocated pages threshold' has been
set to 80%.
```

Example 7

This example causes the allocation page threshold to be set to the default of 40 percent. It does not affect the reserved pages threshold:

```
sp_dumpoptimize 'allocation_threshold=default'
```

```
Backup Server: 4.172.1.4: The value of 'allocated pages threshold' has been
set to 40%.
```

Example 8

Dumps disks in the database with a percentage of reserved pages that is greater than or equal to 60 percent without reading allocation pages on this disk. For the remaining disks, the allocation pages are read and if an allocation unit has 30 percent or more pages allocated, then the whole allocation unit is dumped:

```
sp_dumpoptimize 'reserved_threshold=60', 'allocation_threshold=30'
```

```
Backup Server: 4.172.1.3: The value of 'reserved pages threshold' has been
set to 60%.
Backup Server: 4.172.1.4: The value of 'allocated pages threshold' has been
set to 30%.
```

Example 9

Displays the current value of the thresholds:

```
sp_dumpoptimize
```

```
Backup Server: 4.171.1.1: The current value of 'reserved pages threshold'
is 60%
Backup Server: 4.171.1.2: The current value of 'allocated pages threshold'
is 30%.
```

Usage

- When you set a threshold using `sp_dumpoptimize`, this threshold acts on each individual device that the database resides on.
- When you set values with `sp_dumpoptimize`, those values are immediately in affect without the need to restart Backup Server. However, the changes are effective only until the Backup Server is restarted. When Backup Server is restarted, the default values are used.
- If you issue `sp_dumpoptimize` multiple times, the thresholds specified by the last instance are used by later dumps. For example, if you first set the `reserved_threshold` value, and later issue `archive_space=maximum`, then that value overwrites the previous value you set for `reserved_threshold`.
- Dumps of different databases can use different thresholds by changing the `sp_dumpoptimize` values before each database dump.
- The optimal threshold values can vary from one database to another. Therefore, the performance of a dump depends on both the I/O configuration and the amount of used space in the database. The DBA can determine the appropriate configuration for a database by experimenting with dumps using different values and choosing the one that results in the shortest dump time.
- You can use `sp_dumpoptimize` for both local and remote dumps.
- `sp_dumpoptimize` has no effect on the performance of a transaction log dump or a load. Therefore, it need not be issued before `dump transaction`, `load database` or `load transaction` operations.
- If `sp_dumpoptimize` is issued without any parameters, the current value of the thresholds is displayed on the client.
- On configurations in which the archive device throughput is equal to or higher than the cumulative throughput of all the database disks, using `archive_space=maximum` may result in a faster dump. However, on configurations in which the archive device throughput is less than the cumulative throughput of all the database disks, using this option may result in a slower dump.

- The option names and the values for this procedure can be abbreviated to the unique substring that identifies them. For example, `ar = ma` is sufficient to uniquely identify the option `archive_space=maximum`.
- There can be zero or more blank space characters around the equal sign (=) in the option string.
- The option names and their values are case insensitive.

See also:

- `dump database`, `dump transaction`, `load database`, `load transaction` in *Reference Manual: Commands*
- See the *System Administration Guide* for information on allocation pages.

Permissions

The permission checks for `sp_dumpoptimize` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `dump database` privilege on the database you are dumping.
Disabled	With granular permissions disabled, you must be the datatype owner, a user with sa_role, or a user with sso_role.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

1.108.1 Thresholds and sp_dumpoptimize

The default values for the thresholds are: Reserved pages: 85%; allocation pages: 40%.

If the device fragment of the database has a reserved pages percentage that is:

- Greater than or equal to the reserved threshold – then all the blocks on this device that pertain to this database are dumped.
- Less than the reserved threshold – then Backup Server starts checking each allocation unit on this device for the allocation percentage. If the cumulative allocation percentage is:
  - Less than the allocation threshold – then it would only dump those pages with data written on it
  - Greater than the allocation threshold – the entire allocation unit would be dumped.

1.109 sp_encryption

Reports encryption information.

Syntax

- To list encryption key properties:

```
sp_encryption help | helpkey
```

- To list encryption key properties for a specific key or keys matching a pattern:

```
sp_encryption help | helpkey[, <key_name> | wildcard]
     [, all_dbs | key_copy | display_cols]
```

- To report information about a master key or dual master key:

```
sp_encryption help | 'helpkey',
     {'master' | 'dual master'} [, 'display_keys' | 'all_dbs'
```

- To display objects encrypted by the service key:

```
sp_encryption 'help'[, 'servicekeyname'[, 'display_objs']]
```

- To display the encryption status of external passwords in the status column:

```
sp_encryption 'helpextpasswd'
```

- To display the column name and the key used to encrypt the column:

```
sp_encryption helpcol[, <table_name> | <column_name> ]
```

- To display the keys owned by or assigned to a user in the current database:

```
sp_encryption helpuser[, <user_name> | wildcard ][, key_copy |
login_passwd_check ]
```

- To specify credentials for SAP ASE to access the Hardware Security Module (HSM) key:

```
sp_encryption 'hsm_credential' [,'lib=<pkcs11 library name>;pin=<normal user
pin>;slot=<slot number>;']
```

- To display credentials for SAP ASE to access the Hardware Security Module (HSM) key:

```
sp_encryption 'hsm_credential'
```

- To display or set the master key startup file name and path:

```
sp_encryption 'mkey_startup_file'[, {'<new_path>' | '<default_location>' |
'null'}
     [, {sync_with_mem | sync_with_qrm}]]
```

- To display or set the `downgrade kek size` configuration:

```
sp_encryption 'downgrade_kek_size' [, 'true'|'false']
```

- To display the encrypted keys and key copies using the system encryption password in the current database:

```
sp_encryption system_encr_passwd, '<newpasswd>' [,'<oldpasswd>']
```

Parameters

`helpkey`

lists encryption key properties, including:

- Whether the database contains encryption keys.
- The following, when run by a user with sso_role, key custodian, or DBO: keyname, keyowner, key length, key algorithm, key type, pad, initialization vector, type of password used to encrypt the key, whether key recovery has been enabled and count of key copies. The output is sorted on `<owner>`.`<key_name>`. When run by a non-privileged user, this command lists `<key_name>`, `<key_owner>`, and `<key_type>`.

`help`

is identical to `helpkey`, and is included for backward compatibility.

`<key_name>`

is the name of the key you are investigating. Lists the properties defined for `<key_name>`. If `<key_name>` is omitted, lists properties for all keys.

`<wildcard>`

lists the properties for keys matching the wildcard pattern in the current database. See the *Reference Manual: Building Blocks* for information about using wildcards.

`all_dbs`

lists information on encryption keys in all available databases. Only the SSO can run `all_dbs`.

`key_copy`

lists all user copies for the specified key in the current database. The output is sorted by `<key_owner>.<key_name>`. Includes information about:

- The base key owner.
- If the key copy is a recovery key copy.
- The user to whom a copy belongs.
- If the copy is encrypted with a user-encryption password, a login password, or the system encryption password for login association (indicated by Login Access).

`login_passwd_check`

indicates if the key copies assigned to the matched users are well synchronized with the user's login password. That is, the last update date of the key copy is newer than the date of the login password. The key copies are encrypted with the user's login password or login association.

`display_keys`

is used with `<system_encr_passwd>` to display the encrypted keys and key copies using the system encryption password. Used with `master` or `dual master` to display the encrypted keys and key copies using the master key or the dual master key.

You must be the system security officer, key custodian, or the database owner can run `sp_encryption helpkey, master | 'dual master', display_keys` to display encryption keys protected by either the master or dual master key.

display_cols

displays the key name, all keys (or matching wildcard keys) in the current database and the columns the key encrypts. When the SSO includes `display_cols`, it displays columns encrypted by the keys across all available databases. When a user without the sso_role runs `display_cols`, only those columns encrypted by the key in the current database are displayed. Data is sorted by `<key_name>`, `<key_owner>`, `<database_name>`, `<table_owner>`, `<table_name>`, and `<column_name>`.

master

reports information about the master key.

dual master

reports information about the dual master key.

servicekeyname

is set to `syb_extpasswdkey` or `syb_syscommkey%`. Use with `display_objs` to display objects encrypted by the service key.

display_objs

displays object owners.

You must be the system security officer, key custodian, or the database to run `sp_encryption helpkey, <key_name>, display_objs` to display objects in current database protected by the `syb_extpasswdkey` or `syb_syscommkey` service keys.

helpextpasswd

displays the encryption status of external passwords in the status column. The encryption status is one of:

- FIPS Encryption – the password is protected by the `syb_extpasswdkey` service key using a FIPS-compliant cryptography algorithm.
- Needs Reset – indicates the system removed the password, and you must reset it manually.
- Legacy Encryption – the password is protected with an algorithm from a version of SAP ASE earlier than 15.7.

You must be the system security officer to run `sp_encryption helpextpasswd` to check the status of external passwords.

helpcol `<column_name>`

displays the column name and the key used to encrypt the column. If the SSO includes `helpcol`, it prints the key name even if the key is not present in the current database. If a non-SSO user includes `helpcol`, the SAP ASE server prints the `keyid` of the key if it is not present in the current database, omitting the `<key_name>`. The output includes:

`<owner>.<table>.<column>`, `<database>.<owner>.<keyname>`. The information is sorted by `<owner>.<table>.<column>`.

`helpuser`

displays the keys owned by or assigned to a user in the current database.

`hsm_credential`

specifies credentials for SAP ASE to access the Hardware Security Module (HSM) key.

- `<pkcs11 library name>` – specifies the name of the PKCS#11 library to be used. The library should be located in the `$SYBASE/ASE-16_0/lib` folder.
- `<normal user pin>` – specifies the normal user pin on the HSM device.
- `<slot number>` – specifies the slot number that contains the token device to be used.

`mkey_startup_file`

displays or sets the master key startup file name and path. `sp_encryption` sets the master key startup file to `<new_path>` or the default location. If you specify `null` or no location, `sp_encryption` displays the current master key startup file name and path.

`sync_with_mem`

(Cluster Edition only) writes the master key encryption key that exists in server memory to the master key startup file. Replaces the current master key encryption key, if it exists. If `automatic master key access` is set to off, `sync_with_mem` is also disabled.

You must be the system security officer display, set, or sync the master key startup file.

`sync_with_qrm`

updates the local master key startup file with the version in the quorum device.

You must be the system security officer display, set, or sync the master key startup file.

`downgrade_kek_size`

displays or sets the `downgrade kek size` configuration. `true` indicates that the SAP ASE server is in `downgrade kek size` mode; `false` disables this mode.

If you specify no argument, `sp_encryption` displays the current value for `downgrade_kek_size`.

You must be the system security officer or the key custodian to run this command.

`system_encr_passwd`

displays the encrypted keys and key copies that are using the system encryption password in the current database.

`system_encr_passwd, all_dbs`

displays the properties of the system encryption password in every database where it has been set. The output is sorted by database name. Only the system security officer can run this command. If the system encryption password has not been set for all databases, the SAP ASE server generates the following message:

```
The system encryption password has not been set for all
available databases
```

Examples

Display Key Information for Fully Encrypted Database

This example shows a key type called "`database encryption key`" to indicate that the database is fully encrypted:

```
1> create encryption key key1 as default for database encryption
2> go
1> sp_encryption helpkey, key1
```

```
Key Name    Key Owner    Key Length   Key Algorithm
    Key Type                            Pad    Initialization Vector
  Protected By     Key Recovery
     # of Key Copies
----------- ------------ ------------ -------------
    --------------------------------   ------ ---------------------
  -------------- ----------------    -----------------
key1        dbo          256          AES
    symmetric database encryption key      0                       1
  master key       0                          0
1> create encryption key key2 for database encryption with master key
2> create encryption key key3 for database encryption with dual_control
3> go
1> sp_encryption helpkey, 'key%'
Key Name    Key Owner    Key Length   Key Algorithm
    Key Type                            Pad    Initialization Vector
  Protected By     Key Recovery
     # of Key Copies
----------- ------------ ------------ -------------
    --------------------------------   ------ ---------------------
  -------------- ----------------    -----------------
key1        dbo          256          AES
    symmetric database encryption key      0                       1
  master key       0                          0
key2        dbo          256          AES
    symmetric database encryption key      0                       1
  master key       0                          0
key3        dbo          256          AES
    symmetric database encryption key      0                       1
  dual_control(master key + dual master key)  0                  0
1> create database encr_db1 encrypt with key1
2> create database encr_db2 encrypt with key2
3> create database encr_db3 encrypt with key3
4> go
1> sp_encryption helpkey, '%', "display_dbs"
Key Name Key Owner Encrypted Database
-------------------- --------------------------------------
key1 dbo encr_db1
key1 dbo encr_db2
key3 dbo encr_db3
```

Display Key Information in Current Database

The `helpkey` parameter displays information in the current database on all or specific keys. The second parameter to `sp_encryption` supplies the key name and may include SQL pattern-matching characters. If you are not the database owner and do not have `sso_role` or `keycustodian_role`, `sp_encryption` displays fewer columns.

This displays properties of all base encryption keys in the current database when run by the SSO, key custodian, or the DBO:

```
sp_encryption helpkey
```

```
Key Name    Key Owner  Key Length  Key Algorithm  Key Type               Pad
     Init Vector  Protected By    Key Recovery  # of Key Copies
----------  ---------  ----------  --------------  --------              ----
     -----------  --------------------------    ------------  ---------------
tinnap_key  tinnap     128         AES            symmetric key          0
     1            system encryption password               0                0
tinnap_key1 tinnap     128         AES            symmetric default key  0
     1            user Passwd                              1                3
sample_key1 dbo        192         AES            symmetric key          1
     1            login Passwd                             1                2
```

When run by user "tinnap," this displays the following properties of all base encryption keys in the current database:

```
sp_encryption helpkey
```

```
Key Name          Key Owner   Key Type
--------------     ---------   ------------
tinnap_key         tinnap      symmetric key
tinnap_key1        tinnap      symmetric default key
sample_key1        dbo         symmetric key
```

If you are not the system security officer or do have `keycustodian_role`, the query displays all base keys you own in the current database. If you do not specify a `<user_name>` as the second parameter, the query displays the base keys you own.

Display Properties of Base Encryption Key When Run by SSO

Displays the properties of base encryption key `sample_key1` when run by the SSO, key custodian, or DBO in the current database:

```
sp_encryption helpkey, sample_key1
```

```
Key Name   Key Owner  Key Length  Key Algorithm          Key Type
   Pad  Init Vector   Protected By      Key Recovery     # of Key Copies
---------  --------    ---------  --------------         --------------
   ---  -----------   ------------      -------------    ---------------
sample_key1     dbo          192             AES            symmetric Key
     1            1           Login                  1                   2
```

When non-privileged user "tinnap" runs this command, it displays the following properties for the base encryption key `sample_key1` in the current database:

```
sp_encryption helpkey, sample_key1
```

```
Key Name       Key Owner    Key Type
-------------  -----------  ------------
sample_key1            dbo  ymmetric key
```

Display Properties of All Base Encryption Keys in All Available Databases

Only the SSO can run this command:

```
sp_encryption helpkey, NULL, all_dbs
```

```
Db.Owner.Keyname         Key Length   Key Algorithm  Key Type
Pad       Init Vector   Protected By       Key Recovery    #of Key Copies
------------------------   ----------   -----------  --------------------
-----  ----------   -----------------    --------------  ----------------
```

```
keydb.dbo.cc_key           256          AES         symmetric default key
    1           1   system encr passwd                0              0
keydb.dbo.sample_key1      128          AES         symmetric key
    0           0   system encr passwd                1              4
keydb1.tinnap.tinnap_key   128          AES         symmetric key
    0           1   system encr passwd                0              0
keydb1.tinnap.tinnap_key1  128          AES         symmetric default key
    0           1        user password                1              3
keydb1.dbo.sample_key1     192          AES         symmetric key
    1           1         login passwd                1              2
```

Display Properties of All Base Encryption Keys Similar to %key in All Available Databases

`all_dbs` indicates that information on keys across all databases is required. You must have `sso_role` to use the `all_dbs` parameter:

```
sp_encryption helpkey, '%key', all_dbs
```

```
Db.Owner.Keyname         Key Length   Key Algorithm  Key Type
Pad   Init Vector   Protected By       Key Recovery    #of Key Copies
------------------------   ----------   -----------  --------------------
-----  ----------   ---------------    --------------  ----------------
keydb.dbo.cc_key                  256      AES       symmetric default key
    1           1            system encr passwd     0               0
keydb1.tinnap.tinnap_key          128      AES              symmetric key
    0           1             system encr passwd    0               0
```

Display Properties of All Base Encryption Keys With Names Similar to "tinnap%" in Database Run by SSO

Displays properties of all base encryption keys with names similar to "tinnap%" in the current database when run by the SSO, key custodian, or DBO:

```
sp_encryption helpkey, "tinnap%"
```

```
Key Name  Key Owner  Key Length   Key Algorithm            Key Type
   Pad  Init Vector   Protected By         Key Recovery     # of Key Copies
---------  --------    ---------  --------------  -----------------------
   ---  -----------   -------------------  ------------    ---------------
tinnap_key   tinnap          128             AES   symmetric key
     0            1   system encr passwd              0                  0
tinnap_key1  tinnap           128             AES   symmetric default key
     0            1          user passwd              1                  3
```

When run by user "tinnap," displays the following properties for the base encryption keys in the current database with names similar to "tinnap%":

```
sp_encryption helpkey, "tinnap%"
```

```
Key Name           Key Owner  Key Type
------------------  ---------  ------------
tinnap_key          tinnap     symmetric key
tinnap_key1         tinnap     symmetric default key
```

Display Information on Key Copies Using key_copy as Third Parameter

Displays information on key copies using `key_copy` as the third parameter. Enter null instead of value for `<keyname>` for the second parameter to see information on all key copies. You can use pattern-matching characters in `<keyname>` (see the previous example):

```
sp_encryption helpkey, tinnap_key1, key_copy
```

```
Owner.Keyname         Assignee       Protected by       Key Recovery
------------------     ---------       ----------------       ----------
tinnap.tinnap_key1     joesmp          user passwd            0
tinnap.tinnap_key1     samcool         user passwd            1
tinnap.tinnap_key1     billyg          user passwd            0
```

When run by user "joesmp," this displays all encryption key copies assigned to user "joesmp" and also all the key copies for that keyname if the user is the owner of the key in the current database:

```
sp_encryption helpkey, tinnap_key1, key_copy
```

```
Owner.Keyname         Assignee       Protected by          Key Recovery
------------------     ---------       ----------------      ------------
tinnap.tinnap_key1        joesmp             user passwd                  0
```

Display All Encrypted Columns in All Available Databases Encrypted by Keys from Database

Use the `display_cols` parameter to show all encrypted columns in all available databases encrypted by keys from the current database. If you do not have the sso_role, the query displays only the encrypted columns in the current database encrypted by keys from the current database.

You can use pattern matching characters or `<key_name>` for the second parameter. If you use pattern matching characters for `<key_name>` as sso_role, the query displays all encrypted columns in all available databases encrypted by the pattern matching `<key_name>`. If you use `<key_name>` for the second parameter and have the sso_role, displays all encrypted columns in all available databases encrypted by the specified `<key_name>`:

```
sp_encryption helpkey, null, display_cols
```

```
Key Name     Key Owner  Database Name  Table Owner  Table Name  Column Name
----------   ---------  -------------  ----------   ----------  ----------
tinnap_key      tinnap        testdb1      tinnap           t3         c3
tinnap_key1     tinnap        testdb1      tinnap           t4         c4
sample_key1        dbo          coldb         dbo           t1         c1
sample_key1        dbo          coldb      billyg            t2        c2
```

Display All Keys, Key Copies Encrypted With System Encryption Password in Database

Displays all keys and key copies encrypted with the system encryption password in the current database. If you do not have these privileges, the query displays the keys owned by or assigned to the user which are encrypted with the system encryption password:

```
sp_encryption helpkey, system_encr_passwd, display_keys
```

```
Owner.Keyname                   Assignee
---------------                  -------------
dbo.cc_key                                NULL
dbo.sample_key1                           NULL
dbo.sample_key1                         tinnap
```

Display All Base Keys Owned by Users in Database

When run by the database owner or a user with keycustodian_role or sso_role, the `helpuser` parameter displays all base keys owned by users in the current database:

```
sp_encryption helpuser
```

```
Owner.Keyname             Protected by
---------------              -------------------
tinnap.tinnap_key           system encr passwd
tinnap.tinnap_key1                 user passwd
dbo.sample_key1                    login passwd
```

If user "tinnap" runs this command, lists all base keys owned by this user in the current database:

```
sp_encryption helpuser
```

```
Owner.Keyname             Protected by
---------------              -------------------
tinnap.tinnap_key           system encr passwd
tinnap.tinnap_key1           user passwd
```

Display Key Copies Assigned to One or More Users

The database owner or a user with keycustodian_role or sso_role can use the `key_copy` parameter with the `helpuser` parameter to display key copies assigned to one or more users in the current database. You can use pattern-matching characters for the `<user>` parameter. This shows the key copies of all users in the current database:

```
sp_encryption helpuser, NULL, key_copy
```

```
Owner.Keyname            Assignee          Protected by      Key Recovery
---------------------      -----------      ----------------  -----------
dbo.sample_key1                 tinnap          login passwd           0
tinnap.tinnap_key1              joesmp           user passwd           0
dbo.sample_key1                 joesmp          login passwd           1
tinnap.tinnap_key1             samcool           user passwd           1
tinnap.tinnap_key1              billyg            user passwd          0
```

If you are not the database owner and do not have keycustodian_role or sso_role, this query displays the copies of any keys you own and the key copies that other key owners have assigned to you. For example, when user "tinnap" runs this query:

```
sp_encryption helpuser, NULL, "key_copy"
```

```
Owner.Keyname            Assignee         Protected by       Key Recovery
---------------------     -----------      ----------------   ---------
dbo.sample_key1                tinnap          login passwd           0
tinnap.tinnap_key1             joesmp           user passwd           0
tinnap.tinnap_key1            samcool           user passwd           1
tinnap.tinnap_key1              billyg            user passwd         0
```

Display All Encrypted Columns in Database and Keys Used to Encrypt Columns

If you are the database owner or a user with keycustodian_role or sso_role, `helpcol` displays all encrypted columns in the current database and the keys used to encrypt the columns. If you do not have these privileges, helpcol displays keyid instead of the <key_name> if the encryption key is in a different database:

```
sp_encryption helpcol
```

```
Owner.Table.Column           Db.Owner.Keyname
-----------------------       ---------------------
dbo.t1.c1                     keydb1.dbo.sample_key1
billyg.t2.c2                  keydb.dbo.sample_key1
tinnap.t3.c3                  coldb.dbo.sample_key2
```

Display All Encrypted Columns or Specific Encrypted Column in a Table

Include the helpcol parameter with the <table_name> and <column_name> parameters to display all encrypted columns or a specific encrypted column in a given table. When run by a user with sso_role, the query below displays all encrypted columns in table t3 in the current database and the keys used to encrypt the columns across all available databases. When run by a user without sso_role, this query displays the key's ID instead of its name if the key is not in the current database. The second parameter can have a combination of [<database_name>.][<table_name>.][<column_name>]:

```
sp_encryption helpcol, t3
```

```
Owner.Table.Column           Db.Owner.Keyname
-----------------------      ---------------------
tinnap.t3.c3                  coldb.dbo.sample_key2
```

Display System Encryption Password Properties for Each Database

Displays the system encryption password properties for each database (you must have sso_role to run this query):

```
sp_encryption helpkey, system_encr_passwd, all_dbs
```

```
Database  Type of system_encr_passwd   Last modified by            Date
--------  --------------------------    ---------------   ----------------
master                    persistent                sa   Aug 26 2008 10:05AM
```

Display All Encryption Keys Encrypted With Master Key in Database

Displays all encryption keys encrypted with the master key in the current database (you must have sso_role, keycustodian_role, or be the database owner to run this query):

```
sp_encryption helpkey,'master',display_keys
```

```
Owner.Keyname      Assignee
---------------- ----------
user1.key_dual         NULL
user1.key_mst          NULL
user4.key_dC_pwd       NULL
user4.key_dC_pwd      user5
user4.key_dC_pwd      user6
user4.key_dC_pwd    KC_tdb1
```

Display Name and Location of Current Master Key Start-Up File

Displays the name and location of the current master key start-up file configured for the current server:

```
sp_encryption mkey_startup_file
```

```
Msg 19956, Level 16, State 1: Procedure 'sp_encryption', Line 298: The
current master key startup file is:'/sybase/release/ASE-150/init/
ase_encrcols_mk_l157.dat'.
```

Display Encrypted Stored Procedures

Displays three stored procedures that are encrypted with key `syb_syscommkey_123456`, and are owned by user1 and user2:

```
sp_encryption  helpkey, "syb_syscommkey%", display_objs
```

```
Key Name                            Key Owner     Database Name
        Object owner           Object Name
------------                        -------       -----------
        ------------            -----------
syb_syscommkey_1234567890ab             dbo            testdb
              user1            sp_mysproc1
syb_syscommkey_abcdefghijkl123456       dbo            testdb
              user1            sp_mysproc2_
syb_syscommkey_ABCDEF123456             dbo            testdb
              user2            sp_mysproc3
```

Usage

- When a database is fully encrypted, `sp_encryption` reports a key type called "`database encryption key`".
- The privileges granted to the user who runs `sp_encryption` determines the output.
- If you run `sp_encryption helpkey` and no keys are present in the database, you see an informational message.
- Specify the `<key_copy>` parameter to get information about key copies. Otherwise, `sp_encryption` returns information only about base keys.
- If `<keyname>` is NULL in `sp_encryption helpkey, <key_name>, key_copy`, lists all the key copies in the current database for a SSO, key custodian, or DBO. If it is run by a user without privileges, it lists all the key copies assigned to the user in the current database and all key copies of the keys owned by the user in the current database.
- For `sp_encryption helpcol, <column_name>` uses the form `<name>.<name>.<name>`, where:
    - `<name>` – if `sp_encryption` finds no tables of this name, it looks for all columns of that name.
    - `<name>.<name>` – is `<owner>.<table>`. If `sp_encryption` finds no tables of this name, it looks for a single column named `<table.column>`.
    - `<name>.<name>.<name>` – is `<owner>.<table>.<name>`.

  For all columns identified by these rules in the current database, `sp_encryption` displays column name along with the key used to encrypt the column.
  The output for `sp_encryption helpcol, <column_name>` is `<owner>.<table>.<column>` and `<db>.<owner>.<keyname>`. The `<keyname>` is expressed as `<database>.<keyid>` when run by non-SSO users, and the key is present in a different database from the encrypted column. The result set is sorted by `<owner>.<table>.<column>`.

The restrictions for `sp_encryption` are:

- Only an SSO can run `sp_encryption helpkey [, <keyname> | wildcard], all_dbs` to get the properties of keys in all databases. If a user without the sso_role runs this command, they receive an "unauthorized user" error message. If no keys qualify the keyname or wildcard, the SAP ASE server returns a message stating `'There are no encryption keys (key copies) like keyname in all databases'`.

- When the SSO runs `sp_encryption helpkey, <keyname>, <display_cols>`, it lists all columns across all available databases encrypted by `<key_name>`. If it is run by a user without privileges, it lists the columns in the current database encrypted by `<key_name>`.
  If the SSO runs `sp_encryption helpkey, <key_name>, <display_cols>` and the `<key_name>` value is NULL, it displays all encrypted columns across all available databases. When run by a user without privileges, it displays all encrypted columns in the current database.
- If an SSO, key custodian, or DBO runs `sp_encryption helpuser, <user_name>, key_copy` without specifying a `<user_name>` and `<key_copy>` for the `helpuser` parameter, it lists all the base keys owned by all users in the current database. If `sp_encryption` is run by a user without privileges without specifying a `<user_name>` or `<key_copy>`, it displays the base keys owned by the current user.
  If any user runs `sp_encryption helpuser, <user_name>`, it lists all the base keys owned by `<owner>`.`<key_name>`. If a user without privileges runs the command and owns no base keys, the SAP ASE server displays an informational message stating this.
  If an SSO, key custodian, or DBO runs `sp_encryption helpuser, <user_name>, <key_copy>`, it lists the key copies assigned to `<user_name>`. If a user without privileges issues this command, its lists the key copies assigned to this user and all the key copies of the keys owned by the user in the current database, with these columns in the result set: `Owner.Keyname`, `Assignee`, `Type of Password`, and `Key Recovery`. The output is sorted by `Assignee`.
  If `<user_name>` is NULL for `sp_encryption helpuser <user_name>`, `<key_copy>`, it lists all the key copies in the current database for a SSO, key custodian, or DBO. For users without privileges, it lists all the key copies assigned to the user in the current database and the key copies for the keys owned by this user.
- When a SSO, key custodian, or DBO runs `sp_encryption helpkey, <key_name>, <key_copy>`, it lists the key copies in the current database for `<key_name>`. If this is run by a user without privileges, it lists the key copies assigned to the user for that `<key_name>` and the key copies for that `<key_name>` if the user is the key owner.
- The SSO, key custodian, and DBO can run `sp_encryption helpkey, <system_encr_passwd>, display_keys` to receive information on all keys and key copies in the current database encrypted by system encryption password. Users without privileges receive information about the base encryption keys or key copies they own or are assigned in the current database. Key copies are encrypted with the system encryption password only when they are created for login association. The output is sorted by `<owner>`.`<key_name>`.

Permissions

The permission checks for `sp_encryption` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled: • `downgrade_kek_size` – You must be a user with `manage security configuration` privilege.

Setting	Description
	● `help/help_key system_encr_passwd, display_keys` – You must be a user with `manage column encryption key` privilege. Any user can see their own key. ● `help/help_key system_encr_passwd` – You must be a user with `manage column encryption key` privilege. ● `help/help_key master key/dual master key, display_keys` – You must be a user `manage master key` privilege. ● `help/help_key keyname/wild card, display_cols` – You must be a user with `use any database` privilege for cross database check. Any user for the current database. ● `help/help_key service keyname, display_objs` –You must be a user with `manage service key` privilege. ● `help/help_key keyname/wild card, all_dbs` – You must be a user with the following privilege depending the key type: ○ column encryption key – `manage column encryption key` ○ master key – `manage master key` ○ service key – `manage service key` ● For cross-database checks, one of the above three, and `use any database` permission. ● `help/help_key keyname wildcard` – You must be a user with the following privilege depending the key type: ○ column encryption key – `manage column encryption key` ○ master key – `manage master key` ○ service key – `manage service key` For non-privileged users, limited encryption key information is displayed. ● `help/help_key keyname wildcard, key_copy` – You must a user with the following privilege depending on the key type: ○ Column encryption key – `manage column encryption key` ○ Master key – `manage master key` ● `helpcol` – You must be a user with `use any database` privilege for cross database checks. ● `helpextpassword` – You must be a user with `manage service key` privilege. ● `helpuser username/wildcard, [key_copy/login_passwd_check]` – You must be a user with `manage any encryption key` privilege. Non-privilege users can see their own key. ● `mkey_startup_file` – You must be a user with `manage security configuration` privilege. ● `system_encr_passwd` – You must be a user with `manage column encryption key` privilege. ● `verify_downgrade` – You must be a user with `manage security configuration` privilege.
Disabled	With granular permissions disabled: ● `downgrade_kek_size` – You must be a user with sso_role or keycustodian_role. ● `help/help_key system_encr_passwd, display_keys` – You must be the database owner, a user with sso_role, or a user with keycustodian_role. Any user can see their own key.

Setting	Description
	• `help/help_key system_encr_passwd` – You must be the database owner, a user with sso_role, or a user with keycustodian_role. • `help/help_key master key/dual master key, display_keys` – You must be the database owner, a user with sso_role, or a user with keycustodian_role. • `help/help_key keyname/wild card, display_cols` – You must be a user with sso_role for cross database check. Any user for the current database. • `help/help_key service keyname, display_objs` – You must be a user with sso_role or a user with keycustodian_role. • `help/help_key keyname/wild card, all_dbs` – You must be a user with sso_role. • `help/help_key keyname wildcard` – You must be the database owner, a user with sso_role, or a user with keycustodian_role. • `help/help_key keyname wildcard, key_copy` – You must be the database owner, a user with sso_role, or a user with keycustodian_role. • For: ○ Non-privileged users – displays only `key_copy` information ○ For privileged users – displays the encryption key and key_copy information for all users in the database • `helpcol` – You must be a user with sso_role. • `helpextpassword` – You must be a user with sso_role. • `helpuser username/wildcard, [key_copy/login_passwd_check]` – You must be the database owner, a user with sso_role, or a user with keycustodian_role. Non-privilege users can see their own keys. • `mkey_startup_file` – You must be a user with sso_role. • `system_encr_passwd` – You must be a user with sso_role or keycustodian_role. • `verify_downgrade` – You must be a user with sso_role or keycustodian_role.

Auditing

You can enable `encryption_key` auditing option to audit this procedure. Values in `event` and `extrainfo` columns from the `sysaudits` table are:

Information	Value
Audit option	`encryption_key`
Event	106
Command or access audited	`sp_encryption`
Information in **`extrainfo`**	• **Roles** – Current active roles • **Keywords or options**: ○ If password is set the first time: `ENCR_ADMIN system_encr_passwd password` ********

Information	Value
	○ If the password is subsequently changed: ENCR_ADMIN system_encr_passwd password ******** ******** - **Previous value** – NULL - **Current value** – NULL - **Other information** – NULL - **Proxy information** – Original login name, if set proxy in effect

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

1.110 sp_engine

Enables you to bring an engine online or offline. In threaded mode, use alter thread pool to bring engines online.

Syntax

```
sp_engine {"online" | [offline | can_offline][, <engine_id>] |
["shutdown", <engine_id>]}
```

Parameters

"online"

bring an engine online. The value of sp_configure "max online engines" must be greater than the current number of engines online. Use quotes when specifying "online", as it is a reserved keyword.

In threaded mode, online increases the thread count for syb_default_pool by 1.

offline

bring an engine offline. You can also use the <engine_id> parameter to specify a specific engine to bring offline.

In threaded mode, offline decreases the thread count for syb_default_pool by 1.

can_offline

returns information on whether an engine can be brought offline. can_offline returns the SAP ASE tasks with an affinity to this engine (for example, during Omni or java.net tasks) if its state is online. If you do not specify an <engine_id>, the command describes the status of the engine in sysengines with the highest <engine_id>.

In threaded mode, can_offline succeeds only if the total number of engines is less than the total number of threads in `syb_default_pool` and the total number of threads in `syb_default_pool` is greater than or equal to 2.

`<engine_id>`

the ID of the engine. The `<engine_id>` parameter is optional. If you do not specify an `<engine_id>`, `sp_engine` uses the incremented or decremented value for `<engine_id>` for the value of engine found within `sysengines`. That is, if your system uses engines 0, 1, 2, and 3, and you do not specify an engine ID, `sp_engine` takes engine ID 3 offline, then engine ID 2, and so on.

This parameter is ignored in threaded mode.

`"shutdown"`

Forces an engine offline. If there are any tasks with an affinity to this engine, they are killed after a five-minute wait. Use quotes when specifying `"shutdown"`, as it is a reserved keyword.

Examples

Example 1

Brings engine 1 online. Messages are platform specific (this example uses Sun Solaris):

```
sp_engine "online", 1
```

```
02:00000:00000:2001/10/26 08:53:40.61 kernel  Network and device connection
limit is 3042.
02:00000:00000:2001/10/26 08:53:40.61 kernel  SSL Plus security modules
loaded successfully.
02:00000:00000:2001/10/26 08:53:40.67 kernel  engine 2, os pid 8624  online
02:00000:00000:2001/10/26 08:53:40.67 kernel  Enabling Sun Kernel
asynchronous disk I/O strategy
00:00000:00000:2001/10/26 08:53:40.70 kernel  ncheck: Network fc0330c8
online
```

Example 2

Describes the steps in taking an engine offline that is currently running tasks with an affinity for this engine:

```
select engine, status from sysengines
```

```
engine    status
------    ------
0         online
1         online
2         online
3         online
```

If you bring engine 1 offline:

```
sp_engine offline, 1
```

```
The following task(s) will affect the offline process:
spid: 19 has outstanding ct-lib connections.
```

And then run the same query as above, it now shows that engine 1 is in an offline state:

```
select engine, status from sysengines
```

```
engine    status
------    ------
0         online
1         in offline
2         online
3         online
```

As soon as the task that has an affinity to engine 1 finishes, the SAP ASE server issues a message similar to the following to the error log:

```
02:00000:00000:2001/10/26 09:02:09.05 kernel  engine 1, os pid
8623  offline
```

Example 3

Determines whether engine 1 can be brought offline:

```
sp_engine can_offline, 1
```

Example 4

Takes engine 1 offline:

```
sp_engine offline, 1
```

The SAP ASE server eventually returns a message similar to the following:

```
01:00000:00000:2001/11/09 16:11:11.85 kernel  Engine 1 waiting for
affinitated process(es) before going offline
01:00000:00000:2001/11/09 16:11:11.85 kernel  Process 917518 is preventing
engine 1 going offline
00:00000:00000:2001/11/09 16:16:01.90 kernel  engine 1, os pid
21127  offline
```

Example 5

Shuts down engine 1 :

```
sp_engine shutdown, 1
```

Usage

- As sp_engine works only in process mode, the SAP ASE server issues an error message if you run sp_engine in threaded mode. Use alter thread pool in threaded mode.
- You cannot take offline or shut down engine 0.
- You can determine the status of an engine, and which engines are currently online with the following query:

```
select engine, status from sysengines
where status = "online"
```

- online and shutdown are keywords and must be enclosed in quotes.

- Engines can be brought online only if `max online engines` is greater than the current number of engines with an `online` status, and if enough CPU is available to support the additional engine.
- `sp_engine` can run in sessions using chained transaction mode if there are no open transactions.
- An `engine offline` command may fail or may not immediately take effect if there are server processes with an affinity to that engine.

Permissions

The permission checks for `sp_engine` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `manage server` privilege.
Disabled	With granular permissions disabled, you must be a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

1.110.1 Using sp_engine "offline" Versus sp_engine "shutdown"

Sometimes when you use `sp_engine "offline"`, the engine does not immediately go offline, and instead appears to be in "dormant" state in the engine table.

This is caused by processes that are attached to your engine that cannot be migrated to other engines. When this happens, the engine does not take new work, and consumes minimal CPU cycles. When the process preventing the completion of `engine offline` either ends or becomes available for migration, the engine moves from dormant to fully offline, and disappears from the engine table.

`sp_engine "shutdown"` is a more aggressive version of the `offline` command. `sp_engine "shutdown"` actively kills any processes that are preventing the engine from going offline, forcing it to shut down.

However, if you use `sp_engine "shutdown"` on an engine that has Client Library or Java connections, you see:

```
Engine has outstanding ct-lib/java connections and
cannot be offlined.
```

When this happens, repeat the command again every few minutes until the connections are no longer there, and the engine can shut down.

1.111 sp_errorlog

Dynamically changes the path of the error log.

Syntax

```
sp_errorlog "change log", "<new_path>" [,{"jslog true" | "jslog false"}]
```

```
sp_errorlog "help", "change log”
```

Parameters

<new_path>

is the new path of the error log. Maximum length of <new_path> is 255 characters.

jslog true

(default) if the Job Scheduler is running, sp_errorlog "change log" attempts to change the Job Scheduler Agent log to the directory where the new SAP ASE error log resides. Both logs indicate error messages, if any.

jslog false

specifies to not change the location of the Job Scheduler Agent log.

Examples

Example 1

Changes the SAP ASE error log to use a new location without changing the location of the Job Scheduler log:

```
sp_errorlog "change log",
"$SYBASE/$SYBASE_ASE/install/new.log", "jslog false"
```

The SAP ASE error log location is changed to $SYBASE/$SYBASE_ASE/install/new.log. However, the location of the Job Scheduler Agent log is not changed.

Example 2

Changes the error log location to $SYBASE/$SYBASE_ASE/install/new.log:

```
sp_errorlog "change log",
"$SYBASE/$SYBASE_ASE/install/new.log", "jslog true"
```

If the Job Scheduler Agent is running, the agent log location is also changed to `$SYBASE/$SYBASE_ASE/install/new.log`.

If the Job Scheduler Agent is not running, SAP ASE does not change the agent log location.You see a message that the agent log location is unchanged.

Example 3

Changes the SAP ASE error log to `$SYBASE/$SYBASE_ASE/install/new.log`:

```
sp_errorlog "change log",
"$SYBASE/$SYBASE_ASE/install/new.log"
```

If the Job Scheduler Agent is running, the agent log is also changed to `$SYBASE/$SYBASE_ASE/install/new.log`.

If the Job Scheduler Agent is not running, SAP ASE does not change the path of the Job Scheduler Agent log. You see a message that the agent log location is unchanged.

Usage

`sp_errorlog` returns 0 if the switch to the new location is successful. A non-zero return value implies an error. Use the `@@errorlog` global variable to view the current error log location.

> i Note
>
> To pick up the new location of the error log when the server is restarted, update the `-e` argument in the runserver file.

See *Configuration Guide > Logging Error Messages and Events* for information on the `runserver` file.

Permissions

The permission checks for `sp_errorlog` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `manage server` privilege.
Disabled	With granular permissions disabled, you must be a user with sa_role.

Auditing

Information	Value
Audit option	`errorlog`

Information	Value
Event	127
Command or access audited	`sp_errorlog`
Information in **`extrainfo`**	- **Roles** – Current active roles - **Keywords or options** – NULL - **Previous value** – NULL - **Current value** – NULL - **Other information** –`ERRORLOG_ADMIN`, all input parameters - **Proxy information** – Original login name, if `set proxy` in effect

Example of `extrainfo` after executing `sp_errorlog`:

```
sa_role sso_role oper_role sybase_ts_role mon_role; ; ; ; ERRORLOG_ADMI
      N change log $SYBASE/$SYBASE_ASE/install/new.log %; ; sa/ase;
```

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

1.112 sp_estspace

Estimates the amount of space required for a table and its indexes, and the time needed to create the index.

Syntax

```
sp_estspace <table_name>, <no_of_rows>, <fill_factor>,
    <cols_to_max>, <textbin_len>, <iosec>, <page_size>
```

Parameters

`<table_name>`

is the name of the table. It must already exist in the current database.

`<no_of_rows>`

is the estimated number of rows that the table contains.

`<fill_factor>`

is the index fillfactor. The default is null, which means that the SAP ASE server uses its default fillfactor.

`<cols_to_max>`

is a comma-separated list of the variable-length columns for which you want to use the maximum length instead of the average. The default is the average declared length of the variable-length columns.

<textbin_len>

is the length, per row, of all `text` and `image` columns. The default value is 0. You need to provide a value only if the table stores `text` or `image` data. `text` and `image` columns are stored in a separate set of data pages from the rest of the table's data. The actual table row stores a pointer to the `text` or `image` value. `sp_estspace` provides a separate line of information about the size of the `text` or `image` pages for a row.

<iosec>

is the number of disk I/Os per second on this machine. The default is 30 I/Os per second.

<pagesize>

allows you to estimate the space required for a given table — and all of its indexes — if you migrate the table to a server of the specified page size. You can either specify a page size (2048, 4096, 8192, 16384, or 2K, 4K, 8K, 16K) or NULL to use your current page size. If you do not use "K" as a unit specifier, the default for `<pagesize>` is bytes. Because page allocation allocates the same size page for various objects, the `<page_size>` value applies to all page types (`index`, `data`, `text` and so on).

Examples

Example 1

Calculates the space requirements for the `titles` table and its indexes, and the time required to create the indexes. The number of rows is 10,000, the fillfactor is 50 percent, two variable-length columns are computed using the maximum size for the column, and the disk I/O speed is 25 I/Os per second:

```
sp_estspace titles, 10000, 50, "title,notes", 0, 25
```

```
name             type         idx_level Pages        Kbytes
---------------- ------------ --------- ------------ ------------
titles           data                 0         3364         6728
titles           text/image           0            0            0
titleidind       clustered            0           21           43
titleidind       clustered            1            1            2
titleind         nonclustered         0         1001         2002
titleind         nonclustered         1           54          107
titleind         nonclustered         2            4            8
titleind         nonclustered         3            1            2
Total_Mbytes
-----------------
             8.68

name               type         total_pages  time_mins
------------------ ------------ ------------ ------------
titleidind         clustered            3386           13
titleind           nonclustered         1060            5
titles             data                    0            2
```

Example 2

Uses the average length of existing `image` data in the `au_pix` table to calculate the size of the table with 1000 rows. You can also provide this size as a constant:

```
declare @i int
select @i = avg(datalength(pic)) from au_pix
exec sp_estspace au_pix, 1000, null, null, 16, @i
```

```
au_pix has no indexes
 name            type         idx_level Pages     Kbytes
 --------------- ------------ --------- --------- ---------
 au_pix          data                 0        31        63
 au_pix          text/image           0     21000     42000

 Total_Mbytes
 -----------------
             41.08
```

Example 3

Calculates the size of the `titles` table with 50,000 rows, using defaults for all other values:

```
sp_estspace titles, 50000
```

```
name             type         idx_level Pages        Kbytes
--------------- ------------ --------- ------------ ------------
titles          data                0         4912         9824
titleidind      clustered           0           31           61
titleidind      clustered           1            1            2
titleind        nonclustered        0         1390         2780
titleind        nonclustered        1           42           84
titleind        nonclustered        2            2            4
titleind        nonclustered        3            1            2
Total_Mbytes
-----------------
            12.46
name               type         total_pages  time_mins
------------------ ------------ ------------ ------------
titleidind         clustered            4943           19
titleind           nonclustered         1435            8
```

Example 4

Runs after adding a clustered index to the `blurbs` table:

```
declare @i int
select @i = avg(datalength(copy)) from blurbs
exec sp_estspace blurbs, 6, null, null, 16, @i, "16k"
```

```
name                     type        idx_level Pages        Kbytes
------------------------ ----------- --------- ---------    ------
blurbs                   data                0        8        128
blurbs                   text/image          0        6         96
blurbs_ind               clustered           0        1         16
blurbs_ind               clustered           1        1         16
Total_Mbytes
-----------------
0.25
name                     type         total_pages  time_mins
------------------------ ------------ ------------ ------------
blurbs_ind               clustered              10            0
blurbs                   data                    6            0
```

This example is run on a 2K server, and indicates that the `blurbs` table would require 0.25 MB after it is migrated to a 16K server. Below is the same query run on a 16K server, which verifies the .25MB space requirement:

```
declare @i int
select @i = avg(datalength(copy)) from blurbs
exec sp_estspace blurbs, 6, null, null, 16, @i, "16k"
```

```
name                     type         idx_level Pages     Kbytes
------------------------ ------------ --------- --------- ------
blurbs                   data                 0         8    128
blurbs                   text/image           0         6     96
blurbs_ind               clustered            0         1     16
blurbs_ind               clustered            1         1     16
Total_Mbytes
-----------------
0.25
name                    type         total_pages  time_mins
----------------------- ------------ ------------ ----------
blurbs_ind              clustered              10          0
blurbs                  data                    6          0
```

Example 5

Estimates that, if the `blurbs` table had a thousand rows in it on a 2K server, it would require 1.99MB of space:

```
declare @i int
select @i = avg(datalength(copy)) from blurbs
exec sp_estspace blurbs, 1000, null, null, 16, @i, "2k"
```

```
name                    type         idx_level Pages        Kbytes
----------------------- ------------ --------- ------------ ------
blurbs                  data                 0     16           32
blurbs                  text/image           0   1000         2000
blurbs_ind              clustered            0      1            2
blurbs_ind              clustered            1      1            2
Total_Mbytes
------------
1.99
name                    type         total_pages  time_mins
----------------------- ------------ ------------ ---------
blurbs_ind              clustered             18          0
blurbs                  data                1000          0
```

Usage

To estimate the amount of space required by a table and its indexes:

1. Create the table.
2. Create all indexes on the table.
3. Run `sp_estspace`, giving the table name, the estimated number of rows for the table, and the optional arguments, as needed.

For information about tables or columns, use `sp_help <tablename>`.

See also `create index`, `create table` in *Reference Manual: Commands*.

You do not need to insert data into the tables. `sp_estspace` uses information in the system tables — not the size of the data in the tables — to calculate the size of tables and indexes.

Permissions

Any user can execute `sp_estspace`. Permission checks do not differ based on the granular permissions settings.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_dboption [page 228]
sp_help [page 396]

1.112.1 Estimating the Extra Space Required by a Column

If the `auto identity` option is set in a database, the SAP ASE server automatically defines a 10-digit IDENTITY column in each new table that is created without specifying a primary key, a unique constraint, or an IDENTITY column. To estimate how much extra space is required by this column:

Procedure

1. In the `master` database, use `sp_dboption` to turn on the `auto identity` option for the database.
2. Create the table.
3. Run `sp_estspace` on the table and record the results.
4. Drop the table.
5. Turn the `auto identity` option off for the database.
6. Re-create the table.
7. Re-run `sp_estspace` on the table, and record the results.

1.113 sp_export_qpgroup

Exports all plans for a specified user and abstract plan group to a user table.

Syntax

```
sp_export_qpgroup <usr>, <group>, <tab>
```

Parameters

<usr>

is the name of the user who owns the abstract plans to be exported.

<group>

is the name of the abstract plan group that contains the plans to be exported.

<tab>

is the name of a table into which to copy the plans. It must be a table in the current database. You can specify a database name, but not an owner name, in the form `<dbname>..<tablename>`. With large identifiers, the total length must be no more than 255 characters.

Examples

Example 1

Creates a table called `moveplans` containing all the plans for the user "freidak" that are in the `ap_stdout` group:

```
sp_export_qpgroup freidak, ap_stdout, "tempdb..moveplans"
```

Usage

`sp_export_qpgroup` copies plans from an abstract plan group to a user table. With `sp_import_qpgroup`, it can be used to copy abstract plans groups between servers and databases or to assign user IDs to copied plans.

The user table name that you specify cannot exist before you run `sp_export_qpgroup`. The table is created with a structure identical to that of `sysqueryplans`.

sp_export_qpgroup uses select...into to create the table to store the copied plans. You must use sp_dboption to enable select into/bulkcopy/pllsort in order to use sp_export_qpgroup, or create the table in tempdb.

Permissions

The permission checks for sp_export_qpgroup differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with manage abstract plans privilege.
Disabled	With granular permissions disabled, you must be the database owner or a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_copy_all_qplans [page 212]
sp_copy_qplan [page 214]
sp_dboption [page 228]
sp_import_qpgroup [page 499]

1.114 sp_extendsegment

Extends the range of a segment to another database device.

Syntax

```
sp_extendsegment <segname>, <dbname>, <devname>
```

Parameters

<segname>

is the name of the existing segment previously defined with sp_addsegment.

<dbname>

is the name of the database on which to extend the segment. <dbname> must be the name of the current database.

<devname>

is the name of the database device to be added to the current database device range already included in <segname>.

Examples

Example 1

Extends the range of the segment indexes for the database pubs2 on the database device dev2:

```
sp_extendsegment indexes, pubs2, dev2
```

Usage

There are additional considerations when using sp_extendsegment:

- You cannot extend a segment on a device that already has an exclusive segment, and you cannot extend an exclusive segment on a device that has another segment.
  For example, if you attempt to extend segment orders_seg on a device orders.dat, which already has an exclusive segment, you see an error message similar to:

  ```
  A segment with a virtually hashed table exists on
  device orders.dat.
  ```

  If you attempt to extend exclusive segment orders_seg on device orders.dat, which has other segments, you see an error message similar to:

  ```
  You cannot extend a segment with a virtually hashed
  table on device orders.dat, because this device has
  other segments.
  ```
- A segment can be extended over several database devices.
- You can only execute sp_extendsegment for the logsegment system segment in single-user mode.
- If the logsegment segment is extended, any other segments on the device are dropped and the device is used for the log segment exclusively.
- When you extend the logsegment segment, the SAP ASE server recalculates its last-chance threshold.
- To associate a segment with a database device, create or alter the database with a reference to that device. A database device can have more than one segment associated with it.

- After defining a segment, you can use it in the `create table` and `create index` commands to place the table or index on the segment. If you create a table or index on a particular segment, subsequent data for the table or index is located on that segment.

See also `alter database`, `create index`, `create table` in *Reference Manual: Commands*.

Permissions

The permission checks for `sp_extendsegment` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `manage database` privilege.
Disabled	With granular permissions disabled, you must be the database owner or a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_addsegment [page 56]
sp_dropsegment [page 319]
sp_helpdb [page 438]
sp_helpdevice [page 446]
sp_helpsegment [page 478]
sp_placeobject [page 664]

1.115 sp_extrapwdchecks

A custom stored procedure that can contain user-defined logic for password complexity checks. You can configure `sp_extrapwdchecks` according to your security needs. Install `sp_extrapwdchecks` in the `master` database.

Syntax

```
sp_extrapwdchecks <caller_password>, <new_password>, <login_name>
```

Parameters

`<caller_password>`

specifies the current password.

`<new_password>`

specifies the new password being set.

`<login_name>`

specifies the login name associated with the password being changed or added.

Usage

- `sp_extrapasswordchecks` must use `raiserror` to signal a failure to the SAP ASE server. Use `sp_addmessage` to add error message for this failure in the SAP ASE server.

  > i Note
  >
  > Do not use `raiserror` to get the expected behavior. `raiserror` updates the `@@error` global variable. `@@error` is also updated each time you execute a T-SQL statement, including `print` and `if`. If `raiserror` is followed by any T-SQL statement, `@@error` gets overwritten, and `sp_extrapwdchecks` fails to return an error for a failed password if `raiserror` is followed by any TSQL statement.

- `sp_extrapwdchecks` allows NULL values for `caller_password` and `loginame` parameters.
  The `caller_password` parameter is NULL when :
  - The system security officer creates a new login account using `create login` command.
  - The system security officer modifies the login account's password using `alter login .. modify password` command.

  The `loginame` parameter is NULL when the system security officer creates a new login account using the `create login` command.

Permissions

sp_extrapwdchecks is not executed directly. It is a custom stored procedure and executed by the SAP ASE server internally as part of authentication.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

1.116 sp_familylock

Reports information about all the locks held by a family (coordinating process and its worker processes) executing a statement in parallel.

Syntax

```
sp_familylock [<fpid1>[, <fpid2>]]
```

Parameters

<fpid1>

is the family identifier for a family of worker processes from the master.dbo.sysprocesses table. Run sp_who or sp_lock to get the <spid> of the parent process.

<fpid2>

is the SAP ASE process ID number for another lock.

Examples

Example 1

Displays information about the locks held by all members of the family with an `fid` of 5:

```
sp_familylock 5
```

```
fid spid locktype      table_id  partitionid page dbname
class           context
--- ---- ----------    --------- ----------- ---- ------ ---------------
 -----------------------
  5   5  Sh_intent     176003658           0    0 userdb Non cursor lock Sync-
pt duration request
  5   5  Sh_intent-blk 208003772           0    0 userdb Non cursor lock Sync-
pt duration request
  5   6  Sh_page       208003772           0 3972 userdb Non cursor lock Sync-
pt duration request
  5   7  Sh_page       208003772           0 3973 userdb Non cursor lock Sync-
pt duration request
  5   8  Sh_page       208003772           0 3973 userdb Non cursor lock Sync-
pt duration request
```

Example 2

Displays information about partition-level locks:

```
sp_familylock
```

```
spid  locktype             table_id     partitionid     page   row…
----  ------------------   -----------  -------------   -----  ----
0     Ex_partition           576002052      576004423       0     0
0     Sh_partition_intent   1417053053     1417053053       0     0
```

Table lock and fine-grained lock values for `partitionid` are 0. `partitionid` is populated only for partition-level locks.

Usage

There are additional considerations when using `sp_familylock`:

- `sp_familylock` with no parameter reports information on all processes belonging to families that currently hold locks. The report is identical to the output from `sp_lock`; however, `sp_familylock` allows you to generate reports based on the family ID, rather than the process ID. It is useful for detecting family deadlocks.
- Use the `object_name` system function to derive a table's name from its ID number.
- The "`locktype`" column indicates whether the lock is a shared lock ("Sh" prefix), an exclusive lock ("Ex" prefix) or an update lock, and whether the lock is held on a table ("table" or "intent") or on a page ("page"). The "`blk`" suffix in the "`locktype`" column indicates that this process is blocking another process that needs to acquire a lock. As soon as this process completes, the other process(es) moves forward. The "demand" suffix indicates that the process is attempting to acquire an exclusive lock.
- The "`class`" column indicates whether a lock is associated with a cursor. It displays one of the following:
  - "Non cursor lock" indicates that the lock is not associated with a cursor.

    - "Cursor Id <number>" indicates that the lock is associated with the cursor ID number< >for that SAP ASE process ID.
    - A cursor name indicates that the lock is associated with the cursor <cursor_name> that is owned by the current user executing sp_lock.
- The "fid" column identifies the family (including the coordinating process and its worker processes) to which a lock belongs. Values for "fid" are:
    - A zero value indicates that the task represented by the spid is executed in serial. It is not participating in parallel execution.
    - A nonzero value indicates that the task (spid) holding the lock is a member of a family of processes (identified by "fid") executing a statement in parallel. If the value is equal to the spid, it indicates that the task is the coordinating process in a family executing a query in parallel.
- The "context" column identifies the context of the lock. Worker processes in the same family have the same context value. Values for "context" are:
    - "NULL" means that the task holding this lock is either executing a query in serial or is a query being executed in parallel in transaction isolation level 1.
    - "FAM_DUR" means that the task holding the lock holds the lock until the query is complete.
      A lock's context may be "FAM_DUR" if the lock is a table lock held as part of a parallel query, if the lock is held by a worker process at transaction isolation level 3, or if the lock is held by a worker process in a parallel query and must be held for the duration of the transaction.

See also kill, select in *Reference Manual: Commands*.

Permissions

Any user can execute sp_familylock. Permission checks do not differ based on the granular permissions settings.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_lock [page 559]
sp_who [page 846]

1.117 sp_file_path

Use the sp_file_path procedure to specify directory restrictions when writing output files using the transfer table ... to command.
As of version 16.0 SP02 PL04, the transfer table ... to command is no longer permitted to write an output file to any directory that is writable by the running server. Output files must be written to a specified output directory or to one of its subdirectories. Directory restrictions apply server-wide, and may be amended per-database. Path restriction takes two forms:

- The required file root of all tranfer table ... to output files may be specified using dtu path root. If it is not specified, the default is $SYBASE/data.
- Certain paths may be noted as forbidden using the file root dtu path forbid.

Syntax

```
sp_file_path <database>, <attr> [, <path>] [, <option>]
```

Parameters

<database>

is the name of the database in which the procedure is being run. This helps prevent accidental changes.

<attr>

is one of dtu path root or dtu path forbid. This identifies which restriction is being affected.

<path>

is the path name that is the target of <@attr>. This path may contain the environment variables $SYBASE, $SYBASE_ASE, $SYBASE_OCS, which the server will translate at runtime. (Windows note: %SYBASE%, etc., are also recognized.)

<option>

- insert – inserts a new restriction.
- delete – removes an existing restriction.
- select – list restrictions.
- show – list restrictions.
- help – prints a short help message.

If no option is specified, the default is insert.

Examples

Example 1

Specify a new dtu path root in the master directory:

```
sp_file_path 'master', 'dtu path root', '$SYBASE/data'
```

Example 2

Remove the dtu path root from directory model:

```
sp_file_path 'model', 'dtu path root', NULL, 'delete'
```

Usage

- sp_file_path must be invoked from within the indicated database.
- Restrictions may be specified in the master database and individual databases, or both.
- A dtu path root specified in the master database applies to every database in that installation. Individual databases can override that by specifying their own dtu path root.
- The list of dtu path forbid directories is cumulative. dtu path forbid paths that are specified in the master database apply to every database in the installation. Individual databases may add to, but not subtract from, the master list.
- Running sp_file_path with @attr = "dtu path root" and @option = "insert" will replace any existing dtu path root in the indicated database.
- You can disable the dtu path root by setting it to * (a single asterisk). However, the dtu path forbid list still applies. SAP recommends disabling the dtu path root only when needed, and only for as long as is necessary. If possible, disable dtu path root for individual databases, not in the master database, so that thedtu path root restriction is still applied to other databases.
- When a transfer table ... to command specifies a relative path name as an output file, the server prefixes it with the current dtu path root. If dtu path root has never been set, or if it is set to *, the server uses $SYBASE/data.
- Once the full path name is constructed, if it does not begin with the dtu path root, then the transfer is rejected. Similarly, if the path begins with any entry in the dtu path forbid list, the transfer is rejected. The server performs the forbid list check twice: once with the initial output path, and again after resolving any symbolic links in the path.
- The path restrictions apply only to output files using the transfer table ... to command. Any valid input file may be specified for transfer table ... from.

Permissions

The permission checks for sp_file_path differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `manage any database` privilege.
Disabled	With granular permissions disabled, you must be a user with sa_role.

1.118 sp_find_qplan

Finds an abstract plan, given a pattern from the query text or plan text.

Syntax

```
sp_find_qplan <pattern>[, group ]
```

Parameters

<pattern>

is a string to find in the text of the query or abstract plan.

<group>

is the name of the abstract plan group.

Examples

Example 1

Reports on all abstract plans that have the string "from titles" in the query:

```
sp_find_qplan "%from titles%"
```

```
gid id          text
--- ----------- --------------------------------------------------
2   921054317 select count(*) from titles
2   921054317
         ( plan
        ( i_scan t_pub_id_ix titles )
        ( )
)
( prop titles
        ( parallel 1 )
        ( prefetch 16 )
        ( lru )
)
5   937054374 select type, avg(price) from titles group by type
```

```
5   937054374
         ( plan
        ( store Worktab1
                ( i_scan type_price titles )
        )
        ( t_scan ( work_t Worktab1 ) )
)
( prop titles
        ( parallel 1 )
        ( prefetch 16 )
        ( lru )
```

Example 2

Finds all plans that include a table scan operator:

```
sp_find_qplan "%t_scan%"
```

Example 3

Uses the range pattern matching to look for strings such as "table1", "table2", and so forth, in plans in the `dev_plans` group:

```
sp_find_qplan "%table[0-9]%", dev_plans
```

Usage

There are additional considerations when using `sp_find_qplan`:

- Use `sp_find_qplan` to find an abstract plan that contains a particular string. You can match strings from either the query text or from the abstract plan text.
- For each matching plan, `sp_find_qplan` prints the group ID, plan ID, query text and abstract plan text.
- If you include a group name, `sp_find_qplan` searches for the string in the specified group. If you do not provide a group name, `sp_find_plan` searches all queries and plans for all groups.
- You must supply the "%" wildcard characters, as shown in the examples, unless you are searching for a string at the start or end of a query or plan. You can use any Transact-SQL pattern matching syntax, such as that shown in Example 3.
- The text of queries in `sysqueryplans` is broken into 255-byte column values. `sp_find_qplan` may miss matches that span one of these boundaries, but finds all matches that are less than 127 bytes, even if they span two rows.

Permissions

The permission checks for `sp_find_qplan` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `manage abstract plans` privilege or `monitor qp performance` privilege.

Setting	Description
	Any user can execute `sp_find_qplan` to find and display report plans that they own.
Disabled	With granular permissions disabled, you must be the database owner or a user with sa_role. Any user can execute `sp_find_qplan` to find and display report plans that they own.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_help_qpgroup [page 410]
sp_help_qplan [page 412]

1.119 sp_fixindex

Repairs corrupt indexes on system tables. It can rebuild a specified index or all indexes on the table. `sp_fixindex` rebuilds the data layer if the target table has a placement or clustered index (it reclaims the unused space in the data layer while working on the placement or clustered index of a system table).

Syntax

```
sp_fixindex <database_name>, <table_name>[, <index_id> | null]
     [, <index_name> | null] [, force_option]
```

Parameters

<dbname>

is the database name

<tabname>

is the table name

<indiex_id>

is the ID of the index you want to fix

<index_name>

indicates the index that needs to be processed. If a NULL value is used, the index associated with <index_id> is rebuilt. If <index_id> is also a NULL value, all the indexes in the system table are rebuilt

force_option

forces the SAP ASE server to rebuild the system table index in tempdb. sp_fixindex without the force_option forces the database specified by <database_name> to be in single-user mode, which is not possible for tempdb. Although the force_option allows you to rebuilt system catalogs in tempdb, it should not be used for user databases.

Examples

Example 1

Repairs the clustered index on the sysprocedures table of the pubs2 database:

```
sp_fixindex pubs2, sysprocedures, 1
```

Example 2

Rebuilds the index with an index ID of 2 on testdb..sysprocedures:

```
sp_fixindex 'testdb', 'sysprocedures', 2
```

Example 3

Rebuilds the index csysprocedures in the testdb..sysprocedures system table:

```
sp_fixindex 'testdb', 'sysprocedures', null, 'csysprocedures'
```

Example 4

Rebuilds all available indexes on the sysprocedures table in testdb. If the table has clustered or placement index, sp_fixindex reclaims the unused space by removing the garbage present in data pages (that is, it rebuilds the data pages):

```
sp_fixindex 'testdb', 'sysprocedures'
```

Example 5

Rebuilds the index with an with an index ID of 2 on tempdb..sysprocedures:

```
sp_fixindex 'tempdb', 'sysprocedures', 2, null, 1
```

Example 6

Rebuilds the index csysprocedures for the table tempdb..sysprocedures:

```
sp_fixindex 'tempdb', 'sysprocedures', null,
    'sysprocedures', 1
```

Example 7

Rebuilds all indexes on sysprocedures in tempdb:

```
sp_fixindex 'tempdb', 'sysprocedures', null, null, 1
```

Usage

Before you run sp_fixindex, make sure your database is in single-user mode, and is reconfigured to allow updates to system tables.

After you run sp_fixindex:

- Use the dbcc checktable command to verify that the corrupted index has been fixed
- Disallow updates to system tables using sp_configure
- Turn off single-user mode

Do not run sp_fixindex on user tables.

> ⚠ Caution
>
> You cannot use sp_fixindex against the clustered index on sysindexes. If you do, sp_fixindex returns the following error message:
>
> `Cannot re-create index on this table.`

For more information on sp_fixindex, see:

- *Troubleshooting and Error Message Guide > Encyclopedia of Tasks*
- *Performance and Tuning Guide: Basics > Indexing for Performance*

Permissions

The permission checks for sp_fixindex differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be the database owner or a user with own database privilege.
Disabled	With granular permissions disabled, you must be a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide > Auditing*.

1.120 sp_flushstats

Flushes statistics from in-memory storage to the systabstats and sysstatistics system tables.

Syntax

```
sp_flushstats [<objname>]
```

Parameters

<objname>

is the name of a table.

Examples

Example 1

Flushes statistics for the titles table:

```
sp_flushstats titles
```

Usage

There are additional considerations when using sp_flushstats:

- When you do not specify a table with the <objname> parameter, sp_flushstats acts at the database level.
- Some statistics in the systabstats table are updated in in-memory storage locations and flushed to systabstats periodically, to reduce overhead and contention on systabstats.
- If you query systabstats using SQL, executing sp_flushstats guarantees that in-memory statistics are flushed to systabstats.
- The optdiag command always flushes in-memory statistics before displaying output.
- The statistics in sysstatistics are changed only by data definition language commands and do not require the use of sp_flushstats.
- The in-memory datachange counters are persistently stored in sysstatistics. These are flushed to disk when sp_flushstats is executed.

Permissions

The permission checks for `sp_flushstats` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `monitor qp performance` privilege.
Disabled	With granular permissions disabled, you must be a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

1.121 sp_forceonline_db

Provides access to all the pages in a database that were previously marked suspect by recovery.

Syntax

```
sp_forceonline_db <dbname>,
    {"sa_on" | "sa_off" | "all_users"}
```

Parameters

`<dbname>`

is the name of the database to be brought online.

`sa_on`

allows only users with the sa_role access to the specified page.

`sa_off`

revokes access privileges created by a previous invocation of `sp_forceonline_page` with `sa_on`.

`all users`

allows all users access to the specified page.

Examples

Example 1

Allows the system administrator access to all suspect pages in the pubs2 database:

```
sp_forceonline_db pubs2, "sa_on"
```

Example 2

Revokes access to all suspect pages in the pubs2 database from the system administrator. Now, no one can access the suspect pages in pubs2:

```
sp_forceonline_db pubs2, "sa_off"
```

Example 3

Allows all users access to all pages in the pubs2 database:

```
sp_forceonline_db pubs2, "all_users"
```

Usage

There are additional considerations when using sp_forceonline_db:

- A page that is forced online is not necessarily repaired. Corrupt pages can also be forced online. The SAP ASE server does not perform any consistency checks on pages that are forced online.
- sp_forceonline_page with all users cannot be reversed. When pages have been brought online for all users, you cannot take them offline again.
- sp_forceonline_db cannot be used in a transaction.
- To bring only specific offline pages online, use sp_forceonline_page.

Permissions

The permission checks for sp_forceonline_db differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be the database owner or a user with own database privilege.
Disabled	With granular permissions disabled, you must be a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_forceonline_page [page 385]
sp_listsuspect_db [page 551]
sp_listsuspect_page [page 554]
sp_setsuspect_granularity [page 729]
sp_setsuspect_threshold [page 732]

1.122 sp_forceonline_object

Provides access to an index previously marked suspect by recovery.

Syntax

```
sp_forceonline_object <dbname>, <objname>, <indid>,
    {sa_on | sa_off | all_users}[, no_print]
```

Parameters

`<dbname>`

is the name of the database containing the index to be brought online.

`<objname>`

is the name of the table.

`<indid>`

is the index ID of the suspect index being brought online.

`sa_on`

allows only users with the sa_role to access the specified index.

`sa_off`

revokes access privileges created by a previous invocation of `sp_forceonline_object` with `sa_on`.

`all_users`

allows all users to access the specified index.

`no_print`

skips printing a list of other suspect objects after the specified object is brought online.

Examples

Example 1

Allows a system administrator to access the index with `indid 3` on the `titles` table in the `pubs2` database:

```
sp_forceonline_object pubs2, titles, 3 , sa_on
```

Example 2

Revokes access to the index from the system administrator. Now, no one has access to this index:

```
sp_forceonline_object pubs2, titles, 3, sa_off
```

Example 3

Allows all users to access the index on the `titles` table in the `pubs2` database:

```
sp_forceonline_object pubs2, titles, 3, all_users
```

Usage

There are additional considerations when using `sp_forceonline_object`:

- If an index on a data-only-locked table has suspect pages, the entire index is taken offline during recovery. Offline indexes are not considered by the query optimizer. Indexes on allpages-locked tables are not taken completely offline during recovery; only individual pages of these indexes are taken offline. Use `sp_forceonline_page` to bring these pages online.
- Use `sp_listsuspect_object` to see a list of databases that are offline.
- To repair a suspect index, use `sp_forceonline_object` with `sa_on` access. Then, drop and re-create the index.

  > i Note
  >
  > If the index is on `systabstats` or `sysstatistics` (the only data-only-locked system tables) call Sybase Technical Support.

- `sp_forceonline_object` with `all_users` cannot be reversed. When an index has been brought online for all users, you cannot take it offline again.

- An index that is forced online is not necessarily repaired, as corrupt indexes can be forced online. The SAP ASE server does not perform any consistency checks on indexes that are forced online.
- sp_forceonline_object cannot be used in a transaction.
- sp_forceonline_object works only for databases in which the recovery fault isolation mode is "page." Use sp_setsuspect_granularity to display the recovery fault isolation mode for a database.
- To bring all of a database's offline pages and indexes online in a single command, use sp_forceonline_db.

For more information on recovery fault isolation, see the *System Administration Guide*.

Permissions

The permission checks for sp_forceonline_object differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be the database owner or a user with own database privilege.
Disabled	With granular permissions disabled, you must be a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_listsuspect_object [page 552]
sp_setsuspect_granularity [page 729]

1.123 sp_forceonline_page

Provides access to pages previously marked suspect by recovery.

Syntax

```
sp_forceonline_page <dbname>, <pgid>,
    {"sa_on" | "sa_off" | "all_users"}
```

Parameters

<dbname>

is the name of the database containing the pages to be brought online.

<pgid>

is the page identifier of the page being brought online.

sa_on

allows only users with the sa_role access to the specified page.

sa_off

revokes access privileges created by a previous invocation of `sp_forceonline_page` with `sa_on`.

all_users

allows all users access to the specified page.

Examples

Example 1

Allows a system administrator access to page 312 in the `pubs2` database:

```
sp_forceonline_page pubs2, 312, "sa_on"
```

Example 2

Revokes access to page 312 in the `pubs2` database from the system administrator. Now, no one has access to this page:

```
sp_forceonline_page pubs2, 312, "sa_off"
```

Example 3

Allows all users access to page 312 in the `pubs2` database:

```
sp_forceonline_page pubs2, 312, "all_users"
```

Usage

There are additional considerations when using `sp_forceonline_page`:

- `sp_forceonline_page` with `all_users` cannot be reversed. When pages have been brought online for all users, you cannot take them offline again.
- A page that is forced online is not necessarily repaired. Corrupt pages can also be forced online. The SAP ASE server does not perform any consistency checks on pages that are forced online.
- You cannot use `sp_forceonline_page` in a transaction.
- `sp_forceonline_page` works only for databases in which the recovery fault isolation mode is "page." Use `sp_setsuspect_granularity` to display the recovery fault isolation mode for a database.
- To bring all of a database's offline pages online in a single command, use `sp_forceonline_db`.

Permissions

The permission checks for `sp_forceonline_page` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be the database owner or a user with `own database` privilege.
Disabled	With granular permissions disabled, you must be a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_forceonline_db [page 380]
sp_listsuspect_db [page 551]

sp_listsuspect_page [page 554]
sp_setsuspect_granularity [page 729]
sp_setsuspect_threshold [page 732]

1.124 sp_foreignkey

Defines a foreign key on a table or view in the current database.

Syntax

```
sp_foreignkey <tabname>, <pktabname>, <col1>[, <col2>] ...
    [, <col8>]
```

Parameters

<tabname>

is the name of the table or view that contains the foreign key to be defined.

<pktabname>

is the name of the table or view that has the primary key to which the foreign key applies. The primary key must already be defined.

<col1>

is the name of the first column that makes up the foreign key. The foreign key must have at least one column and can have a maximum of eight columns.

Examples

Example 1

The primary key of the publishers table is the pub_id column. The titles table also contains a pub_id column, which is a foreign key of publishers:

```
sp_foreignkey titles, publishers, pub_id
```

Example 2

The primary key of the `parts` table has been defined with `sp_primarykey` as the `partnumber` and `subpartnumber` columns. The `orders` table contains the columns `part` and `subpart`, which make up a foreign key of `parts`:

```
sp_foreignkey orders, parts, part, subpart
```

Usage

There are additional considerations when using `sp_foreignkey`:

- `sp_foreignkey` adds the key to the `syskeys` table. Keys make explicit a logical relationship that is implicit in your database design.
- `sp_foreignkey` does not enforce referential integrity constraints; use the `foreign key` clause of the `create table` or `alter table` command to enforce a foreign key relationship.
- The number and order of columns that make up the foreign key must be the same as the number and order of columns that make up the primary key. The datatypes (and lengths) of the primary and foreign keys must agree, but the null types need not agree.
- The installation process runs `sp_foreignkey` on the appropriate columns of the system tables.
- To display a report on the keys that have been defined, execute `sp_helpkey`.
- You cannot use a Java datatype with `sp_foreignkey`.

See also

`alter table`, `create table`, `create trigger` in *Reference Manual: Commands*.

Permissions

You must be the owner of the table or view to execute `sp_foreignkey`. Permission checks do not differ based on the granular permissions settings.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide > Auditing*.

Related Information

sp_commonkey [page 191]

sp_dropkey [page 306]
sp_helpjoins [page 460]
sp_helpkey [page 462]
sp_primarykey [page 676]

1.125 sp_freedll

Unloads a dynamic link library (DLL) that was previously loaded into XP Server memory to support the execution of an extended stored procedure (ESP).

Syntax

```
sp_freedll <dll_name>
```

Parameters

<dll_name>

is the file name of the DLL being unloaded from XP Server memory.

Examples

Example 1

Unloads the sqlsrvdll.dll DLL:

```
sp_freedll "sqlsrvdll.dll"
```

Usage

There are additional considerations when using sp_freedll:

- You cannot execute from within a transaction.
- sp_freedll cannot free the DLL of a system ESP.
- An alternative to unloading a DLL explicitly, using sp_freedll, is to specify that DLLs always be unloaded after the ESP request that invoked them terminates. To do this, set the esp unload dll configuration parameter to 1 or start xpserver with the -u option.

- You cannot use to update an ESP function in a DLL without shutting down XP Server or the SAP ASE server.
- If you use sp_freedll to unload a DLL that is in use, sp_freedll succeeds, causing the ESP currently using the DLL to fail.

Permissions

The permission checks for sp_freedll differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with manage any ESP privilege.
Disabled	With granular permissions disabled, you must be a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_addextendedproc [page 37]
sp_dropextendedproc [page 297]
sp_helpextendedproc [page 448]

1.126 sp_getmessage

Retrieves stored message strings from sysmessages and sysusermessages for print and raiserror statements.

Syntax

```
sp_getmessage <message_num>, <result> output[, <language>]
```

Parameters

<message_num>

is the number of the message to be retrieved.

<result> output

is the variable that receives the returned message text, followed by a space and the keyword output. The variable must have a datatype of char, unichar, nchar, varchar, univarchar, or nvarchar.

<language>

is the language of the message to be retrieved. <language> must be a valid language name in syslanguages table. If you include <language>, the message with the indicated <message_num> and <language> is retrieved. If you do not include <language>, then the message for the default session language, as indicated by the variable @@<langid>, is retrieved.

Examples

Example 1

Retrieves message number 20001 from sysusermessages:

```
declare @myvar varchar(200)
exec sp_getmessage 20001, @myvar output
```

Example 2

Retrieves the French language version of message number 20010 from sysusermessages:

```
declare @myvar varchar(200)
exec sp_getmessage 20010, @myvar output, french
```

Usage

Any application can use sp_getmessage, and any user can read the messages stored in sysmessages and sysusermessages.

See also

print, raiserror in *Reference Manual: Commands*.

Permissions

Any user can execute sp_getmessage. Permission checks do not differ based on the granular permissions settings.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_addmessage [page 47]
sp_dropmessage [page 309]

1.127 sp_grantlogin

(Windows only) Assigns SAP ASE roles or default permissions to Windows users and groups when Integrated Security mode or Mixed mode (with Named Pipes) is active.

Syntax

```
sp_grantlogin {<login_name> | <group_name>}
     ["<role_list>" | default]
```

Parameters

<login_name>

is the network login name of the Windows user.

<group_name>

is the Windows group name.

<role_list>

is a list of the SAP ASE roles granted. The role list can include one or more of the following role names: sa_role, sso_role, oper_role. If you specify more than one role, separate the role names with spaces, not commas.

default

specifies that the <login_name> or <group_name> receive default permissions assigned with the grant statement.

Examples

Example 1

Assigns the SAP ASE oper_role to the Windows user "jeanluc":

```
sp_grantlogin jeanluc, oper_role
```

Example 2

Assigns the default value to the Windows user "valle". User "valle" receives any permissions that were assigned to her via the grant command:

```
sp_grantlogin valle
```

Example 3

Assigns the SAP ASE sa_role and sso_role to all members of the Windows administrators group:

```
sp_grantlogin Administrators, "sa_role sso_role"
```

Usage

There are additional considerations when using sp_grantlogin:

- You must create the Windows login name or group before assigning roles with sp_grantlogin. See your Windows documentation for details.
- sp_grantlogin is active only when the SAP ASE server is running in Integrated Security mode or Mixed mode when the connection is Named Pipes. If the SAP ASE server is running under Standard mode or Mixed mode with a connection other than Named Pipes, use grant instead.
- If you do not specify a <role_list> or default, the procedure automatically assigns the default value.
- The default value does not indicate an SAP ASE role. It specifies that the user or group should receive any permissions that were assigned to it via the grant command.
- Using sp_grantlogin with an existing <login_name> or <group_name> overwrites the user's or group's existing roles.

See also

grant, setuser in *Reference Manual: Commands*

Permissions

The permission checks for sp_grantlogin differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with manage roles privilege.

Setting	Description
Disabled	With granular permissions disabled, you must be a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_addlogin [page 47]
sp_displaylogin [page 270]
sp_droplogin [page 309]
sp_locklogin [page 563]
sp_logininfo [page 572]
sp_modifylogin [page 592]
sp_revokelogin [page 703]
sp_role [page 705]

1.128 sp_ha_admin

Performs administrative tasks on SAP ASE servers configured with Failover in a high availability system. `sp_ha_admin` is installed with the `installhavss` script on UNIX platforms or the `insthasv` script on Windows.

Syntax

```
sp_ha_admin [cleansessions | help]
```

Parameters

`cleansessions`

removes old entries from syssessions. Old syssessions entries are typically left behind because either the SAP ASE server failed to clean up syssessions during a restart, or because a client failed to connect to the SAP ASE server.

help

displays the syntax for sp_ha_admin.

Examples

Example 1

Removes old entries from syssessions left by a client connection that did not exit correctly:

```
sp_ha_admin cleansessions
(return status = 0)
```

Example 2

Displays the syntax for sp_ha_admin:

```
sp_ha_admin "help"
```

```
sp_ha_admin Usage: sp_ha_admin command [, option1 [, option2]]
sp_ha_admin commands:
sp_ha_admin 'cleansessions'
sp_ha_admin 'help'
(return status = 0)
```

Usage

There are additional considerations when using sp_ha_admin:

- sp_ha_admin performs administrative tasks on the SAP ASE server that are configured for Failover in a high availability system. sp_ha_admin is not installed using the installmaster script; instead, use the installhavss script that installs and configures for Failover (insthasv on Windows).
- sp_ha_admin returns a 0 if it successfully cleaned up syssessions, and returns a 1 if it encounters an error.
- sp_ha_admin enters a message in the errorlog if it could not remove any entries from syssessions (for example, if it could not get a lock on syssessions).
- To view all the current entries in syssessions, enter:

```
select * from syssessions
```

Permissions

You must be a user with ha_role to execute `sp_ha_admin`. Permission checks do not differ based on the granular permissions settings.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

1.129 sp_help

Reports information about a database object (any object listed in `sysobjects`) and about system or user-defined datatypes, as well as user-defined functions, computed columns and function-based indexes. Column displays `optimistic_index_lock`.

Syntax

```
sp_help [<objname> [, terse]]
```

Parameters

`<objname>`

is the name of any object in `sysobjects` or any user-defined datatype or system datatype in `systypes`. You cannot specify database names. `<objname>` can include tables, views, precomputed result sets, stored procedures, logs, rules, defaults, triggers, referential constraints, encryption keys, predicates, and check constraints, but refers to tables when you enable `optimistic_index_lock`. Use owner names if the object owner is not the user running the command and is not the database owner.

terse

displays a shortened list of object properties in tabular format. Only valid when the object type is `table`.

Examples

Example 1

Displays a list of objects in `sysobjects` and displays each object's name, owner, and object type. Also displays a list of each user-defined datatype in `systypes`, indicating the datatype name, storage type, length, null type, default name, and rule name. Null type is 0 (null values not allowed) or 1 (null values allowed):

```
sp_help
```

Example 2

Displays information about a partitioned `publishers` table. `sp_help` also lists any attributes assigned to the specified table and its indexes, giving the attribute's class, name, integer value, character value, and comments:

```
sp_help publishers
```

```
Name                  Owner              Object_Type     Create_date
-------------------   ---------------    -----------     -----------------
publishers            dbo                user table      Oct 7 2005 11:14AM
Column_name Type  Length  Prec  Scale  Nulls  Default_name  Rule_name
Access_Rule_name  Computed_Column_object    Identity
----------  ----  ------  ----- -----  -----  ------------  -----------
----------------  -----------------------    --------
pub_id     char       4    NULL    NULL     0  NULL         pub_idrule
            NULL                    NULL         0
pub_name   varchar   40    NULL    NULL      1          NULL
           NULL                    NULL         0
city       varchar   20    NULL    NULL      1          NULL
           NULL                    NULL         0
state       char      2    NULL    NULL      1          NULL
           NULL                    NULL         0
Object does not have any indexes.
keytype  object      related_objs  object_keys           related_keys
-------  ------      ------------  -----------           ---------------
primary  publishers  -- none --    pub_id,*,*,*,*,*,*,*  *,*,*,*,*,*,*,*
name        type        partition_type  partitions  partition_keys
----------  --------    --------------  ----------  --------------
publishers  base table  roundrobin               3  NULL
partition_name          partition_id   pages  segment  create_date
------------------      -------------- -----  -------  -----------------
publishers_608002166    608002166          1  default  Oct 13 2005 11:18AM
publishers_1116527980   1116527980         1  default  Oct 13 2005 11:18AM
publishers_1132528037   1132528037         1  default  Oct 13 2005 11:19AM
Partition_Conditions
--------------------
NULL
Avg_pages  Max_pages  Min_pages  Ratio(Max/Avg)  Ratio(Min/Avg)
---------  ---------  ---------  --------------  --------------
        1          1          1  1.0000000       1.0000000
Lock scheme Allpages
The attribute "exp_row_size" is not applicable to tables with allpages lock
scheme.
exp_row  reservepagegap  fillfactor  max_rows_per_page  identity_gap
-------  --------------  ----------  -----------------  ------------
      0               0           0                   0             0
concurrency_opt_threshold  optimistic_index_lock  dealloc_first_txtpg
-------------------------  ---------------------  -------------------
                        0                      0                    0
```

Example 3

Displays information about a partitioned `titles` table:

```
sp_help titles
```

```
Name                  Owner              Object_Type     Create_date
--------------------- ---------------    -----------     -----------------
titles                dbo                user table      Oct 7 2005 11:14AM
(1 row affected)
Column_name Type Length Prec Scale Nulls Default_name Rule_name    Access_Rule
_name
      Identity
----------- ---- ------ ---- ----- ----- ------------ ---------
    -----------------
      --------
title_id    tid       6 NULL NULL      0 NULL         title_idrule NULL
       0
title   varchar      80 NULL NULL      0 NULL         NULL         NULL
        0
type       char      12 NULL NULL      0 typedflt     NULL         NULL
        0
pub_id     char       4 NULL NULL      1 NULL         NULL         NULL
        0
price     money       8 NULL NULL      1 NULL         NULL         NULL
        0
advance   money       8 NULL NULL      1 NULL         NULL         NULL
        0
total_sales int       4 NULL NULL      1 NULL         NULL         NULL
        0
notes   varchar     200 NULL NULL      1 NULL         NULL         NULL
        0
pubdate datetime      8 NULL NULL      0 datedflt     NULL         NULL
        0
contract    bit       1 NULL NULL      0 NULL         NULL         NULL
        0
attribute_class                    attribute
        int_value          char_value           comments
---------------------------------- --------------------------------
        ------------------ -------------------- ----------------
misc table info                    recompile factor
             NULL          NULL                 NULL
Object has the following indexes
index_name  index_keys      index_description  index_max_rows_per_page
index_fillfactor    index_reservepagegap  index_created      index_local
----------  ----------      -----------------  ------------------------
----------------    ---------------------  ------------      ----------
title_idx   total_sales      clustered                              0
               0                       0  Oct 13 2005 5:20PM  Local Index
index_ptn_name        index_ptn_seg
--------------------  ---------------
p1                     default
p2                     default
p3                     default
title_idx_98505151     default
keytype   object       related_object  object_keys
related_keys
--------  ---------  -----------------------------------------------
---------------------
foreign   roysched     titles          title_id, *, *, *, *, *, *, *
title_id, *, *, *, *, *, *, *
foreign   salesdetail  titles          title_id, *, *, *, *, *, *, *
title_id, *, *, *, *, *, *
foreign   titleauthor  titles          title_id, *, *, *, *, *, *, *
title_id, *, *, *, *, *, *
foreign   titles       publishers       pub_id, *, *, *, *, *, *, *
pub_id, *, *, *, *, *, *, *
```

```
primary   titles       -- none --        title_id, *, *, *, *, *, *, *
*, *, *, *, *, *, *, *
name    type        partition_type  partitions  partition_keys
----    ----------  --------------  ----------  --------------
titles  base table  range                    4  pubdate
partition_name  partition_id  pages  segment  create_date
--------------  ------------  -----  -------  -------------------
q1              937051343         1  default  Oct 13 2005 5:20PM
q2              953051400         1  default  Oct 13 2005 5:20PM
q3              969051457         1  default  Oct 13 2005 5:20PM
q4              985051514         1  default  Oct 13 2005 5:20PM
Partition_Conditions
--------------------
VALUES <= ("3/31/2006")
VALUES <= ("6/30/2006")
VALUES <= ("9/30/2006")
VALUES <= ("12/31/2006")
VALUES <= ("3'31'2006")
Avg_pages  Max_pages  Min_pages  Ratio(Max/Avg)  Ratio(Min/Avg)
---------  ---------  ---------  --------------  --------------
        1          1          1  1.000000        1.000000
Table LOB compression level 0
Lock scheme Allpages
The attribute 'exp_row_size' is not applicable to tables with allpages lock
scheme.
The attribute 'concurrency_opt_threshold' is not applicable to tables with
allpages lock scheme.
 exp_row_size reservepagegap fillfactor max_rows_per_page identity_gap
         ascinserts
 ------------ -------------- ---------- ----------------- ------------
         -----------
            0              0          0                 0            0
                   0
(1 row affected)
 concurrency_opt_threshold optimistic_index_lock dealloc_first_txtpg
         cached_index_root_page

recompile_factor

 ------------------------- --------------------- -------------------
         ----------------------

-----------------------------------------------------------------------
                                                           -----
                         0                     0                   0
                              0

12

(return status = 0)
```

Example 4

Displays a shortened list of information about a `titles` table:

```
sp_help titles, terse
 Name         Owner      Object_type            Create_date
 ------------ ---------- ----------------------
--------------------------------------
 titles       dbo        user table             Oct  5 2016 10:49AM
(1 row affected)
 Column_description
 --------------------  ---------
 title_id tid          not null
 title varchar (80)    not null
 type char (12)        not null --Default typedflt
 pub_id char (4)       null
 price money           null
 advance money          null
 total_sales int        null
 notes varchar (200)    null
 pubdate datetime       not null --Default datedflt
 contract bit           not null
 Index_description

-------------------------------------------------------------------------------
-
 unique clustered index titleidind on titles ( title_id )  -- global index
 nonclustered index titleind on titles ( title )  -- global index
(2 rows affected)
 total_indexes global_indexes local_indexes partial_indexes
 ------------- -------------- ------------- ---------------
             2              2             0               0
 keytype        object                 related_object
object_keys                       related_keys
 -------------- ---------------------- ----------------
------------------------------    --------------------------------
 foreign        roysched               titles             title_id, *, *, *,
*, *, *, *     title_id, *, *, *, *, *, *, *
 foreign        salesdetail            titles             title_id, *, *, *,
*, *, *, *     title_id, *, *, *, *, *, *, *
 foreign        titleauthor            titles             title_id, *, *, *,
*, *, *, *     title_id, *, *, *, *, *, *, *
 foreign        titles                 publishers         pub_id, *, *, *, *,
*, *, *       pub_id, *, *, *, *, *, *, *
 primary        titles                  -- none --        title_id, *, *, *,
*, *, *, *     *, *, *, *, *, *, *, *
 Partition_details
 -----------------
 Partition type        : roundrobin
 Number of partitions  : 1
 Partition keys        : NULL
 Table_property                               Status/value
 --------------------------------------------- ----------------------------
 LOB compression level                        0
 ascinserts                                   0
 cached_index_root_page                       0
 dealloc_first_txtpg                          0
 fillfactor                                   0
 identity_gap                                 0
 lock scheme                                  allpages
 max_rows_per_page                            0
 optimistic_index_lock                        0
 recompile_factor                             12
 reservepagegap                               0
(return status = 0)
1>
```

Example 5

Displays information about the trigger `marytrig` owned by user "mary". The quotes are needed, because the period is a special character:

```
sp_help "mary.marytrig"
```

```
Name         Owner              Object_type
------------ ------------------ ----------------
marytrig     mary              trigger
Data_located_on_segment When_created
----------------------- --------------------------
not applicable          Mar 20 2002  2:03PM
```

Example 6

Displays information about the `money` system datatype:

```
sp_help money
```

```
Type_name  Storage_type  Length  Prec   Scale  Nulls  Defaul_name
---------  ------------  -------  -----  -----  -----  ------------
Rule_name  Access_Rule_name  Identity
---------  ----------------  --------
money       money                8  NULL    NULL       1        NULL
NULL                   NULL          0
```

Example 7

Displays information about the user-defined datatype `identype`. The report indicates the base type from which the datatype was created, whether it allows nulls, the names of any rules and defaults bound to the datatype, and whether it has the IDENTITY property:

```
sp_help identype
```

```
Type_name  Storage_type  Length  Prec   Scale  Nulls  Defaul_name
---------  ------------  -------  -----  -----  -----  ------------
Rule_name  Access_Rule_name  Identity
---------  ----------------  --------
identype        numeric        4   NULL    NULL      1         NULL
NULL                   NULL          1
```

Example 8

Shows a new column, indicating whether optimistic index locking is enabled. 1 indicates that the option is enabled; 0 indicates that it is not:

```
sp_help "mytable"
```

```
------------
exp_row_size   reserve   pagegap   fillfactor   max_rows_per_page
------------------------------------------------------
           1         0         0            0                   0
concurrency_opt_threshold    optimistic_index_lock
-------------------------------------------------
                        0                        1
```

Example 9

Shows a virtual computed column:

```
alter table authors add fullname as au_fname + ' ' + au_lname
sp_help authors
```

```
Object has the following computed columns
Column_Name Property
----------- --------
fullname    virtual
Text
------------------------------
AS au_fname + ' ' + au_lname
```

Example 10

Shows a virtual computed column to a materialized computed column:

```
alter table authors modify fullname materialzied
sp_help authors
```

```
Object has the following computed columns
Column_Name Property
----------- ------------
fullname    materialized
Text
-------------------------------------------
AS  au_fname + ' ' + au_lname
MATERIALIZED
```

Example 11

The result set for `sp_help <table_name>` includes the `Decrypt_Default_name` column, which indicates the decrypt default name for the column. For example, run the following:

```
create table encr_table(col1 int encrypt decrypt_default 1)
```

When you then run `sp_help` on `encr_table`, it shows the following:

```
Column_name Type Length Prec Scale Nulls Default_name Rule_name
Access_Rule_name     Computed_Column_object Identity Encrypted
Decrypt_Default_name
----------- ---- ------ ---- ----- ----- --------------------- --------------
------------------- ---------- -------------------------
c1          int       4 NULL NULL      0 NULL         NULL       NULL
    NULL                          0         1 encr_table_col1_1036527695
```

Example 12

Displays the `Name`, `Owner`, `Object_type`, `Object_status`, and `Create_date` of the predicate object:

```
grant select on tab1 where col1 = 5 as pred1 to robert
sp_help pred1
```

```
Name  Owner  Object_type  Object_status  Create_date
----- ------ ------------- -------------- ------------
pred1 dbo    predicate     -- none --      Feb  9 2010 12:49PM
```

Example 13

For this precomputed result set:

```
create table numtrips (source int, destination int, count_trip int)
create precomputed result set frequent_trips unique (source, destination)
as
select * from numtrips where count_trip > 100
```

`sp_help numtrips` returns the following:

```
Name            Owner       Object_type
Object_status
Create_date
---------------- ---------- ----------------------
------------------------------------------------------------
--------------------------------------
numtrips         dbo        user table
```

```
precomputed result set defined
May 11 2012  6:46AM
. . .
```

`sp_help frequent_trips` returns:

```
Name                         Owner
Object_type
Object_status
Create_date
---------------------------- ----------
--------------------------------------------
----------------------------------------------------------------------
--------------------------------------
frequent_trips               dbo
precomputed result set
immediate, enabled, enabled for QRW
May 11 2012  6:46AM
. . .
```

Example 14

`sp_help` displays `execute as ownerexecute as caller` in the `Object` status field as follows:

```
create proc p1 with execute as owner asselect 1gosp_help
p1Name  Owner  Object_type  Object_statuse  Create_date
----  -----  -----------  --------------  -----------
p1       dbo        stored procedureexecute as ownerJun  8 2012 10:05AM
(1 row
affected)Column_name  Type Length Prec Scale Nulls Not_compressed  Default_nam
e
Rule _name  Access_Rule_name  Computed_Column_object  Identity
---------------------------------------------------------------------------
(return status = 0) Rule_name
```

Example 15

Displays reduced output about the `order_number` table, enabled for in-memory row storage:

```
sp_help order_number, terse
Name         Owner Object_type Create_date
------------ ----- ----------- -------------------
order_number dbo   user table  Jan 13 2016 11:14AM
(1 row affected)
Column_description
---------------------
number int not null
title char (10) not null
Object does not have any indexes.
No defined keys for this object.
name         type       partition_type partitions partition_keys
------------ ---------- -------------- ---------- --------------
order_number base table roundrobin     1          NULL
partition_name    partition_id compression_level pages row_count segment
create_date
----------------  ------------ ----------------- ----- --------- -------
-------------------
ord_num_672002394 672002394    none              1     0          default Jan
13 2015 11:14AM
Partition_Conditions
--------------------
NULL
Avg_pages   Max_pages   Min_pages   Ratio(Max/Avg)              Ratio(Min/Avg)
----------- ----------- ----------- ---------------------------
---------------------------
1           1           1           1.000000                    1.000000
```

```
Table_property            Status/value
------------------------- --------------
LOB compression level     0
cached_index_root_page    0
concurrency_opt_threshold 15
data row caching          enabled
dealloc_first_txtpg       0
exp_row_size              1
fillfactor                0
identity_gap              0
keep first text page      enabled
lock scheme               datarows
max_rows_per_page         0
optimistic_index_lock     0
reservepagegap            0
snapshot isolation        enabled
```

Example 16

Alter table `t1` to disable `row_caching` and then displays information about `t1`:

```
sp_help t1
Name Owner Object_type Object_status Create_date
-------- ---------- ----------------------
------------------------------------------------------------------------
--------------------------------------
t1 dbo user table snapshot isolation, data row caching May 25 2017 3:03AM
alter table t1 set row_caching off
go
sp_help t1
go
Name Owner Object_type Object_status Create_date
-------- ---------- ----------------------
------------------------------------------------------------------------------
------------------------------------ --------------------------------------
t1 dbo user table snapshot isolation, data row caching temporarily disabled
May 25 2017 3:03AM
```

Usage

- For virtually hashed table, `sp_help` reports:
    - That a table is virtually hashed with this message:

      ```
      Object is Virtually Hashed
      ```

    - The `hash_key_factors` for the table with a message using this syntax:

      ```
      <column_1>:<hash_factor_1>,
      <column_2>:<hash_factor_2>...,
      <max_hash_key>=<max_hash_value>
      ```

      For example:

      ```
       orattribute_class         attribute       int_value
      char_value                                comments

      ---------------------   ---------------  ------------------------
      --------------------------------------    -----------
      hash clustered tables   hash key factors                     NULL
      id:10.0, id2:1.0, max_hash_key=1000.0           NULL
      ```

- sp_help looks for an object in the current database only.
- sp_help works on temporary tables if you issue it from tempdb.
- Columns with the IDENTITY property have an "Identity" value of 1; others have an "Identity" value of 0. In example 2, there are no IDENTITY columns.
- sp_help lists any indexes on a table, including indexes created by defining unique or primary key constraints in the create table or alter table statements. It also lists any attributes associated with those indexes. However, sp_help does not describe any information about the integrity constraints defined for a table. Use sp_helpconstraint for information about any integrity constraints.
- sp_help displays the following settings:
    -
    - The locking scheme, which can be set with create table and changed with alter table
    - The expected row size, which can be set with create table and changed with sp_chgattribute
    - The reserve page gap, which can be set with create table and changed with sp_chgattribute
    - The row lock promotion settings, which can be set or changed with sp_setpglockpromote and dropped with sp_droprowlockpromote
    - The recompile factor, which determines when the query plan is recompiled based on the row growth, and is changed with sp_chgattribute
- sp_help includes the report from:
    - sp_helpindex – showing the order of the keys used to create the index and the space management properties
    - sp_helpartition – showing the partition information of the table
    - sp_helpcomputedcolumn – showing the computed column information of the table
- When Component Integration Services is enabled, sp_help displays information on the storage location of remote objects.
- sp_help displays information about encryption keys. When a key name is specified as the parameter to sp_help, the command lists the key's name, owner, object type, and creation date.
- For tables enabled for in-memory row storage, sp_help reports on row caching (even if it is temporarily disabled) and snapshot isolation.
- sp_help <tablename> indicates if a column is encrypted, including the name of the decrypt default on the column, if one exists.
- sp_help <predicate_name> displays information about the predicated privilege.

See also:

- alter table, create table in *Reference Manual: Commands*
- *Java in Adaptive Server Enterprise* for more information about SQLJ routines.

Permissions

Any user can execute sp_help. Permission checks do not differ based on the granular permissions settings.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_chgattribute [page 153]
sp_droprowlockpromote [page 315]
sp_helppartition [page 416]
sp_helpcomputedcolumn [page 423]
sp_helpconstraint [page 434]
sp_helpindex [page 454]
sp_setpglockpromote [page 718]

1.129.1 Rules for Finding Objects

sp_help follows the SAP ASE rules for finding objects:

- If you do not specify an owner name, and you own an object with the specified name, sp_help reports on that object.
- If you do not specify an owner name, and do not own an object of that name, but the database owner does, sp_help reports on the database owner's object.
- If neither you nor the database owner owns an object with the specified name, sp_help reports an error condition, even if an object with that name exists in the database for a different owner. Qualify objects that are owned by database users other than yourself and the database owner with the owner's name, as shown in Example 4.
- If both you and the database owner own objects with the specified name, and you want to access the database owner's object, specify the name in the format <dbo>.<objectname>.

1.129.2 Precomputed Result Sets and sp_help

sp_help displays information about precomputed result set objects in the Object_type column.

The SAP ASE server treats precomputed result set objects internally as user tables. When you issue sp_help with a precomputed result set as the <objectname>, it reports all the relevant details about columns, partitions, keys, indexes, and so on, similar to when you run sp_help against a user table.

Additionally, the Object_Status column returns the following for precomputed result sets:

- For user tables – returns precomputed result set defined in the Object_Status column if any precomputed result set objects are defined on the user table

- For precomputed result set objects – returns the following in the `Object_Status` column for:
    1. The refresh mode – `immediate` or `manual`
    2. The precomputed result set state – `enabled` or `disabled`
    3. The query rewrite state – `enable for QRW` or `disabled for QRW`

1.130 sp_help_resource_limit

Reports on resource limits.

Syntax

```
sp_help_resource_limit [<name>[, <appname>[, <limittime>
    [, <limitday>[, <scope>[, <action>[, verbose]]]]]]]
```

Parameters

`<name>`

is the SAP ASE login to which the limits apply. For information about limits that govern a particular login, specify the login `<name>`. For information about limits without regard to login, specify `null`.

> i Note
>
> If you are not a system administrator, specify your own login, or a login of NULL, to display information about the resource limits that apply to you.

`<appname>`

is the name of the application to which the limit applies. For information about limits that govern a particular application, specify the application name that the client program passes to the SAP ASE server in the login packet. For information about limits without regard to application, specify `null`.

`<limittime>`

is the time during which the limit is enforced. For information about limits in effect at a given time, specify the time, with a value between "00:00" and "23:59", using the following form:

```
"<HH>:<MM>"
```

For information about limits without regard to time, specify `null`.

`<limitday>`

is any day on which the limit is enforced. For information about resource limits in effect on a given day of the week, specify the full weekday name for the default server language, as stored in the syslanguages system table of the master database. For information about limits without regard to the days on which they are enforced, specify null.

<scope>

is the scope of the limit. Specify one of the following:

- 1 – for help on all limits that govern queries
- 2 – for help on all limits that govern query batches (one or more SQL statements sent by the client to the server)
- 4 – for help on all limits that govern transactions
- 6 – for help on all limits that govern both query batches and transactions
- NULL – for help on all limits that govern the specified <name>, <appname>, <limittime>, <limitday>, and <action>, without regard to their <scope>

<action>

is the action to take when the limit is exceeded. Specify one of the following:

- 1 – for help on all limits that issue a warning
- 2 – for help on all limits that abort the query batch
- 3 – for help on all limits that abort the transaction
- 4 – for help on all limits that kill the session
- NULL – for help on all limits that govern the specified <name>, <appname>,< limittime>, <limitday, >and< scope>, without regard to the< action> they take

verbose

when used, the output is displayed in the verbose mode, with value 1 or 0 (zero).

Examples

Example 1

Lists all resource limits stored in the sysresourcelimits system table:

```
sp_help_resource_limit
```

Example 2

Lists all limits for the user "joe_user":

```
sp_help_resource_limit joe_user
```

Example 3

Lists all limits for the application <my_app>:

```
sp_help_resource_limit NULL, my_app
```

Example 4

Lists all limits enforced at 9:00 a.m.:

```
sp_help_resource_limit NULL, NULL, "09:00"
```

Example 5

An alternative way of listing the limits enforced at 9:00 a.m.:

```
sp_help_resource_limit @limittype = "09:00"
```

Example 6

Lists all limits enforced on Mondays:

```
sp_help_resource_limit NULL, NULL, NULL, Monday
```

Example 7

Lists any limit in effect for "joe_user" on Mondays at 9:00 a.m.

```
sp_help_resource_limit joe_user, NULL, "09:00", Monday
```

Example 8

To list all limits in verbose mode:

```
sp_help_resource_limit null,null,null,null,null,null,1
```

Example 9

To list all resource limits in verbose mode:

```
sp_help_resource_limit @verbose=1
```

Usage

`sp_help_resource_limit` reports on all resource limits, limits for a given login or application, limits in effect at a given time or day of the week, or limits with a given scope or action.

See the *System Administration Guide* for more information on resource limits.

Permissions

The permission checks for `sp_help_resource_limit` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `manage resource limit` privilege. Any user can execute `sp_help_resource_limit` to list their own resource limits.

Setting	Description
Disabled	With granular permissions disabled, you must be a user with sa_role. Any user can execute `sp_help_resource_limit` to list their own resource limits.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_add_resource_limit [page 18]
sp_drop_resource_limit [page 287]
sp_modify_resource_limit [page 586]

1.131 sp_help_qpgroup

Reports information on an abstract plan group.

Syntax

```
sp_help_qpgroup [ <group>[, <mode> ]]
```

Parameters

<group>

is the name of an abstract plan group.

<mode>

is the type of report to print, and is one of the following:

- `full` – returns the number of rows and number of plans in the group, the number of plans that use two or more rows, the number of rows and plan IDs for the longest plans, and number of hash keys and hash key collision information. This is the default report mode.

- `stats` – returns all of the information from the "full" report, except hash key information.
- `hash` – returns the number of rows and number of abstract plans in the group, the number of hash keys, and hash-key collision information.
- `list` – returns the number of rows and number of abstract plans in the group, and the following information for each query/plan pair: hash key, plan ID, first few characters of the query, and the first few characters of the plan.
- `queries` – returns the number of rows and number of abstract plans in the group, and the following information for each query: hash key, plan ID, first few characters of the query.
- `plans` – returns the number of rows and number of abstract plans in the group, and the following information for each plan: hash key, plan ID, first few characters of the plan.
- `counts` – returns the number of rows and number of abstract plans in the group, and the following information for each plan: number of rows, number of characters, hash key, plan ID, first few characters of the query.

Examples

Example 1

Reports summary information about all abstract plan groups in the database:

```
sp_help_qpgroup
```

```
Group                  GID         Plans
----------------------- ----------- -----------
ap_stdin                         1           0
ap_stdout                        2           0
dev_test                         3         209
```

Example 2

Reports on the `test_plans` group:

```
sp_help_qpgroup test_plans
```

```
Query plans group 'test_plans', GID 8

 Total Rows  Total QueryPlans
 ----------- ----------------
           6                3
sysqueryplans rows consumption, number of query plans per row count
 Rows        Plans
 ----------- -----------
           2           3
 Hashkeys
 -----------
           3
There is no hash key collision in this group.
```

Usage

When used with an abstract plan group name, and no mode parameter, the default mode for sp_help_qpgroup is full.

Hash-key collisions indicate that more than one plan for a particular user has the same hash-key value. When there are hash key collisions, the query text of each query with the matching hash key must be compared to the user's query text in order to identify the matching query, so performance is slightly degraded.

Permissions

The permission checks for sp_help_qpgroup differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with manage abstract plans privilege.
Disabled	With granular permissions disabled, you must be the database owner or a user with sa_role. Any user can execute sp_help_qpgroup for their own abstract plan group.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_help_qplan [page 412]

1.132 sp_help_qplan

Reports information about an abstract plan.

Syntax

```
sp_help_qplan <id>[, <mode>]
```

Parameters

<id>

is the ID of the abstract plan.

<mode>

is the type of report to print, one of the following:

- `full` – returns the plan ID, group ID, and hash key, and the full query and plan text.
- `brief` – returns the same as full, but only prints about 80 characters of the query and plan, rather than the full query and plan. This is the default mode.
- `list` – returns the hash key, ID, and first 20 characters of the query and plan.

If you do not supply a value for the `mode` parameter, the default is `brief`.

Examples

Example 1

Prints the brief abstract plan report:

```
sp_help_qplan 800005881
```

```
gid          hashkey     id
 ----------- ----------- -----------
           5  2054169974   937054374
 query
---------------------------------------------------------------------------
 select type, avg(price) from titles group by type
 query_plan
---------------------------------------------------------------------------
 ( plan
    ( store Worktab1
        ( i_scan type_price titles )
    )
    ( t_scan ( ...
```

Example 2

Prints the full abstract plan report:

```
sp_help_qplan 784005824, full
```

Permissions

The permission checks for `sp_help_qplan` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with manage abstract plans privilege. All users can execute sp_help_qplan for their own abstract plan.
Disabled	With granular permissions disabled, you must be the database owner or a user with sa_role. Any user can execute sp_help_qplan for their own abstract plan.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_find_qplan [page 374]
sp_help_qpgroup [page 410]

1.133 sp_helpapptrace

Determines which sessions the SAP ASE server is tracing. Returns the server process IDs (spids) for all the sessions the SAP ASE server is tracing, the spids of the sessions tracing them, and the name of the tracefile.

Syntax

```
sp_helpapptrace
```

Examples

Example 1

Determines which sessions the SAP ASE server is tracing:

```
sp_helpapptrace
```

```
 traced_spid  tracer_spid    trace_file
```

```
-------------   ------------   ----------
11                exited       /tmp/myfile1
13                14           /tpcc/sybase.15_0/myfile2
```

Usage

`sp_helpapptrace` returns these columns:

- `traced_spid` – spid of the session you are tracing.
- `tracer_spid` – spid of the session that `traced_spid` is tracing. Prints "exited" if the `tracer_spid` session has exited.
- `trace_file` – full path to the tracefile.

If a session is tracing another session, but quits without disabling the tracing, the SAP ASE server allows a new session to rebind with the earlier trace. This means that a sa or sso is not required to finish every trace they start, but can start a trace session, quit, and then rebind to this trace session

Permissions

The permission checks for `sp_helpapptrace` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `manage server` privilege.
Disabled	With granular permissions disabled, you must be a user with sa_role or sso_role.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

1.134 sp_helppartition

Lists partition-related information of a table or index.

Syntax

```
sp_helppartition [ <table_name> [, { null | <indexname> | "all" }[,
<partitionname> ][, "terse" | "help" ] ] ]
```

Parameters

<table_name>

is the name of a table in the current database.

null

specifies that information about base table partitions is to be listed.

<indexname>

is the name of an index in the current table. Information about this index displays.

"all"

specifies that all index partition information is to be listed.

<partitionname>

is the name of the partition in the base table or index.

"terse"

sp_help displays a reduced output, including:

- Number of partitions
- Partition type
- Partition keys

"help"

Displays usage information for sp_helppartition.

Examples

Example 1

Returns summary and detailed information about the data partitions in the titles table.

```
sp_helppartition titles
go
```

```
name      type       partition_type partitions  partition_keys
--------- ---------- -------------- ----------- --------------
titles    base table range                    5  total_sales
(1 row affected)
partition_name partition_id  pages row_count segment   create_date
-------------- ------------  ----- --------- --------- -------------------
smallsales     1440005130        1         5 titleseg1 Sep 26 2005 5:44PM
smallsales2    1456005187        1         0 titleseg2 Sep 26 2005 5:44PM
smallsales3    1472005244        1         2 titleseg3 Sep 26 2005 5:44PM
mediumsales4   1488005301        1         8 titleseg4 Sep 26 2005 5:44PM
bigsales5      1504005358        1         3 titleseg5 Sep 26 2005 5:44PM
Partition_Conditions
--------------------
VALUES <= (1000)
VALUES <= (2000)
VALUES <= (3000)
VALUES <= (10000)
VALUES <= (25000)
Avg_pages   Max_pages   Min_pages   Ratio(Max/Avg)   Ratio(Min/Avg)
----------- ---------- ---------- ------------------ --------------------
        1           1            1       1.000000          1.000000
(return status = 0)
```

Example 2

Returns summary partition information about the `titles` table and detailed information about the `smallsales` data partition.

```
sp_helpartition titles, null, smallsales
```

```
name      type       partition_type partitions  partition_keys
--------- ---------- -------------- ----------- --------------
titles    base table range                    5 total_sales
(1 row affected)
partition_name partition_id pages  row_count segment    create_date
-------------- ------------- ------ --------- ---------  -------------------
smallsales     1440005130       1         5  titleseg1 Sep 26 2005 5:44PM
Partition_Conditions
--------------------
VALUES <= (1000)
(return status = 0)
```

Example 3

First, creates the nonclustered index `ncidx_local` on the `my_titles` table, then returns summary partition information about `my_titles` and detailed information on the partition `ncip4` on `ncidx_local`:

```
create nonclustered index ncidx_local on my_titles(title_id) local index
    (ncip1, ncip2, ncip3, ncip4, ncip5)
go
sp_helpartition my_titles, ncidx_local, ncip4
go
```

```
name        type        partition_type partitions  partition_keys
----------- ----------- -------------- ----------- --------------
ncidx_local local index range                   5 total_sales
(1 row affected)
partition_name partition_id pages row_count segment create_date
-------------- ------------ ----- --------- ------- ---------------------
ncip4          1584005643       1         8 default Sep 26 2005 6:06PM
Partition_Conditions
--------------------
VALUES <= (10000)
```

```
(return status = 0)
```

Example 4

Displays terse output for `syspartition` partitions:

```
sp_helpartition syspartitions, null, null, "terse"
```

```
partition_type : roundrobin
no_of_partitions : 1
partition_keys : NULL
(return status = 0)
```

Example 5

Displays partition information about all objects:

```
sp_helpartition null, null, null, "help"
```

Usage

- `sp_helpartition` lists partition related information at the table, index, and partition level. The table- or index-level partition information includes index type (whether it is a local or global index), partition type, number of partitions, and partition keys, if applicable. For each partition, the information include partition name, ID, number of pages, segment name, create date, and the partition condition if applicable.
  The summary information displays the number of pages per partition, the minimum and maximum number of pages, and the ratio between the average number of pages and the maximum or minimum number.
- If you do not supply a table name, `sp_helpartition` lists the owner, table name, number of partitions, and the partition type of all user tables in the current database.
- If you specify:
  - `"all"` instead of an index name or `null` – `sp_helpartition` lists the table- and index-level partition information for each index of the specified table and of the base table.
  - A particular index – `sp_helpartition` lists the index-level information for that index. If the partition name is:
    - Not specified – `sp_helpartition` displays the partition-level information for all partitions in the index, and summary information for the partitions.
    - Specified – `sp_helpartition` displays only the partition-level information for that partition.
  - Only the table name – `sp_helpartition` displays table-level index partition information for the base table and partition-level information for all partitions in the base table.
  - Null instead of an index name, and a partition name is specified – `sp_helpartition` displays table-level partition information for the base table and partition-level information for the named partition—with no summary information.
- Partitions are created using `create table`, `alter table`, and `select into`. See these commands for more information about partitioning.
- Use `sp_helpsegment` to display the number of used and free pages on the segment on which the partition is stored.

See also `alter table`, `create table`, `select into` in *Reference Manual: Commands*.

Permissions

Any user can execute `sp_helpartition`. Permission checks do not differ based on the granular permissions settings.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_helpsegment [page 478]
sp_statistics [page 880]

1.134.1 Determine the Accuracy of Results

The values reported in the "pages" column may differ from the actual values. To determine whether the count is inaccurate, run `sp_statistics` and `sp_helpartition` to compare the data page count. The count provided by `sp_statistics` is always accurate.

Procedure

1. If the page count reported by `sp_statistics` differs from the sum of the partition pages reported by `sp_helpartition` by more than 5 percent, run one of these commands to update the partition statistics:
    - `dbcc checkdb`
    - `dbcc checktable`
    - `update all statistics`
    - `update table statistics`
2. Re-run `sp_helpartition` for an accurate report.

Related Information

sp_statistics [page 880]

1.135 sp_helpcache

Displays information about the objects that are bound to a data cache, the amount of overhead required for a specified cache size, and total memory allocated for the in-memory row storage cache.

Syntax

```
sp_helpcache {<cache_name> | "<cache_size>[P | K | M | G]" ,
     ‘instance <instance_name>’}
```

Parameters

<cache_name>

is the name of an existing data cache.

<cache_size>

specifies the size of the cache, specified by `P` for pages, `K` for kilobytes, `M` for megabytes, or `G` for gigabytes. The default is `K`.

<instance_name>

is the name of the instance with a cache that you are investigating.

Examples

Example 1

Displays information about items bound to `pub_cache`:

```
sp_helpcache pub_cache
```

Example 2

Shows the amount of overhead required to create an 80MB data cache:

```
sp_helpcache "80M"
```

Example 3

Displays information about all caches and all items bound to them:

```
sp_helpcache
```

Example 4

(Cluster Edition) displays the overhead for the cache `C2` on instance “blade1” for size 10M:

```
sp_helpcache 'C2', '10M', 'instance blade1'
```

Example 5

Displays output for different types of caches:

```
sp_helpcache
Cache Name          Config Size   Run Size   Overhead   Cache Type
------------------- ------------- ---------- ---------- ------------
HK_ignore_cache          10.00 Mb   10.00 Mb     0.30 M        Mixed
default data cache        8.00 Mb    8.00 Mb     0.26 Mb     Default
imdb_cache              400.00 Mb  400.00 Mb     8.17 Mb   In-Memory
imrs_cache1            1024.00 Mb 1024.00 Mb     1.99 Mb Row Storage
imrs_cache2            1024.00 Mb 1024.00 Mb     1.99 Mb Row Storage
log_cache                10.00 Mb   10.00 Mb     0.30 Mb    Log Only
mixed_cache              10.00 Mb   10.00 Mb     0.30 Mb       Mixed
Memory Available For Memory Configured
Named Caches         To Named Caches
-------------------- ----------------
2486.04 Mb           2486.00 Mb
------------------ Cache Binding Information: ------------------
Cache Name Entity Name Type Index Name
Status
---------- ----------- ---- ----------
 ------
imdb_cache imdb database
 V
mixed_cache sybsystemprocs.dbo.sysindexes index csysindexes
 V
 mixed_cache sybsystemprocs.dbo.sysobjects table
 V
 ------------------ In-memory Storage Cache Space Information
------------------
 Cache Name Device Name Status Start Page Number of Pages Size(KB)
 ------------ ------------- -------- ------------ ----------------- ----------
 imdb_cache imdb_dev1 active 0 24576 49152
 imdb_cache imdb_logdev1 active 24576 12288 24576
 imdb_cache None free 36864 167936 335872
 ------------------ Row Storage Cache Information ------------------
 Cache Name Database Name Memtotal Memused Memfree
 ------------ --------------- ---------- ---------- ----------
 imrs_cache2           imrsdb 1024.00 Mb  257.00 Mb  767.00 Mb
```

Example 6

Displays information about the IMRS cache, which is not bound to a database:

```
sp_helpcache imrs_cache1
Cache Name   Config Size   Run Size   Overhead   Cache Type
------------ ------------- ---------- ---------- ------------
imrs_cache1  1024.00 Mb    1024.00 Mb 1.99 Mb    Row Storage
```

Example 7

Displays information about the IMRS cache, which is bound to a data-row cache database:

```
sp_helpcache imrs_cache2
Cache Name   Config Size   Run Size   Overhead   Cache Type
------------ ------------- ---------- ---------- ------------
imrs_cache2  1024.00 Mb    1024.00 Mb 1.99 Mb    Row Storage
------------------ Row Storage Cache Information ------------------
Cache Name   Database Name   Memtotal   Memused    Memfree
------------ --------------- ---------- ---------- ----------
```

```
imrs_cache2   imrsdb           1024.00 Mb 257.00 Mb   767.00 Mb
```

Usage

There are additional considerations when using `sp_helpcache`:

- To see the size, status, and I/O size of all data caches on the server, use `sp_cacheconfig`.
- When you configure data caches with `sp_cacheconfig`, all the memory that you specify is made available to the data cache. Overhead for managing the cache is taken from the default data cache. The `sp_helpcache` displays the amount of memory required for a cache of the specified size.
- (Cluster Edition) If you do not specify an `<instance_name>`, `sp_helpcache` displays information for all caches.
- To bind objects to a cache, use `sp_bindcache`. To unbind a specific object from a cache, use `sp_unbindcache`. To unbind all objects that are bound to a specific cache, use `sp_unbindcache_all`.
- The procedure `sp_cacheconfig` configures data caches. The procedure `sp_poolconfig` configures memory pools within data caches.
- `sp_helpcache` computes overhead accurately up to 74 GB.
- Although you can still use `sp_bindcache` on a system `tempdb`, the binding of the system `tempdb` is now non-dynamic. Until you restart the server, the changes do not take effect, and `sp_helpcache` reports a status of “P” for pending, unless you have explicitly bound the system `tempdb` to the default data cache, in which case the status as “V” for valid, because by default the system `tempdb` is already bound to the default datacache.

Permissions

Any user can execute `sp_helpcache`. Permission checks do not differ based on the granular permissions settings.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_bindcache [page 103]
sp_cacheconfig [page 118]
sp_poolconfig [page 669]

sp_unbindcache [page 817]
sp_unbindcache_all [page 820]

1.136 sp_helpcomputedcolumn

Reports information on the computed columns in a specified table.

Syntax

```
sp_helpcomputedcolumn {<tabname>}
```

Parameters

<tabname>

names the table that contains computed columns.

Examples

Example 1

This example reports the computed columns in the `mytitles` table:

```
sp_helpcomputedcolumn mytitles
```

```
Column_Name Property
----------- ------------
sum_sales   materialized
Text
-------------------------------------
AS price * total_sales materialized
(return status = 0)
```

Permissions

Any user can execute `sp_helpcomputedcolumn`. Permission checks do not differ based on the granular permissions settings.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

1.137 sp_helpconfig

Reports help information on configuration parameters.

Syntax

```
sp_helpconfig "<config_name>"
    [, { "<size>" | "estimate [using <argument> = <value> [, <argument> =
<value> ] [, ...] ] } ]
```

Parameters

`<config_name>`

is the configuration parameter being queried, or a non-unique parameter fragment.

`<size>`

is the size of memory, specified by `B` (bytes), `K` (kilobytes), `M` (megabytes), `G` (gigabytes), or `P` (pages). If you do not include a size, the `<size>` parameter specifies the number of the entity being configured using this parameter (for example, locks, open indexes, and so on). `<size>` is ignored if `<config_name>` is not a unique parameter name.

estimate

recommends a value to which you can set the `compression info pool size` or `HCB index memory pool size` configuration parameters. This is based on the settings of other configuration parameters, or user-specified values that override those settings. The `estimate` parameter is only valid for the `compression info pool size` and `HCB index memory pool size` configuration parameters. See Estimating Memory Requirements for compression info pool size [page 429].

using **`<argument>`**

(Only used with the `compression info pool size` and `HCB index memory pool size` configuration parameters) provides additional arguments for the `estimate` parameter, allowing it to override default values:

- For the `compression info pool size` configuration parameter, the `using` parameter includes these arguments:
    - `maxconcusers` – maximum number of concurrent users that can run statements, each requesting memory from the compression information pool.
    - `numtables` – average number of compressed tables referenced in a statement.
    - `numcolumns` – average number of compressed columns from each compressed table in a statement
    - `numcompobjs` – number of compressed objects, from all databases, that can be cached in the metadata cache.
    - `numcompindexes` – number of compressed indexes in all databases.
    - `numindexkeys` – average number of keys from each compressed index.
- For the `HCB index memory pool size` configuration parameter, the `using` parameter includes these arguments
    - `dbname` – specifies the name of the database that uses index hash caching.
    - `numdatarows` – average number of data rows in a table.
    - `numindexes` – total number of indexes to use index hash caching.
    - `numptns_per_idx` – number of index partitions per index.
    - `percentage` – percentage of data rows to be cached.
    - `numhashbuckets` – hash table bucket count used by each index.

Examples

Example 1

Returns a report on all configuration options that start with "allow":

```
sp_helpconfig "allow"
```

```
Configuration option is not unique.
 option_name                    config_value run_value
 ------------------------------ ------------ -----------
 allow sql server async i/o                1           1
 allow remote access                       1           1
 allow sendmsg                             0           0
 allow updates to system tables            0           0
 allow nested triggers                     1           1
 allow resource limits                     0           0
 allow statement rollback                  0           0
 allow memory grow at startup              1           1
 allow procedure grouping                  1           1
 allow backward scans                      1           1
```

Example 2

Returns a report on how much memory is needed to create a metadata cache for 421 object descriptors:

```
sp_helpconfig "open objects", "421"
```

```
number of open objects sets the maximum number of database objects that are
open at one time on SQL Server. The default run value is 500.
```

```
Minimum Value  Maximum Value  Default Value  Current Value  Memory Used
-------------  -------------  -------------  -------------  -----------
          100     2147483647            500            500          243
Configuration parameter, 'number of open objects', will consume 207K of
memory if configured at 421.
```

Example 3

Returns a report on how many database descriptors would fill a 1 MB database cache:

```
sp_helpconfig "open databases", "1M"
```

```
number of open databases sets the maximum number of databases that can be
open at one time on SQL Server. The default run value is 12.
Minimum Value  Maximum Value  Default Value  Current Value  Memory Used
-------------  -------------  -------------  -------------  -----------
            5     2147483647             12             12          433
Configuration parameter, 'number of open databases', can be configured to
28 to fit in 1M of memory.
```

Example 4

Returns a report on how many locks use 512K of memory:

```
sp_helpconfig "number of locks", "512K"
```

```
number of locks sets the number of available locks. The default run value
is 5000.
Minimum Value  Maximum Value  Default Value  Current Value  Memory Used
-------------  -------------  -------------  -------------  -----------
         1000    2147483647           5000           5000          528
Configuration parameter 'number of locks', can be configured to 4848 to fit
in 512K of memory.
```

Example 5

Returns a report on the status of the `allow updates to system tables` configuration parameter:

```
sp_helpconfig "allow updates to system tables"
```

```
allow updates to system tables allows system tables to be updated directly.
The default is 0 (off).
Minimum Value  Maximum Value  Default Value  Current Value  Memory Used
-------------  -------------  -------------  -------------  -----------
            0              1              0              0            0
```

Example 8

Displays information about the `enable in-memory row storage` configuration parameter:

```
sp_helpconfig 'enable in-memory row storage’
The configuration option enables or disables the use of in-memory row
storage caches and associated features. The default value is 0 (disabled).
Minimum Value Maximum Value Default Value Current Value Memory
Used Unit Type
 --------------- --------------- --------------- --------------- -------
---------- ---------
               0               1               0               1       0
switch   dynamic
```

Example 9

Returns a report on space usage for the HCB index memory pool size for the `big_db` database if it used 200000 data rows, 40 indexes, 2 indexes per partition, caches 20% of the rows, and 500000 hash buckets:

```
sp_helpconfig 'HCB index memory pool size', 'estimate USING dbname = big_db,
numdatarows = 200000, numindexes = 40,
numptns_per_idx = 2, percentage = 20, numhashbuckets = 500000'
The HCB index memory pool size parameter indicates the total amount of memory
to store index hash caching information.
Minimum Value  Maximum Value   Default Value Current Value Memory Used
Unit              Type
-------------- --------------- ------------- ------------- -----------
----------------- ----------
             0      2147483647          4096          4096        8192
memory pages(2k)    dynamic
Suppose 200000 data rows per table, accessing 40 hash caching enabled
index(es) which have 2 index partition(s) per index
and 20 percentage(s) of data rows to cache, and each hash table has 500000
bucket(s).
Estimated memory required is 412568 KB!
Configuration parameter, 'HCB index memory pool size', can be configured to
206284 to fit in 412568 KB of memory.
(return status = 0)
```

Usage

- `sp_helpconfig` reports help information on configuration parameters, such as how much memory would be needed if the parameter were set to a certain value. `sp_helpconfig` also displays the current setting, the amount of memory used for that setting, the default value, and the minimum and maximum settings.

> i Note
>
> The "maximum value" setting refers to the largest number that the parameter’s data type can accept, rather than to an actual configurable value.
>
> In many cases, the maximum allowable values for configuration parameters are extremely high. The maximum value for your server is usually limited by available memory and other resources, rather than by configuration parameter limitations.

- Issue `sp_helpconfig "cluster options"` to display cluster-wide configuration parameters.
- If the `set system_view` option is set to:
  - `cluster` – `sp_helpconfig` displays configuration information for all instances in the cluster.
  - `instance` – `sp_helpconfig` displays configuration information for the current instance.
- If you use a nonunique parameter fragment for `<configname>`, `sp_helpconfig` returns a list of matching parameters with their configured values and current values. See Example 1.
- `sp_helpconfig` accepts static, dynamic, and read-only options.
- `sp_helpconfig 'restricted decrypt permission'` returns the following display:

```
sp_helpconfig 'restricted decrypt permission'
```

```
0 - restricted decrypt permission disabled (default).
1 - restricted decrypt permission enabled
```

```
Minimum Value  Maximum Value  Default Value  Current Value
    Memory Used  Unit      Type
-------------  -------------  -------------  --------------
    -----------  -------------
0                          1              0              0
              0  switch    dynamic
```

Permissions

Any user can execute `sp_helpconfig` except the following, which requires sybase_ts_role:

- `number of ccbs`
- `caps per ccb`
- `average cap size`

Permission checks do not differ based on the granular permissions settings.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_configure [page 203]

sp_countmetadata [page 215]

sp_monitorconfig [page 610]

1.137.1 Planning Metadata Cache Configuration

Use `sp_helpconfig` when you are planning a metadata cache configuration for a server.

For example, suppose you were planning to move a database that contained 2000 user indexes to a different server. To find how much memory you would need to configure for that server so that it would accommodate the database's user indexes, enter the following command:

```
sp_helpconfig "open indexes", "2000"
```

```
number of open indexes sets the maximum number of indexes that can be
open at one time on SQL Server. The default run value is 500.
Minimum Value  Maximum Value  Default Value  Current Value  Memory Used
-------------  -------------  -------------  -------------  -----------
```

```
          100     2147483647            500            500          208
Configuration parameter, 'number of open indexes', will consume 829k of memory
if configured at 2000.
```

Alternatively, suppose you had 1MB of memory available for the index cache, and you needed to know how many index descriptors it would support. Run the following command:

```
sp_helpconfig "open indexes", "1M"
```

```
number of open indexes sets the maximum number of indexes that can be
open at one time on SQL Server. The default run value is 500.
Minimum Value  Maximum Value  Default Value  Current Value  Memory Used
-------------  -------------  -------------  -------------  -----------
          100     2147483647            500            500          208
Configuration parameter 'number of open indexes', can be configured to 2461 to
fit in 1M of memory.
```

Based on this output, if you have 1MB of memory, you can create an index descriptor cache that can contain a maximum of 2461 index descriptors. To create this cache, set the `number of open indexes` configuration parameter as follows:

```
sp_configure "number of open indexes", 2461
```

1.137.2 Estimating Memory Requirements for compression info pool size

Use the `estimate` parameter to determine the approximate amount of memory required for the `compression info pool size` configuration parameter.

The `estimate` parameter recommends a value to which you can set `compression info pool size`. This recommendation is based on the settings of other configuration parameters, or user-specified values that override those settings.

```
sp_helpcofig "config_name"
    [, { "size" | "estimate [<using_argument> = <value>[, <using_argument> =
<value> ] [, ...] ] } ]
```

`<using_argument>= <value>` provides these additional arguments for the `estimate` parameter to override default values:

- `maxconcusers = <value>` – specifies the maximum `number of concurrent users`, as an integer, that can access compressed tables.
  For example, `maxconcusers = 0.7` indicates 70 percent of the configured value for `number of user connections`. An integer value of 1 or greater specifies an absolute number of concurrent users.
- `numcolumns = <value>` – specifies the average number of columns in a compressed table.
- `numcompobjs = <value>` – specifies the default number of open objects as an integer, or as a percentage, that require memory for compression metadata. For example, `numcompobjs = 0.2` indicates that 20 percent of the configured value for `number of open objects`. An integer value of 1 or greater specifies an absolute number of open objects.
- `numtables = <value>` – determines the average number of compressed tables accessed in a statement.

Issuing `sp_helpconfig` without arguments generates usage information, showing the subclauses you may specify, and some examples of typical usage.

This example shows the `sp_helpconfig ... estimate` parameter run from a system database (such as `master` or `tempdb`). In this example, `sp_helpconfig` performs the estimate using default values for factors that affect the required memory:

```
sp_helpconfig 'compression info pool', 'estimate'
The compression information pool size parameter indicates the
amount of memory currently available to store table compression
information.
Minimum Value  Maximum Value  Default Value  Current Value  Memory Used
Unit            Type
-------------  -------------- -------------  -------------- ------------
-------------- -------
0              2147483647    4096           4096           8240       memory
pages(2k) dynamic

Estimated memory required for 600 concurrent users requesting
memory from this pool, accessing 500 compressed objects with
50 columns, on an average, per compressed table is 22600 KB.
Configuration parameter, 'compression info pool size', can be
configured to 21971 to fit in 44200K of memory.
```

This example overrides the defaults with site-specific parameters to estimate the memory and configuration value setting. `sp_helpconfig` is executed a second time from a system database (such as `master` or `tempdb`) to estimate the memory required for server-wide concurrent access to compressed objects, when these objects are accessed from multiple databases in the server:

```
sp_helpconfig 'compression info pool', 'estimate
 using numcompobjs=0.3, numtables=2.25, numcolumns=25,
 maxconcusers=0.85'
The compression information pool size parameter indicates the
amount of memory currently available to store table compression
information.
Minimum Value  Maximum Value  Default Value  Current Value  Memory Used
Unit            Type
-------------  -------------- -------------  -------------- ------------
-------------- -------
0              2147483647    4096           4096           8240       memory
pages(2k) dynamic

Estimated memory required for 1020 concurrent users requesting
memory from this pool, accessing 150 compressed objects with 25
columns, on an average,
 per compressed table is 37020 KB.
Configuration parameter, 'compression info pool size', can be
configured to 18402 to fit in 37020K of memory.
```

This example shows `sp_helpconfig ... estimate` run against a user database with numerous compressed tables, which are used frequently by an application. The server is configured as:

```
sp_configure 'user connections', 900
sp_configure 'worker processes', 500
sp_configure 'max parallel degree', 5
```

In this example, `estimate` gathers metrics from the user database from which you issue the procedure for:

- The number of compressed objects
- The average number of columns in these compressed objects

Using these input values, `sp_helpconfig` estimates the memory required for `compression info pool` to store table compression information:

```
sp_helpconfig 'compression info pool size', 'estimate'
The compression information pool size parameter indicates
the amount of memory currently available to store table
compression information.
Minimum Value  Maximum Value  Default Value  Current Value  Memory Used
Unit            Type
-------------  -------------- -------------  -------------- ------------
-------------- -------
0              2147483647    4096           15396         33384       memory
pages(2k) dynamic

Estimated memory required for 1400 concurrent users requesting
memory from this pool, accessing 78240 compressed objects
with 10 columns, on an average, per compressed table is 74850 KB.
Configuration parameter, 'compression info pool size', can be
configured to 34519 to fit in 74850K of memory.
```

This output indicates that a total of 1400 concurrent users are expected to simultaneously request memory. The database has slightly more than 78000 compressed objects, with each table having, on average, 10 columns. The estimated value for this configuration option is 34519.

However, if not all the objects are routinely accessed simultaneously, and not all the configured user connections are simultaneously active, you can refine the estimates by providing site-specific overrides with the `using` parameter subclause:

```
sp_helpconfig 'compression info pool size', 'estimate
using numcompobjs = 50000, maxconcusers=600'
The compression information pool size parameter indicates
the amount of memory currently available to store table
compression information.
Minimum Value  Maximum Value  Default Value  Current Value  Memory Used
Unit            Type
-------------  -------------- -------------  -------------- ------------
-------------- -------
 0              2147483647    4096           15396         33384       memory
pages(2k) dynamic
Estimated memory required for 1100 concurrent users requesting
memory from this pool, accessing 50000 compressed objects with
10 columns, on an average, per compressed table is 55225 KB.
Configuration parameter, 'compression info pool size', can be
configured to 25468 to fit in 55225K of memory.
```

In this output, `maxconcusers = 600` implies that 600 concurrent client connections are accessing compressed objects requesting memory. Because of the parallel configuration settings, `sp_helpconfig` estimates that a total of 1100 requesters may concurrently request memory. The estimated value for this configuration option is 25468.

1.137.3 Estimating Memory Requirements for HCB index memory pool size

Use the `estimate` parameter to determine the approximate amount of memory required for the `HCB index memory pool size` configuration parameter.

The `estimate` parameter recommends a value to which you can set `HCB index memory pool size`. This recommendation is based on the settings of other configuration parameters, or user-specified values that override those settings. The syntax is:

```
sp_helpcofig "config_name"
    [, { "size" | "estimate [<using_argument> = <value>[, <using_argument> =
<value> ] [, ...] ] } ]
```

`The using <argument>= <value>` parameter provides these additional arguments to override default values:

- `dbname =<value>` – specifies the name of the database that uses index hash caching. For example, issuing `dbname = tdb1` indicates that you are scanning database `tdb1` to estimate the HCB index memory pool size.

  > i Note
  >
  > You cannot specify system, temporary, proxy, and archive databases with the `estimate` parameter.

  `sp_helpconfig` does not perform an estimate if you include `dbname` without the `numindexes` parameter if the database does not include an unique index.
- `numdatarows =<value>` – specifies the average number of data rows in a table. The default value is 100,000.
- `numindexes =<value>` – specifies the total number of indexes to use index hash caching. The maximum is the value of `number of open indexes`. If you do not specify a value, SAP ASE uses an internally generated value.

  > i Note
  >
  > `sp_helpconfig` provides the most accurate estimates if you include the `numdatarows` and `numindexes` arguments.
- `numptns_per_idx =<value>` – specifies the number of index partitions per index. The default value is 1.
- `percentage = <value>` – specifies the percentage of data rows to be cached. The default value is 50, with a range from 1 – 100.
- `numhashbuckets = <value>` – specifies the hash table bucket count used by each index.

Issuing `sp_helpconfig` without arguments generates usage information, showing the subclauses you may specify, and some examples of typical usage.

In this example, `sp_helpconfig` performs an estimate using default values for factors that affect the required memory:

```
sp_helpconfig 'HCB index memory pool size', 'estimate'
The HCB index memory pool size parameter indicates the total amount of memory to
store index hash caching information.
Minimum Value    Maximum Value    Default Value Current Value  Memory Used
Unit                Type
```

```
---------------- ---------------- ------------- -------------- -----------
------------------ -------------
               0       2147483647          4096          4096         8192
memory pages(2k)      dynamic
Suppose 100000 data rows per table, accessing 1 hash caching enabled index(es)
which have 1 index partition(s)
per index and 50 percentage(s) of data rows to cache, and each hash table has
150000 bucket(s).
Estimated memory required is 4298 KB!
Configuration parameter, 'HCB index memory pool size', can be configured to 2149
to fit in 4298 KB of memory.
(return status = 0)
```

This example overrides the defaults with site-specific parameters to estimate the memory and configuration value setting:

```
sp_helpconfig 'HCB index memory pool size', 'estimate USING dbname = tdb1,
numdatarows = 1000, numindexes = 20, numptns_per_idx = 2, percentage = 10,
numhashbuckets = 50000'
go
The HCB index memory pool size parameter indicates the total amount of memory to
store index hash caching information.
Minimum Value    Maximum Value    Default Value Current Value  Memory Used
Unit               Type
---------------- ---------------- ------------- -------------- -----------
------------------ -------------
               0       2147483647          4096           4096        8192
emory pages(2k)       dynamic
Suppose 1000 data rows per table, accessing 20 hash caching enabled index(es)
which have 2 index partition(s) per index and 10 percentage(s)
of data rows to cache, and each hash table has 50000 bucket(s).
Estimated memory required is 15784 KB!
Configuration parameter, 'HCB index memory pool size', can be configured to 7892
to fit in 15784 KB of memory.
(return status = 0)
```

1.137.4 Using sp_helpconfig with sybdiagdb (SAP Product Support Only)

sp_helpconfig includes several <configname> options that are intended only for SAP Product Support to use with the sybdiagdb database:

- <number of ccbs> – the number of configurable action point control blocks available to aid debugging.
- <caps per ccb> – the maximum number of configurable action points that can be configured at any one time within one configurable action point.
- <average cap size> – the estimated number of bytes of memory required to store the information associated with a typical configurable action point.

> i Note
>
> SAP Technical Support may create the sybdiagdb database on your system for debugging purposes. This database holds diagnostic configuration data, and is for use by SAP Technical Support only.

For example:

```
sp_helpconfig "number of ccbs"
```

```
Minimum Value Maximum Value Default Value Current Value Memory Used
------------- ------------- ------------- ------------- -----------
0             100             0             0            0
```

```
sp_helpconfig "caps per ccb"
```

```
Minimum Value Maximum Value Default Value Current Value Memory Used
------------- ------------- ------------- ------------- -----------
5             500            50            50            0
```

```
sp_helpconfig "average cap size"
```

```
Minimum Value Maximum Value Default Value Current Value Memory Used
------------- ------------- ------------- ------------- -----------
100         10000           200           200            0
```

1.138 sp_helpconstraint

Reports information about integrity constraints used in the specified tables.

Syntax

```
sp_helpconstraint [<objname>][, detail]
```

Parameters

<objname>

is the name of a table that has one or more integrity constraints defined by a `create table` or `alter table` statement.

detail

returns information about the constraint's user or error messages.

Examples

Example 1

Displays the constraint information for the `store_employees` table in the `pubs3` database. The `store_employees` table has a foreign key to the `stores` table (`stor_id`) and a self-reference (`mgr_id` references `emp_id`):

```
sp_helpconstraint store_employees
```

```
name                         defn
---------------------------  --------------------------------
store_empl_stor_i_272004000  store_employees FOREIGN KEY
                             (stor_id) REFERENCES stores(stor_id)
store_empl_mgr_id_288004057  store_employees FOREIGN KEY
                             (mgr_id) SELF REFERENCES
                             store_employees(emp_id)
store_empl_2560039432        UNIQUE INDEX( emp_id) :
                             NONCLUSTERED, FOREIGN REFERENCE
(3 rows affected)
Total Number of Referential Constraints: 2
Details:
-- Number of references made by this table: 2
-- Number of references to this table: 1
-- Number of self references to this table: 1
Formula for Calculation:
Total Number of Referential Constraints
= Number of references made by this table
+ Number of references made to this table
- Number of self references within this table
```

Example 2

Displays more detailed information about the `pubs3..salesdetail` constraints, including the constraint type and any constraint error messages:

```
sp_helpconstraint titles, detail
```

```
name                         type                    defn
        msg
------------------------     --------------
----------------------------
        --------------------------------------------
datedflt                     default value           create default datedflt
as getdate()
typedflt                     default value           create default typedflt
as "UNDECIDED"
titles_pub_id_96003373       referential constraint  titles FOREIGN KEY
(pub_id)
                                                     REFERENCES
publishers(pub_id)
        standard system error message number : 547
roysched_title__144003544    referential constraint  roysched FOREIGN KEY
(title_id)
                                                     REFERENCES
titles(title_id)
        standard system error message number : 547
salesdetai_title__368004342  referential constraint  salesdetail FOREIGN KEY
(title_id)
                                                     REFERENCES
titles(title_id)
        standard system error message number : 547
```

```
titleautho_title__432004570  referential constraint  titleauthor FOREIGN KEY
(title_id)
                                                     REFERENCES
titles(title_id)
        standard system error message number : 547
titles_800033162                unique constraint    UNIQUE INDEX
( title_id) :
                                                     NONCLUSTERED, FOREIGN
REFERENCE
        standard system error message number : 2601
(7 rows affected)
Total Number of Referential Constraints: 4
Details:
-- Number of references made by this table: 1
-- Number of references to this table: 3
-- Number of self references to this table: 0
Formula for Calculation:
Total Number of Referential Constraints
= Number of references made by this table
+ Number of references made to this table
- Number of self references within this table.
```

Example 3

Displays a listing of all tables in the pubs3 database:

```
sp_helpconstraint
```

```
id          name              Num_referential_constraints
----------- ----------------- ---------------------------
   80003316 titles                                      4
   16003088 authors                                     3
  176003658 stores                                      3
  256003943 salesdetail                                 3
  208003772 sales                                       2
  336004228 titleauthor                                 2
  896006223 store_employees                             2
   48003202 publishers                                  1
  128003487 roysched                                    1
  400004456 discounts                                   1
  448004627 au_pix                                      1
  496004798 blurbs                                      1

(11 rows affected)
```

Usage

There are additional considerations when using sp_helpconstraint:

- sp_helpconstraint truncates foreign keys and reference keys to 30 characters.
- sp_helpconstraint prints the name and definition of the integrity constraint, and the number of references used by the table. The detail option returns information about the constraint's user or error messages.
- sp_helpconstraint displays sharable inline defaults similarly to how it displays regular inline defaults.
- Running sp_helpconstraint with no parameters lists all the tables containing references in the current database, and displays the total number of references in each table. sp_helpconstraint lists the tables in descending order, based on the number of references in each table.

- sp_helpconstraint reports only the integrity constraint information about a table (defined by a create table or alter table statement). It does not report information about rules, triggers, or indexes created using the create index statement. Use sp_help to see information about rules, triggers, and indexes for a table.
- For constraints that do not have user-defined messages, the SAP ASE server reports the system error message associated with the constraint. Query sysmessages to obtain the actual text of that error message.
- You can use sp_helpconstraint only for tables in the current database.
- If a query exceeds the configured number of auxiliary scan descriptors, the SAP ASE server returns an error message. You can use sp_helpconstraint to determine the necessary number of scan descriptors. See the *System Administration Guide* or more information on the number of aux scan descriptors configuration parameter.
- A system security officer can prevent the source text of constraint definitions from being displayed to most users who execute sp_helpconstraint. To restrict select permission on the text column of the syscomments table to the object owner or a system administrator, use sp_configure to set the select on syscomments.text column parameter to 0. This restriction is required to run the SAP ASE server in the evaluated configuration. See the *System Administration Guide* for more information about the evaluated configuration.

See alsoalter table, create table in *Reference Manual: Commands*.

Permissions

Any user can execute sp_helpconstraint. Permission checks do not differ based on the granular permissions settings.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_configure [page 203]

sp_help [page 396]

sp_helpdb [page 438]

sp_monitorconfig [page 610]

1.139 sp_helpdb

Reports information about a particular database or about all databases.

Syntax

```
sp_helpdb [<dbname> [, <order>][, verbose]]
```

Parameters

<dbname>

is the name of the database on which to report information. Without this optional parameter, `sp_helpdb` reports on all databases. `<dbname>` can include wildcard characters to return all databases that match the specified pattern.

<order>

The default order of the output is by `lstart`, which is the order in which the databases were created or altered. Use `device_name` along with `<dbname>` to display the output of `sp_helpdb` ordered by `device_name`.

verbose

The `sp_helpdb` output displays additional detailed information about the database.

Examples

Example 1

Displays information about all the databases in the SAP ASE server:

```
sp_helpdb
```

```
name          db_size  owner  bid  created        status
------------- -------- -----  ---- -------------- --------------------
master          24.0 MB   sa  1      Jan 07, 2004  mixed log and data
model           8.0 MB    sa  3      Jan 07, 2004  mixed log and data
pubs2           8.0 MB    sa  4      Jan 21, 2004  trunc log on chkpt,
                                                  mixed log and data
sybsystemdb     8.0 MB    sa  31513 Jan 07, 2004   mixed log and data
sybsystemprocs 112.0 MB  sa  31514 Jan 07, 2004   trunc log on chkpt, mixed
                                                  log and data
tempdb           8.0 MB   sa  2      Feb 24, 2004  select into/bulkcopy/
                                                  pllsort, trunc log on
                                                  chkpt, mixed log| and
                                                  data
(1 row affected)
```

```
(return status = 0
```

Example 2

Issued from within `pubs2`, displays information about the `pubs2` database, and includes segment information:

```
1> use pubs2
2> go
1> sp_helpdb pubs2
2> go
```

```
name   db_size  owner  dbid  created        status
------ -------- ------ ----- ------------- -------------------------------
pubs2  20.0 MB   sa     4     Apr 13, 2005  trunc log on chkpt, mixed log
                                            and data
(1 row affected)
pubs2
device_fragments   size    usage          created            free kbytes
------------------ ------- ------------- ------------------- -------
master             10.0 MB  data and log  Apr 13 2005 10:29AM  2304
pubs_2_dev         10.0 MB  data and log  Apr 13 2005 10:33AM  9888
device         segment
-------------  ----------------------------------------------------
master         default
master         logsegment
master         system
pubs_2_dev     default
pubs_2_dev     logsegment
pubs_2_dev     system
pubs_2_dev     titleseg1
pubs_2_dev     titleseg2
pubs_2_dev     titleseg3
pubs_2_dev     titleseg4
pubs_2_dev     titleseg5
return status = 0)
```

Example 3

Not issued from within `pubs2`, displays information about the `pubs2` database:

```
sp_helpdb pubs2
```

```
name  db_size  owner  dbid    created      status
------------ ------------- ------------------------ ----- ----------------
pubs2   20.0 MB  sa      4   Jan 21, 2004  trunc log on chkpt, single user,
                                            mixed log and data
(1 row affected)
device_fragments  size    usage         created              free kbytes
----------------  ----    -----         -------              -------------
master            10.0 MB  data and log  Apr 13 2005  10:29AM  2304
pubs_2_dev        10.0 MB  data and log  Apr 13 2005  10:33AM  9888
(return status = 0)
```

Example 4

Specifies `device_name` for the `<order>` parameter to display the device fragments for `mydb` in alphabetical order, overriding the default sort order of `sp_helpdb`:

```
sp_helpdb mydb, device_name
```

```
name             db_size  owner  dbid  created      status
---------------  -------  -----  ----  -----------  -----------
```

```
mydb             4.5 MB    sa      5     Feb 27, 2003   no options set
(1 row affected)
device_fragments  size     usage       created                 free kbytes
----------------  -----    ------      --------   ------------------
A                 1.5 MB   data only   Feb 27 2003   7:50AM    1530
B                 1.0 MB   log only    Feb 27 2003   7:50AM not applicable
C                 2.0 MB   data only   Feb 27 2003   7:50AM    846
```

Example 5

Displays the row lock promotion attributes set for the `pubtune` database:

```
sp_helpdb pubtune
```

```
name    attribute_class  attribute      int_value char_value  comments
----    ---------------  ---------      ---------- ----------  ------
pubtune lock strategy   row lock promotion  NULL     PCT = 95, LWM = 300,
                                                               HWM = 300
```

Example 6

Displays whether or not a database is a user-created temporary database under the `status` column:

```
sp_helpdb "mytempdb3"
```

```
name    db_size owner dbid created    status
-------  -------- ----- ---- -------     -----
mytempdb 32.0 MB sa    7    Dec 2, 2001 select into/bulkcopy/pllsort, trunc
                                       log on chkpt, user created temp db
```

Example 7

Reports the status of database that is being encrypted:

```
sp_helpdb
```

```
name        db_size    owner dbid  created      durability
    lobcomplvl inrowlen
status
……
test_db     6.0 MB     sa       4  Aug 07, 2013 full
             0 NULL
    encryption in progress: 35%
……
```

Example 8

Reports the status of a partially encrypted database:

```
sp_helpdb
```

```
name        db_size    owner dbid  created      durability
    lobcomplvl inrowlen
status
……
test_db     6.0 MB     sa       4  Aug 07, 2013 full
             0 NULL
    encrypted partly
……
```

Example 9

Reports the status of a database that is partially decrypted:

```
sp_helpdb
```

```
name        db_size    owner dbid  created      durability
    lobcomplvl inrowlen
status
……
test_db     6.0 MB     sa       4  Aug 07, 2013 full
             0 NULL
    decrypted partly
……
```

Example 10

Displays information about the durability of a user-created temporary database. For this example, if you create the database:

```
create temporary database tempdb_explicit on default = 50
with durability = no_recovery
```

`sp_helpdb` displays this output:

```
sp_helpdb tempdb_explicit
 name db_size owner dbid created durability lobcomplvl inrowlen status
 ---- ------- ----- ---- ------- ---------- ---------- -------- ------

 tempdb_explicit  50.0 MB  sa  7    Dec 05, 2012 no_recovery  0  NULL
         select into/bulkcopy/pllsort, trunc log on chkpt,
         mixed log and data, user-created enhanced performance
         temp db, allow wide dol rows
(1 row affected)
device_fragments   size      usage         created          free  kbytes
----------------- ------ -------------- ------------------ -------------
 master          50.0 MB  data and log  Dec 5 2012 8:49PM    49216
(return status = 0)
```

Example 11

Displays detailed information about `pubs2`, which is enabled for data row caching and snapshot isolation:

```
sp_helpdb pubs2, lstart, verbose
name   db_size       owner dbid created
 ----- ------------- ----- ---- ------------
 pubs2 36.0 MB       sa    6    Aug 11, 2016
(1 row affected)
 database_property status/value
 -------------------- --------------
 data row caching enabled
 durability full
 in-memory row storage enabled
 inrowlen NULL
 lobcomp_lvl 0
 mixed log and data enabled
 snapshot isolation enabled
 trunc log on chkpt enabled
 device_fragments size          usage        created             free_kbytes
 ---------------- ------------- ------------ -------------------
-----------------
 imrs_dev1        8.0 MB        imrslog only Aug 11 2016 12:54AM 8144
 master           28.0 MB       data and log Aug 11 2016 12:53AM 9568
 imrscache
 -----------
```

```
imrs_cache1
```

Usage

There are additional considerations when using `sp_helpdb`:

- When you run `sp_helpdb` on a fully encrypted database, it reports its encryption status:
  - Encrypted
  - Encryption in progress
  - Decryption in progress

  If the database is being encrypted or decrypted, `sp_helpdb` reports the percentage of work that has completed.
- `sp_helpdb` reports on the specified database when `<dbname>` is given. If no value is supplied for `<dbname>`, `sp_helpdb` reports on all the databases listed in `master.dbo.sysdatabases`.
- `sp_helpdb` reports all database-specific properties and settings, such as: whether a database is offline, compression type, large object compression level, in-row large object length, row lock promotion thresholds (if any are defined for the database), enabled for row storage cache, and so on.
- If you enable asynchronous log service on a database, the `attribute` column in the `sp_helpdb` output displays "`async log srv`".
  For more information about asynchronous log service, see `sp_dboption`, and *Advanced Optimizing Tools* in *Performance and Tuning: Optimizer*.
- For log segment disk pieces in a dedicated log database, `sp_helpdb` issues "not applicable" for the free space field in its per-disk-piece report. `sp_helpdb` also includes a column titled `free pages`, which is the value for the number of free pages the log segment has.
- (Cluster Edition) `sp_helpdb` does not display device-related information if the specified database is a local temporary database owned by a remote instance.
- `<dbname>` can include wildcard characters to return all databases that match the specified pattern. See *Expressions, Identifiers, and Wildcard Characters* in *Reference Manual: Building Blocks* for details about using wildcard characters.
- Executing `sp_helpdb <dbname>` from `<dbname>` includes free space and segment information in the report.
- `sp_helpdb` displays information about a database's attributes, giving the attribute's class, name, integer value, character value, and comments, if any attributes are defined. Example 3 shows cache binding attributes for the `pubs2` database.
- A database created with the `for load` option has a status of "don't recover" in the output from `sp_helpdb`.
- When Component Integration Services is enabled, `sp_helpdb` lists the default storage location for the specified database or all databases. If there is no default storage location, the display indicates "NULL".
- The `status` column of `sp_helpdb` includes these descriptions for database durability:
  - `user created temp db` – normal temporary database created by the user (that is, created without specifying the `durability` parameter).
  - `user-created enhanced performance temp db` – user-created temporary database created explicitly with the `no_durability` parameter. Because a database created with `no_durability` depends on licensing, it may not come online if the license expires.

- sp_helpdb reports this information for row_storage-enabled databases:
  - Whether the database is enabled for in-memory row storage.
  - The name of the cache, if one exists.
  - Whether row caching is enabled by default for newly-created tables.
  - Whether snapshot isolation is enabled by default for newly-created tables.
  - Whether snapshot isolation uses the temporary database version storage or the row_storage cache to store the row versions.

See also:

- *Performance and Tuning: Optimizer > Advanced Optimizing Tools*
- *Reference Manual: Building Blocks > Expressions, Identifiers, and Wildcard Characters*
- *Reference Manual: Commands* > alter database, create database.

Permissions

Any user can execute sp_helpdb. Permission checks do not differ based on the granular permissions settings.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide > Auditing*.

Related Information

sp_configure [page 203]
sp_dboption [page 228]
sp_rename [page 692]

1.140 sp_helpdefrag

Reports defragmentation information for either all eligible objects for reorg defrag in the database whose context it is invoked from or for the given object if it is eligible for reorg defrag.

sp_helpdefrag uses the built-in function defrag_status() on each of the required tables or on each of the required data partitions to get the information about defragmentation.

- If <table_name> is not specified, defragmentation information for all eligible tables for <reorg defrag> (that is, user tables with datarows or datapages locking scheme) is reported. Rows for tables on which

<reorg defrag> is currently executing precede those for tables where <reorg defrag> is not currently executing. Among these two sets, rows are in ascending order of the pct_defrag.

- If <table_name> is specified, and if the table is eligible for <reorg defrag>, defragmentation information of the table as well as that of each data partition is reported. Rows are in the ascending order of percentage defragmented portion. Row for the table comes first and has NULL in partition column.
- If <partition_name> is specified, only that particular data partition's information is reported.

Syntax

The syntax is:

```
sp_helpdefrag [<table_name>][,<partition_name>]
```

Parameters

<table_name>

is the name of the table.

<partition_name>

is the name of the partition.

Examples

No parameters and before defragmentation

If sp_helpdefrag is executed without parameters on database testdb with user data-only locking tables before defragmentation:

```
sp_helpdefrag
```

The output is:

```
table          frag_index   pct_defrag   executing   last_run
------------- ------------ ------------ ----------- ----------
t1_forw             0.01         0            0      NULL
mymsgs              0.39         0            0      NULL
mymsgs_clone        0.57         0            0      NULL
t1                  0.66         0            0      NULL
myprocs             0.86         0            0      NULL
mymsgs_ptnd         1.07         0            0      NULL
t1_clone            1.98         0            0      NULL
myprocs_clone       2.16         0            0      NULL
t1_ptnd             2.99         0            0      NULL
myprocs_ptnd        3.03         0            0      NULL
(1 row affected)
(return status = 0)
```

If you execute sp_helpdefrag after defragmentation, the output is:

```
table          frag_index   pct_defrag   executing   last_run
------------- ------------ ------------ ----------- --------------
t1_forw           0.01          100            0    Oct 10 2012  4:15PM
mymsgs            0.05          100            0    Oct 10 2012  4:15PM
mymsgs_clone      0.06          100            0    Oct 10 2012  4:15PM
t1                0.08          100            0    Oct 10 2012  4:15PM
myprocs           0.09          100            0    Oct 10 2012  4:15PM
mymsgs_ptnd       0.09          100            0    Oct 10 2012  4:15PM
t1_clone          0.10          100            0    Oct 10 2012  4:15PM
myprocs_clone     0.11          100            0    Oct 10 2012  4:15PM
t1_ptnd           0.12          100            0    Oct 10 2012  4:15PM
myprocs_ptnd      0.14          100            0    Oct 10 2012  4:15PM
(1 row affected)
(return status = 0)
```

On a specified table

If sp_helpdefrag is executed on table t1 in database testdb:

```
sp_helpdefrag t1
```

The output is:

```
table  partition  frag_index   pct_defrag  executing      last_run
------ ---------- ----------- ------------ ---------- -----------------
t1       NULL        0.35           35           0     Oct 10 2012  4:33PM
t1       p2          0.50           0            0     NULL
t1       p1          0.42           20           0     Oct 10 2012  4:33PM
t1       p3          0.42           20           0     Oct 10 2012  4:33PM
t1       p4          0.05          100           0     Oct 10 2012  4:33PM
(1 row affected)
(return status = 0)
```

If reorg defrag is currently processing, the output is:

```
table   partition  frag_index   pct_defrag  executing     last_run
------- ---------- ----------- ------------ ---------- -----------------
t1       NULL        0.48           13           1       Oct 10 2012  4:33PM
t1       p2          0.50            0           1       NULL
t1       p4          0.60            0           1       Oct 10 2012  4:33PM
t1       p1          0.42           20           1       Oct 10 2012  4:33PM
t1       p3          0.42           20           1       Oct 10 2012  4:33PM
(1 row affected)
(return status = 0)
```

On a specified partition

If sp_helpdefrag is executed on partition p1 in table t1:

```
sp_helpdefrag t1, p1
```

The output is:

```
table   partition  frag_index   pct_defrag  executing     last_run
------- ---------- ----------- ------------ ---------- -----------------
t1        p1         0.42           20           0       Oct 10 2012  4:33PM
(1 row affected)
(return status = 0)
```

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

1.141 sp_helpdevice

Reports information about a particular device or about all SAP ASE database devices and dump devices.

Syntax

```
sp_helpdevice [<devname>]
```

Parameters

<devname>

is the name of the device about which to report information. If you omit this parameter, `sp_helpdevice` reports on all devices.

Examples

Example 1

Reports information about the dump device named `diskdump`:

```
sp_helpdevice diskdump
```

Example 2

Displays information about all the devices on SAP ASE:

```
1> sp_helpdevice
2> go
```

```
 device_name physical_name
description
                                status cntrltype vdevno vpn_low vpn_high
 ----------- ---------------------------------------------------------------
-------------------------------------------------------------------------------
------------------------------- ------ --------- ------ ------- --------
```

```
 cachedisk   ./cachedisk.dat
file system device, NV cache device, special, dsync off, directio on,
physical disk, 10.00 MB, Free: 10.00 MB      2         0      2       0
5119
 master      /enigma_dev11/pagarwal/CRS/cachebuzz/SSBUILT/SMP/run/master.dat
file system device, special, dsync on, directio off, default disk, physical
disk, 400.00 MB, Free: 176.00 MB       3         0      0       0   204799
 mydisk      ./mydisk.dat
file system device, special, dsync off, directio on, physical disk, 2048.00
MB, Free: 2045.00 MB                   2         0      1       0  1048575
 tapedump1   /dev/nst0
unknown device type, disk, dump
device
    16         2      0       0    20000
 tapedump2   /dev/nst1
unknown device type, tape,        625 MB, dump
device                                                             16
3      0       0    20000
```

Usage

There are additional considerations when using `sp_helpdevice`.

- `sp_helpdevice` displays the amount of unallocated space per device, indicated by the placeholder `Free` in the description column in the output

  > **i Note**
  >
  > A small amount of space can remain unused on a device, especially for servers with larger page sizes. For example, the last 2 MB of a 250 MB device in a 16K server cannot be allocated, and sp_helpdevice reports this as free. This is because the size of an allocation unit in a 16K server is 4 MB, so only multiples of allocation units can be allocated.

- `sp_helpdevice` displays information on the specified device, when `<devname>` is given, or on all devices in `master.dbo.sysdevices`, when no argument is given.
- The `sysdevices` table contains dump devices and database devices.
  Database devices can be designated as default devices, which means that they can be used for database storage. This can occur when a user issues `create database` or `alter database` and does not specify a database device name or gives the keyword `default`. To make a database device a default database device, execute the system procedure `sp_diskdefault`.
- Add database devices to the system with `disk init`. Add dump devices with `sp_addumpdevice`.
- If you issue `sp_helpdevice` against a single device, it displays a list of allocated fragments on that device.
- The `description` column displays information about device types:
  - `block device`
  - `file system device`
  - `raw device`

  The number in the `status` column corresponds to the status description in the "description" column.
  The `cntrltype` column specifies the controller number of the device. The `cntrltype` is 2 for disk or file dump devices and 3 – 8 for tape dump devices. For database devices, the `cntrltype` is usually 0 (unless your installation has a special type of disk controller).
  The `vdevno` column is 0 for dump devices, 0 for the `master` database device, and 1 or higher for other database devices.

The vpn_low and vpn_high columns represent virtual page numbers, each of which is unique among all the devices in SAP ASE.

See also disk init, dump database, dump transaction, load database, load transaction in *Reference Manual: Commands*.

See *System Administration Guide Volume 2 > Configuring Data Caches > NV Cache Management* for details about NV caches.

Permissions

Any user can execute sp_helpdevice. Permission checks do not differ based on the granular permissions settings.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide > Auditing*.

Related Information

sp_addumpdevice [page 70]
sp_deviceattr [page 259]
sp_diskdefault [page 262]
sp_dropdevice [page 292]
sp_logdevice [page 566]

1.142 sp_helpextendedproc

Displays extended stored procedures (ESPs) in the current database, along with their associated DLL files.

Syntax

```
sp_helpextendedproc [<esp_name>]
```

Parameters

<esp_name>

case-sensitive, this is the name of the extended stored procedure. It must be a procedure in the current database. <esp_name> must match the <esp_name> used to create the ESP. If you omit <esp_name>, sp_helpextendedproc lists all the extended stored procedures in the database.

Examples

Example 1

Lists the xp_cmdshell ESP and the name of the DLL file in which its function is stored:

```
use sybsystemprocs
go
sp_helpextendedproc xp_cmdshell
```

```
ESP Name    DLL Name
----------- ----------
xp_cmdshell sybsyesp
```

Example 2

Lists all the ESPs in the current database, along with the names of the DLL files in which their functions are stored:

```
sp_helpextendedproc
```

```
ESP Name    DLL Name
----------- ----------
xp_freedl     sybsyesp
xp_cmdshell   sybsyesp
```

Usage

See also create procedure, drop procedure in *Reference Manual: Commands*.

Permissions

Any user can execute sp_helpextendedproc.

Permission checks do not differ based on the granular permissions settings.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_addextendedproc [page 37]
sp_dropextendedproc [page 297]
xp_cmdshell [page 888]

1.143 sp_helpexternlogin

(Component Integration Services only) Reports information about external login names.

Syntax

```
sp_helpexternlogin [<server>[, <loginame>[, <rolename>]]]
```

Parameters

`<server>`

is the name of the remote server that has been added to the local server with `sp_addserver`.

`<loginame>`

is a login account on the local server.

`<rolename>`

is the SAP ASE user's assigned role.

Examples

Example 1

Displays all remote servers, local login names, role names, and external logins:

```
sp_helpexternlogin
```

Example 2

Displays local login names, role names, and external logins for the server named SSB:

```
sp_helpexternlogin SSB
```

Example 3

Displays remote servers, local login names and external logins for the user named "milo":

```
sp_helpexternlogin NULL, milo
```

Example 4

Displays external logins for remote server SSB where the local user name is "trixi":

```
sp_helpexternlogin SSB, trixi
```

Example 5

Displays external logins for remote server SSB for local users with sa_role:

```
sp_helpexternlogin SSB, NULL, sa_role
```

Usage

`sp_helpexternlogin` displays all remote servers, the user's local login name, role name, and the user's external login name.

Add remote servers with `sp_addserver`. Add local logins with `create login`.

Permissions

Any user can execute `sp_helpexternlogin`. Permission checks do not differ based on the granular permissions settings.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_addexternlogin [page 39]
sp_addlogin [page 47]
sp_addserver [page 58]
sp_dropexternlogin [page 299]
sp_helpserver [page 481]

1.144 sp_helpgroup

Reports information about a particular group or about all groups in the current database.

Syntax

```
sp_helpgroup [<grpname>]
```

Parameters

`<grpname>`

is the name of a group in the database created with `sp_addgroup`.

Examples

Example 1

Displays information about all groups in the current database:

```
sp_helpgroup
```

```
Group_name           Group_id
---------------      --------
hackers              16384
public                0
```

Example 2

Displays information about the group "hackers":

```
sp_helpgroup hackers
```

```
Group_name      Group_id      Users_in_group      Userid
-----------     ---------     --------------      ------
hackers         16384         ann                 4
hackers         16384         judy                3
```

Usage

To get a report on the default group, "public," enclose the name "public" in single or double quotes ("public" is a reserved word).

If there are no members in the specified group, `sp_helpgroup` displays the header, but lists no users, as follows:

```
Group_name             Group_id           Users_in_group          Userid
-----------            ---------          --------------          ------
```

See also `grant`, `revoke` in *Reference Manual: Commands*.

Permissions

Any user can execute `sp_helpgroup`. Permission checks do not differ based on the granular permissions settings.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide > Auditing*.

Related Information

sp_addgroup [page 42]

sp_changegroup [page 135]
sp_dropgroup [page 304]
sp_helpprotect [page 471]
sp_helpuser [page 494]

1.145 sp_helpindex

Reports information about the indexes created on a table. Reports information on computed column indexes, function-based indexes, and partial indexes

Syntax

```
sp_helpindex <objname>,[<cmdname> | "terse"]
```

Parameters

<objname>

is the name of a table in the current database.

<cmdname>

command to run for displaying index information. Supported commands are

- `help` – display usage information for `sp_helpindex`
- `showpartialindex` – display all partial indexes in this database
- `showlackindexpartition` – display data partitions for which partial index partitions are not built yet for table `<objname>`

"terse"

`sp_helpindex` displays a reduced output, skipping partition related information. The output for `terse` includes :

- Total number of indexes
- Total number of global indexes
- Total number of local indexes
- Total number of partial indexes

`sp_helpindex` displays index information in output that is aligned with the `create index` syntax.

Examples

Example 1

Displays the types of indexes on the `sysobjects` table:

```
sp_helpindex sysobjects
```

```
index_name index_keys index_description index_max_rows_per_page
       index_fillfactor index_reservepagegap index_created
       index_local
sysobjects    id        clustered, unique                     0
                   0                  0        Apr 12 2005  2:38PM
        Global Index
ncsysobjects  name, uid nonclustered, unique
                   0                  0        Apr 12 2005  2:38PM
        Global Index
(2 rows affected)
index_pt_name          index_ptn_seg
---------------------- --------------
sysobjects_1            system
ncsysobjects_1           system
```

Example 2

Displays information about the index on the `titles` table in the `pubs2` database. The `titles` table is partitioned, but the index `titleind` is not. `titleind` is a nonclustered (single-partitioned), global index:

```
sp_helpindex titles
```

```
index_name index_keys index_description index_max_rows_per_page
       index_fillfactor index_reservepagegap index_created
       index_local
titleind    title    nonclustered                             0
          Global Index
(1 row affected)
index_pt_name          index_ptn_seg
---------------------- --------------
titleind_1232004389     default
```

Example 3

Displays index information about the `mysalesdetail` table. `mysalesdetail` is partitioned by hash on the `ord_num` column. A clustered, local index, with three partitions, has also been created on `ord_num`:

```
sp_helpindex mysalesdetail
```

```
index_name index_keys index_description index_max_rows_per_page
       index_fillfactor index_reservepagegap index_created       index_local
---------- ---------- ----------------- -----------------------
       ---------------- -------------------- -------------       -----------
clust_idx  ord_num    clustered                                 0
                     0                    0 Apr 12 2005 2:38PM  Local Index
(1 row affected)
index_pt_name          index_ptn_seg
---------------------- --------------
clust_idx_1344004788   default
clust_idx_1360004845   default
clust_idx_1376004902   default
```

Example 4

Displays information about the indexes created on table `big_table`:

```
sp_helpindex big_table
```

Example 5

Displays usage information for `sp_helpindex`:

```
sp_helpindex null, help
```

Example 6

Displays all partial indexes in the current database:

```
sp_helpindex null, showpartialindex
```

Example 7

Display all partial indexes on table `big_table`:

```
sp_helpindex big_table, showpartialindex
```

Example 8

Displays all data partitions that do not include partial index partitions on table `big_table`:

```
sp_helpindex big_table, showlackindexpartition
```

Example 9

Displays a function-based index:

```
create index sum_sales on mytitles (price * total_sales)
sp_helpindex mytitles
```

```
Object has the following indexes
index_name index_keys index_description index_max_rows_per_page
       index_fillfactor index_reservepagegap index_created       index_local
---------- ---------- ----------------- -----------------------
       ---------------- -------------------- -------------       -----------
sum_sales  sybfi2_1   nonclustered                            0
       0                                    0 Oct 12 2005 3:34PM  Global Index
(1 row affected)
index_ptn_name       index_ptn_seg
-------------------- -------------
sum_sales_1724867646 default
(1 row affected)
Object has the following functional index keys
Internal_Index_Key_Name
-----------------------
sybfi2_1
(1 row affected)
Expression
-------------------
price * total_sales
(return status = 0)
```

Example 10

Displays an abbreviated information set for the `syspartitions` indexes:

```
sp_helpindex syspartitions, "terse"
Object has the following indexes
```

```
index description
-------------------------------------------------------------------------------
---------------------
unique clustered index csyspartitions on syspartitions ( id, indid,
partitionid )  -- global index
unique nonclustered index ncsyspartitions on syspartitions ( partitionid,
indid )  -- global index
unique nonclustered index nc2syspartitions on syspartitions ( id, indid,
name )  -- global index

(3 rows affected)
total_indexes global_indexes local_indexes partial_indexes
------------- -------------- ------------- ---------------
            3              3             0               0

(1 row affected)
(return status = 0)
```

Usage

There are additional considerations when using `sp_helpindex`:

- `sp_helpindex` lists any indexes on a table, including indexes created by defining unique or primary key constraints defined by a `create table` or `alter table` statement.
- `sp_helpindex` displays any attributes (for example, cache bindings) assigned to the indexes on a table.
- `sp_helpindex` displays:
  - Partition information for each index.
  - Whether the index is local or global, clustered or nonclustered.
  - The `max_rows_per_page` setting of the indexes.
  - Information about clustered indexes on data-only locked tables.
    The index ID (`indid)` of a clustered index in data-only locked tables is not equal to 1.
  - The column order of the keys, to indicate whether they are in ascending or descending order.
  - Space manage property values.
  - The key column name followed by the order. Only descending order is displayed. For example, if there is an index on column a ASC, b DESC, c ASC, "index_keys" shows "a, b DESC, c".

See also `create index`, `drop index`, `update statistics` in *Reference Manual: Commands*.

Permissions

Any user can execute `sp_helpindex`. Permission checks do not differ based on the granular permissions settings.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide > Auditing*.

Related Information

sp_help [page 396]
sp_helpkey [page 462]
sp_helpartition [page 416]

1.146 sp_helpjava

Displays information about Java classes and associated JARs that are installed in the database.

Syntax

```
sp_helpjava ["class"[, <java_class_name>[, "detail" | "depends"]] |
   "jar", <jar_name>[, "depends"]]]
```

Parameters

"class" | "jar"

specifies whether to display information about a class or a JAR. Both "class" and "jar" are keywords, so the quotes are required.

<java_class_name>

the name of the class about which you want information. The class must be a system class or a user-defined class that is installed in the database.

detail

specifies that you want to see detailed information about the class.

depends

lists all the database objects that depend on the specified class or classes in the JAR, including SQLJ functions, SQLJ stored procedures, views, Transact-SQL stored procedures, and tables.

<jar_name>

the name of the JAR for which you want to see information. The JAR must be installed in the database using `installjava`.

Examples

Example 1

Displays the names of all classes and associated JAR files installed in the database:

```
sp_helpjava
```

Example 2

Displays the name of all classes:

```
sp_helpjava "class"
```

Example 3

Displays detailed information about the `Address` class:

```
sp_helpjava "class", Address, detail
```

```
Class
--------------------------------------------------
Address
(1 row affected)
Class Modifiers
--------------------------------------------------
 public synchronized

 Implemented Interfaces
 --------------------------------------------------
 java.io.Serializable

 Extended Superclass
 --------------------------------------------------
 java.lang.Object

 Constructors
 --------------------------------------------------
 public Address()
 public Address(java.lang.String,java.lang.String)

 Methods
 --------------------------------------------------
 public final native java.lang.Class java.lang.Object.getClass()
 public native int java.lang.Object.hashCode()
 public boolean java.lang.Object.equals(java.lang.Object)
 public java.lang.String java.lang.Object.toString()
 public final native void java.lang.Object.notify()
 public final native void java.lang.Object.notifyAll()
 public final native void java.lang.Object.wait(long) throws
java.lang.InterruptedException
public final void java.lang.Object.wait(long,int) throws
java.lang.InterruptedException
 public final void java.lang.Object.wait() throws
java.lang.InterruptedException
 public java.lang.String Address.display()
 public void Address.removeLeadingBlanks()
```

```
Fields
--------------------------------------
public java.lang.String Address.street
public java.lang.String Address.zip
```

Usage

The `depends` parameter lists dependencies of a class or classes if the class is listed in the `external name` clause of a create statement for a SQLJ routine or is used as a datatype of a column in the database.

See also:

- `remove java` in *Reference Manual: Commands*
- See *Java in Adaptive Server Enterprise* for more information about Java in the database.
- `extractjava`, `installjava` in the *Utility Guide*

Permissions

Any user can execute `sp_helpjava`. Permission checks do not differ based on the granular permissions settings.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

1.147 sp_helpjoins

Lists the columns in two tables or views that are likely join candidates.

Syntax

```
sp_helpjoins <lefttab>, <righttab>
```

Parameters

<lefttab>

is the first table or view.

<righttab>

is the second table or view. The order of the parameters does not matter.

Examples

Example 1

Displays a list of columns that are likely join candidates in the sales and salesdetailtables:

```
sp_helpjoins sales, salesdetail
```

```
a1       a2       b1       b2       c1       c2
   d1       d2       e1       e2       f1       f2
      g1       g2       h1       h2
-------- -------- -------- -------- -------- --------
-------- -------- -------- -------- -------- --------
      -------- -------- -------- --------
stor_id  stor_id  ord_num  ord_num  NULL     NULL
   NULL     NULL     NULL     NULL     NULL     NULL
      NULL     NULL     NULL     NULL
```

Example 2

Displays a list of columns that are likely join candidates in the sysobjects and syscolumns system tables:

```
sp_helpjoins sysobjects, syscolumns
```

```
a1   a2   b1   b2   c1   c2   d1   d2   e1   e2
        f1   f2   g1   g2   h1   h2
---- ---- ---- ---- ---- ---- ---- ---- ---- ----
        ---- ---- ---- ---- ---- ----
id   id   NULL NULL NULL NULL NULL NULL NULL NULL
        NULL NULL NULL NULL NULL NULL
```

Usage

The column pairs that sp_helpjoins displays come from either of two sources. sp_helpjoins checks the syskeys table in the current database to see if any foreign keys have been defined with sp_foreignkey on the two tables, then checks to see if any common keys have been defined with sp_commonkey on the two tables. If sp_helpjoins does not find any foreign keys or common keys there, it checks for keys with the same user-defined datatypes. If that fails, it checks for columns with the same name and datatype.

sp_helpjoins does not create any joins.

Permissions

Any user can execute `sp_helpjoins`. Permission checks do not differ based on the granular permissions settings.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_commonkey [page 191]
sp_foreignkey [page 387]
sp_helpkey [page 462]
sp_primarykey [page 676]

1.148 sp_helpkey

Reports information about a primary, foreign, or common key of a particular table or view, or about all keys in the current database.

Syntax

```
sp_helpkey [<tabname>]
```

Parameters

`<tabname>`

is the name of a table or view in the current database. If you do not specify a name, the procedure reports on all keys defined in the current database.

Examples

Example 1

Displays information about the keys defined in the current database. The "object_keys" and "related_keys" columns refer to the names of the columns that make up the key:

```
sp_helpkey
```

```
keytype object      related_object object_keys         related_keys
------- -------     -------------- ---------------     --------------
primary authors     -- none --     au_id,*,*,*,*,*,*,*  *,*,*,*,*,*,*,*
foreign titleauthor authors        au_id,*,*,*,*,*,*,* au_id,*,*,*,*,*,*,*
```

Usage

There are additional considerations when using `sp_helpkey`:

- `sp_helpkey` lists information about all primary, foreign, and common key definitions that reference the table `<tabname>` or, if `<tabname>` is omitted, about all the keys in the database. Define these keys with the `sp_primarykey`, `sp_foreignkey`, and `sp_commonkey` system procedures.
- `sp_helpkey` does not provide information about the `unique` or `primary key` integrity constraints defined by a `create table` statement. Use `sp_helpconstraint` to determine what constraints are defined for a table.
- Create keys to make explicit a logical relationship that is implicit in your database design so that applications can use the information.
- If you specify an object name, `sp_helpkey` follows the SAP ASE rules for finding objects:
  - If you do not specify an owner name, and you own an object with the specified name, `sp_helpkey` reports on that object.
  - If you do not specify an owner name, and you do not own an object of that name, but the database owner does, `sp_helpkey` reports on the database owner's object.
  - If neither you nor the database owner owns an object with the specified name, `sp_helpkey` reports an error condition, even if an object with that name exists in the database for a different owner.
  - If both you and the database owner own objects with the specified name, and you want to access the database owner's object, specify the name in the form `<dbo>.<objectname>`.
- Qualify objects that are owned by database users other than yourself and the database owner with the owner's name, as in "mary.myproc".

See also `create trigger` in *Reference Manual: Commands*.

Permissions

Any user can execute `sp_helpkey`. Permission checks do not differ based on the granular permissions settings.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide > Auditing*.

Related Information

sp_commonkey [page 191]
sp_foreignkey [page 387]
sp_primarykey [page 676]

1.149 sp_helplanguage

Reports information about a particular alternate language or about all languages.

Syntax

```
sp_helplanguage [<language>]
```

Parameters

`<language>`

is the name of the alternate language for which to display information about.

Examples

Example 1

Displays information about the alternate language, "french":

```
sp_helplanguage french
```

```
langid dateformat datefirst upgrade  name      alias
       months
       shortmonths
```

```
        days
------ ---------- ---------- -------- ---------  ----------------
      ------------------------------------------------------------
      ------------------------------------------------------------
      ------------------------------------------------------------
1     dmy        1          0        french      french
      janvier,février,mars,avril,mai,juin,juillet,août,septembre,
          octobre,novembre,décembre
      jan,fév,mar,avr,mai,jui,juil,aoû,sep,oct,nov,déc
      lundi,mardi,mercredi,jeudi,vendredi,samedi,dimanche
```

Example 2

Displays information about all installed alternate languages:

```
sp_helplanguage
```

Usage

`sp_helplanguage` reports on a specified language, when the language is given, or on all languages in `master.dbo.syslanguages`, when no language is supplied.

Permissions

Any user can execute `sp_helplanguage`. Permission checks do not differ based on the granular permissions settings.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_addlanguage [page 43]
sp_droplanguage [page 308]
sp_setlangalias [page 717]

1.150 sp_helplog

Reports the name of the device that contains the first page of the transaction log.

Syntax

```
sp_helplog
```

Examples

Example 1

Reports "master" as the name of the device:

```
sp_helplog
```

```
In database 'master', the log starts on device 'master'.
```

Usage

See also `alter database`, `create database` in *Reference Manual: Commands*.

Permissions

Any user can execute `sp_helplog`. Permission checks do not differ based on the granular permissions settings.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_helpdevice [page 446]
sp_logdevice [page 566]

1.151 sp_helpmaplogin

Displays mapping information.

Syntax

```
sp_helpmaplogin [ (<authentication_mech> | null), (<client_username> | null) ]
```

Parameters

<authentication_mech>

is one of the valid values specified for the `authenticate with` option in `create login` and `alter login`.

<client_username>

is an external username.

Examples

Example 1

Displays information about all logins:

```
sp_helpmaplogin
```

```
authentication   client name   login name
--------------   -----------   ------------------
NULL             jsmith        guest
LDAP             NULL          create login
```

Usage

If you do not include any parameters, `sp_helpmaplogin` displays login information about all users currently logged in to the SAP ASE server. Restrict the output to specific sets of client user names or authentication mechanisms by using the parameters.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide > Auditing*.

Related Information

sp_maplogin [page 579]

1.152 sp_helpobjectdef

(Component Integration Services only) Reports owners, objects, and type information for remote object definitions.

Syntax

```
sp_helpobjectdef [<objname>]
```

Parameters

`<objname>`

is the name of the object as it is defined in the `sysattributes` table. The `<objname>` can be in any of the following forms:

- `<dbname>.<owner>.<object>`
- `<dbname>..<object>`
- `<owner>.<object>`

- <object>

<dbname> and <owner> are optional. <object> is required. If <owner> is not supplied, the <owner> defaults to the current user name. If <dbname> is supplied, it must be the current database, and <owner> must be supplied or marked with the placeholder <dbname>..<object>. Enclose a multipart <objname> in quotes.

Examples

Example 1

Displays all remote object definitions in the current database:

```
sp_helpobjectdef
```

Example 2

Displays remote object definitions for the tb1 table owned by the database owner:

```
sp_helpobjectdef "dbo.tb1"
```

Usage

If no <objname> is supplied, sp_helpobjectdef displays all remote object definitions.

A server name is not permitted in the <objname> parameter.

See also create table, create existing table, drop table in *Reference Manual: Commands*.

Permissions

Any user can execute sp_helpobjectdef. Permission checks do not differ based on the granular permissions settings.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_addobjectdef [page 50]
sp_dropobjectdef [page 311]
sp_helpserver [page 481]

1.153 sp_helpremotelogin

Reports information about a particular remote server's logins or about all remote server logins.

Syntax

```
sp_helpremotelogin [<remoteserver>[, <remotename>]]
```

Parameters

<remoteserver>
is the name of the server about which to report remote login information.

<remotename>
is the name of a particular remote user on the remote server.

Examples

Example 1

Displays information about all the remote users of the remote server GATEWAY:

```
sp_helpremotelogin GATEWAY
```

Example 2

Displays information about all the remote users of all the remote servers known to the local server:

```
sp_helpremotelogin
```

Usage

sp_helpremotelogin reports on the remote logins for the specified server, when <remoteserver> is given, or on all servers, when no parameter is supplied.

Permissions

Any user can execute sp_helpremotelogin. Permission checks do not differ based on the granular permissions settings.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_addremotelogin [page 53]
sp_dropremotelogin [page 313]
sp_helpserver [page 481]

1.154 sp_helprotect

Reports on permissions for database objects, users, groups, or roles.

Syntax

```
sp_helprotect [<name>[, <username>[,'grant'|'deny'
    [,"none" | "granted" | "enabled" | <role_name>[, <permission_name>]]]]]
```

Parameters

<name>

is either the name of the table, view, stored procedure, SQLJ stored procedure, SQLJ function, user-defined function, name of a user, role, or group in the current database. If you do not provide a name, `sp_helprotect` reports on all permissions in the database.

<username>

is the name of the user, group, or role in the current database.

grant

displays the privileges granted on `<name>` to `<username>` with `grant` option. If `<username>` is null, `sp_helprotect` lists all privileges granted with grant option on `<name>`.

deny

displays the denied privileges for a table, table owner, all tables, all owners, or the status (denied or not) for the specified permission name.

none

ignores roles granted to the user when determining permissions granted.

granted

includes information on all roles granted to the user when determining permissions granted.

enabled

includes information on all roles activated by the user when determining permissions granted.

<role_name>

lists privileges granted through `<role_name>`.

<permission_name>

allows `sp_helprotect` to provide information (grantor name, grantee name, table/column name, grantability) for any specific permission granted in a given database.

The value of this parameter can be any value from the `sysprotects.action` column.

Examples

Example 1

This series of `grant` and `revoke` statements, executing `sp_helprotect titles` results in this display:

```
grant select on titles to judy
grant update on titles to judy
revoke update on titles(price) from judy
grant select on publishers to judy
with grant option
go
sp_helprotect titles
```

```
grantor grantee type   action   object   column      predicate  grantable
------- ------  -----  ------   ------   ------      ---------  ---------
dbo     judy    Grant  Select   titles   All         0          FALSE
dbo     judy    Grant  Update   titles   advance     0          FALSE
dbo     judy    Grant  Update   titles   notes       0          FALSE
dbo     judy    Grant  Update   titles   pub_id      0          FALSE
dbo     judy    Grant  Update   titles   pubdate     0          FALSE
dbo     judy    Grant  Update   titles   title       0          FALSE
dbo     judy    Grant  Update   titles   title_id    0          FALSE
dbo     judy    Grant  Update   titles   total_sales 0          FALSE
dbo     judy    Grant  Update   titles   type        0          FALSE
dbo     judy    Grant  Select   titles   all         0          TRUE
```

Example 2

Issuing the following `grant` statement results in `sp_helprotect` displaying the following:

```
grant select, update on titles(price, advance)
    to mary
    with grant option
go
sp_helprotect titles
```

```
grantor   grantee   type    action   object   column   predicate grantable
-------   -------   ------  -------  ------   ------   ---------  ---------
dbo       mary      Grant   Select   titles   advance  0          TRUE
dbo       mary      Grant   Select   titles   price    0          TRUE
dbo       mary      Grant   Update   titles   advance  0          TRUE
dbo       mary      Grant   Update   titles   price    0          TRUE
```

Example 3

Displays all the permissions that "judy" has in the database:

```
sp_helprotect judy
```

Example 4

Displays any permissions that "csmith" has on the `sysusers` table, as well as whether "csmith" has `with grant option` which allows "csmith" to grant permissions to other users:

```
sp_helprotect sysusers, csmith, "grant"
```

```
grantor  grantee  type    action     object    column  predicate grantable
-------- -------  ------  ---------  --------  ------  --------- --------
dbo      doctor    Grant  Delete     sysusers  All     0         FALSE
dbo      doctor    Grant  Insert     sysusers  All     0         FALSE
dbo      doctor    Grant  References sysusers  All     0         FALSE
```

Example 5

Displays information about the permissions that the doctor role has in the database:

```
sp_helprotect doctor
```

```
grantor  grantee  type   action     object   column   predicate  grantable
-------  ------   -----  ---------  -------- ------   -------    ----------
dbo      doctor   Grant  Delete     sysusers All      0          FALSE
dbo      doctor   Grant  Insert     sysusers All      0          FALSE
dbo      doctor   Grant  References sysusers All      0          FALSE
```

Example 6

Displays information on all roles granted to "csmith":

```
sp_helprotect csmith, null, null, "granted"
```

```
grantor grantee   type   action     object    column  predicate  grantable
------- --------  ------ ---------- --------  ------- ---------- ---------
dbo     csmith    Grant  Update     sysusers  All     0          FALSE
dbo     doctor    Grant  Delete     sysusers  All     0          FALSE
dbo     doctor    Grant  Insert     sysusers  All     0          FALSE
dbo     doctor    Grant  References sysusers  All     0          FALSE
(1 row affected)
(return status = 0)
```

Example 7

Displays information on all active roles granted to "rpillai":

```
sp_helprotect rpillai, null, null, "enabled"
```

```
grantor grantee   type   action object         column  predicate grantable
------- --------  ------ ------ -------------  ------- --------- -------
dbo     public    Grant  Select sysattributes  All     0          FALSE
(1 row affected)
(return status = 0)
```

Example 8

Advises that SQLJ function access is public:

```
sp_helprotect function_sqlj
```

```
Implicit grant to public for SQLJ functions.
```

Example 9

Uses the action "Decrypt" from `sysprotects.action`:

```
sp_helprotect @permission_name = "Decrypt"
```

```
grantor  grantee  type   action   object     column   predicate  grantable
-------  -------- -----  -------  -------    ------   ---------  ---------
sa1      hr_login Grant  Decrypt  employee   ssn      0          TRUE
sa1      hr_role  Grant  Decrypt  employee   ssn      0          FALSE
```

Example 10

Displays the name of the predicated privilege in the output:

```
grant select, update, on tab1 where col1 = 8 as pred1 to robert
grant select, delete on tab1 where col1 = 9 to robert, joffrey
grant select, delete, update on tab1 where col2 = 10 as pred2 to role1,
group1
```

```
sp_helprotect tab1
```

```
grantor  grantee type  action object column predicate          grantable
-----------------------------------------------------------------------
 dbo     joffrey Grant Delete tab1   All    tab1_fdoIidqcSKLm  FALSE
 dbo     joffrey Grant Select tab1   All    tab1_fdoIidqcSKLm  FALSE
 dbo     group1  Grant Delete tab1   All    pred2              FALSE
 dbo     group1  Grant Select tab1   All    pred2              FALSE
 dbo     group1  Grant Update tab1   All    pred2              FALSE
 dbo     role1   Grant Delete tab1   All    pred2              FALSE
 dbo     role1   Grant Select tab1   All    pred2              FALSE
 dbo     role1   Grant Update tab1   All    pred2              FALSE
 dbo     robert  Grant Delete tab1   All    tab1_fdoIidqcSKLm  FALSE
 dbo     robert  Grant Select tab1   All    pred1              FALSE
 dbo     robert  Grant Select tab1   All    tab1_fdoIidqcSKLm  FALSE
 dbo     robert  Grant Update tab1   All    pred1              FALSE
```

Example 11

Display all permissions of table `t1` including denied permissions:

```
sp_helprotect t1
```

```
grantor  grantee      type   action              object      column
predicate  grantable
------------------------------------------------------------------------------
-----------
 dbo     All owners   Deny   Delete              All tables   All
 NULL       FALSE
 dbo     All owners   Deny   Delete Statistics   All tables   All
NULL       FALSE
 dbo     All owners   Deny   Insert              All tables   All
 NULL       FALSE
 dbo     All owners   Deny   References          All tables   All
NULL       FALSE
 dbo     All owners   Deny   Select              All tables   All
NULL       FALSE
 dbo     All owners   Deny   Transfer Table      All tables   All
NULL       FALSE
 dbo     All owners   Deny   Truncate Table      All tables   All
NULL       FALSE
 dbo     All owners   Deny   Update              All tables   All
NULL       FALSE
 dbo     All owners   Deny   Update Statistics   All tables   All
NULL       FALSE
 dbo     user1        Grant  Select              t1           All
NULL       FALSE
 dbo     user1        Grant  Truncate Table      t1           All
NULL       TRUE
```

Example 12

Use `allow` to allow some denied permissions and display remaining denied permissions:

```
allow update, insert, references on all tables to all owners
```

```
sp_helprotect "deny"
```

```
grantor  grantee      type   action              object      column
predicate  grantable
------------------------------------------------------------------------------
-----------
 dbo     All owners   Deny   Delete              All tables   All
 NULL       FALSE
 dbo     All owners   Deny   Delete Statistics   All tables   All
NULL       FALSE
 dbo     All owners   Deny   Select              All tables   All
 NULL       FALSE
 dbo     All owners   Deny   Transfer Table      All tables   All
NULL       FALSE
```

```
 dbo     All owners   Deny   Truncate Table      All tables   All
NULL       FALSE
 dbo     All owners   Deny   Update Statistics   All tables   All
NULL       FALSE
```

Example 13

Display permissions on a specified table and user when dbo is the owner of `t1`:

```
sp_helprotect, dbo
```

```
grantor  grantee      type   action              object      column
predicate  grantable
-------------------------------------------------------------------------------
-----------
 dbo     All owners   Deny   Delete              All tables   All
 NULL       FALSE
 dbo     All owners   Deny   Delete Statistics   All tables   All
NULL       FALSE
 dbo     All owners   Deny   Select              All tables   All
 NULL       FALSE
 dbo     All owners   Deny   Transfer Table      All tables   All
NULL       FALSE
 dbo     All owners   Deny   Truncate Table      All tables   All
NULL       FALSE
 dbo     All owners   Deny   Update Statistics   All tables   All
NULL       FALSE
```

Example 15

Display denied permissions of specific user:

```
sp_helprotect user1, 'deny'
```

```
grantor  grantee      type   action              object      column
predicate  grantable
-------------------------------------------------------------------------------
-----------
 dbo     All Owners   Deny   Delete              All Tables    All
NULL      FALSE
 dbo     All Owners   Deny   Delete Statistics   All Tables    All
NULL      FALSE
 dbo     All Owners   Deny   Select              All Tables    All
NULL      FALSE
 dbo     All Owners   Deny   Transfer Table      All Tables    All
NULL      FALSE
 dbo     All Owners   Deny   Truncate Table      All Tables    All
NULL      FALSE
 dbo     All Owners   Deny   Update Statistics   All Tables    All
NULL      FALSE
```

Example 16

Display the status of specific permission:

```
sp_helprotect 'deny', @permission_name= 'update'
```

```
grantor  grantee      type   action              object      column
predicate  grantable
-------------------------------------------------------------------------------
-----------
```

```
 dbo     All Owners   Deny   Update              All Tables   All
NULL      FALSE
```

Usage

- `sp_helprotect` reports permissions on a database object. If you supply the `<username>` parameter, only that user's permissions on the database object are reported. If `<name>` is not an object, `sp_helprotect` checks to see if it is a user, a group, a role, or a permission name. If it is, `sp_helprotect` lists the permissions for the user, group, or role.
- `sp_helprotect` looks for objects and users in the current database only.
- If you do not specify an optional value such as `granted`, `enabled`, `none`, or `<role_name>`, the SAP ASE server returns information on all roles activated by the current specified user.
- If the specified user is not the current user, the SAP ASE server returns information on all roles granted to the specified user.
- Displayed information always includes permissions granted to the group in which the specified user is a member.
- In granting permissions, a system administrator is treated as the object owner. If a system administrator grants permission on another user's object, the owner's name appears as the grantor in `sp_helprotect` output.

`sp_helprotect` reports information on encrypted columns, encryption keys, and users as follows:

- Tables and columns – reports who has been granted `decrypt` permission and on which columns.
- Encryption keys – reports who has been granted `select` permission.
- Users – indicates users who have been granted `create encryption key` permission.

`sp_helprotect` reports information on predicated privileges by listing the name of the predicated privilege, if any, as an extra column in the output.

See also `grant`, `revoke` in *Reference Manual: Commands*.

Permissions

Any user can execute `sp_helprotect`. Permission checks do not differ based on the granular permissions settings.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_activeroles [page 15]
sp_displayroles [page 276]

1.155 sp_helpsegment

Reports information about a particular segment or about all segments in the current database.

Syntax

```
sp_helpsegment [<segname>]
```

Parameters

<segname>

is the name of the segment about which you want information. If you omit this parameter, information about all segments in the current database appears.

Examples

Example 1

Reports information about all segments in the current database:

```
sp_helpsegment
```

```
segment name                       status
------- ------------------------------ ------
      0 system                          0
      1 default                         1
      2 logsegment                      0
      3 seg1                            0
      4 seg2                            0
      5 seg3                            0
      6 seg4                            0
```

Example 2

Reports information about the segment named `order_seg`. This includes database tables and indexes that bond to this segment — the tables/indexes currently having this segment specified at the table/index level — as well as the objects currently on this segment (partitions that are actually located on this segment). In addition, this example reports the total number of pages, free pages, used pages, and reserved pages on this segment:

```
sp_helpsegment seg1
```

```
segment name                           status
------- ------------------------------ ------
      3 seg1                                0
device                 size           free_pages
---------------------- -------------- -----------
pubs_dev1              2.0MB                240
Objects on segment 'seg1':
table_name      index_name          indid   partition_name
----------- ------------- ------ ----------------
fictionsales    fictionsales            0   q1
pb_fictionsales pb_fictionsales         0   lov
Objects currently bound to segment 'seg1':
```

```
table_name  index_name  indid
----------  ----------  -----
new_titles  new_titles      0
total_size    total_pages    free-pages    used_pages    reserved pages
----------    -----------    ----------    ----------    --------------
2.0MB         256            240           16            0
```

Example 3

Reports information about the `default` segment. The keyword `default` must be enclosed in quotes. The output has been abridged due to length:

```
sp_helpsegment "default"
```

```
segment  name    status
-------  ------  ------
      1  default       1
device    size      free_pages
------    ----      -----------
master    14.0MB            303
pubs_dev1  2.0MB            240
pubs_dev2  2.0MB            232
pubs_dev3  2.0MB            232
pubs_dev4  2.0MB            240
Objects on segment 'default':
```

```
table_name     index_name     indid  partition_name
----------     ----------     -----  --------------
au_pix         au_pix             0  au_pix_864003078
au_pix         tau_pix            0  tau_pix_864003078
...
titles         title_idx           0  p1
```

```
titles         title_idx          0  p2
titles         title_idx          0  p3
titles         title_idx          0  title_idx_985051514
Objects currently bound to segment 'default':
table_name     index_name     indid
----------     ----------     -----
au_pix         au_pix             0
...
titleauthor    titleidind         3
titles         title_idx          1
```

```
total_size   total_pages   free_pages   used_pages   reserved_pages
----------   -----------   ----------   ----------   --------------
22.0MB       2816          1247         1569         0
```

Example 4

Reports information about the segment on which the transaction log is stored:

```
1> sp_helpsegment "logsegment"
2> go
```

```
 segment name       status
 ------- ---------- ------
       2 logsegment      0
 device      device size
 ------      ------
 master      14.0MB
 pubs_dev1     2.0MB
 pubs_dev2     2.0MB
 pubs_dev3     2.0MB
 pubs_dev4     2.0MB
 free_pages
 -----------
        1239
Objects on segment 'logsegment':
 table_name index_name indid  partition_name
 ---------- ---------- ------ --------------
 syslogs    syslogs         0  syslogs_8
Objects currently bound to segment 'logsegment':
 table_name index_name indid
 ---------- ---------- ------
 syslogs    syslogs         0
total_size    total_pages    free_pages    used_pages    reserved_pages
------------- -------------- ------------- ------------- ---------------
22.0MB        2816           1239          13            0
(return status = 0)
```

Usage

There are additional considerations when using `sp_helpsegment`:

- `sp_helpsegment` displays information about the specified segment, when `<segname>` is given, or about all segments in the current database, when no argument is given.
- When you first create a database, the SAP ASE server automatically creates the `system`, `default`, and `logsegment` segments. Use `sp_addsegment` to add segments to the current database.
- If you specify a log segment from a dedicated log database for the `<segname>` parameter, `sp_helpsegment` reports the number of free pages in the log segment.
- The `system`, `default`, and `logsegment` segments are numbered 0, 1, and 2, respectively.
- The "`status`" column indicates which segment is the default pool of space. Use `sp_placeobject` or the `on <segment_name>` clause of the `create table` or `create index` command to place objects on specific segments.
- The "`indid`" column is 0 if the table does not have a clustered index and is 1 if the table has a clustered index.

See also `create index`, `create table` in *Reference Manual: Commands*.

Permissions

Any user can execute `sp_helpsegment`. Permission checks do not differ based on the granular permissions settings.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_addsegment [page 56]
sp_dropsegment [page 319]
sp_extendsegment [page 365]
sp_helpdb [page 438]
sp_helpdevice [page 446]
sp_placeobject [page 664]

1.156 sp_helpserver

Reports information about a particular remote server or about all remote servers.

Syntax

```
sp_helpserver [<server>]
```

Parameters

`<server>`

is the name of the remote server about which you want information.

Examples

Example 1

Displays information about the remote server GATEWAY:

```
sp_helpserver GATEWAY
```

Example 2

Displays information about the local Backup Server:

```
sp_helpserver SYB_BACKUP
```

```
name         network_name    security_mechanism    server_principal
           class
   status
id cost
----------   --------------  --------------------  ------------------
           -----
----------------------------------------------------------------------
      -----
SYB_BACKUP       SYB_BACKUP                  NULL                NULL
           NULL
timeouts, no net password encryption, writable, enable login redirection 1
       NULL
```

Example 3

Displays information about all the remote servers known to the local server:

```
sp_helpserver
```

Usage

sp_helpserver reports information about all servers in master.dbo.sysservers or about a particular remote server, when <server> is specified.

When Component Integration Services (CIS) is installed, sp_helpserver lists the security mechanism, server principal name, and server class for each server.

Permissions

Any user can execute sp_helpserver. Permission checks do not differ based on the granular permissions settings.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_addserver [page 58]
sp_dropserver [page 321]
sp_helpremotelogin [page 470]
sp_serveroption [page 710]

1.157 sp_helpsort

Displays the SAP ASE server's default sort order and character set.

Syntax

```
sp_helpsort
```

Examples

Example 1

For Class 1 (single-byte) character sets, `sp_helpsort` displays the name of the server's default sort order, its character set, and a table of its primary sort values. On a 7-bit terminal, it appears as follows:

```
sp_helpsort
```

```
Sort Order Description
------------------------------------------------------------------
 Character Set = 1, iso_1
     ISO 8859-1 (Latin-1) - Western European 8-bit character set.
 Sort Order = 50, bin_iso_1
     Binary sort order for the ISO 8859/1 character set (iso_1).
Characters, in Order
------------------------------------------------------------------
   ! " # $ % & ' ( ) * + , - . / 0 1 2 3 4 5 6 7 8 9 : ; < = > ?
   @ A B C D E F G H I J K L M N O P Q R S T U V W X Y Z [ \ ] ^ _
   ` a b c d e f g h i j k l m n o p q r s t u v w x y z { | } ~
```

```
    ! “ # $ % & ‘ ( ) * + , - . / 0 1 2 3 4 5 6 7 8 9 : ; < = > ?
    @ A B C D E F G H I J K L M N O P Q R S T U V W X Y Z [ \ ] ^ _
    ` a b c d e f g h i j k l m n o p q r s t u v w x y z { | } ~
```

Example 2

On an 8-bit terminal, it appears as follows:

```
Sort Order Description
------------------------------------------------------------------
 Character Set = 1, iso_1
     ISO 8859-1 (Latin-1) - Western European 8-bit character set.
 Sort Order = 50, bin_iso_1
     Binary sort order for the ISO 8859/1 character set (iso_1).
Characters, in Order
------------------------------------------------------------------
   ! “ # $ % & ‘ ( ) * + , - . / 0 1 2 3 4 5 6 7 8 9 : ; < = > ?
   @ A B C D E F G H I J K L M N O P Q R S T U V W X Y Z [ \ ] ^ _
   ` a b c d e f g h i j k l m_n o p q r s t u v w x y z { | } ~
   ¡ ¢ £ ¤ ¥ | § ¨ © ª  ¬ - ® ¯ °  2 3 ´ µ ¶ · ¸ 1 º  1/4 1/2 3/4 ¿ À
   Á Â Ã Ä Å Æ Ç È É Ê Ë Ì Í Î Ï D Ñ Ò Ó Ô Õ Ö × Ø Ù Ú Û Ü Y P ß à
   á â ã ä å æ ç è é ê ë ì í î ï  ñ ò ó ô õ ö ÷ ø ù ú û ü y p ÿ
```

Example 3

For a Class 2 (multibyte) character set, the characters are not listed, but a description of the character set is included. For example:

```
Sort Order Description
------------------------------------------------------------------
Character Set = 140, euc_jis
    Japanese. Extended Unix Code mapping for JIS-X0201
    (hankaku katakana) and JIS-X0208 (double byte) roman,
     kana, and kanji.
    Class 2 character set
Sort Order = 50, bin_eucjis
    Binary sort order for Japanese using the EUC JIS
      character set as a basis.
```

Example 4

For case-insensitive character sets, the name and sort order ID of available case-insensitive sort orders is listed:

```
Name                       ID
-------------------------
nocase_eucgb              52
nocase_cp936              52
nocase_gb18030            52
nocase_eucjis             52
nocase_sjis               52
nocase_deckanji           52
```

Usage

Binary sort order is the default.

Permissions

Any user can execute `sp_helpsort`. Permission checks do not differ based on the granular permissions settings.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

1.158 sp_helptext

Displays the source text of a compiled object, as well as the text for user-defined functions, computed columns, or function-based index definitions.

Syntax

```
sp_helptext <objname>[, <grouping_num>][, <numlines>[, <printopts>]]]
```

Parameters

`<objname>`

is the name of the compiled object for which the source text is to be displayed. The compiled object must be in the current database.

`<grouping_num>`

is an integer identifying an individual procedure, when `<objname>` represents a group of procedures. This parameter tells `sp_helptext` to display the source text for a specified procedure in the group.

This parameter also specifies the start line number from which to generate the SQL text, when the `<printops>` argument is used.

> **i Note**
>
> Views, defaults, and other non-procedural objects are never grouped; use `<number>` only for groups of procedures.

<numlines>

specifies the numbers of lines for which to generate SQL text. If the argument <printopts> is also used with showsql, <numlines> specifies the number of lines of SQL text to display; if <printopts> is used with context, <numlines> is treated as the context block width surrounding the starting line number.

<printopts>

supports various comma-separated properties of the output format. One or more of these print options can be specified, in any order, as a comma-separated string:

- showsql – generates formatted SQL output for the compiled object. If showsql does not appear in the <printopts> list, this property is not invoked.
- linenumbers – produces line numbers for each line of SQL output.
- comments – produces the line numbers as a comment field (/*<nnn>*/), so that the generated SQL can still recreate the compiled object, without further edits, if necessary.
- context – produces a context block of output around a specified starting line number. If no, or null, <numlines >parameter is called, a default context block of five lines, generated before and after the line number of interest, is supplied.
- noparams – suppresses the automatically generated parameter information. Use this print option to produce only the relevant portion of SQL output for the compiled object.
- ddlgen – generates the SQL text as a DDL script, prefacing the output with a use <database> command and a drop <object> command. This allows you to reproduce almost exactly the SQL required to recreate most compiled objects, such as procedures, triggers, views, defaults, and rules.

The print options ddlgen and context are mutually exclusive specifiers. Used together, they raise an error. To get line numbers when you are displaying a context block of SQL text, use the context and linenumbers specifiers.

Examples

Example 1

Displays the source text of pub_idrule. Since this rule is in the pubs2 database, execute this command from pubs2:

```
sp_helptext pub_idrule
```

```
# Lines of Text
---------------
1
text
------------------------------------
create rule pub_idrule
as @pub_id in ("1389", "0736", "0877",
    "1622", "1756")
    or @pub_id like "99[0-9][0-9]"
```

Example 2

Displays the source text of `sp_helptext`. Since system procedures are stored in `sybsystemprocs`, execute this command from `sybsystemprocs`:

```
sp_helptext sp_helptext
```

Example 3

Displays the source text of the `myproc` group behavior where you specify no `<number>` argument. The number of the procedure displays beside the text:

```
sp_helptext myproc
```

```
# Lines of Text
---------------
2
number
text
---------------
1
create procedure myproc; as select 1
2
create procedure myproc;2 as select 2
(2 rows affected)
```

Example 4

Displays the source text of `myproc`, specifying a procedure in the `<myproc>` group but displaying no grouping number.

```
sp_helptext myproc, 2
```

```
# Lines of Text
---------------
1
text
----------------
create procedure myproc;2 as select 2
```

Example 5

Generates text for `sp_help`:

```
sp_helptext sp_help,NULL,NULLM 'showsql'
```

Example 6

To generate text for `sp_help`, producing line numbers:

```
sp_helptext sp_help, NULL,NULL,'showsql,linenumbers'
```

Example 7

To generate the text for `sp_help`, in a context block of seven lines starting at line 25, with output generated in a comment block:

```
sp_helptext sp_help,25,7,'showsql,comments,context'
```

Example 8

Generates the text for `sp_droptabledef`, producing the output as a stand-alone DDL script that you can use to recreate the procedure:

```
sp_helptext sp_droptabledef,NULL,NULL,'showsql,ddlgen'
-------------
use sybsystemprocs
```

```
-------------
IF EXISTS (SELECT 1 FROM sysobjects
WHERE name = 'sp_droptabledef'
AND type = 'P'
DROP PROCEDURE sp_droptabledef
--------------
/*Sccsud="%Z%generic/sproc/src/%M%%I%%G%"*/
/*
**Omni only
*/
create procedure sp_droptabledef
  @tablename varchar(92) /*tablename*/
as begin
  declare @status int
  exec @status = sp_dropobjectdef @tablename
  return(@status)
end
----------
(return status = 0)
```

Example 9

Uses `sp_helptext` on a view created with delimited identifiers. You need not use `set quoted_identifier on` to extract the SQL defining the view. You do, however, need it to create objects using delimited identifiers:

```
set quoted_identifier ON
---------
create table "t one"
        (c1 int,
        "c two" varchar(10),
        "c three int)
---------
create table "t two"
        ("t2 one" int,
        "t2 two" varchar(10),
        t2_three int)
------------
create view "v one" as
    select * from "t one"
    UNION
    select "t2 one","t2 two",t2_three
    from "t two"
-----------------
```

Example 10

The SAP ASE server displays the text for predicates. `sp_helptext` can be supplied the predicate’s user-defined name, if there is one, or its internal name. For example:

```
sp_helptext pred1
```

```
# Lines of Text
 ---------------
```

```
           1
text ----------------------------------------------------
 grant select on tab1 where col1 = 5 as pred1 to robert
```

Usage

There are additional considerations when using `sp_helptext`:

- `sp_helptext` truncates trailing spaces when displaying the source text from `syscomments`
- `sp_helptext` prints out the number of rows in `syscomments` (255 characters long each) that are occupied by the compiled object, followed by the source text of the compiled object.
- The source-text is displayed using `char(255)`, so trailing spaces are present in the displayed text. The text stored in `syscomments` may not include these trailing spaces. `syscomments` stores the text "as supplied," so another application or tool may not have included these trailing spaces. Because of this, you should not use `sp_helptext` to get a copy of the text stored. Instead, use other tools like `defncopy`.
- `sp_helptext` looks for the source text in the `syscomments` table in the current database.
- You can encrypt the source text with `sp_hidetext`.
- When `sp_helptext` operates on a group of procedures, it prints the number column from `syscomments`in addition to the source text.
- A system security officer can prevent the source text of compiled objects from being displayed to most users who execute `sp_helptext`. To restrict `select` permission on the `text` column of the `syscomments` table to the object owner or a system administrator, use `sp_configure` to set the `select on syscomments.text column` parameter to `0`. This restriction is required to run SAP ASE in the evaluated configuration. See the *System Administration Guide* for more information about the evaluated configuration.
- Even when you use `sp_helptext` in `ddlgen` mode, the `showsql` print option is required.
- The object with text that you want to retrieve must reside in the database where the procedure is executed.
- If the text is either hidden or not in `syscomments`, an error message is raised. If, however, you request a context block output, and the text is missing or hidden, a message reporting the missing text is printed, but no error is raised.
- Text generated using the `ddlgen` print option may still fail to create a compiled object correctly if it contains references to other objects, such as temporary tables, that do not already exist when the generated script is executed.
- If the compiled object contains a `select *` statement, it usually reflects the entire column list of the table this statement references.
- You can generate SQL text for compiled objects created with quoted identifiers, but if the compiled object contains a `select *` statement, the expanded column list appears with bracketed identifiers after the SAP ASE server writes the text to `syscomments`. For example:

  ```
  [this column], [column name with space]
  ```

  It is not necessary to `set quoted_identifier ON` when generating text for compiled objects that are themselves, or use, delimited identifiers.

Permissions

The permission checks for `sp_helptext` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be the object owner, the database owner, or a user with `own database` privilege.
Disabled	With granular permissions disabled, you must be the object owner, database owner, or a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_checksource [page 150]
sp_configure [page 203]
sp_hidetext [page 496]
System Procedure Tables [page 14]

1.159 sp_helpthread

Displays the current thread pool configuration.

Syntax

```
sp_helpthread [<pool_name>]
```

Parameters

`<pool_name>`

name of the pool to show. If <pool_name> is null, sp_helpthread displays configuration information about all pools.

Examples

Example 1

Displays information about all pools:

```
sp_helpthread
```

```
name              type    size    idle_timeout
         description
-----------------  ------  ----    ------------
         --------------------------------------------
pubs_pool          Engine     2             100
                                                 NULL
syb_blocking_pool     RTC     4               0
         A pool dedicated to executing blocking calls
syb_default_pool   Engine     1             100
         The default pool to run query sessions
syb_system_pool       RTC     4               0
          The I/O and system task pool
```

Example 2

Displays information about the pubs_pool:

```
sp_helpthread pubs_pool
```

```
 name       type  size  idle_timeout  description
---------  ------  ----  ------------  -----------
pubs_pool  Engine     2           100         NULL
thread_id  osthread_id  state  affinity  instance_id
---------  -----------  -----  --------  -----------
       12   1248065856   IDLE      NULL           0
       13   1237576000   IDLE      NULL           0
```

Usage

sp_helpthread gathers information for its reports from the monThread monitoring table.

sp_helpthread produces output only in threaded mode.

Permissions

Any user can issue sp_helpthread. Permission checks do not differ based on the granular permissions settings.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide > Auditing*.

1.160 sp_helpthreshold

Reports the segment, free-space value, status, and stored procedure associated with all thresholds in the current database or all thresholds for a particular segment.

Syntax

```
sp_helpthreshold [<segname>]
```

Parameters

`<segname>`

is the name of a segment in the current database.

Examples

Example 1

Shows all thresholds on the log segment:

```
sp_helpthreshold logsegment
```

Example 2

Shows all thresholds on all segments in the current database:

```
sp_helpthreshold
```

Example 3

Shows all thresholds on the default segment. Note the use of quotes around the reserved word “default”:

```
sp_helpthreshold "default"
```

Usage

sp_helpthreshold displays threshold information for all segments in the current database. If you provide the name of a segment, sp_helpthreshold lists all thresholds in that segment.

The status column is 1 for the last-chance threshold and 0 for all other thresholds. Databases that do not store their transaction logs on a separate segment have no last-chance threshold.

Permissions

Any user can execute sp_helpthreshold. Permission checks do not differ based on the granular permissions settings.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_addthreshold [page 62]
sp_dropthreshold [page 323]
sp_helpsegment [page 478]
sp_modifythreshold [page 597]
sp_thresholdaction [page 808]

1.161 sp_helptrigger

sp_helptrigger lists all triggers created on the table specified by <tablename>; which command (insert, update, or delete) fires the trigger, and the trigger's order number.

Syntax

```
sp_helptrigger <tablename>
```

Parameters

<tablename>

is the name of the table.

Permissions

Any user can execute `sp_helptrigger`.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

1.162 sp_helpuser

Reports information about a particular user, group, or alias, or about all users, in the current database. Also identifies objects and user-defined datatypes owned by a user.

Syntax

```
sp_helpuser [<name_in_db> [, <display_object>]]
```

Parameters

<name_in_db>

is `null` or name of a valid user in the current database.

<display_object>

lists all objects and user-defined datatypes owned by `<name_in_db>` in the current database. If `<name_in_db>` is `null`, the objects and user-defined datatypes owned by the caller are listed. The output for objects includes `object_name`, `object_type`, and `create_date`, sorted by `object_type` and `object_name`. The output for user-defined datatype includes user type name.

Examples

Example 1

Displays information about all users in the current database:

```
sp_helpuser
```

```
Users_name  ID_in_db    Group_name  Login_name
----------  --------    ----------  ----------
ann         4           hackers     ann
dbo         1           public      sa
guest       2           public      NULL
judy        3           hackers     judy
```

Example 2

Displays information about the database owner (user name "dbo"):

```
sp_helpuser dbo
```

```
Users_name     ID_in_db    Group_name  Login_name
----------     --------    ----------  ----------
dbo            1           public      sa
Users aliased to user.
Login_name
-------------------------------
andy
christa
howard
linda
```

Example 3

Displays objects owned by the user bill:

```
sp_helpuser bill, display_object
```

```
Object_name         Object_type         Create_date
-----------         ------------        ---------
proc_update_titles  stored procedures   Apr 28 2007 04:47PM
author              user table          Apr 27 2007 04:47PM
publisher           user table          Apr 27 2007 05:47PM
titles              user table          Apr 27 2007 06:47PM
vw_author_in_ca     view                Apr 27 2007 05:47PM
```

Example 4

Displays objects owned by the database owner (DBO):

```
sp_helpuser 'dbo', display_object
```

```
Object_name         Object_type         Create_date
-----------         ------------        --------------
enter_key           encryption key      Sep 7 2007 03:37PM
sysalternatives     system table        Jul 17 2007 09:25AM
sysattributes       system table        Jul 17 2007 09:25AM
syscolumns          system table        Jul 17 2007 09:25AM
.....               ......              ...........
sysquerymetrics     view                Jul 17 2007 09:25AM
```

Usage

sp_helpuser reports information about all users of the current database. If you specify a <name_in_db>, sp_helpuser reports information only on the specified user.

If the specified user is not listed in the current database's sysusers table, sp_helpuser checks to see if the user is aliased to another user or is a group name.

Permissions

Any user can execute sp_helpuser. Permission checks do not differ based on the granular permissions settings.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_adduser [page 73]
sp_dropuser [page 326]
sp_helpgroup [page 452]

1.163 sp_hidetext

Hides the source text for the specified compiled object, as well as the text of computed columns, predicates, and function-based index keys. sp_hidetext also encrypts the text for user-defined functions.

Syntax

```
sp_hidetext [<objname>[, <tabname>[, <username>]]]
```

Parameters

`<objname>`

specifies the compiled object for which to hide the source text.

`<tabname>`

specifies the name of the table or view for which to hide the source text.

`<username>`

specifies the name of the user who owns the compiled object for which to hide the source text.

Examples

Example 1

Hides the source text of all compiled objects in the current database:

```
sp_hidetext
```

Example 2

Hides the source text of the user-defined stored procedure, `sp_sort_table`, that is owned by Mary:

```
sp_hidetext @objname = "sp_sort_table",
    @username = "Mary"
```

Example 3

Hides the source text of the stored procedure `pr_phone_list`:

```
sp_hidetext "pr_phone_list"
```

Example 4

Hides the source text of all check constraints, defaults, and triggers defined on the table `my_tab`:

```
sp_hidetext @tabname = "my_tab"
```

Example 5

Hides the source text of the view `my_vu` and all check constraints, defaults, and triggers defined on the table `my_tab`:

```
sp_hidetext "my_vu", "my_tab"
```

Example 6

Hides the source text of all compiled objects that are owned by Tom:

```
sp_hidetext @username = "Tom"
```

Usage

There are additional considerations when using `sp_hidetext`:

- `sp_hidetext` hides the source text for the specified compiled object.

> ⚠ Caution
>
> Before executing `sp_hidetext`, make sure you have a backup of the source text. The results of executing `sp_hidetext` are not reversible.

- If you do not provide any parameters, `sp_hidetext` hides the source text for all compiled objects in the current database.
- `sp_helprotect .. expand_predicate` prints a null predicate if text has been hidden.
- Hidden `syscomments.text` is not available for use by `sp_helprotect`.
- The SAP ASE server allows the predicate owner or the SSO to hide the text of a predicate. Hidden `syscomments.text` is not available for use by `sp_helprotect`. Users must be warned that the `expand_predicate` option of `sp_helprotect` prints a null predicate if text has been hidden.
- If you use `sp_hidetext` followed by a cross-platform `dump` and `load`, you must manually drop and re-create all hidden objects.

See also:

- `dump database`, `dump transaction`, `load database`, `load transaction` in *Reference Manual: Commands*
- *Transact-SQL Users Guide* for more information about hiding source text.

Permissions

The permission checks for `sp_hidetext` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `manage database` privilege. Any user can execute `sp_hidetext` to hide the source text of their own compiled objects.
Disabled	With granular permissions disabled, you must be the datatype owner or a user with sa_role. Any user can execute `sp_hidetext` to hide the source text of their own compiled objects.

Auditing

You can enable `security` auditing option to audit this procedure. Values in `event` and `extrainfo` columns from the `sysaudits` table are:

Information	Value
Audit option	`security`
Event	145
Command or access audited	`sp_hidetext`
Information in **extrainfo**	- **Roles** – Current active roles - **Keywords or options** – NULL - **Previous value** – NULL - **Current value** – NULL - **Other information** – Total number of objects for which `sp_hidetext` was executed, and object ids from syscomments table. - **Proxy information** – Original login name, if `set proxy` in effect

This is an example of `extrainfo` column:

```
sa_role sso_role oper_role sybase_ts_role mon_role; ; ; ; Total 1
     object(82096302); ; sa/ase;
```

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_checksource [page 150]

1.164 sp_import_qpgroup

Imports abstract plans from a user table into an abstract plan group.

Syntax

```
sp_import_qpgroup <tab>, <usr>, <group>
```

Parameters

<tab>

is the name of a table from which to copy the plans. You can specify a database name, but not an owner name, in the form <dbname>..<tablename>. The total length can be up to 255 characters long.

<usr>

is the name of the user whose ID should be assigned to the abstract plans when they are imported.

<group>

is the name of the abstract plan group that contains the plans to be imported.

Examples

Example 1

Copies plans from the table moveplans to the new_plans group, giving them the user ID for the database owner:

```
sp_import_qpgroup moveplans, dbo, new_plans
```

Usage

There are additional considerations when using sp_import_qpgroup:

- sp_import_qpgroup copies plans from a user table to an abstract plan group in sysqueryplans. With sp_export_qpgroup, it can be used to copy abstract plan groups between servers and databases, or to copy plans belonging to one user and assign them the ID of another user.
- sp_import_qpgroup creates the abstract plan group if it does not exist when the procedure is executed.
- If an abstract plan group exists when sp_import_qpgroup is executed, it cannot contain any plans for the specified user. sp_import_qpgroup does not check the query text to determine whether queries already exist in the group. If you need to import plans for a user into a group where some plans for the user already exist:
  - Use sp_import_qpgroup to import the plans into a new plan group.
  - Use sp_copy_all_qplans to copy the plans from the newly-created group to the destination group. sp_copy_all_qplans does check queries to be sure that no duplicate plans are created.
  - If you no longer need the group you created for the import, drop the plans in the group with sp_copy_all_qplans, then drop the group with sp_drop_qpgroup.
- To create an empty table in order to bulk copy abstract plans, use:

```
select * into load_table
from sysqueryplans
where 1 = 2
```

See also `create plan` in *Reference Manual: Commands*.

Permissions

The permission checks for `sp_import_qpgroup` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `manage abstract plans` privilege.
Disabled	With granular permissions disabled, you must be the datatype owner or a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_copy_all_qplans [page 212]
sp_copy_qplan [page 214]
sp_drop_all_qplans [page 282]
sp_drop_qpgroup [page 284]
sp_export_qpgroup [page 364]
sp_help_qpgroup [page 410]

1.165 sp_imrs

Manages and monitors an in-memory row storage cache, and synthesizes component-specific reports from IMRS-specific monitoring tables and other internal data sources.

Syntax

```
sp_imrs <action> [, <object> [, <filter> [, <secondary_filter> ] ] ]
```

Parameters

> **i Note**
>
> Most <action> parameters displayed by help are mostly for internal use (for troubleshooting the IMRS system), and are used by technical support. Only the help, show, and pack_rows <action> parameters are available for users. Avoid the using other <action> parameters unless instructed by SAP product support to do so.

<action>

specifies one of the following actions performed by sp_imrs:

- help – displays usage information with examples.
- show – displays in-memory row storage usage metrics such as row counts, memory usage, and so on.
- clear – removes SPIDs from the queue that are preventing other processes from running.
- pack_rows – forces a pack of the rows from the IMRS, freeing the specified percentage of pages or number or allocation units from sysimrslogs. The syntax to pack rows from the IMRS is:

  ```
  [ 'aus', '<number_of_allocation_units_to_pack>' | 'pct',
  <'percentage_of_allocation_units_to_pack>' ]
  ```

  The pack_rows subcommand includes the following:
  - aus – indicates you are freeing this number of allocation units from sysimrslogs.
  - <number_of_allocation_units> – is the number of allocation units you are packing.
  - pct – indicates you are freeing this percentage of the rows from the sysimrslogs.
  - <percentage_of_allocation_unit_to_pack> – the percentage of IMRS rows you are packing.

<object>

specifies one of the following objects:

- all metrics – displays output of all sp_imrs 'show' subcommands.
- blocking_spid – displays a list of SPIDs that are blocking other processes.
- cacheinfo – displays a summary of IMRS cache usage metrics.
- effectiveness – displays the effectiveness of IMRS data for insert, select, update, and delete operations for all row types. For example, the UpdOfMig column indicates how many times a migrated row in IMRS was updated in IMRS.
- gcinfo – displays general information about garbage collection threads, such as status, last wakeup, and the number of transactions pending that need to be attended to by the garbage collector.
- gcstats – displays statistical information about garbage collector threads, such as total memory freed by the garbage collector, and the number of versions freed by the garbage collector.

- ilm_metrics – displays output of all ILM-related subcommands, including metrics for ilmstats, ilmpcts, and effectiveness.
- ilmstats – displays the row count-related statistics used by ILM.
- ilmpcts – displays counts and percentages of DML events affected by ILM.
- memusage – displays memory usage metrics for different types of rows, and for metadata in the IMRS.
- metrics – displays memory and row count-related metrics.
- pack_efficiency – displays metrics indicating the efficiency of pack operation on various tables, and the overall efficiency of a cache.
- pack_memstats – displays metrics on pack thread and subsystem memory usage.
- pack_metrics – displays details for all pack-related subcommands.
- pack_rowstats – displays metrics related to pack subsystem row-count. For example, the total percentage of inserted rows that are packed.
- rowcounts – displays counts for rows in the IMRS.
- sysimrslogs – displays details about sysimrslogs (for example, the number of pages, first page, last page, and so on).
- tables – displays a summary of row counts for tables with IMRS-resident data, and the percentage of rows in the IMRS for each table.
- versionstats – displays statistical information about the data row versions, such as the number of versions, size of the older versions, and the size of the latest versions.

<filter>

specifies a filter on the cache or database name.

<secondary_filter>

specifies a filter on the table name, partition name, or SPID.

Examples

Example 1

Describes the full syntax and usage for sp_imrs.

```
sp_imrs <action> [,<object> [, <filter> [, <secondary_filter> ] ] ]

  where:
   <action> is one of:
   – 'help'
   – 'show'
   – 'clear'
   – 'pack_rows'
   <object> is one of:
   – 'all metrics'
   – 'aus'
   – 'blocking_spid'
   – 'cacheinfo'
   – 'effectiveness'
   – 'ilm_metrics'
   – 'ilmstats'
   – 'ilmpcts'
   – 'versionstats'
   - 'gcinfo'
   - 'gcstats'
   - 'memusage'
   - 'metrics'
   - 'pack_efficiency'
   - 'pack_memstats'
   - 'pack_metrics'
   - 'pack_rowstats'
   - 'pct'
   - 'rowcounts'
   - 'sysimrslogs'
   - 'tables'
   <filter> is the cache name or database name.
   <secondary_filter> is the name of the table, partition, or the SP ID.

Examples:
  -- Show list of IMRS-enabled tables in a database
  --
  sp_imrs show, tables, perf_test_db
  -- Show top-level cache information for all IMRS caches:
  --
  sp_imrs show, cacheinfo
  -- Show cache information or memory usage for specific IMRS cache:
  --
  sp_imrs show, cacheinfo, imrs_cache
  sp_imrs show, memusage, 'imrs_cache%'
  -- Show row counts:
  --
  sp_imrs show, 'rowcounts', 'my_imrs'
  -- Show version stats:
  --
  sp_imrs show, 'versionstats'
  sp_imrs show, 'versionstats', 'my_imrs'
  sp_imrs show, 'versionstats', 'my_imrs', '<tablename>'
  -- Show GC statistics or information:
  --
  sp_imrs show, gcstats
  sp_imrs show, gcinfo
  sp_imrs show, gcstats, 'imrs_cache%'
  sp_imrs show, gcinfo, 'imrs_cache%'
  -- Show top-level information for pack subsystem:
  --
  sp_imrs show, pack_metrics
  -- Show information about SPIDS blocking GC threads:
  --
  sp_imrs show, blocking_spid
  sp_imrs show, blocking_spid, 'imrsdb'
  -- Clear a SPID off the system which may be blocking GC threads:
  --
  sp_imrs clear, blocking_spid, 'imrsdb'
  sp_imrs clear, blocking_spid, 'imrsdb', '<spid>'

  NOTE: This command requires an additional 'sa_role' to execute
  -- Show sysimrslogs details for an IMRS-enabled database
  -- Execute this command from an IMRS-enabled database:
  --
  sp_imrs show, sysimrslogs
```

Example 2

displays information about the IMRS-enabled tables in the `tpcc` database:

```
sp_imrs 'show', 'tables', 'tpcc'
ID        OwnerName Name       DRC MVCC NumRows   NumRowsIMRS Pct
--------- --------- ---------- --- ---- --------- ----------- ------
656002337 dbo       customer     1    0   7200000     1745145  24.23
624002223 dbo       district     1    0      2400        2400 100.00
688002451 dbo       history      1    0  13444380     6020692  44.78
```

```
816002907 dbo       item         1    0    100000       98992  98.99
720002565 dbo       new_order    1    0   2742647     2682071  97.79
784002793 dbo       order_line   1    0 136237347    69654012  51.12
752002679 dbo       orders       1    0  13644204     7400261  54.23
848003021 dbo       stock        1    0  24000000    10596743  44.15
592002109 dbo       warehouse    1    0       240         240 100.00
```

The database name argument is optional. When not provided, the current database is examined for IMRS-enabled tables.

Example 3

displays information about the `imrs_cache`:

```
sp_imrs 'show', 'cacheinfo', 'imrs_cache'
 CacheName  DBName TotalSizeMB UsedSizeMB FreeSizeMB PctUtil UsedSizeHWM
PctUtilHWM NumTables NumRows  NumRowsHWM NumVersions NumVersionsHWM
 ---------- ------ ----------- ---------- ---------- ------- -----------
---------- --------- -------- ---------- ----------- --------------
 imrs_cache tpcc     153600.21   42884.98  110715.23   27.91    45516.02
29.63         9 98201102   98201102           0         586282
```

Example 4

displays information lifecycle management (ILM) metrics for the `imrs_cache`:

```
> sp_imrs 'show', 'effectiveness', 'imrs_cache'
ILM Effectiveness Metrics:
<Op>Of<RowType>: Columns below indicate effectiveness of IMRS for <Op>
affecting <RowType>
Example: Column 'UpdOfMig' indicates effectiveness of IMRS for updates of
migrated rows.
 CacheName  DBName OwnerName ObjectName Score     SelOfIns UpdOfIns DelOfIns
SelOfMig UpdOfMig DelOfMig SelOfCached UpdOfCached DelOfCached
 ---------- ------ --------- ---------- --------- -------- -------- --------
-------- -------- -------- ----------- ----------- -----------
 imrs_cache tpcc   dbo       warehouse  105752.32     NULL     NULL     NULL
26881.76 26049.93     0.00    26840.13    25980.50        0.00
 imrs_cache tpcc   dbo       district    11030.40     NULL     NULL
NULL   241.89  5252.02     0.00      243.01     5293.48        0.00
 imrs_cache tpcc   dbo       item          649.72     NULL     NULL
NULL     NULL     NULL     NULL      649.72        0.00        0.00
 imrs_cache tpcc   [Any]     [Totals]       49.42     0.08     0.47
0.04     0.63     4.61     0.00       39.81        3.78        0.00
 imrs_cache tpcc   dbo       customer       15.25     NULL     NULL
NULL     1.53     3.78     0.00        3.93        6.01        0.00
 imrs_cache tpcc   dbo       stock          10.91     NULL     NULL
NULL     0.57     6.02     0.00        1.00        3.32        0.00
 imrs_cache tpcc   dbo       orders          2.22     0.22     0.55
0.00     0.07     1.00     0.00        0.26        0.12        0.00
 imrs_cache tpcc   dbo       order_line      2.16     0.09     0.55
0.00     0.03     1.00     0.00        0.23        0.26        0.00
 imrs_cache tpcc   dbo       new_order       0.55     0.00     0.00
0.55     NULL     NULL     NULL        NULL        NULL        NULL
 imrs_cache tpcc   dbo       history         0.00     0.00     0.00
0.00     NULL     NULL     NULL        NULL        NULL        NULL
```

The `Score` column represents the amount of benefit to this table if you include it in the IMRS, and how suitable this table is for the IMRS. Typically, higher values for `Score` indicates columns that are more suitable for the IMRS. In this example, the `warehouse` table is suited to be IMRS-enabled, and the `history` table does not use DMLs on these tables.

Example 5

displays ILM metrics for `imrs_cache`:

```
sp_imrs 'show', 'ilm_metrics', 'imrs_cache'
Row count statistics affected by ILM strategies:
 DBName OwnerName ObjectName NIns     NUpd      NDel    NMig     NCached
NSelOfIns NUpdToIns NDelOfIns NSelOfMig NUpdToMig NDelOfMig NSelOfCached
NUpdToCached NDelOfCached
 ------ --------- ---------- -------- --------- ------- -------- -------
--------- --------- --------- --------- --------- --------- ------------
------------ ------------
 tpcc   [Any]     [Totals]   80557167 137892857 3471566 20152394 1741519
7243477  38211291   3471566  12802110  93082218         0     69344399
6599348            0
 tpcc   dbo       order_line 62105064  42420921       0  7528479  579293
5855574  34739721         0    291032   7528509         0       138074
152691            0
 tpcc   dbo       stock             0  64414702       0 10672907
19821         0         0         0   6155596  64348781         0
19910        65921            0
 tpcc   dbo       district          0  12693173       0     2313
103         0         0         0    559508  12147944         0
25031       545229            0
 tpcc   dbo       orders      6215689   4287394       0   752326  494294
1387903   3471570         0     56321    752328         0       133074
63496            0
 tpcc   dbo       new_order   6215685         0 3471566        0
0         0         0   3471566         0         0         0
0            0            0
 tpcc   dbo       customer          0   7831278       0  1196224
548921         0         0         0   1841797   4527415         0
2161115      3303863            0
 tpcc   dbo       warehouse         0   6245389       0      145
95         0         0         0   3897856   3777241         0
2549813      2468148            0
 tpcc   dbo       history     6020729         0       0        0
0         0         0         0         0         0         0
0            0            0
 tpcc   dbo       item              0         0       0        0
98992         0         0         0         0         0         0
64317382            0            0
(1 row affected)

Total number of rows: 10

Counts and percentages of DML events affected by ILM:
 CacheName  DBName OwnerName ObjectName NIns     NUpd      NDel    InsPct
UpdPct DelPct NMig     NCached MigPct CachedPct
 ---------- ------ --------- ---------- -------- --------- ------- ------
------ ------ -------- ------- ------ ---------
 imrs_cache tpcc   [Any]     [Totals]   80557167 137892857 3471566  36.29
62.13   1.56 20152394 1741519  92.04      7.95
 imrs_cache tpcc   dbo       order_line 62105064  42420921       0  59.41
40.58   0.00  7528479  579293  92.85      7.14
 imrs_cache tpcc   dbo       stock             0  64414702       0   0.00
100.00   0.00 10672907   19821  99.81      0.18
 imrs_cache tpcc   dbo       district          0  12693173       0   0.00
100.00   0.00     2313     103  95.73      4.26
 imrs_cache tpcc   dbo       orders      6215689   4287394       0  59.17
40.82   0.00   752326  494294  60.34     39.65
 imrs_cache tpcc   dbo       new_order   6215685         0 3471566  64.16
0.00  35.83         0       0   NULL      NULL
 imrs_cache tpcc   dbo       customer          0   7831278       0   0.00
100.00   0.00  1196224  548921  68.54     31.45
 imrs_cache tpcc   dbo       warehouse         0   6245389       0   0.00
100.00   0.00      145      95  60.41     39.58
```

```
 imrs_cache tpcc   dbo       history     6020729         0       0 100.00
0.00   0.00        0       0   NULL      NULL
 imrs_cache tpcc   dbo       item              0         0       0   NULL
NULL   NULL        0   98992   0.00    100.00
(1 row affected)

Total number of rows: 10

ILM Effectiveness Metrics:
<Op>Of<RowType>: Columns below indicate effectiveness of IMRS for <Op>
affecting <RowType>
Example: Column 'UpdOfMig' indicates effectiveness of IMRS for updates of
migrated rows.
 CacheName  DBName OwnerName ObjectName Score     SelOfIns UpdOfIns DelOfIns
SelOfMig UpdOfMig DelOfMig SelOfCached UpdOfCached DelOfCached
 ---------- ------ --------- ---------- --------- -------- -------- --------
-------- -------- -------- ----------- ----------- -----------
 imrs_cache tpcc   dbo       warehouse  105752.32   NULL     NULL     NULL
26881.76 26049.93     0.00    26840.13    25980.50        0.00
 imrs_cache tpcc   dbo       district    11030.40    NULL     NULL
NULL   241.89  5252.02     0.00      243.01     5293.48        0.00
 imrs_cache tpcc   dbo       item          649.72    NULL     NULL
NULL     NULL     NULL     NULL      649.72        0.00        0.00
 imrs_cache tpcc   [Any]     [Totals]       49.42    0.08     0.47
0.04     0.63     4.61     0.00       39.81        3.78        0.00
 imrs_cache tpcc   dbo       customer       15.25    NULL     NULL
NULL     1.53     3.78     0.00        3.93        6.01        0.00
 imrs_cache tpcc   dbo       stock          10.91    NULL     NULL
NULL     0.57     6.02     0.00        1.00        3.32        0.00
 imrs_cache tpcc   dbo       orders          2.22    0.22     0.55
0.00     0.07     1.00     0.00        0.26        0.12        0.00
 imrs_cache tpcc   dbo       order_line      2.16    0.09     0.55
0.00     0.03     1.00     0.00        0.23        0.26        0.00
 imrs_cache tpcc   dbo       new_order       0.55    0.00     0.00
0.55     NULL     NULL     NULL        NULL        NULL        NULL
 imrs_cache tpcc   dbo       history         0.00    0.00     0.00
0.00     NULL     NULL     NULL        NULL        NULL        NULL
(1 row affected)

Total number of rows: 10
```

Example 6

displays row count statistics for the `imrs_cache`:

```
sp_imrs 'show', 'ilmstats', 'imrs_cache'
Row count statistics affected by ILM strategies:
 DBName OwnerName ObjectName NIns     NUpd      NDel    NMig     NCached
NSelOfIns NUpdToIns NDelOfIns NSelOfMig NUpdToMig NDelOfMig NSelOfCached
NUpdToCached NDelOfCached
 ------ --------- ---------- -------- --------- ------- -------- -------
--------- --------- --------- --------- --------- --------- ------------
------------ ------------
 tpcc   [Any]     [Totals]   80557167 137892857 3471566 20152394 1741519
7243477  38211291   3471566  12802110  93082218         0     69344399
6599348            0
 tpcc   dbo       order_line 62105064  42420921       0  7528479  579293
5855574  34739721         0    291032   7528509         0       138074
152691            0
 tpcc   dbo       stock             0  64414702       0 10672907
19821         0         0         0   6155596  64348781         0
19910        65921            0
 tpcc   dbo       district          0  12693173       0     2313
103         0         0         0    559508  12147944         0
25031       545229            0
 tpcc   dbo       orders      6215689   4287394       0   752326  494294
1387903   3471570         0     56321    752328         0       133074
63496            0
```

```
 tpcc   dbo       new_order   6215685         0 3471566        0
0         0         0   3471566         0         0         0
0            0            0
 tpcc   dbo       customer          0   7831278       0  1196224
548921         0         0         0   1841797   4527415         0
2161115      3303863            0
 tpcc   dbo       warehouse         0   6245389       0      145
95         0         0         0   3897856   3777241         0
2549813      2468148            0
 tpcc   dbo       history     6020729         0       0        0
0         0         0         0         0         0         0
0            0            0
 tpcc   dbo       item              0         0       0        0
98992         0         0         0         0         0         0
64317382            0            0
(10 rows affected)

Total number of rows: 10
```

Example 7

displays the information about the DML events affected by ILM:

```
sp_imrs 'show', 'ilmpcts', 'imrs_cache'
Counts and percentages of DML events affected by ILM:
 CacheName  DBName OwnerName ObjectName NIns     NUpd      NDel    InsPct
UpdPct DelPct NMig     NCached MigPct CachedPct
 ---------- ------ --------- ---------- -------- --------- ------- ------
------ ------ -------- ------- ------ ---------
 imrs_cache tpcc   [Any]     [Totals]   80557167 137892857 3471566  36.29
62.13   1.56 20152394 1741519  92.04      7.95
 imrs_cache tpcc   dbo       order_line 62105064  42420921       0  59.41
40.58   0.00  7528479  579293  92.85      7.14
 imrs_cache tpcc   dbo       stock             0  64414702       0   0.00
100.00   0.00 10672907   19821  99.81      0.18
 imrs_cache tpcc   dbo       district          0  12693173       0   0.00
100.00   0.00     2313     103  95.73      4.26
 imrs_cache tpcc   dbo       orders      6215689   4287394       0  59.17
40.82   0.00   752326  494294  60.34     39.65
 imrs_cache tpcc   dbo       new_order   6215685         0 3471566  64.16
0.00  35.83        0       0   NULL      NULL
 imrs_cache tpcc   dbo       customer          0   7831278       0   0.00
100.00   0.00  1196224  548921  68.54     31.45
 imrs_cache tpcc   dbo       warehouse         0   6245389       0   0.00
100.00   0.00      145      95  60.41     39.58
 imrs_cache tpcc   dbo       history     6020729         0       0 100.00
0.00   0.00        0       0   NULL      NULL
 imrs_cache tpcc   dbo       item              0         0       0   NULL
NULL   NULL        0   98992   0.00    100.00
(10 rows affected)

Total number of rows: 10
```

Example 8

displays the metrics for the `imrs_cache`:

```
sp_imrs 'show', 'metrics', 'imrs_cache'
**** Execute: sp_imrs show, tables, tpcc ****
 ID        OwnerName Name       DRC MVCC NumRows   NumRowsIMRS Pct
 --------- --------- ---------- --- ---- --------- ----------- ------
 656002337 dbo       customer     1    0   7200000     1745145  24.23
 624002223 dbo       district     1    0      2400        2400 100.00
 688002451 dbo       history      1    0  13444380     6020692  44.78
 816002907 dbo       item         1    0    100000       98992  98.99
 720002565 dbo       new_order    1    0   2742647     2682071  97.79
 784002793 dbo       order_line   1    0 136237347    69654012  51.12
 752002679 dbo       orders       1    0  13644204     7400261  54.23
 848003021 dbo       stock        1    0  24000000    10596743  44.15
 592002109 dbo       warehouse    1    0       240         240 100.00
(1 row affected)
**** Execute: sp_imrs show, cacheinfo, imrs_cache ****
 CacheName  DBName TotalSizeMB UsedSizeMB FreeSizeMB PctUtil UsedSizeHWM
PctUtilHWM NumTables NumRows  NumRowsHWM NumVersions NumVersionsHWM
 ---------- ------ ----------- ---------- ---------- ------- -----------
---------- --------- -------- ---------- ----------- --------------
 imrs_cache tpcc     153600.21   42884.98  110715.23   27.91    45516.02
29.63         9 98201102   98201102           0         586282
(1 row affected)
**** Execute: sp_imrs show, rowcounts, imrs_cache ****
 DBName OwnerName ObjectName NRows    NRowsHWM NVersions NVersHWM NInsRows
NMigRows NCachedRows NInsVers NMigVers NRowsPendGC
 ------ --------- ---------- -------- -------- --------- -------- --------
-------- ----------- -------- -------- -----------
 tpcc   [Any]     [Totals]   98201102 98202326         0   715406 76403190
19848638      974637        0        0           0
 tpcc   dbo       order_line 69654448 69654471         0   214648 61546676
7681170      426602        0        0           0
 tpcc   dbo       stock      10596743 10596745         0   322917        0
10586259       10484        0        0           0
 tpcc   dbo       orders      7400261  7400262         0    21409  6153641
815822      430798        0        0           0
 tpcc   dbo       history     6020729  6020729         0        0
6020729        0           0        0         0           0
 tpcc   dbo       new_order   2682144  2683342         0    15081
2682144        0           0        0         0           0
 tpcc   dbo       customer    1745145  1745145         0    49671        0
1737384        7761        0        0           0
 tpcc   dbo       item          98992    98992         0        0
0        0       98992        0        0           0
 tpcc   dbo       district       2400     2400         0    62938
0    2400           0        0        0           0
 tpcc   dbo       warehouse       240      240         0    28742
0     240           0        0        0           0
(10 rows affected)

Total number of rows: 10

**** Execute: sp_imrs show, memusage, imrs_cache ****
 DBName OwnerName ObjectName NRows    LatestVersMB LatestVersHWM OlderVersMB
OlderVersHWM InsRowsMB MigRowsMB QPFRowsMB TotalMemMB
 ------ --------- ---------- -------- ------------ ------------- -----------
------------ --------- --------- --------- ----------
 tpcc   dbo       order_line 69654448     19145.23      19145.23
0.00        39.16  16915.13   2230.10      0.00   19145.23
 tpcc   dbo       stock      10596743      5501.37       5501.37
0.00       137.58      0.00   5501.37      0.00    5501.37
 tpcc   dbo       orders      7400261      1808.07       1808.07
0.00         3.26   1503.24    304.84      0.00    1808.07
 tpcc   dbo       history     6020729      1655.38       1655.38
0.00         0.00   1655.38      0.00      0.00    1655.38
 tpcc   dbo       customer    1745145      1493.07       1498.86
0.00        37.91      0.00   1493.07      0.00    1493.07
 tpcc   dbo       new_order   2682144       654.82        655.03
0.00         2.34    654.82      0.00      0.00     654.82
 tpcc   dbo       item          98992        31.00         31.00
0.00         0.00      0.00     31.00      0.00      31.00
 tpcc   dbo       district       2400         0.81          0.84
0.00        14.94      0.00      0.81      0.00       0.81
 tpcc   dbo       warehouse       240         0.07          0.08
0.00         6.09      0.00      0.07      0.00       0.07
(1 row affected)

Total number of rows: 9
```

```
Cache Utilization Metrics for set of objects listed above:

 CacheName  DBName CacheSizeMB UsedFor  UsedSizeMB CacheUtilPct
 ---------- ------ ----------- -------- ---------- ------------
 imrs_cache tpcc     153600.21 Metadata   12595.15        8.199
 imrs_cache tpcc     153600.21 Tables     30289.82       19.719
**** Execute: sp_imrs show, ilm_metrics, imrs_cache ****
Row count statistics affected by ILM strategies:
 DBName OwnerName ObjectName NIns     NUpd      NDel    NMig     NCached
NSelOfIns NUpdToIns NDelOfIns NSelOfMig NUpdToMig NDelOfMig NSelOfCached
NUpdToCached NDelOfCached
 ------ --------- ---------- -------- --------- ------- -------- -------
--------- --------- --------- --------- --------- --------- ------------
------------ ------------
 tpcc   [Any]     [Totals]   80557167 137892857 3471566 20152394 1741519
7243477  38211291   3471566  12802110  93082218         0     69344399
6599348            0
 tpcc   dbo       order_line 62105064  42420921       0  7528479  579293
5855574  34739721         0     291032   7528509         0       138074
152691            0
 tpcc   dbo       stock             0  64414702       0 10672907
19821         0         0         0   6155596  64348781         0
19910        65921            0
 tpcc   dbo       district          0  12693173       0     2313
103         0         0         0    559508  12147944         0
25031       545229            0
 tpcc   dbo       orders      6215689   4287394       0   752326  494294
1387903   3471570         0     56321    752328         0       133074
63496            0
 tpcc   dbo       new_order   6215685         0 3471566        0
0         0         0   3471566         0         0         0
0            0            0
 tpcc   dbo       customer          0   7831278       0  1196224
548921         0         0         0   1841797   4527415         0
2161115      3303863            0
 tpcc   dbo       warehouse         0   6245389       0      145
95         0         0         0   3897856   3777241         0
2549813      2468148            0
 tpcc   dbo       history     6020729         0       0        0
0         0         0         0         0         0         0
0            0            0
 tpcc   dbo       item              0         0       0        0
98992         0         0         0         0         0         0
64317382            0            0
(1 row affected)

Total number of rows: 10

Counts and percentages of DML events affected by ILM:
 CacheName  DBName OwnerName ObjectName NIns     NUpd      NDel    InsPct
UpdPct DelPct NMig     NCached MigPct CachedPct
 ---------- ------ --------- ---------- -------- --------- ------- ------
------ ------ -------- ------- ------ ---------
 imrs_cache tpcc   [Any]     [Totals]   80557167 137892857 3471566  36.29
62.13   1.56 20152394 1741519  92.04      7.95
 imrs_cache tpcc   dbo       order_line 62105064  42420921       0  59.41
40.58   0.00  7528479  579293  92.85      7.14
 imrs_cache tpcc   dbo       stock             0  64414702       0   0.00
100.00   0.00 10672907   19821  99.81      0.18
 imrs_cache tpcc   dbo       district          0  12693173       0   0.00
100.00   0.00     2313     103  95.73      4.26
 imrs_cache tpcc   dbo       orders      6215689   4287394       0  59.17
40.82   0.00   752326  494294  60.34     39.65
 imrs_cache tpcc   dbo       new_order   6215685         0 3471566  64.16
0.00  35.83        0       0   NULL      NULL
 imrs_cache tpcc   dbo       customer          0   7831278       0   0.00
100.00   0.00  1196224  548921  68.54     31.45
```

```
 imrs_cache tpcc   dbo       warehouse         0   6245389       0   0.00
100.00   0.00      145      95  60.41     39.58
 imrs_cache tpcc   dbo       history     6020729         0       0 100.00
0.00     0.00      0       0   NULL      NULL
 imrs_cache tpcc   dbo       item              0         0       0   NULL
NULL   NULL        0   98992   0.00    100.00
(1 row affected)

Total number of rows: 10

ILM Effectiveness Metrics:
<Op>Of<RowType>: Columns below indicate effectiveness of IMRS for <Op>
affecting <RowType>
Example: Column 'UpdOfMig' indicates effectiveness of IMRS for updates of
migrated rows.
 CacheName  DBName OwnerName ObjectName Score     SelOfIns UpdOfIns DelOfIns
SelOfMig UpdOfMig DelOfMig SelOfCached UpdOfCached DelOfCached
 ---------- ------ --------- ---------- --------- -------- -------- --------
-------- -------- -------- ----------- ----------- -----------
 imrs_cache tpcc   dbo       warehouse  105752.32     NULL     NULL     NULL
26881.76 26049.93     0.00    26840.13    25980.50        0.00
 imrs_cache tpcc   dbo       district    11030.40     NULL     NULL
NULL   241.89    5252.02   0.00      243.01     5293.48        0.00
 imrs_cache tpcc   dbo       item           649.72     NULL     NULL
NULL     NULL     NULL     NULL      649.72        0.00        0.00
 imrs_cache tpcc   [Any]     [Totals]       49.42     0.08     0.47
0.04     0.63     4.61     0.00       39.81        3.78        0.00
 imrs_cache tpcc   dbo       customer       15.25     NULL     NULL
NULL     1.53     3.78     0.00        3.93        6.01        0.00
 imrs_cache tpcc   dbo       stock          10.91     NULL     NULL
NULL     0.57     6.02     0.00        1.00        3.32        0.00
 imrs_cache tpcc   dbo       orders          2.22     0.22     0.55
0.00     0.07     1.00     0.00        0.26        0.12        0.00
 imrs_cache tpcc   dbo       order_line      2.16     0.09     0.55
0.00     0.03     1.00     0.00        0.23        0.26        0.00
 imrs_cache tpcc   dbo       new_order       0.55     0.00     0.00
0.55     NULL     NULL     NULL        NULL        NULL        NULL
 imrs_cache tpcc   dbo       history         0.00     0.00     0.00
0.00     NULL     NULL     NULL        NULL        NULL        NULL
(1 row affected)

Total number of rows: 10

**** Execute: sp_imrs show, pack_metrics, imrs_cache ****
Row counts for pack subsystem:
 CacheName DBName OwnerName ObjectName NRows InsPct MigPct CachedPct
NDRPackPct NSteadyPct NAggrPct SkipRatio NSkipped HotRowsPct NoLockPct
GT1VersPct OtherPct
 --------- ------ --------- ---------- ----- ------ ------ ---------
---------- ---------- -------- --------- -------- ---------- ---------
---------- --------
(1 row affected)

Total number of rows: 0

Memory related metrics for pack subsystem:
 CacheName DBName OwnerName ObjectName LastPacked LastVisited PackedMB
InsMBPct MigMBPct CachedMBPct MemOvhdMB MemOvhdPct
 --------- ------ --------- ---------- ---------- ----------- --------
-------- -------- ----------- --------- ----------
(1 row affected)

Total number of rows: 0

Pack efficiency and transaction metrics for pack subsystem:
 CacheName DBName OwnerName ObjectName SkipRatio MemOvhdPct NCTrans DRTPct
SteadyTPct AggrTPct NRBTrans MBPerTran NRowsPerTran NDRowsPerTran
NStRowsPerTran NAgRowsPerTran
```

```
 --------- ------ --------- ---------- --------- ---------- ------- ------
---------- -------- -------- --------- ------------ -------------
-------------- --------------
(1 row affected)

Total number of rows: 0

**** Execute: sp_imrs show, sysimrslogs, imrs_cache ****
 Description                                               Value
Comment
 --------------------------------------------------------- --------
------------------------
 Total number of pages in imrslogsegment                   16000000
250000.00 MB
 Total number of pages in use                               3597587
56212.30 MB ( 22.48 %)
 Number of non-truncatable pages                            3597587
56212.30 MB ( 22.48 %)
 Number of truncatable pages                                      0
0.00 MB (  0.00 %)
 Total number of free pages of imrslogsegment              12339912
192811.13 MB ( 77.12 %)
 First page ID of sysimrslogs
9600001
 Last page ID of sysimrslogs
13211696
 Page ID of oldest non-truncatable page
9600001
 Percentage of active space that can be freed by DUMP TRAN
0
 Number of pages reserved for Last-Chance Threshold (LCT)    800000
12500.00 MB (  5.00 %)
(10 rows affected)
```

Example 9

displays information about how efficiently the pack is for `imrs_cache`:

```
sp_imrs 'show', 'pack_efficiency', 'imrs_cache'
Pack efficiency and transaction metrics for pack subsystem:
 CacheName  DBName OwnerName ObjectName SkipRatio MemOvhdPct NCTrans DRTPct
SteadyTPct AggrTPct NRBTrans MBPerTran NRowsPerTran NDRowsPerTran
NStRowsPerTran NAgRowsPerTran
 ---------- ------ --------- ---------- --------- ---------- ------- ------
---------- -------- -------- --------- ------------ -------------
-------------- --------------
 imrs_cache tpcc   dbo       new_order          0      43.70   39998
100.00       0.00     0.00    17384         0           86
86           NULL           NULL
 imrs_cache tpcc   [Any]     [Totals]           0      43.70   39998
100.00       0.00     0.00    17384         0           86
86           NULL           NULL
 imrs_cache tpcc   dbo       item            NULL       NULL       0
NULL       NULL     NULL        0      NULL         NULL
NULL           NULL           NULL
 imrs_cache tpcc   dbo       stock           NULL       NULL       0
NULL       NULL     NULL        0      NULL         NULL
NULL           NULL           NULL
 imrs_cache tpcc   dbo       orders          NULL       NULL       0
NULL       NULL     NULL        0      NULL         NULL
NULL           NULL           NULL
 imrs_cache tpcc   dbo       history         NULL       NULL       0
NULL       NULL     NULL        0      NULL         NULL
NULL           NULL           NULL
 imrs_cache tpcc   dbo       customer        NULL       NULL       0
NULL       NULL     NULL        0      NULL         NULL
NULL           NULL           NULL
```

```
 imrs_cache tpcc   dbo       district        NULL       NULL       0
NULL       NULL     NULL        0      NULL         NULL
NULL           NULL           NULL
 imrs_cache tpcc   dbo       warehouse       NULL       NULL       0
NULL       NULL     NULL        0      NULL         NULL
NULL           NULL           NULL
 imrs_cache tpcc   dbo       order_line      NULL       NULL       0
NULL       NULL     NULL        0      NULL         NULL
NULL           NULL           NULL
(10 rows affected)

Total number of rows: 10
```

Example 10

displays the pack metrics for `imrs_cache`:

```
sp_imrs 'show', 'pack_memstats', 'imrs_cache'
Memory related metrics for pack subsystem:
 CacheName  DBName OwnerName ObjectName LastPacked
LastVisited         PackedMB InsMBPct MigMBPct CachedMBPct MemOvhdMB
MemOvhdPct
 ---------- ------ --------- ---------- -------------------
------------------- -------- -------- -------- ----------- ---------
----------
 imrs_cache tpcc   dbo       new_order  Jan 20 2017  1:45AM Jan 20 2017
1:45AM      848   100.00     0.00        0.00       370      43.70
 imrs_cache tpcc   [Any]     [Totals]   Jan 20 2017  1:45AM Jan 20 2017
1:45AM      848   100.00     0.00        0.00       370      43.70
 imrs_cache tpcc   dbo       item                   NULL
NULL        0     NULL     NULL        NULL         0       NULL
 imrs_cache tpcc   dbo       stock                  NULL
NULL        0     NULL     NULL        NULL         0       NULL
 imrs_cache tpcc   dbo       orders                 NULL
NULL        0     NULL     NULL        NULL         0       NULL
 imrs_cache tpcc   dbo       history                NULL
NULL        0     NULL     NULL        NULL         0       NULL
 imrs_cache tpcc   dbo       customer               NULL
NULL        0     NULL     NULL        NULL         0       NULL
 imrs_cache tpcc   dbo       district               NULL
NULL        0     NULL     NULL        NULL         0       NULL
 imrs_cache tpcc   dbo       warehouse              NULL
NULL        0     NULL     NULL        NULL         0       NULL
 imrs_cache tpcc   dbo       order_line             NULL
NULL        0     NULL     NULL        NULL         0       NULL
(10 rows affected)

Total number of rows: 10

(return status = 0)
```

Example 11

displays the row count-related statistics for `imrs_cache`:

```
sp_imrs 'show', 'pack_rowstats', 'imrs_cache'
Row counts for pack subsystem:
 CacheName  DBName OwnerName ObjectName NRows   InsPct MigPct CachedPct
NDRPackPct NSteadyPct NAggrPct SkipRatio NSkipped HotRowsPct NoLockPct
GT1VersPct OtherPct
 ---------- ------ --------- ---------- ------- ------ ------ ---------
---------- ---------- -------- --------- -------- ---------- ---------
---------- --------
 imrs_cache tpcc   dbo       new_order  3471493 100.00   0.00      0.00
100.00       0.00     0.00         0        0       NULL      NULL
NULL     NULL
```

```
 imrs_cache tpcc   [Any]     [Totals]   3471493 100.00   0.00      0.00
100.00       0.00     0.00         0        0       NULL      NULL
NULL     NULL
 imrs_cache tpcc   dbo       item             0   NULL   NULL      NULL
NULL       NULL     NULL      NULL        0       NULL      NULL
NULL     NULL
 imrs_cache tpcc   dbo       stock            0   NULL   NULL      NULL
NULL       NULL     NULL      NULL        0       NULL      NULL
NULL     NULL
 imrs_cache tpcc   dbo       orders           0   NULL   NULL      NULL
NULL       NULL     NULL      NULL        0       NULL      NULL
NULL     NULL
 imrs_cache tpcc   dbo       history          0   NULL   NULL      NULL
NULL       NULL     NULL      NULL        0       NULL      NULL
NULL     NULL
 imrs_cache tpcc   dbo       customer         0   NULL   NULL      NULL
NULL       NULL     NULL      NULL        0       NULL      NULL
NULL     NULL
 imrs_cache tpcc   dbo       district         0   NULL   NULL      NULL
NULL       NULL     NULL      NULL        0       NULL      NULL
NULL     NULL
 imrs_cache tpcc   dbo       warehouse        0   NULL   NULL      NULL
NULL       NULL     NULL      NULL        0       NULL      NULL
NULL     NULL
 imrs_cache tpcc   dbo       order_line       0   NULL   NULL      NULL
NULL       NULL     NULL      NULL        0       NULL      NULL
NULL     NULL
(10 rows affected)

Total number of rows: 10
```

Example 12

displays the row count statistics for the pack operation:

```
sp_imrs 'show', 'pack_metrics', 'imrs_cache'
Row counts for pack subsystem:
 CacheName  DBName OwnerName ObjectName NRows   InsPct MigPct CachedPct
NDRPackPct NSteadyPct NAggrPct SkipRatio NSkipped HotRowsPct NoLockPct
GT1VersPct OtherPct
 ---------- ------ --------- ---------- ------- ------ ------ ---------
---------- ---------- -------- --------- -------- ---------- ---------
---------- --------
 imrs_cache tpcc   dbo       new_order  3471493 100.00   0.00      0.00
100.00       0.00     0.00         0        0       NULL      NULL
NULL     NULL
 imrs_cache tpcc   [Any]     [Totals]   3471493 100.00   0.00      0.00
100.00       0.00     0.00         0        0       NULL      NULL
NULL     NULL
 imrs_cache tpcc   dbo       item             0   NULL   NULL      NULL
NULL       NULL     NULL      NULL        0       NULL      NULL
NULL     NULL
 imrs_cache tpcc   dbo       stock            0   NULL   NULL      NULL
NULL       NULL     NULL      NULL        0       NULL      NULL
NULL     NULL
 imrs_cache tpcc   dbo       orders           0   NULL   NULL      NULL
NULL       NULL     NULL      NULL        0       NULL      NULL
NULL     NULL
 imrs_cache tpcc   dbo       history          0   NULL   NULL      NULL
NULL       NULL     NULL      NULL        0       NULL      NULL
NULL     NULL
 imrs_cache tpcc   dbo       customer         0   NULL   NULL      NULL
NULL       NULL     NULL      NULL        0       NULL      NULL
NULL     NULL
 imrs_cache tpcc   dbo       district         0   NULL   NULL      NULL
NULL       NULL     NULL      NULL        0       NULL      NULL
NULL     NULL
```

```
 imrs_cache tpcc   dbo       warehouse        0   NULL   NULL      NULL
NULL       NULL     NULL      NULL        0       NULL      NULL
NULL     NULL
 imrs_cache tpcc   dbo       order_line       0   NULL   NULL      NULL
NULL       NULL     NULL      NULL        0       NULL      NULL
NULL     NULL
(1 row affected)

Total number of rows: 10

Memory related metrics for pack subsystem:
 CacheName  DBName OwnerName ObjectName LastPacked
LastVisited         PackedMB InsMBPct MigMBPct CachedMBPct MemOvhdMB
MemOvhdPct
 ---------- ------ --------- ---------- -------------------
------------------- -------- -------- -------- ----------- ---------
----------
 imrs_cache tpcc   dbo       new_order  Jan 20 2017  1:45AM Jan 20 2017
1:45AM      848   100.00     0.00        0.00       370      43.70
 imrs_cache tpcc   [Any]     [Totals]   Jan 20 2017  1:45AM Jan 20 2017
1:45AM      848   100.00     0.00        0.00       370      43.70
 imrs_cache tpcc   dbo       item                      NULL
NULL        0     NULL     NULL        NULL         0       NULL
 imrs_cache tpcc   dbo       stock                     NULL
NULL        0     NULL     NULL        NULL         0       NULL
 imrs_cache tpcc   dbo       orders                    NULL
NULL        0     NULL     NULL        NULL         0       NULL
 imrs_cache tpcc   dbo       history                   NULL
NULL        0     NULL     NULL        NULL         0       NULL
 imrs_cache tpcc   dbo       customer                  NULL
NULL        0     NULL     NULL        NULL         0       NULL
 imrs_cache tpcc   dbo       district                  NULL
NULL        0     NULL     NULL        NULL         0       NULL
 imrs_cache tpcc   dbo       warehouse                 NULL
NULL        0     NULL     NULL        NULL         0       NULL
 imrs_cache tpcc   dbo       order_line                NULL
NULL        0     NULL     NULL        NULL         0       NULL
(1 row affected)

Total number of rows: 10

Pack efficiency and transaction metrics for pack subsystem:
 CacheName  DBName OwnerName ObjectName SkipRatio MemOvhdPct NCTrans DRTPct
SteadyTPct AggrTPct NRBTrans MBPerTran NRowsPerTran NDRowsPerTran
NStRowsPerTran NAgRowsPerTran
 ---------- ------ --------- ---------- --------- ---------- ------- ------
---------- -------- -------- --------- ------------ -------------
-------------- --------------
 imrs_cache tpcc   dbo       new_order          0      43.70   39998
100.00       0.00     0.00    17384         0           86
86           NULL           NULL
 imrs_cache tpcc   [Any]     [Totals]           0      43.70   39998
100.00       0.00     0.00    17384         0           86
86           NULL           NULL
 imrs_cache tpcc   dbo       item            NULL       NULL       0
NULL       NULL     NULL        0      NULL         NULL
NULL           NULL           NULL
 imrs_cache tpcc   dbo       stock           NULL       NULL       0
NULL       NULL     NULL        0      NULL         NULL
NULL           NULL           NULL
 imrs_cache tpcc   dbo       orders          NULL       NULL       0
NULL       NULL     NULL        0      NULL         NULL
NULL           NULL           NULL
 imrs_cache tpcc   dbo       history         NULL       NULL       0
NULL       NULL     NULL        0      NULL         NULL
NULL           NULL           NULL
```

```
 imrs_cache tpcc   dbo       customer        NULL       NULL       0
NULL       NULL     NULL        0      NULL         NULL
NULL           NULL           NULL
 imrs_cache tpcc   dbo       district        NULL       NULL       0
NULL       NULL     NULL        0      NULL         NULL
NULL           NULL           NULL
 imrs_cache tpcc   dbo       warehouse       NULL       NULL       0
NULL       NULL     NULL        0      NULL         NULL
NULL           NULL           NULL
 imrs_cache tpcc   dbo       order_line      NULL       NULL       0
NULL       NULL     NULL        0      NULL         NULL
NULL           NULL           NULL
(1 row affected)

Total number of rows: 10
```

Example 13

displays memory usage information about the `imrs_cache` (`sp_imrs` internally issues `sp_imrs show, rowcounts, imrs_cache` and `sp_imrs show, sysimrslogs, imrs_cache`):

```
sp_imrs 'show', 'memusage', 'imrs_cache'
 DBName OwnerName ObjectName NRows    LatestVersMB LatestVersHWM OlderVersMB
OlderVersHWM InsRowsMB MigRowsMB QPFRowsMB TotalMemMB
 ------ --------- ---------- -------- ------------ ------------- -----------
------------ --------- --------- --------- ----------
 tpcc   dbo       order_line 69654448     19145.23      19145.23
0.00        39.16  16915.13   2230.10      0.00   19145.23
 tpcc   dbo       stock      10596743      5501.37       5501.37
0.00       137.58      0.00   5501.37      0.00    5501.37
 tpcc   dbo       orders      7400261      1808.07       1808.07
0.00         3.26   1503.24    304.84      0.00    1808.07
 tpcc   dbo       history     6020729      1655.38       1655.38
0.00         0.00   1655.38      0.00      0.00    1655.38
 tpcc   dbo       customer    1745145      1493.07       1498.86
0.00        37.91      0.00   1493.07      0.00    1493.07
 tpcc   dbo       new_order   2682144       654.82        655.03
0.00         2.34    654.82      0.00      0.00     654.82
 tpcc   dbo       item          98992        31.00         31.00
0.00         0.00      0.00     31.00      0.00      31.00
 tpcc   dbo       district       2400         0.81          0.84
0.00        14.94      0.00      0.81      0.00       0.81
 tpcc   dbo       warehouse       240         0.07          0.08
0.00         6.09      0.00      0.07      0.00       0.07
(1 row affected)
Total number of rows: 9
```

Example 14

displays row counts for the `imrs_cache`:

```
sp_imrs show, rowcounts, imrs_cache
 DBName OwnerName ObjectName NRows    NRowsHWM NVersions NVersHWM NInsRows
NMigRows NCachedRows NInsVers NMigVers NRowsPendGC
 ------ --------- ---------- -------- -------- --------- -------- --------
-------- ----------- -------- -------- -----------
 tpcc   [Any]     [Totals]   98201102 98202326         0   715406 76403190
19848638      974637        0        0           0
 tpcc   dbo       order_line 69654448 69654471         0   214648 61546676
7681170      426602        0        0           0
 tpcc   dbo       stock      10596743 10596745         0   322917        0
10586259       10484        0        0           0
 tpcc   dbo       orders      7400261  7400262         0    21409  6153641
815822      430798        0        0           0
 tpcc   dbo       history     6020729  6020729         0        0
6020729        0           0        0        0           0
```

```
 tpcc   dbo       new_order   2682144  2683342         0    15081
2682144        0           0        0           0
 tpcc   dbo       customer    1745145  1745145         0    49671        0
1737384        7761        0        0           0
 tpcc   dbo       item          98992    98992         0        0
0        0       98992        0        0           0
 tpcc   dbo       district       2400     2400         0    62938
0     2400           0        0        0           0
 tpcc   dbo       warehouse       240      240         0    28742
0      240           0        0        0           0
(10 rows affected)
Total number of rows: 10
```

Example 15

displays `sysimrslogs` information for the `imrs_cache`:

```
sp_imrs show, sysimrslogs, imrs_cache ****
 Description                                               Value    Comment
 --------------------------------------------------------- --------
------------------------
 Total number of pages in imrslogsegment                   16000000
250000.00 MB
 Total number of pages in use                               3597587
56212.30 MB ( 22.48 %)
 Number of non-truncatable pages                            3597587
56212.30 MB ( 22.48 %)
 Number of truncatable pages                                      0
0.00 MB (  0.00 %)
 Total number of free pages of imrslogsegment              12339912
192811.13 MB ( 77.12 %)
 First page ID of sysimrslogs                               9600001
 Last page ID of sysimrslogs                               13211696
 Page ID of oldest non-truncatable page                     9600001
 Percentage of active space that can be freed by DUMP TRAN        0
 Number of pages reserved for Last-Chance Threshold (LCT)    800000
12500.00 MB (  5.00 %)
```

Example 16

displays the SPIDs that are currently blocking processes:

```
sp_imrs show, 'blocking_spid'
 SPID UserName HostName       OSPID StartTime           NTransBlocked DBName
Status
 ---- -------- -------------- ----- ------------------- ------------- -------
----------
   36 dbo      big_machine      32441 Mar 29 2017  2:24AM           0 imrsdb
recv sleep
   37 dbo      bigger_machine   6381  Mar 29 2017  2:27AM           0 imrsdb2
recv sleep
Above SPID(s) are active in the server.
GC threads will be unblocked when the transaction completes (commit / abort)
If the SPID has become unresponsive, you may disconnect it and run the
following -
sp_imrs 'clear', 'blocking_spid', '<dbname>', '<spid>'
Running the above command on an active connection may result in data
corruption.
Please exercise due caution!
```

Remove blocking SPID number 36 with this command:

```
sp_imrs clear, 'blocking_spid', 'imrsdb', '36'
SPID 36 is active in the system.
Cleaning up an active process may result in data corruption. Action aborted!
(return status = 0)
```

Example 17

displays all metrics for `imrs_cache`:

```
sp_imrs 'show', 'all metrics', 'imrs_cache'
**** Execute: sp_imrs show, tables, tpcc ****
 ID        OwnerName Name       DRC MVCC NumRows   NumRowsIMRS Pct
 --------- --------- ---------- --- ---- --------- ----------- ------
 656002337 dbo       customer     1    0   7200000     1745145  24.23
 624002223 dbo       district     1    0      2400        2400 100.00
 688002451 dbo       history      1    0  13444380     6020692  44.78
 816002907 dbo       item         1    0    100000       98992  98.99
 720002565 dbo       new_order    1    0   2742647     2682071  97.79
 784002793 dbo       order_line   1    0 136237347    69654012  51.12
 752002679 dbo       orders       1    0  13644204     7400261  54.23
 848003021 dbo       stock        1    0  24000000    10596743  44.15
 592002109 dbo       warehouse    1    0       240         240 100.00
(1 row affected)
**** Execute: sp_imrs show, cacheinfo, imrs_cache ****
 CacheName  DBName TotalSizeMB UsedSizeMB FreeSizeMB PctUtil UsedSizeHWM
PctUtilHWM NumTables NumRows  NumRowsHWM NumVersions NumVersionsHWM
 ---------- ------ ----------- ---------- ---------- ------- -----------
---------- --------- -------- ---------- ----------- --------------
 imrs_cache tpcc     153600.21   42884.98  110715.23   27.91    45516.02
29.63         9 98201102   98201102           0         586282
(1 row affected)
**** Execute: sp_imrs show, rowcounts, imrs_cache ****
 DBName OwnerName ObjectName NRows    NRowsHWM NVersions NVersHWM NInsRows
NMigRows NCachedRows NInsVers NMigVers NRowsPendGC
 ------ --------- ---------- -------- -------- --------- -------- --------
-------- ----------- -------- -------- -----------
 tpcc   [Any]      [Totals]   98201102 98202326         0   715406 76403190
19848638      974637        0        0           0
 tpcc   dbo       order_line 69654448 69654471         0   214648 61546676
7681170      426602        0        0           0
 tpcc   dbo       stock      10596743 10596745         0   322917        0
10586259       10484        0        0           0
 tpcc   dbo       orders      7400261  7400262         0    21409  6153641
815822      430798        0        0           0
 tpcc   dbo       history     6020729  6020729         0        0
6020729        0           0        0        0           0
 tpcc   dbo       new_order   2682144  2683342         0    15081
2682144        0           0        0        0           0
 tpcc   dbo       customer    1745145  1745145         0    49671        0
1737384        7761        0        0           0
 tpcc   dbo       item          98992    98992         0        0
0        0       98992        0        0           0
 tpcc   dbo       district       2400     2400         0    62938
0     2400           0        0        0           0
 tpcc   dbo       warehouse       240      240         0    28742
0      240           0        0        0           0
(10 rows affected)

Total number of rows: 10

**** Execute: sp_imrs show, memusage, imrs_cache ****
 DBName OwnerName ObjectName NRows    LatestVersMB LatestVersHWM OlderVersMB
OlderVersHWM InsRowsMB MigRowsMB QPFRowsMB TotalMemMB
 ------ --------- ---------- -------- ------------ ------------- -----------
------------ --------- --------- --------- ----------
 tpcc   dbo       order_line 69654448     19145.23      19145.23
0.00        39.16  16915.13   2230.10      0.00   19145.23
 tpcc   dbo       stock      10596743      5501.37       5501.37
0.00       137.58      0.00   5501.37      0.00    5501.37
 tpcc   dbo       orders      7400261      1808.07       1808.07
0.00         3.26   1503.24    304.84      0.00    1808.07
 tpcc   dbo       history     6020729      1655.38       1655.38
0.00         0.00   1655.38      0.00      0.00    1655.38
```

```
 tpcc   dbo       customer    1745145      1493.07       1498.86
0.00        37.91      0.00   1493.07      0.00    1493.07
 tpcc   dbo       new_order   2682144       654.82        655.03
0.00         2.34    654.82      0.00      0.00     654.82
 tpcc   dbo       item          98992        31.00         31.00
0.00         0.00      0.00     31.00      0.00      31.00
 tpcc   dbo       district       2400         0.81          0.84
0.00        14.94      0.00      0.81      0.00       0.81
 tpcc   dbo       warehouse       240         0.07          0.08
0.00         6.09      0.00      0.07      0.00       0.07
(1 row affected)

Total number of rows: 9


Cache Utilization Metrics for set of objects listed above:

 CacheName  DBName CacheSizeMB UsedFor  UsedSizeMB CacheUtilPct
 ---------- ------ ----------- -------- ---------- ------------
 imrs_cache tpcc     153600.21 Metadata   12595.15        8.199
 imrs_cache tpcc     153600.21 Tables     30289.82       19.719
**** Execute: sp_imrs show, ilm_metrics, imrs_cache ****
Row count statistics affected by ILM strategies:
 DBName OwnerName ObjectName NIns     NUpd      NDel    NMig     NCached
NSelOfIns NUpdToIns NDelOfIns NSelOfMig NUpdToMig NDelOfMig NSelOfCached
NUpdToCached NDelOfCached
 ------ --------- ---------- -------- --------- ------- -------- -------
--------- --------- --------- --------- --------- --------- ------------
------------ ------------
 tpcc   [Any]     [Totals]   80557167 137892857 3471566 20152394 1741519
7243477  38211291   3471566  12802110  93082218         0     69344399
6599348            0
 tpcc   dbo       order_line 62105064  42420921       0  7528479  579293
5855574  34739721         0    291032   7528509         0       138074
152691            0
 tpcc   dbo       stock             0  64414702       0 10672907
19821         0         0         0   6155596  64348781         0
19910        65921            0
 tpcc   dbo       district          0  12693173       0     2313
103         0         0         0    559508  12147944         0
25031       545229            0
 tpcc   dbo       orders      6215689   4287394       0   752326  494294
1387903   3471570         0     56321    752328         0       133074
63496           0
 tpcc   dbo       new_order   6215685         0 3471566        0
0         0         0   3471566         0         0         0
0            0            0
 tpcc   dbo       customer          0   7831278       0  1196224
548921         0         0         0   1841797   4527415         0
2161115      3303863            0
 tpcc   dbo       warehouse         0   6245389       0      145
95         0         0         0   3897856   3777241         0
2549813      2468148            0
 tpcc   dbo       history     6020729         0       0        0
0         0         0         0         0         0         0
0            0            0
 tpcc   dbo       item              0         0       0        0
98992         0         0         0         0         0         0
64317382            0            0
(1 row affected)

Total number of rows: 10

Counts and percentages of DML events affected by ILM:
 CacheName  DBName OwnerName ObjectName NIns     NUpd      NDel    InsPct
UpdPct DelPct NMig     NCached MigPct CachedPct
 ---------- ------ --------- ---------- -------- --------- ------- ------
------ ------ -------- ------- ------ ---------
```

```
 imrs_cache tpcc   [Any]     [Totals]   80557167 137892857 3471566  36.29
62.13   1.56 20152394 1741519  92.04      7.95
 imrs_cache tpcc   dbo       order_line 62105064  42420921       0  59.41
40.58   0.00  7528479  579293  92.85      7.14
 imrs_cache tpcc   dbo       stock             0  64414702       0   0.00
100.00   0.00 10672907   19821  99.81      0.18
 imrs_cache tpcc   dbo       district          0  12693173       0   0.00
100.00   0.00     2313     103  95.73      4.26
 imrs_cache tpcc   dbo       orders      6215689   4287394       0  59.17
40.82   0.00   752326  494294  60.34     39.65
 imrs_cache tpcc   dbo       new_order   6215685         0 3471566  64.16
0.00  35.83        0       0   NULL      NULL
 imrs_cache tpcc   dbo       customer          0   7831278       0   0.00
100.00   0.00  1196224  548921  68.54     31.45
 imrs_cache tpcc   dbo       warehouse         0   6245389       0   0.00
100.00   0.00      145      95  60.41     39.58
 imrs_cache tpcc   dbo       history     6020729         0       0 100.00
0.00   0.00        0       0   NULL      NULL
 imrs_cache tpcc   dbo       item              0         0       0   NULL
NULL   NULL        0   98992   0.00    100.00
(1 row affected)

Total number of rows: 10

ILM Effectiveness Metrics:
<Op>Of<RowType>: Columns below indicate effectiveness of IMRS for <Op>
affecting <RowType>
Example: Column 'UpdOfMig' indicates effectiveness of IMRS for updates of
migrated rows.
 CacheName  DBName OwnerName ObjectName Score     SelOfIns UpdOfIns DelOfIns
SelOfMig UpdOfMig DelOfMig SelOfCached UpdOfCached DelOfCached
 ---------- ------ --------- ---------- --------- -------- -------- --------
-------- -------- -------- ----------- ----------- -----------
 imrs_cache tpcc   dbo       warehouse  105752.32     NULL     NULL     NULL
26881.76 26049.93     0.00    26840.13    25980.50        0.00
 imrs_cache tpcc   dbo       district    11030.40     NULL     NULL
NULL   241.89  5252.02     0.00      243.01     5293.48        0.00
 imrs_cache tpcc   dbo       item          649.72     NULL     NULL
NULL     NULL     NULL     NULL      649.72        0.00        0.00
 imrs_cache tpcc   [Any]     [Totals]       49.42     0.08     0.47
0.04     0.63     4.61     0.00       39.81        3.78        0.00
 imrs_cache tpcc   dbo       customer       15.25     NULL     NULL
NULL     1.53     3.78     0.00        3.93        6.01        0.00
 imrs_cache tpcc   dbo       stock          10.91     NULL     NULL
NULL     0.57     6.02     0.00        1.00        3.32        0.00
 imrs_cache tpcc   dbo       orders          2.22     0.22     0.55
0.00     0.07     1.00     0.00        0.26        0.12        0.00
 imrs_cache tpcc   dbo       order_line      2.16     0.09     0.55
0.00     0.03     1.00     0.00        0.23        0.26        0.00
 imrs_cache tpcc   dbo       new_order       0.55     0.00     0.00
0.55     NULL     NULL     NULL        NULL        NULL        NULL
 imrs_cache tpcc   dbo       history         0.00     0.00     0.00
0.00     NULL     NULL     NULL        NULL        NULL        NULL
(1 row affected)

Total number of rows: 10

**** Execute: sp_imrs show, pack_metrics, imrs_cache ****
Row counts for pack subsystem:
 CacheName  DBName OwnerName ObjectName NRows   InsPct MigPct CachedPct
NDRPackPct NSteadyPct NAggrPct SkipRatio NSkipped HotRowsPct NoLockPct
GT1VersPct OtherPct
 ---------- ------ --------- ---------- ------- ------ ------ ---------
---------- ---------- -------- --------- -------- ---------- ---------
---------- --------
 imrs_cache tpcc   dbo       new_order  3471493 100.00   0.00      0.00
100.00       0.00     0.00         0        0       NULL      NULL
NULL     NULL
```

```
 imrs_cache tpcc   [Any]     [Totals]   3471493 100.00   0.00      0.00
100.00       0.00     0.00         0        0       NULL      NULL
NULL     NULL
 imrs_cache tpcc   dbo       item             0   NULL   NULL      NULL
NULL       NULL     NULL      NULL        0       NULL      NULL
NULL     NULL
 imrs_cache tpcc   dbo       stock            0   NULL   NULL      NULL
NULL       NULL     NULL      NULL        0       NULL      NULL
NULL     NULL
 imrs_cache tpcc   dbo       orders           0   NULL   NULL      NULL
NULL       NULL     NULL      NULL        0       NULL      NULL
NULL     NULL
 imrs_cache tpcc   dbo       history          0   NULL   NULL      NULL
NULL       NULL     NULL      NULL        0       NULL      NULL
NULL     NULL
 imrs_cache tpcc   dbo       customer         0   NULL   NULL      NULL
NULL       NULL     NULL      NULL        0       NULL      NULL
NULL     NULL
 imrs_cache tpcc   dbo       district         0   NULL   NULL      NULL
NULL       NULL     NULL      NULL        0       NULL      NULL
NULL     NULL
 imrs_cache tpcc   dbo       warehouse        0   NULL   NULL      NULL
NULL       NULL     NULL      NULL        0       NULL      NULL
NULL     NULL
 imrs_cache tpcc   dbo       order_line       0   NULL   NULL      NULL
NULL       NULL     NULL      NULL        0       NULL      NULL
NULL     NULL
(1 row affected)

Total number of rows: 10

Memory related metrics for pack subsystem:
 CacheName  DBName OwnerName ObjectName LastPacked
LastVisited         PackedMB InsMBPct MigMBPct CachedMBPct MemOvhdMB
MemOvhdPct
 ---------- ------ --------- ---------- -------------------
------------------- -------- -------- -------- ----------- ---------
----------
 imrs_cache tpcc   dbo       new_order  Jan 20 2017  1:45AM Jan 20 2017
1:45AM      848   100.00     0.00        0.00       370      43.70
 imrs_cache tpcc   [Any]     [Totals]   Jan 20 2017  1:45AM Jan 20 2017
1:45AM      848   100.00     0.00        0.00       370      43.70
 imrs_cache tpcc   dbo       item                      NULL
NULL        0     NULL     NULL        NULL         0       NULL
 imrs_cache tpcc   dbo       stock                     NULL
NULL        0     NULL     NULL        NULL         0       NULL
 imrs_cache tpcc   dbo       orders                    NULL
NULL        0     NULL     NULL        NULL         0       NULL
 imrs_cache tpcc   dbo       history                   NULL
NULL        0     NULL     NULL        NULL         0       NULL
 imrs_cache tpcc   dbo       customer                  NULL
NULL        0     NULL     NULL        NULL         0       NULL
 imrs_cache tpcc   dbo       district                  NULL
NULL        0     NULL     NULL        NULL         0       NULL
 imrs_cache tpcc   dbo       warehouse                 NULL
NULL        0     NULL     NULL        NULL         0       NULL
 imrs_cache tpcc   dbo       order_line                NULL
NULL        0     NULL     NULL        NULL         0       NULL
(1 row affected)

Total number of rows: 10

Pack efficiency and transaction metrics for pack subsystem:
 CacheName  DBName OwnerName ObjectName SkipRatio MemOvhdPct NCTrans DRTPct
SteadyTPct AggrTPct NRBTrans MBPerTran NRowsPerTran NDRowsPerTran
NStRowsPerTran NAgRowsPerTran
```

```
 ---------- ------ --------- ---------- --------- ---------- ------- ------
---------- -------- -------- --------- ------------ -------------
-------------- --------------
 imrs_cache tpcc   dbo       new_order          0      43.70   39998
100.00       0.00     0.00    17384         0           86
86          NULL          NULL
 imrs_cache tpcc   [Any]     [Totals]           0      43.70   39998
100.00       0.00     0.00    17384         0           86
86          NULL          NULL
 imrs_cache tpcc   dbo       item            NULL       NULL       0
NULL       NULL     NULL        0      NULL         NULL
NULL           NULL           NULL
 imrs_cache tpcc   dbo       stock           NULL       NULL       0
NULL       NULL     NULL        0      NULL         NULL
NULL           NULL           NULL
 imrs_cache tpcc   dbo       orders          NULL       NULL       0
NULL       NULL     NULL        0      NULL         NULL
NULL           NULL           NULL
 imrs_cache tpcc   dbo       history         NULL       NULL       0
NULL       NULL     NULL        0      NULL         NULL
NULL           NULL           NULL
 imrs_cache tpcc   dbo       customer        NULL       NULL       0
NULL       NULL     NULL        0      NULL         NULL
NULL           NULL           NULL
 imrs_cache tpcc   dbo       district        NULL       NULL       0
NULL       NULL     NULL        0      NULL         NULL
NULL           NULL           NULL
 imrs_cache tpcc   dbo       warehouse       NULL       NULL       0
NULL       NULL     NULL        0      NULL         NULL
NULL           NULL           NULL
 imrs_cache tpcc   dbo       order_line      NULL       NULL       0
NULL       NULL     NULL        0      NULL         NULL
NULL           NULL           NULL
(1 row affected)

Total number of rows: 10

**** Execute: sp_imrs show, sysimrslogs, imrs_cache ****
 Description                                               Value
Comment
 --------------------------------------------------------- --------
------------------------
 Total number of pages in imrslogsegment                   16000000
250000.00 MB
 Total number of pages in use                               3597587
56212.30 MB ( 22.48 %)
 Number of non-truncatable pages                            3597587
56212.30 MB ( 22.48 %)
 Number of truncatable pages                                      0
0.00 MB (  0.00 %)
 Total number of free pages of imrslogsegment              12339912
192811.13 MB ( 77.12 %)
 First page ID of sysimrslogs
9600001
 Last page ID of sysimrslogs
13211696
 Page ID of oldest non-truncatable page
9600001
 Percentage of active space that can be freed by DUMP TRAN
0
 Number of pages reserved for Last-Chance Threshold (LCT)    800000
12500.00 MB (  5.00 %)
(10 rows affected)
```

Example 18

displays statistics about the garbage collector:

```
sp_imrs show, gcstats
DBName             Type         NWakeups         MemFreedMB
NVersFreed           NTransFreed            NStmtsFreed
NSversPgsDeallocs
------------------ ------------ ---------------- --------------------
-------------------- ---------------------- ----------------------
----------------------------------
btrim_db           imrsgc              0
0.00                    0                     0
0                            0
btrim_db           imrsgc            106
0.00                    1                     3
0                            1
btrim_db1          imrsgc              1
0.00                    0                     0
0                            0
btrim_db1          imrsgc              6
0.00                    2                     2
0                            1
(4 rows affected)
Total number of rows: 4
DBName             Type       NWakeups         MemFreedMB
NVersFreed           NTransFreed            NStmtsFreed
NSversPgsDeallocs
------------------ ---------- ---------------- --------------------
-------------------- ---------------------- ----------------------
----------------------------------
btrim_db           lobgc            0               0.00
0                     0                      0                            0
btrim_db           lobgc            0               0.00
0                     0                      0                            0
btrim_db1          lobgc            0               0.00
0                     0                      0                            0
btrim_db1          lobgc            0               0.00
0                     0                      0                            0
(4 rows affected)
Total number of rows: 4
```

Example 19

displays information about the garbage collector:

```
sp_imrs show, gcinfo
DBName             Type         Status           WaitStatus
ExitStatus           LastWakeup
BlockingSPID             BlockingTime
BlockingSPIDType                 NTranPending             NTranBlocked
------------------ ------------ ---------------- --------------------
-------------------- --------------------------------------
------------------------ ------------------------
-------------------------------- ------------------------
------------------------
btrim_db           lobgc        sleeping         sleeping
alive                Jan  1 1900 12:00AM
0                        0
NULL                                        0                        0
btrim_db           lobgc        sleeping         sleeping
alive                Jan  1 1900 12:00AM
0                        0
NULL                                        0                        0
btrim_db           imrsgc       sleeping         sleeping
alive                Jan  1 1900 12:00AM
```

```
0                        0
NULL                                        0                        0
btrim_db           imrsgc       sleeping         sleeping
alive                Feb 27 2017  1:30AM
0                        0
NULL                                        0                        0
btrim_db1          lobgc        sleeping         sleeping
alive                Jan  1 1900 12:00AM
0                        0
NULL                                        0                        0
btrim_db1          lobgc        sleeping         sleeping
alive                Jan  1 1900 12:00AM
0                        0
NULL                                        0                        0
btrim_db1          imrsgc       sleeping         sleeping
alive                Feb 22 2017  1:14AM
0                        0
NULL                                        0                        0
btrim_db1          imrsgc       sleeping         sleeping
alive                Feb 22 2017  1:14AM
0                        0
NULL                                        0                        0
(8 rows affected)
Total number of rows: 8
```

Example 20

displays statistical information about the garbage collector:

```
sp_imrs show, versionstats
Row version statistics:
CacheName                DBName             NRows      NRowsHWM
NVersions          NVersHWM         OldVerMB         OldVerHWM
LtstVerMB          LtstVerWHM           NOldLOBVer
NOldLOBVerHWM              OldLOBVerMB             OldLOBVerHWM
NSvActivePgs             NSvActivePgsHWM
------------------------ ------------------ ---------- ----------------
------------------ ---------------- ---------------- ------------------
------------------ -------------------- --------------------
-------------------------- ---------------------- ------------------------
------------------------ ------------------------------
btrim_cache              btrim_db               3
3                 0                 0             0.00
0.00               0.00                0.00
0                       0                     0.00
0.00                        0                           0
btrim_cache1             btrim_db1              4
4                 0                 0             0.00
0.00               0.00                0.00
0                       0                     0.00
0.00                        0                           0
(2 rows affected)
Total number of rows: 2
```

Example 21

displays the SPIDs that are currently blocking the IMRS garbage collector:

```
sp_imrs show, 'blocking_spid'
SPID UserName HostName         OSPID StartTime           NTransBlocked
DBName  Status
---- -------- --------------   ----- ------------------- -------------
------- ----------
  36  dbo      big_machine      66666 Mar 29 2017  2:24AM            0
imrsdb  recv sleep
  37  dbo      bigger_machine   99999 Mar 29 2017  2:27AM            0
imrsdb2 recv sleep
To unblock GC of database imrsdb, execute the following -
```

```
sp_imrs clear, 'blocking_spid', 'imrsdb','36'
```

Example 22

displays the SPIDs that are currently blocking the IMRS garbage collector, and filters the result on the database name:

```
sp_imrs show, blocking_spid, 'imrsdb'
SPID UserName HostName       OSPID StartTime           NTransBlocked DBName
Status
---- -------- -------------- ----- ------------------- ------------- -------
----------
  36 dbo      big_machine    66666 Mar 29 2017 2:24AM              0 imrsdb
recv sleep
To unblock GC of database imrsdb, execute the following -
sp_imrs clear, 'blocking_spid', 'imrsdb','36'
```

Example 23

removes a specific SPID (SPID 36) blocking the garbage collector threads:

```
sp_imrs clear, 'blocking_spid', 'imrsdb', '36'
Successfully cleared Blocking SPID 36 from the system.
```

Example 24

Checks for SPIDs that are blocking a specific database, and clears any blocks it finds. In this example, the database `imrsdb2` contains a blocking SPID 38:

```
sp_imrs clear, 'blocking_spid', 'imrsdb2'
Successfully cleared Blocking SPID 38 from the system.
```

`sp_imrs` returns silently if there are no blocking SPIDs in the system.

Example 25

Pack four allocation units of rows from the IMRS, freeing this space from `sysimrslogs`:

```
sp_imrs 'pack_rows', 'aus', '4'
```

Example 26

Packs the number of rows needed to free 30% of `sysimrslogs` pages:

```
sp_imrs 'pack_rows', 'pct', '30'
```

Usage

- The `'aus'`, `<'number_of_allocation_units_to_pack'>` parameter packs the specified number of allocation units of `sysimrslogs` from the IMRS to the pagestore, freeing this amount of space in `sysimrslogs`. SAP ASE issues an error message if the number specified by `<number_of_allocation_units_to_pack>` is greater than the total number of allocation units present in the IMRS log, and suggests that you decrease the number of allocation units.
- The `'pct'`, `<'percentage_of_allocation_units_to_pack'>` packs the specified percentage of IMRS log pages of `sysimrslogs` from the IMRS to the pagestore, freeing this amount of space in `sysimrslogs`. SAP ASE issues an error message if the percentage of allocation units is greater than the total number of allocation units available in the IMRS log.

Permissions

Most sp_imrs commands require the mon_role for successful execution. The command sp_imrs clear, blocking_spid requires the sa_role.

1.166 sp_imrslog_thresholdaction

Creates a threshold for the minimum number of free pages in a database.

When the number of free pages falls below this threshold, the server moves a number of pages, starting with the oldest inserted transaction, until the total number of inactive pages (those that can be released by executing dump transaction) plus the number of free imrslog pages is larger than the threshold level plus the 10% of the total used space when the threshold was triggered. That is:

```
[(total number of inactive pages) + (number of free imrslog pages)] >
[(threshold level) + (10% of total used space)]
```

However, sp_imrslog_thresholdaction does not run if the threshold is explicitly associated with a different procedure. If the sp_thresholdaction system procedure has been created, it is called after the oldest inserted transaction is moved.

Syntax

```
sp_imrslog_thresholdaction <database_name>, <segment_name>, <space_left>,
<status>
```

Parameters

<database_name>

name of a database in which the threshold was reached.

<segment_name>

name of the segment in which the threshold was reached. For the imrslog, <segment_name> is imrslogsegment.

<space_left>

size, in logical pages, of the threshold.

<status>

is 1 for the last-chance threshold; 0 for all other thresholds

Examples

Example 1

This example creates

1. Create the `test` database:

```
create database test on testdat=100 log on testlog=100 imrslog on
testimrslog=100 row storage on imrs_cache
CREATE DATABASE: allocating 51200 logical pages (100.0 megabytes) on disk
'testdat' (51200 logical pages requested).
CREATE DATABASE: allocating 51200 logical pages (100.0 megabytes) on disk
'testlog' (51200 logical pages requested).
CREATE DATABASE: allocating 51200 logical pages (100.0 megabytes) on disk
'testimrslog' (51200 logical pages requested).
Warning: The database 'test' is using an unsafe virtual device 'testdat'.
The recovery of this database can not be guaranteed.
Database 'test' is now online.
(return status = 0)
```

2. Determine the thresholds for the `test` database:

```
use test
go
sp_helpthreshold
go
segment name   free pages   last chance   threshold procedure
-------------- ------------ ------------- --------------------------
imrslogsegment        25600             0 sp_imrslog_thresholdaction
imrslogsegment         2560             1 sp_imrslog_thresholdaction
logsegment             3656             1 sp_thresholdaction
(3 rows affected)
(return status = 0)
```

When the `imrslog` fills, the server writes a message similar to this to the error log:

```
The procedure sp_imrslog_thresholdaction has triggered in database 'test'
for segment 'imrslogsegment' with 25600 pages left.
It will run until 28160 pages are free or inactive. Database 'test'
(retcode = 2, 11 pack ops) Required to pack 2560 pages :
The number of inactive pages has changed from 0 to 2805 (delta 2805). The
number of free pages has changed from 25600 to 25507
(delta -93). 2805 rows have been packed. Elapsed time 0 h, 0 m, 0 s
```

In this scenario, the number of `imrslog` free pages decreased because moving rows from the row storage cache to the page store requires logging to the `imrslog`, and the number of pages that could be freed by executing `dump tran` changed from 0 to 2805.
The threshold procedure ended the execution because the total number of inactive pages (25507) plus the number of free imrslog pages (2805) equals 28312, which is greater than the threshold level (25600) plus 10% of the total used space (25600 X .1), which equals 28160. That is:

```
[25507 + 2805] > [25600 + (25600)(.1)]
```

3. However, if you create a procedure to truncate the logs similar to this:

```
create or replace procedure sp_thresholdaction
        @dbname         sysname,
        @segmentname    sysname,
        @space_left     int,
        @status         int
as
```

```
     print "sp_thresholdaction %1!,%2!,%3!,
%4!",@dbname,@segmentname,@space_left, @status
     dump tran @dbname with truncate_only
```

sp_imrslog_thresholdaction clears the pages from the log, moving pages to the page store, and moving the oldest insert transaction forward:

```
The procedure sp_imrslog_thresholdaction has triggered in database 'test'
for segment 'imrslogsegment' with 25600 pages left.
It will run until 28160 pages are free or inactive.
sp_thresholdaction test,imrslogsegment,25600,0 Database 'test' (retcode =
2, 11 pack ops) Required to pack 2560 pages : The number of
inactive pages has changed from 0 to 2805 (delta 2805). The number of free
pages has changed from 25600 to 28312 (delta 2712). 2805
rows have been packed. Elapsed time 0 h, 0 m, 0 s
```

sp_thresholdaction truncates the log so all the pages from the first imrslog page to the new oldest inserted transaction are freed, creating a positive delta value.

Usage

- sp_imrslog_thresholdaction returns without executing any code if the <segment_name> is any segment other than imrslogsegment.
- sp_imrslog_thresholdaction is installed in sybsystemprocs.

1.167 sp_indsuspect

Checks user tables for indexes marked as suspect during recovery following a sort order change.

Syntax

```
sp_indsuspect [<tab_name>]
```

Parameters

<tab_name>

is the name of the user table to be checked.

Examples

Example 1

Checks the table newaccts for indexes marked as suspect:

```
sp_indsuspect newaccts
```

Usage

sp_indsuspect with no parameter creates a list of all tables in the current database that have indexes that need to be rebuilt as a result of a sort order change. With a <tab_name> parameter, sp_indsuspect checks the specified table for indexes marked as suspect during recovery following a sort order change.

Use sp_indsuspect to list all suspect indexes. The table owner or a system administrator can use dbcc reindex to check the integrity of the listed indexes and to rebuild them if necessary.

See also dbcc in *Reference Manual: Commands*.

Permissions

Any user can execute sp_indsuspect. Permission checks do not differ based on the granular permissions settings.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

1.168 sp_jreconfig

Manages the Java PCA/JVM. Enables or disables arguments and directives, changes configuration values, and reports configuration values.

Syntax

```
sp_jreconfig {
    add <array_arg>, <new_string> |
    array_clear <array_arg> |
    array_enable <array_arg> |
    array_disable <array_arg> |
    delete <array_arg>, <string_value> |
    disable { <directive> | <argument> | <array_arg>, <string_value> } |
    enable { <directive> | <argument> | <array_arg>, <string_value> } |
    list { <list_type>[, formatted ] | units | units, <units_type>[,
formatted ] } |
    reload_config |
    report { <directive>[, formatted ] | <directive>, args[, formatted ]
        |<argument>[, formatted ] } |
    update { <argument>, <old_value>, <new_value> } }
```

> **i Note**
>
> You can safely change the pca_jvm_module_path, pca_jvm_work_dir, pca_jvm_dbg_agent_port, pca_jvm_java_dbg_agent_suspend, pca_jvm_java_options, and pca_jvm_netio arguments. Do not use sp_jreconfig to change other arguments or directives unless instructed to do so by Sybase Technical Support.

Parameters

add

adds a new argument to an argument array. Use add only with arguments where <units_type> is array.

<array_arg>

is the name of an argument where <units_type> is array.

<new_string>

is the string value for a new array element.

array_clear

deletes all element in an argument array.

array_enable

enables all elements in an argument array. Sets each array element to enabled.

array_disable

disables, but does not delete, all elements in an argument array. Sets each element to disabled.

delete

removes an existing element from an argument array. Use `delete` only with arguments where `<units_type>` is array.

disable

disables the specified directive or argument.

<string_value>

identifies an array element in the named argument array that is to be deleted, enabled, or disabled.

directive

is the name of a valid directive.

argument

is the name of a valid argument.

enable

enables a directive or an argument.

list

lists groups of related arguments as, for example, `sp_jreconfig list, directives` or `sp_jreconfig list, enabled`. Also, lists all arguments of a specific type as, for example, `sp_jreconfig list, units, string`. To see all current `<units_types>` values, use `sp_jreconfig list, units`.

formatted

formats the displayed list for readability; longer values may be truncated.

> i Note
>
> In formatted reports, the process of improving readability may truncate wide columns. In addition, column headings may be overridden and may not match the actual table name. Do not format reports if the output is to be parsed or potential data truncation is not acceptable.

<list_type>

specifies a type of list. Values are:

- `directives` – list of directives
- `enabled` – list of enabled arguments
- `disabled` – list of disabled arguments
- `argnames` – list of argument names, each argument's `<units_type>`, and the directive to which each belongs

units

when used with `list`, generates a list of `<units_type>` currently in use.

<units_type>

is a type of argument. Every argument has a `<units_type>` that identifies its type. Values are:

- switch
- string
- number
- array

reload_config

reloads the configuration from the sybpcidb tables into memory. See *Java in Adaptive Server Enterprise > Restoring Default Configuration Values to sybpcidb*.

report

creates a report based on arguments supplied. Usually used to generate a report for an argument to see its current value and whether or not it is enabled. Can also be used to generate a report for a directive or its arguments.

<directive>

is any valid directive.

args

is a keyword used with report to generate a list of argument names for the named directive. For example:

```
sp_jreconfig report, "PCA_JVM", "args"
```

update

modifies a string or numeric value for an argument where <units_type> is string, number, or array. You cannot modify an argument when <units_type> is switch.

<old_value>

is a string or numeric value that identifies the existing argument or array element being updated.

<new_value>

is a string or numeric value that defines the new argument or array element.

Examples

Generating Formatted Report

Generates a formatted report for the PCA_JVM_OPT directive:

```
sp_jreconfig "report", "PCA_JVM_OPT", "formatted"
```

Generating Report of Arguments

Generates a report of the arguments of the PCA_JVM_OPT directive:

```
sp_jreconfig "report", "PCA_JVM_OPT", "args"
```

Generating Report of Argument

Generates a report for the argument pca_jvm_netio:

```
sp_jreconfig "report", "pca_jvm_netio"
```

Generating Report of All Arguments

Generates a report for all arguments that match "pca_jvm". A partial argument name generates a report for all matching arguments:

```
sp_jreconfig "report", "pca_jvm"
```

Generating Lists

Displays a list of all directives and their state (enabled or disabled):

```
sp_jreconfig "list", "directives"
```

Generating Lists

Displays a list of all arguments, their units types, and directives:

```
sp_jreconfig "list", "argnames", "formatted"
```

Generating Lists

Displays a list of all currently enabled arguments:

```
sp_jreconfig "list", "enabled"
```

Generating Lists

Displays a formatted list of all array arguments:

```
sp_jreconfig "list", "units", "array", "formatted"
```

Generating Lists

Display a list of argument unit types:

```
sp_jreconfig "list", "units"
```

The report for this command is formatted by default. Using the "-formatted" option generates an error.

Enabling Directives and Arguments

Enables the `PCA_JVM_WORK_DIR` directive:

```
sp_jreconfig "enable", "PCA_JVM_WORK_DIR"
sp_jreconfig "enable", "WORK_DIR"
```

You can use a partial directive name as long as it includes sufficient information to uniquely identify the directive.

Enabling Directives and Arguments

Enables the `pca_jvm_netio` argument:

```
sp_jreconfig "enable", "pca_jvm_netio"
```

Disabling Directives and Arguments

Disables the `WORK_DIR` directive. This example uses a partial directive name, which must include sufficient information to uniquely identify the directive:

```
sp_jreconfig "disable", "WORK_DIR"
```

> i Note
>
> Disabling a directives causes its arguments to behave as disabled, but does not change their base states.

Disabling Directives and Arguments

Disables the `pca_jvm_netio` argument:

```
sp_jreconfig "disable", "pca_jvm_netio"
```

Disabling Directives and Arguments

Disables array elements in `PCA_JVM_WORK_DIR`:

```
sp_jreconfig "disable", "pca_jvm_work_dir", "/some/path"
```

The path, but not the permissions mask, is required. See *Java in Adaptive Server Enterprise > File and Network Access Using Java*.

Updating String, Number, and Array Arguments

Updates a string argument:

```
sp_jreconfig "update", "pca_jvm_log_filename", "/old/path/filename.log",
    "/new/path/filename.log"
```

This example updates the file location of the `pca_jvm_log_filename` argument.

> i Note
>
> You cannot use `update` with directives or switch argument, as these items can not be modified.

Updating String, Number, and Array Arguments

Updates a number argument:

```
sp_jreconfig "update", "pca_jvm_min_port", "1026", "2056"
```

Numeric values must be enclosed in quotes (as strings) for the stored procedure. The SAP ASE server stores them as numeric values.

Updating String, Number, and Array Arguments

For the `PCA_JVM_WORK_DIR` directive, `work_dir` values consist of a path and an optional permission mask. Although the permission mask is optional, you must include the original string path to identify the `work_dir`. A permission mask is optional. If it is not supplied, the system uses a default mask with an octal equivalent of 0666. Example a does not set a permission mask; it uses the default mask. Examples b and c each set a permission mask of 0644:

```
[a] sp_jreconfig "update", "pca_jvm_work_dir",
"/old/path","/new/working/directory"
```

```
[b] sp_jreconfig "update", "pca_jvm_work_dir",
 "/old/path", "/new/working/directory(u=rw,go=r)"
```

```
[c] sp_jreconfig "update", "pca_jvm_work_dir",
 "/old/path", "/new/working/directory(u+w,ugo+r)"
```

Adding Array Elements

Adds new elements to the pca_jvm_work_dir argument array in the PCA_JVM_WORK_DIR directive. Example a uses the default mask. Examples b and c each set a permissions mask of 0644 (the mask is evaluated from left to right):

```
[a] sp_jreconfig "add", "pca_jvm_work_dir", "/new/working/directory"
```

```
[b] sp_jreconfig "add", "pca_jvm_work_dir", "/new/working/
directory(u=rw,go=r)"
```

```
[c] sp_jreconfig "add", "pca_jvm_work_dir", "/new/working/directory(u+w,ugo
+r)"
```

Deleting Array Elements

Deletes an array element in pca_jvm_work_dir:

```
sp_jreconfig "delete", "pca_jvm_work_dir", "/new/working/directory"
```

> i Note
>
> To delete a an element in pca_jvm_work_dir in the PCA_JVM_WORK_DIR directive, you can specify a partial string if the string supplied identifies a unique record. The permission mask is not required; you only need to supply the path even if the work_dir element was originally defined with a specific permission mask.

Enabling or Disabling All Elements in an Array

Disables all elements in the pca_jvm_work_dir array:

```
sp_jreconfig "array_enable", "pca_jvm_work_dir"
```

Enabling or Disabling All Elements in an Array

Disables all elements in the pca_jvm_work_dir array:

```
sp_jreconfig "array_disable", "pca_jvm_work_dir"
```

Clearing All Records in an Array

Deletes all records in the pca_jvm_work_dir array and creates an empty array:

```
sp_jreconfig "array_clear", "pca_jvm_work_dir"
```

Reloading Default Configuration Values

Loads the configuration values stored in sybpcidb into memory:

```
sp_jreconfig "reload_config"
```

Usage

There are additional considerations when using sp_jreconfig.

Enabling and disabling a directive works like a toggle. When a directive is:

- Enabled – the SAP ASE server uses the configured value (enabled or disabled) of each argument. This is the value stored in `sybpcidb`.
- Disabled – the SAP ASE server disregards the configured value (enabled or disabled) of each argument and treats all arguments of the directive as disabled, although the base value of each argument is retained in `sybpcidb`.

Arguments can be individually enabled or disabled. The types of arguments are:

- Switch – these arguments turn a feature on or off. For example, if the argument for logging is enabled, a log file is generated; if the argument for logging is disabled, no log file is generated.
- String – these arguments are for string and number values. Enabling a string or number argument ensures that the SAP ASE server uses the configured value. Disabling a string or number argument means that the SAP ASE server ignores the configured value and uses the default value. The configured and default values may or may not be the same.
- Array – an array argument is a collection of related string arguments, each of which can be individually enabled or disabled. When an individual string argument (or element) is disabled, its value is ignored and the behavior is the same as if the element had been deleted. When enabled, the argument value is included in the collection and is active.
  Array arguments can be enabled or disabled at will; you do not have to delete a value and then re-enter it later on.

Table 5: pca_jvm_module_path

`pca_jvm_module_path` configures the path to the JVM shared-object library. If you use a JRE other than that supplied by SAP, you must configure this argument to point to a location accessible to the PCA/JVM. This can be an absolute path or a relative path that extends $SYBASE. If an absolute path, start the path with "/" on UNIX or "\" on Windows. Otherwise, the SAP ASE server assumes a relative path and looks under $SYBASE.

Argument	Units Type	Default Value	Default State	Description
`pca_jvm_module_path`	string	Platform-specific	Enabled	The location of the JVM shared library using a relative path located under $SYBASE, or a fully qualified filename.

Table 6: pva_jvm_opt

This table describes `pva_jvm_opt`.

> **i Note**
>
> Do not change default values unless instructed to do so by SAP Technical Support.

Argument	Units Type	Default Value	Default State	Description
`pca_jvm_abort`	switch	On	Enabled	Abort abort(2) all on any failure (dangerous).
`pca_jvm_allow_unchecked_sockops`	switch	N/A	Disabled	Allow unchecked socket operations.
`pca_jvm_debug`	switch	N/A	Disabled	Report PCA_DEBUG requests.

Argument	Units Type	Default Value	Default State	Description
pca_jvm_except	switch	N/A	Enabled	Report excepting PCA/VM JNI/JVM invocations.
pca_jvm_heap_ratio	string	0.3	Enabled	VM Heap / PCI memory ratio.
pca_jvm_jvmti	switch	N/A	Disabled	Java VM Tools Interface.
pca_jvm_min_port	number	1026	Enabled	Allow VM network support.
pca_jvm_netio	switch	N/A	Disabled	Allow VM network support.
pca_jvm_report	switch	N/A	Disabled	Report PCA/VM JNI/JVM invocations.
pca_jvm_security_manager_enabled	switch	N/A	Disabled	Enable the SecurityManager in the PCA/JVM.
pca_jvm_sigcache_density	number	100	Enabled	PCA/VM signature cache target density.
pca_jvm_sigcache_enabled	switch	N/A	Enabled	Enable PCA/VM signature cache.
pca_jvm_sigcache_fixed_ratio	number	50	Enabled	PCA/VM signature cache size percentage fixed.
pca_jvm_sigcache_freeboard	number	30	Enabled	PCA/VM signature cache space recovery percentage on cache sweeps.
pca_jvm_sigcache_size	number	512	Enabled	PCA/VM signature cache size in KBytes.
pca_jvm_sigcache_size_type	number	1	Enabled	PCA/VM signature cache size_type 0:AS_PCT 1:Kbyte 2:Mbyte.
pca_jvm_sigcache_washcycle	number	1000	Enabled	PCA/VM signature cache wash daemon cycle time (ms).
pca_jvm_sigcache_washdaemon	switch	N/A	Disabled	Enable PCA/VM signature cache wash daemon.
pca_jvm_strace	switch	N/A	Enabled	Produce stack traces on none emulated VM handles.

Table 7: pca_jvm_dir_options

pca_jvm_dir_options configures the directory definitions used by the JVM for the ROOT and TEMP directories. Do not change these values unless you are a knowledgeable user or you have been directed to do so by SAP Technical Support.

> ⚠ Caution
>
> Use this directive with care. The pca_jvm_tmp_dir in the PCA_JVM_DIR_OPTIONS directive should always point to the system temporary directory. Changing this location can be a serious security risk. The JVM allows files to be opened for reading and writing, and allows file creation in this directory.

Argument	Units type	Default value	Default state	Description
pca_jvm_root_dir	string	Platform-specific	Enabled	Absolute path to the system root directory. Required for file I/O.

Argument	Units type	Default value	Default state	Description
`pca_jvm_tmp_dir`	string	Platform-specific	Enabled	Absolute path to the system temporary directory. Required for file I/O.

Table 8: pca_jvm_work_dir

`pca_jvm_work_dir` configures the JVM trusted directories. This argument consists of a collection of specific locations in your file system where your Java program classes can perform certain file I/O operations. Each directory can have an optional permission mask that defines which file I/O operations are allowed in each directory.

Argument	Units Type	Default Value	Default State	Description
`pca_jvm_work_dir`	array	Platform-specific	Disabled	The absolute path (and optional permission mask) where the JVM is allowed to do file I/O. See *File and Network Access Using Java* in *Java in Adaptive Server Enterprise*.

Table 9: pca_jvm_min_jni_version

`pca_jvm_min_jni_version` configures minimum backward compatible JNI version.

Argument	Units Type	Default Value	Default State	Description
`pca_jvm_min_jni_version`	string	'JNI_VERSION_1_2'	Enabled	Minimum backward compatible JNI version.

Table 10: pva_jvm_logging

`pva_jvm_logging` configures JRE/VM logging options.

Argument	Units Type	Default Value	Default State	Description
`pca_jvm_ase_logging`	switch	N/A	Enabled	Configure SAP ASE logging.
`pca_jvm_log_filename`	string	`'/tmp/Java_vm.log1'`	Disabled	A fully qualified filen ame that the VM uses for logging.

Table 11: pca_jvm_ext_class_loader

`pca_jvm_ext_class_loader` configures global and database extension class loaders.

Argument	Units Type	Default Value	Default State	Description
`pca_jvm_ext_class_loader_global`	array	none	Disabled	Global Extension Class Loader.
`pca_jvm_ext_class_loader_dbase`	array	none	Disabled	Database Extension Class Loader.

Table 12: pva_jvm_java_options

`pva_jvm_java_options` configures Java start-up options, both normal and extended.

Argument	Units Type	Default Value	Default State	Description
pca_jvm_java_options	array	"-Djava.awt.headless=true"	Enabled	Run Java in headless mode.
pca_jvm_java_options	array	"-Djava.compiler=JIT"	Enabled	Force JIT compilation and optimization.
pca_jvm_java_options	array	"-XX:+CITune:"	Disabled	Time spent in JIT Compiler (1.4 only).
pca_jvm_java_options	array	"-XX:+Use AltSigs"	Disabled	This option seems to crash the J2SE.
pca_jvm_java_options	array	"-XX:CodeCacheExpansionSize=512000"	Enabled	Code Cache extension size.
pca_jvm_java_options	array	"-Xbatch"	Disabled	Disabled background compilation.
pca_jvm_java_options	array	"-Xcheck:jni"	Enabled	Perform additional checks for JNI functions.
pca_jvm_java_options	array	"-Xfuture"	Disabled	Perform strict checks, anticipating future default.
pca_jvm_java_options	array	"-Xincgc"	Disabled	Enable incremental garbage collection.
pca_jvm_java_options	array	"-Xint"	Disabled	Interpreted mode execution only.
pca_jvm_java_options	array	"-Xloggc:./myGClog"	Disabled	Log GC status to a file with time stamps.
pca_jvm_java_options	array	"-Xmixed"	Disabled	Mixed mode execution (default).
pca_jvm_java_options	array	"-Xms64m"	Disabled	Set initial Java heap size.
pca_jvm_java_options	array	"-Xmx64m"	Disabled	Set maximum Java heap size.
pca_jvm_java_options	array	"-XnoClassgc"	Disabled	Disable class garbage collection.
pca_jvm_java_options	array	"-Xprof"	Disabled	Output cpu profiling data.
pca_jvm_java_options	array	"-Xrs"	Disabled	Reduce use of OS signals by Java/VM.
pca_jvm_java_options	array	"-Xshare:auto"	Disabled	Configure shared class data (set to auto, off or on).

Argument	Units Type	Default Value	Default State	Description
`pca_jvm_java_options`	array	`"-Xss64m"`	Disabled	Set Java thread stack size.
`pca_jvm_java_options`	array	`"-XX:MaxPermSize"`	Disabled	Sets the maximum size of the permanent heap
`pca_jvm_java_options`	array	`"-enablesystemassertions"`	Enabled	Enable Java/VM System Assertions - applies only to platforms using the Sun HotSpot (TM) JavaVM.
`pca_jvm_java_options`	array	`"-esa"`	Enabled	Enable All System Assertions - only applies to platforms using the Sun HotSpot (TM) JavaVM.
`pca_jvm_java_options`	array	`"-verbose:class"`	Disabled	Class loading within the JRE/VM.
`pca_jvm_java_options`	array	`"-verbose:gc"`	Disabled	Garbage Collection statistics.
`pca_jvm_java_options`	array	`"-verbose:jni"`	Disabled	Java Native Interface (JNI) invocations.

Table 13: pva_jvm_java_dbg_agent_port

`pva_jvm_java_dbg_agent_port` configures the Java VM debug agent port number (used for debugging Java applications with a Java debugger). See *Java in Adaptive Server Enterprise* for more information.

Argument	Units Type	Default Value	Default State	Description
`pca_jvm_java_dbg_agent_port`	number	8000	Disabled	Configure the port number and the Java VM Debug Agent.
`pca_jvm_java_dbg_agent_suspend`	switch	N/A	Disabled	Java VM Debug Agent starts suspended when enabled.

Table 14: pca_jvm_sys_device_path

`pca_jvm_sys_device_path` configures platform-specific system device directories (required for Solaris).

Argument	Unit Type	Default Value	Default State	Description
`pca_jvm_sys_device_path`	array	Platform-specific	Platform-specific	Internal system option for Sun OS. **Do not change.**

Permissions

The permission checks for `sp_jreconfig` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `manage server configuration` privilege.
Disabled	With granular permissions disabled, you must be a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_pciconfig [page 660]

1.169 sp_ldapadmin

Creates or lists an LDAP URL search string, verifies an LDAP URL search string or login, or specifies the access accounts and tunable LDAPUA-related parameters.

Syntax

```
sp_ldapadmin '<command>'[, <option1>[, <option2>]]
```

Valid `<command>[, <option1>[, <option2>]]` options are listed in the following Parameters section.

Parameters

`'set_primary_url', '<ldapurl>'`

creates the specified search string `<ldapurl>`. Exactly one primary search string can be created.

The syntax for <ldapurl> is:

```
ldapurl::=ldap://<host>:<port>/<node>?<attributes>?base | one
| sub?<filter>
```

where:

- <host> – is the host name of the LDAP server.
- <port> – is the port number of the LDAP server.
- <node> – specifies the node in the object hierarchy at which to start the search.
- <attributes> – is a list of attributes to return in the result set. Each LDAP server may support a different list of attributes.
- base – qualifies the search criteria, specifying a search of the base node.
- one – qualifies the search criteria. base specifies a search of the base node; one specifies a search of node and one sublevel below node; and sub specifies a search of node and all node sublevels.
- sub – specifies a search of node and all node sublevels.
- <filter> – specifies the attribute or attributes to be authenticated. The filter can be simple, such as "uid=*," or compound, such as "(uid=*)(ou=<group>)." The syntax is LDAP server dependent and uses a wildcard (*) to describe the login name.

'set_secondary_url', {'<ldapurl>' | null}

creates the specified secondary search string <ldapurl> or no secondary search string. Exactly one secondary search string can be created.

'set_dn_lookup_url', '<distinguished_name_url>'

uses the searched distinguished name algorithm to authenticate the login with an LDAP directory server when you set set_dn_lookup_url to a non-NULL value.

<distinguished_name_url> has a maximum length of 255 characters and is used to search for a distinguished name associated with the login name.

'set_secondary_dn_lookup_url', '<distinguished_name_url>'

creates the specified secondary distinguished name algorithm to authenticate the login with an LDAP directory server when you set set_secondary_dn_lookup_url to a non-NULL value.

<distinguished_name_url> has a maximum length of 255 characters and is used to search for a distinguished name associated with the login name.

'set_access_acct', '<account_distinguished_name>', '<account_password>'

specifies the identity and password that the SAP ASE server uses to conduct searches and other read-only administrative actions. The identity is in the form of a distinguished name. Use <account_distinguished_name> to authenticate this user with the LDAP server. Both <account_distinguished_name> and <account_password> are limited to 255 characters each.

'set_secondary_access_acct', '<account_distinguished_name>', '<account_password>'

creates the secondary identity and password that the SAP ASE server uses to conduct searches and other read-only administrative actions. The identity is in the form of a distinguished name. Use <account_distinguished_name> to authenticate this user with the LDAP server. Both `<account_distinguished_name>` and `<account_password>` are limited to 255 characters each.

`'set_failback_interval', '<time_in_minutes>'`

sets the interval at which the SAP ASE housekeeper utility checks for failed LDAP servers.

`'suspend', {'primary' | 'secondary'}`

suspends the use of a primary or secondary URL for authentication.

`'activate', {'primary' | 'secondary'}`

enables using the set of primary or secondary URLs for authentication.

`'list'`

displays LDAP search strings.

`'list_urls'`

displays LDAP URL search strings.

`'list_urls'`

displays LDAP URL search strings.

`'list_access_acct'`

displays the LDAP access account distinguished name set.

`'check_url', '<ldapurl>'`

verifies an LDAP URL search string. Can also verify the existence of a user account, but it does not authenticate the user.

`reinit_descriptors`

Unbinds all established LDAP server descriptors, and reinitializes the LDAP user-authentication subsystem. The syntax is:

```
sp_ldapadmin 'reinit_descriptors'
```

Whenever a certification authority trusted root file is modified, the system security officer must use `reinit_descriptors` to reinitialize LDAP user authentication. For complete documentation, see `sp_ldapadmin` in the *Reference Manual: Procedures*.

`'check_login', '<login_name>'`

verifies a user account for the existing LDAP URL search strings. It does not authenticate the user.

`'set_timeout' <timeout_in_milli_seconds>`

sets the time in milliseconds that the SAP ASE server waits for a response from the LDAP server before abandoning the authentication request.

The default value for `set_timeout` is 10,000 milliseconds (10 seconds). Valid values are between 1 and 3,600,000 (one hour).

`'set_log_interval', <log_interval>`

sets the log interval, specified in minutes, from 0 to 480 minutes. The default value is 3 minutes. 0 implies that all messages are printed.

`'set_num_retries', <num_retries>`

sets the number of retries attempted after transient errors. The valid range for `set_num_retries` is 1 – 60, and the default is 3.

`'set_max_ldapua_naptive_threads', <max_ldapua_native_threads>`

sets the maximum number of native threads that can be running concurrently in an engine processing an LDAP authentication request.

The minimum value of `set_max_ldapua_native_threads` is 1. The maximum value is `max native threads` minus `number of dump threads` as specified using `sp_configure`. The default value is the same as the maximum value.

`sp_configure` ensures that `max native threads` is sufficient for `set_max_ldapua_native_threads` and the value of the configuration parameter `number of dump threads`.

`'set_max_ldapua_desc', <max_ldapua_desc>`

sets the maximum number of LDAP descriptors per engine. The valid range for `set_max_ldapua_desc` is 1 – 20, and the default is 20.

`'set_abandon_ldapua_when_full', {true | false}`

allows you to seek alternative means of LDAP user authentication when the native threads per engine capacity is exceeded.

When no more threads are available, the request is abandoned if `set_abandon_ldapua_when_full` is set to true. If `enable ldap user auth` is set to 1, the client is authenticated using SAP ASE `syslogins`. If `enable ldap user auth` is set to 2, the client login fails.

If `set_abandon_ldapua_when_full` is set to false, the authentication request is blocked until the LDAP descriptor can accept new authentication requests.

`'help'`

displays usage information for `sp_ldapadmin`.

Examples

Example 1

Creates an LDAP URL search string for the LDAP SunONE Directory Server:

```
sp_ldapadmin set_primary_url,'ldap://voyager:389/
    ou=People,dc=MyCompany,dc=com??sub?uid=*'
```

The search string identifies a directory server listening on host name "voyager," port number 389 (the default LDAP protocol port), the base node to begin the search is within organizational unit (ou) "People," and the domain is "MyCompany.com." It returns all attributes that match the filter `uid=*`. The SAP ASE server replaces the wildcard with the SAP ASE login name that is to be authenticated.

Example 2

Creates an LDAP URL search string defined in OpenLDAP 2.0.25 using the criteria described in the previous example:

```
sp_ldapadmin set_primary_url,'ldap://voyager:389/
```

```
    dc=MyCompany,dc=com??sub?cn=*'
```

Example 3

Sets the secondary LDAP URL search string to null, indicating no failover and no secondary LDAP server:

```
sp_ldapadmin set_secondary_url, null
```

Example 4

Creates an LDAP URL search string with a compound filter:

```
sp_ldapadmin set_primary_url, 'ldap://voyager:389/
    ou=people,dc=siroe,dc=com??sub?(&(uid=*) (ou=accounting))
```

Example 5

Uses the default Microsoft Active Directory schema found on Windows 2000 controllers:

```
1> sp_ldapadmin set_access_acct, 'cn=aseadmin, cn=Users, dc=mycompany,
      dc=com', 'aseadmin secret password'
2> go
1> sp_ldapadmin set_dn_lookup_url,
    'ldap://mydomainhostname:389/cn=Users,dc=mycompany,dc=com?
     distinguishedName?sub?samaccountname=*'
2> go
1> sp_ldapadmin set_primary_url,'ldap://mydomainhostname:389/'
2> go
```

The "aseadmin" username is added to the Active Directory server and granted read access to the trees and objects where users are found. The LDAP attribute specified by `distinguishedName` is obtained and used to authenticate the user. The filter specifies a search on attribute `samaccountname=*`; the `*` wildcard is replaced with the name from the SAP ASE login record.

For example, "`samaccountname=jqpublic`" returns DN attribute "`distinguishedName`" with value "`cn=John Q. Public, cn=Users,dc=mycompany, dc=com`" to the SAP ASE server. The SAP ASE server uses this string to bind to `ldap://mydomainhostname:389`. If the bind is successful, authentication succeeds.

Example 6

Sets the maximum number of native threads to 12:

```
sp_ldapadmin 'set_max_ldapua_native_threads', '12'
```

Example 7

sets the time that the SAP ASE server waits for a response from the LDAP server before abandoning the authentication request to 25,000 milliseconds:

```
sp_ldapadmin, 'set_timeout', '25000'
```

Example 8

Disables the authentications requests until the LDAP descriptor can accept new authentication requests:

```
sp_ldapadmin 'set_abandon_ldapua_when_full', 'false'
```

Example 9

Displays the current LDAP values:

```
sp_ldapadminPrimary:
URL:                  'ldap://linuxpuneeng1:50917/'
DN Lookup URL:
'ldap://linuxpuneeng1:50917/dc=sybase,dc=com??sub?uid=*'
Access Account:      'cn=Directory Manager'
Active:              'TRUE'
Status:              'READY'
Secondary:
URL:                 ''
DN Lookup URL:       ''
Access Account:      ''
Active:              'FALSE'
Status:              'NOT SET'
Timeout value:       '5000' milliseconds
Log interval:        '1' minutes
Number of retries:   '3'
Maximum LDAPUA native threads per Engine: '400'
Maximum LDAPUA descriptors per Engine: '3'
Abandon LDAP user authentication when full: 'false'(return status = 0)
```

Usage

There are additional considerations when using `sp_ldapadmin`:

- The LDAP vendor determines the syntax of the search string. In all cases, the search string specifies the attribute name that uniquely identifies the user in the form "`<attribute>=<wildcard>`" as in "`cn=*`".
- The first attribute in a compound filter must define the Relative Distinguished Name (RDN). For example, "`...sub?(uid=*)(ou=group)`". Otherwise, the authentication fails.
- When a search string is added, the SAP ASE server verifies that it uses valid LDAP URL syntax and that it references an existing node. To ensure that the valid string returns expected values, carefully choose and verify the search string when configuring the SAP ASE server.
- The secondary URL search string enables failover to another LDAP server. The SAP ASE server uses the primary URL search string unless the LDAP Server is not active or the search string is invalid. In this event, the SAP ASE server uses the secondary URL search string for authentication.
- The login sequence of searched DN algorithm requires the SAP ASE server to bind to the LDAP server using the access account before it can perform searches. The SAP ASE server obtains an LDAP descriptor (handle) as a result of the bind. This descriptor is used for searching the DN of the login on the LDAP server.
- In order to access the server, users who are being authenticated with the LDAP server should either exist as a valid user in SAP ASE, or have a mapping defined.

See *System Administration Guide > Creating and Managing ASE Logins Using LDAP* and `sp_maplogin`.

Permissions

The permission checks for `sp_ldapadmin` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with manage security configuration privilege.
Disabled	With granular permissions disabled, you must be a user with sso_role.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_maplogin [page 579]

1.170 sp_listener

Dynamically starts and stops SAP ASE listeners on any given port on a per-server basis.

Considerations for Process Mode

When executed in process mode, sp_listener dynamically starts and stops SAP ASE listeners on any given port on a per-engine basis.

Syntax

- For threaded mode, the syntax is either of the following:

  ```
  sp_listener "<command>", "<server_name> | <network>"
  ```

  ```
  sp_listener "<command>", '[<protocol>:]<machine>:<port>:"CN=<common_name>"'
  ```

- For process mode, the syntax is either of the following:

  ```
  sp_listener "<command>", "<server_name> | <network>", <engine> | <remaining>
  ```

```
sp_listener "<command>", '[<protocol>:]<machine>:<port>:"CN=<common_name>"',
<engine>
```

Parameters

`<command>`

can be any of:

`start` Starts a listener on the specified ports on each of the specified servers.

`stop` Terminates the specified listeners. You must include a specific listener address in the syntax, not just a server name. The command fails if you attempt to stop the last listener.

`suspend` Prevents the listener from accepting any more connections.

`resume` Instructs suspended listeners to resume listening.

`status` Report on the state of the listeners specified by the parameters. The state is one of: active, stopped, or suspended. If your system is enabled for IPV6, the SAP ASE server encloses the listener name in brackets in the output.

`help` Displays the `sp_listener` syntax.

`<server_name> | <network>`

is the name of the SAP ASE server, as specified in the interfaces file, or the name of the network.

`<engine>`

(Used only in process mode) specifies the number of the engine affected by this command. `<engine>` can be a single-engine number in quotes ("2"), a list ("3,5,6"), a range ("2 – 5"), or mix of all ("2,3 – 5,7").

> **Note**
>
> Windows ignores the `<engine>` parameter.

`remaining`

specifies that the command is to take effect on all engines on which it can be meaningfully applied (that is, where the listener is in a state in which the command is can take effect).

`<protocol>`

the type of protocol; one of: afunix, tcp, tli, ssltcp, ssltli, winsock, sslnlwnsck, sslwinsock.

`<machine:port>`

the machine name and port number (as specified in the interfaces file) to which the listener connects.

`CN=<common_name>`

specifies a common name for the SSL certificate.

Use CN=<common_name> only if you specify ssltcp as the protocol. The SAP ASE server validates the common_name you specify against the common_name in the SSL certificate. If you do not include CN=<common_name>, the SAP ASE server uses <server_name> to validate against the common name in the SSL certificate. If you include a fully qualified domain name in the certificate, it must match CN=<common_name>.

Examples

Example 1

Start listeners for each master entry in the interfaces file corresponding to server orion:

```
sp_listener "start", "orion"
```

Example 2

Create TCP listeners for port number 4226:

```
sp_listener "start", "goldie:4226"
```

Example 3

Create listeners for all master entries in the interfaces file for server orion:

```
sp_listener "start", "orion", "remaining"
```

Example 4

Start TCP listeners on port 4226 on machine goldie for all engines not already listening to this port:

```
sp_listener "start", "goldie:4226", "remaining"
```

Example 5

Specify the common name ase1.big server 1.com:

```
sp_listener 'start','ssltcp:blade1:17251:
                "CN=ase1.big server 1.com"','0'
```

Example 6

Stop the listener on port number 4226:

```
sp_listener "stop", "tcp:goldie:4226"
```

Example 7

Stop all listeners on port number 4226. Because this command includes the remaining parameter, it does not fail if some engines are not listening to the port:

```
sp_listener "stop", "tcp:goldie:4226", "remaining"
```

Example 8

Suspend Winsock listener on port 4226:

```
sp_listener "suspend", "winsock:clouds:4226"
```

Example 9

Resume all active listeners on port number 4226:

```
sp_listener "resume", "tcp:goldie:4226", "remaining"
```

Example 10

Start a named pipe listener using AF_UNIX communication.

```
sp_listener "start", "afunix:big_server:/tmp/big_pipe"
```

Usage

There are additional considerations when using `sp_listener`:

- `sp_listener` uses either of two syntaxes, described in the syntax section, above. The first syntax affects all SAP ASE master ports listed in the interfaces file. The second allows you to manage listeners not listed in the interfaces file.
- The attribute name "CN" is case-insensitive (it can be "CN", "cn" or "Cn"), but the attribute value for the common name is case-sensitive.
- `sp_listener` ignores the `<engine>` parameter if you include it while running in threaded mode.
- The semantics for `sp_listener` is atomic; if a command cannot be completed successfully, it is aborted.
- When the host component of a `sp_listener` command is an IPv6 address, it should be enclosed in brackets. For example, `tcp:[2001:ec8:4008:1::123]:80`
- You can issue the `status` parameter by itself. The `status` parameter displays the state of all the listeners in the interfaces file.
- A listener can be in one of the following states: stopped, suspended, or active. `sp_listener` allows you to move listeners between these states. A request to move to a nonpermissible state results in failure (For example, requesting to stop a non existent listener). Use `sp_listener "status"` to determine the state of a listener.
- The `remaining` parameter specifies that, for the command you are running (`start`, `stop`, `resume`, and so on), the command runs successfully for all listeners that are in a state that allow the change (for example, moving states from start to stop). For example, if you attempt to start listeners on engines one through six, but engines one, four, and five are unavailable, `sp_listener... "remaining"` starts listeners on engines two, three, and six, disregarding the offline engines. You cannot specify an engine number if you include the `remaining` parameter.
- The maximum number of listeners is 32. If you create an SAP ASE server with two master ports in the interfaces file, you can start at most 30 more listeners on other ports.

For limitations related to IPV6 in `sp_listener`, see *Security Administration Guide Specifying a Common Name*.

Permissions

The permission checks for `sp_listener` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `manage server` privilege.
Disabled	With granular permissions disabled, you must be a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

1.171 sp_listsuspect_db

Lists all databases that currently have offline pages because of corruption detected on recovery, including the database name, number of suspect pages, and number of objects containing suspect pages.

Syntax

```
sp_listsuspect_db
```

Examples

Example 1

Lists the databases that have suspect pages:

```
sp_listsuspect_db
```

Usage

To identify suspect pages, use `sp_listsuspect_page`.

Permissions

Any user can execute `sp_listsuspect_db`. Permission checks do not differ based on the granular permissions settings.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_listsuspect_page [page 554]
sp_setsuspect_granularity [page 729]
sp_setsuspect_threshold [page 732]

1.172 sp_listsuspect_object

Lists all indexes in a database that are currently offline because of corruption detected on recovery.

Syntax

```
sp_listsuspect_object [<dbname>]
```

Parameters

`<dbname>`

is the name of the database.

Examples

Example 1

Lists the suspect indexes in the current database:

```
sp_listsuspect_object
```

Example 2

Lists the suspect indexes in the pubs2 database:

```
sp_listsuspect_object pubs2
```

Usage

There are additional considerations when using sp_listsuspect_object:

- If an index on a data-only-locked table has suspect pages, the entire index is taken offline during recovery. Offline indexes are not considered by the query optimizer.
- Use the system procedure sp_forceonline_object to bring an offline index online for repair.
- Indexes on allpages-locked tables are not taken completely offline during recovery; only individual pages of these indexes are taken offline. These pages can be brought online with sp_forceonline_object.
- sp_listsuspect_object lists the database name, object ID, object name, index ID, and access status for every suspect index in the specified database or, if <dbname> is omitted, in the current user database.
- A value of SA_ONLY in the access column means that the index has been forced online for system administrator use only. A value of BLOCK_ALL means that the index is offline for everyone.

See the *System Administration Guide* for more information on recovery fault isolation.

Permissions

Any user can execute sp_listsuspect_object. Permission checks do not differ based on the granular permissions settings.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_forceonline_object [page 382]

1.173 sp_listsuspect_page

Lists all pages in a database that are currently offline because of corruption detected on recovery, including the database name, page ID, object, index ID, and access status for every suspect page in the specified database or, if `<dbname>` is omitted, in the current user database.

Syntax

```
sp_listsuspect_page [<dbname>]
```

Parameters

`<dbname>`

is the name of the database.

Examples

Example 1

Lists the suspect pages in the current database:

```
sp_listsuspect_page
```

Example 2

Lists the suspect pages in the `pubs2` database:

```
sp_listsuspect_page pubs2
```

Usage

A value of SA_ONLY in the "access" column indicates that the page has been forced online for system administrator use only. A value of BLOCK_ALL indicates that the page is offline for everyone.

Permissions

Any user can execute sp_listsuspect_page. Permission checks do not differ based on the granular permissions settings.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_listsuspect_db [page 551]
sp_setsuspect_granularity [page 729]
sp_setsuspect_threshold [page 732]

1.174 sp_lmconfig

Configures license management-related information on SAP ASE.

Syntax

```
sp_lmconfig
     [
     [ 'edition' [, <edition_type> ]]
     | [ 'license type' [, <license_type_name> ]]
     | [ 'smtp host' [, <smtp_host_name> ]]
     | [ 'smtp port' [, <smtp_port_number> ]]
     | [ 'email sender' [, <sender_email_address> ]]
     | [ 'email recipients' [, <email_recipients> ]]
     | [ 'email severity' [, <email_severity> ]]
     ]
```

Parameters

sp_lmconfig

without parameters displays the following license status information:

- Server Name
- License Name
- Version
- Quantity Status
- Expiration Date

edition

is a static configuration parameter to specify the license edition.

<edition_type>

specifies the edition type, and has the following possible values:

- `null` – is the default value. When a null value is specified, no product edition is configured, and the SAP ASE server starts with a license for any edition.
- `EE` – indicates the Enterprise edition.
- `SE` – indicates the Small Business edition.
- `XE` – indicates the Express edition.

> **i Note**
>
> The SAP ASE Developer Edition is no longer supported. As an alternative, you can download and evaluate a non-production environment edition of SAP ASE Enterprise Edition.

license type

is a static configuration parameter that specifies the license type for the installation of SAP ASE, and is valid only when you specify a non-null edition.

<license_type_name>

specifies the license type of a particular installation of SAP ASE. You need not specify`license type` if you are using the Express (XE) edition. The valid, most typical values are:

- `SRST` – server license with network seats
- `SVST` – standby server license with network seats
- `SRCU` – server license with concurrent user seats
- `SVCU` – standby server license with concurrent user seats
- `SRIA` – server license with Internet access license
- `SVIA` – standby server license with Internet access license
- `CP` – CPU license
- `SF` – standby CPU license
- `null` – default

> **i Note**
>
> In addition to this list, `sp_lmconfig` also accepts two-letter abbreviations for specialized and legacy license types. If the license type is not accepted, set the type to null and use the network license server options file to control the license used by this SAP ASE server.

smtp host, <smtp host name>

designates the SMTP host used to send e-mail for license event notifications.

smtp port, <smtp port number>

designates the SMTP port used to send e-mail for license event notifications.

email sender, <sender email address>

specifies the e-mail address used as the senders address on license event E-mail notifications.

email recipients, <email recipients>

is a comma separated list of e-mail recipients who receive license event E-mail notifications.

email severity, <email severity>

is the minimum severity of an error that causes an E-mail notification to be sent. The default is error, and the other possibilities are warning and informational.

Examples

Example 1

Displays basic license configuration information for a system:

```
1> sp_lmconfig
2> go
```

```
 Parameter Name    Config Value
 ----------------- ------------
 edition           EE
 license type      CP
 smtp host         null
 email recipients  null
 email severity    null
 smtp port         null
 email sender      null
 License Name         Version    Quantity Status     Expiry
Date         Server Name
 ---------------      ---------- -------- ---------- -------------------
 ----------
 ASE_HA               2010.03314 2        expirable  Apr 1 2010
12:00AM  cuprum
 ASE_ASM              null       0        not used   null                null
 ASE_EFTS             null       0        not used   null                null
 ASE_DIRS             null       0        not used   null                null
 ASE_XRAY             null       0        not used   null                null
 ASE_ENCRYPTION       null       0        not used   null                null
 ASE_CORE             2010.03314 2        expirable  Apr 1 2010
12:00AM  cuprum
 ASE_PARTITIONS       null       0        not used   null                null
 ASE_RLAC             null       0        not used   null                null
 ASE_MESSAGING_TIBJMS null       0        not used   null                null
 ASE_MESSAGING_IBMMQ  null       0        not used   null                null
 ASE_MESSAGING_EASJMS null       0        not used   null                null

 Property Name Property Value ------------- --------------
 PE            EE
 LT            CP
 ME            null
 MC              null
 MS              null
 MM              null
 CP              0
 AS              A

(return status = 0)
```

Usage

There are additional considerations when using `sp_lmconfig`:

- When you do not specify any parameters, `sp_lmconfig` also displays the server name from the location where the license is checked out.
- If you do not specify an edition or use "null," the SAP ASE server looks for and uses whatever license edition it finds when it starts.
- The configuration options set by `sp_lmconfig` are stored in the `sylapi` properties file.

See also:

- The SAP ASE installation guide for your platform.

Permissions

The permission checks for `sp_lmconfig` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `manage server configuration` privilege.
Disabled	With granular permissions disabled, you must be a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

1.175 sp_lock

Reports the object names and IDs of processes that currently hold locks.

Syntax

```
sp_lock [<spid1>[, <spid2>]] | [@verbose = <int>]
```

Parameters

<spid1>

is the SAP ASE process ID number from the master.dbo.sysprocesses table. Run sp_who to get the <spid> of the locking process.

<spid2>

is another SAP ASE process ID number to check for locks.

@verbose = <int>

displays a concatenated name of the table names instead of a <spid>, such as test..testa, following by the <spid>.

> i Note
>
> <int> can be any number, as sp_lock only check to see whether the value of @verbose is null or not.

Examples

Example 1

Shows the lock status of serial processes with spids 7, 18, and 23 and two families of processes. The family with fid 1 has the coordinating processes with spid 1 and worker processes with spids 8, 9, and 10. The family with fid 11 has the coordinating processes with spid 11 and worker processes with spids 12, 13, and 14:

```
sp_lock
```

```
The class column will display the cursor name for locks associated with a
cursor for the current user and the cursor id for other users.
fid spid locktype        table_id  page  dbname   class           context
--- ---- -------------- ----------- ----- -------- --------------- -------
0    7  Sh_intent      480004741     0 master  Non Cursor Lock NULL
0   18  Ex_intent       16003088     0 pubtune Non Cursor Lock NULL
```

```
0  18  Ex_page         16003088   587 pubtune Non Cursor Lock NULL
0  18  Ex_page         16003088   590 pubtune Non Cursor Lock NULL
0  18  Ex_page         16003088  1114 pubtune Non Cursor Lock NULL
0  18  Ex_page         16003088  1140 pubtune Non Cursor Lock NULL
0  18  Ex_page         16003088  1283 pubtune Non Cursor Lock NULL
0  18  Ex_page         16003088  1362 pubtune Non Cursor Lock NULL
0  18  Ex_page         16003088  1398 pubtune Non Cursor Lock NULL
0  18  Ex_page-blk     16003088   634 pubtune Non Cursor Lock NULL
0  18  Update_page     16003088  1114 pubtune Non Cursor Lock NULL
0  18  Update_page-blk 16003088   634 pubtune Non Cursor Lock NULL
0  23  Sh_intent       16003088     0 pubtune Non Cursor Lock NULL
0  23  Sh_intent      176003658     0 pubtune Non Cursor Lock NULL
0  23  Ex_intent      208003772     0 pubtune Non Cursor Lock NULL
1   1  Sh_intent      176003658     0 tpcd    Non Cursor Lock Sync-pt
duration request
1   1  Sh_intent-blk  208003772     0 tpcd    Non Cursor Lock Sync-pt
duration request
1   8  Sh_page        176003658 41571 tpcd    Non Cursor Lock NULL
1   9  Sh_page        176003658 41571 tpcd    Non Cursor Lock NULL
1  10  Sh_page        176003658 41571 tpcd    Non Cursor Lock NULL
11 11  Sh_intent      176003658     0 tpcd    Non Cursor Lock Sync-pt
duration request
11 12  Sh_page        176003658 41571 tpcd    Non Cursor Lock NULL
11 13  Sh_page        176003658 41571 tpcd    Non Cursor Lock NULL
11 14  Sh_page        176003658 41571 tpcd    Non Cursor Lock NULL
```

Example 2

Displays information about the locks currently held by `spid 7`:

```
sp_lock 7
```

```
The class column will display the cursor name for locks associated with a
cursor for the current user and the cursor id for other users.
fid spid locktype   table_id  page dbname  class             context
--- ---- ---------  --------- ---- ------  ----------------  ----------
 0    7   Sh_intent  480004741    0 master  Non Cursor Lock    NULL
```

Example 3

First, queries the `pubs2` database about the ID of its running processes that currently hold locks (1056003762), then queries the `pubs2` database using the `@verbose` option, which returns the object name (`master..spt_values`) in addition to the process ID:

```
1> use pubs2
2> go
1> sp_lock
2> go
```

```
The class column will display the cursor name for locks associated with a
cursor for the current user and the cursor id for other users.
fid spid loid locktype  table_id   page row dbname class context
--- ---- ---- --------  --------   ---- --- ------ ------ ----------
0     15   30 Sh_intent 1056003762    0   0 master Non Cursor Lock
(1 row affected)
(return status = 0)
```

```
1> sp_lock @verbose=0
2> go
```

```
The class column will display the cursor name for locks associated with a
cursor for the current user and the cursor id for other users.
fid spid loid locktype page row objectName         id       class   context
```

```
--- ---- ---- -------- ---- --- ----------------- -------- ------ -------
0     15   30 Sh_intent   0   0  master..spt_values 1056003762 Non Cursor Lock
(1 row affected)
(return status = 0)
```

Example 4

This example shows all locks, including partition locks, currently held by SAP ASE.

```
sp_lock
go
fid spid loid locktype            table_id    partitionid page row dbname
class context
--- ---- ---- --------            ----------  ----------- ---- --- ------
------ -------
0     13   26 Ex_intent            420193516            0    0   0 master Non
Cursor Lock
0     13   26 Ex_intent_partition  420193516    452193630    0   0 master Non
Cursor Lock
0     13   26 Ex_page              420193516    452193630 4993   0 master Non
Cursor Lock
0     14   28 Ex_intent            420193516            0    0   0 master Non
Cursor Lock
0     14   28 Ex_intent_partition  420193516    468193687    0   0 master Non
Cursor Lock
0     14   28 Ex_page              420193516    468193687 5001   0 master Non
Cursor Lock
0     16   32 Sh_intent           1006623598            0    0   0 master Non
Cursor Lock
```

Table lock and fine-grained lock values for `partitionid` are 0. `partitionid` is populated only for partition-level locks.

Usage

There are additional considerations when using `sp_lock`:

- `sp_lock` with no parameters reports information on all processes that currently hold locks.
- The only user control over locking is through the use of the `holdlock` keyword in the `select` statement.
- Use the `object_name` system function to derive a table's name from its ID number.
- `sp_lock` in versions of the Cluster Edition earlier than 15.0.3 displayed information about only the locks associated with the instance on which you issued the stored procedure. `sp_lock` on Cluster Edition version 15.0.3 and later displays information about all locks in the cluster.
- `sp_lock` output is ordered by `fid` and then `spid`.
- `sp_lock` output also displays the following lock types:
  - "Sh_row" indicates shared row locks
  - "Update_row" indicates update row locks
  - "Ex_row" indicates exclusive row locks

The `sp_lock` columns are:

`loid` The column identifies unique lock owner ID of the blocking transaction. Even `loid` values indicate that a local transaction owns the lock. Odd values indicate that an external transaction owns the lock.

`locktype` The column indicates whether the lock is a shared lock ("Sh" prefix), an exclusive lock ("Ex" prefix) or an update lock, and whether the lock is held on a table ("table" or "intent") or on a page ("page").

A "blk" suffix in the "locktype" column indicates that this process is blocking another process that needs to acquire a lock. As soon as this process completes, the other process(es) moves forward. A "demand" suffix in the "locktype" column indicates that the process is attempting to acquire an exclusive lock. See the *Performance and Tuning Guide* for more information about lock types.

`class` The column indicates whether a lock is associated with a cursor. It displays one of the following:

- "Non Cursor Lock" indicates that the lock is not associated with a cursor.
- "Cursor Id `<number>`" indicates that the lock is associated with the cursor ID number`< >`for that SAP ASE process ID.
- A cursor name indicates that the lock is associated with the cursor `<cursor_name>` that is owned by the current user executing `sp_lock`.

`fid` The column identifies the family (including the coordinating process and its worker processes) to which a lock belongs. Values for `fid` are:

- A zero value indicates that the task represented by the `spid` is executed serially. It is not participating in parallel execution.
- A nonzero value indicates that the task (`spid`) holding the lock is a member of a family of processes (identified by `fid`) executing a statement in parallel. If the value is equal to the `spid,` it indicates that the task is the coordinating process in a family executing a query in parallel.

`context` The column identifies the context of the lock. Worker processes in the same family have the same context value. Legal values for "context" are as follows:

- "NULL" – the task holding this lock is either a query executing serially, or is a query executing in parallel in transaction isolation level 1.
- "Sync-pt duration request" – the task holding the lock holds the lock until the query is complete.
  A lock's context may be "Sync-pt duration request" if the lock is a table lock held as part of a parallel query, if the lock is held by a worker process at transaction isolation level 3, or if the lock is held by a worker process in a parallel query and must be held for the duration of the transaction.
- "Ind pg" – indicates locks on index pages (allpages-locked tables only)
- "Inf key" – indicates an infinity key lock (for certain range queries at transaction isolation level 3 on data-only-locked tables)
- "Range" – indicates a range lock (for range queries at transaction isolation level 3 on data-only-locked tables)

These new values may appear in combination with "Fam dur" (which replaces "Sync pt duration") and with each other, as applicable.

`row` The column displays the row number for row-level locks.

See also `kill`, `select` in *Reference Manual: Commands*.

Permissions

Any user can execute `sp_lock`. Permission checks do not differ based on the granular permissions settings.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_familylock [page 369]
sp_who [page 846]

1.176 sp_locklogin

Locks an SAP ASE account so that the user cannot log in, or displays a list of all locked accounts.

Syntax

```
sp_locklogin <login> | NULL | <wildcard_string> , "lock" | "unlock",
    [<except_login_name> | <except_role_name>][, <number_of_inactive_days>]
```

Or:

```
sp_locklogin
```

Parameters

`sp_locklogin`

without any parameters, displays all locked logins.

`<loginame>`

is the name of the account to be locked or unlocked.

`<wildcard_string>`

is any string with wildcards that identifies a set of logins.

NULL

all logins, including the sa_role, are locked.

lock | unlock

specifies whether to lock or unlock the account.

<except_login_name>

is the name of login that is exempted from being locked.

<except_role_name>

is the name of role that is exempted from being locked. For example, all logins in a role that are to be exempted.

<number_of_inactive_days>

is the number of days, from 1 to 32,767, that an account has been inactive.

Examples

Example 1

Locks the login account for the user "charles":

```
sp_locklogin charles, "lock"
```

Example 2

Locks all logins except those with the sa_role:

```
sp_locklogin NULL, "lock", sa_role
```

Example 3

Displays a list of all locked accounts:

```
sp_locklogin
```

Example 4

Locks all login accounts that have not authenticated within the past 60 days:

```
sp_locklogin NULL, 'lock', NULL, 60
```

> i Note
>
> This command has no effect if the `sp_passwordpolicy` option "`enable last login updates`" is set to "0".

Usage

There are additional considerations when using `sp_locklogin`:

- Without any parameters, `sp_locklogin` displays all locked logins.
- The `syslogins` columns `lockdate`, `locksuid` and `lockreason` are updated at time of locking/unlocking a login.
- Conditions for using `sp_locklogin` are:
    - No wild cards are allowed for exceptions.
    - Existing functionality is undisturbed.
    - The exception specified is first matched against logins. If such a login does not exist, then the exception is checked against roles.
    - A value of NULL for a login means "all" logins.
    - You see an error if the login name or exception you specify does not exist.
    - Nothing happens if the specified "effective set" of logins to be locked is empty.
    - If the exception is NULL, the set of logins specified (through the `login` parameter) is locked.
    - High-availability Failover only – in versions of SAP ASE earlier than 15.0, `sp_locklogin` checked to see if the login to be locked or unlocked existed on a remote high-availability server by verifying that the `suid` (server user ID) of that login existed on the server.
      In SAP ASE version 15.0, `sp_locklogin` checks both the `suid` as well as the login name.
    - You see an error if you specify any word other than `lock` or `unlock`.

See also `create login`, `alter login` in *Reference Manual: Commands*.

Permissions

The permission checks for `sp_locklogin` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `manage any login` privilege. To unlock login account which was locked because of `maxfailedlogin`, you must be a user with `change password` privilege.
Disabled	With granular permissions disabled, you must be a user with sso_role.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide > Auditing*.

1.177 sp_logdevice

Moves the transaction log of a database with log and data on the same device to a separate database device.

Syntax

```
sp_logdevice <dbname>, <devname>
```

Parameters

<dbname>

is the name of the database with the `syslogs` table, which contains the transaction log, to put on a specific logical device.

<devname>

is the logical name of the device on which to put the `syslogs` table. This device must be a database device associated with the database (named in `create database` or `alter database`). Run `sp_helpdb` for a report on the database's devices.

Examples

Example 1

Creates the database `products` and puts the table `products.syslogs` on the database device `logs`:

```
create database products on default = "10M", logs = "2M"
go
sp_logdevice products, logs
go
```

Example 2

For the database `test` with log and data on the same device, places the log for `test` on the log device `logdev`:

```
alter database test log on logdev
go
sp_logdevice test, logdev
go
```

Usage

There are additional considerations when using `sp_logdevice`:

- You can only execute `sp_logdevice` in single-user mode.
- The `sp_logdevice` procedure affects only future allocations of space for `syslogs`. This creates a window of vulnerability during which the first pages of your log remain on the same device as your data. Therefore, the preferred method of placing a transaction log on a separate device is the use of the `log on` option to `create database`, which immediately places the entire transaction log on a separate device.
- Place transaction logs on separate database devices, for both recovery and performance reasons.
  A very small, noncritical database could keep its log together with the rest of the database. Such databases use `dump database` to back up the database and log and `dump transaction with truncate_only` to truncate the log.
- `dbcc checkalloc` and `sp_helplog` show some pages for `syslogs` still allocated on the database device until after the next `dump transaction`. After that, the transaction log is completely transferred to the device named when you executed `sp_logdevice`.
- The size of the device required for the transaction log varies, depending on the amount of update activity and the frequency of transaction log dumps. As a rule, allocate to the log device 10 percent to 25 percent of the space you allocate to the database itself.
- Use `sp_logdevice` only for a database with log and data on the same device. Do not use `sp_logdevice` for a database with log and data on separate devices.
- To increase the amount of storage allocated to the transaction log use `alter database`. If you used the `log on` option to `create database` to place a transaction log on a separate device, use this to increase the size of the log segment. If you did not use `log on`, execute `sp_logdevice`:

  ```
  sp_extendsegment <segname>, <devname>
  ```

  The device or segment on which you put `syslogs` is used **only** for `syslogs`. To increase the amount of storage space allocated for the rest of the database, specify any device other than the log device when you issue `alter database` .
- Use `disk init` to format a new database device for databases or transaction logs.

See also:

- *System Administration Guide*
- `alter database`, `create database`, `dbcc`, `disk init`, `dump database`, `dump transaction`, `select` in *Reference Manual: Commands*

Permissions

The permission checks for `sp_logdevice` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be the database owner or a user with `own database` privilege.

Setting	Description
Disabled	With granular permissions disabled, you must be the database owner or a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_extendsegment [page 365]
sp_helpdevice [page 446]
sp_helplog [page 466]

1.178 sp_logging_rate

Calculates the transaction log growth rate for the specified time period.

Syntax

```
sp_logging_rate {'full'|'sum', '[day,]hh:mm:ss'}[, interval='hh:mm:ss' |
clear_option='y'|'n']
```

Parameters

`full`

`sp_logging_rate` provides a detailed report for each collection.

`sum`

`sp_logging_rate` provides summary information, including values for the average, minimum, maximum, and the maximum rate. If you do not specify a time, `sp_logging_rate` collects information every 10 seconds.

`day, <hh:mm:ss>`

Specifies the duration of time `sp_logging_rate` runs, using the form `<date, hour:minute:second>`.

`interval = '<hh:mm:ss>'`

Period of time during which the interval runs, using the form `<hour:minute:second>`

`clear_option = 'y' | 'n'`

Determines whether to clear the monitor counters during data collection.

Examples

Example using sum parameter

This example collects information for 1 day and 8 hours, takes a sample every 10 minutes, and prints summary information at the end of the interval:

```
sp_logging_rate 'sum', '1,08:00:00', '00:10:00'
=========================
Total Summary Information
=========================
Transaction Log Growth Rate      Min GB/h        Max GB/h        Avg GB/h
---------------------------   --------------  --------------  --------------
                                  0.000000        2.870076        1.823028
```

Example using full parameter

This example collects information for 3 minutes, takes samples every 10 seconds (the default), and prints summary information at the end of the interval:

```
sp_logging_rate 'full', '00:03:00'
Date Time                       Transaction Log Growth Rate GB/h
---------------------------     --------------------------------
Oct 22 2013  6:00:32:480AM                 0.406779
Oct 22 2013  6:00:42:483AM                 0.000000
Oct 22 2013  6:00:52:483AM                 0.000000
Oct 22 2013  6:01:02:483AM                 0.000000
Oct 22 2013  6:01:12:490AM                 0.000000
Oct 22 2013  6:01:22:500AM                 0.000000
Oct 22 2013  6:01:32:476AM                 2.341870
Oct 22 2013  6:01:42:483AM                 2.828132
Oct 22 2013  6:01:52:480AM                 2.850305
Oct 22 2013  6:02:02:483AM                 2.782750
Oct 22 2013  6:02:12:483AM                 2.853574
Oct 22 2013  6:02:22:480AM                 2.002917
Oct 22 2013  6:02:32:483AM                 2.848995
Oct 22 2013  6:02:42:483AM                 2.754143
Oct 22 2013  6:02:52:483AM                 2.854949
Oct 22 2013  6:03:02:480AM                 2.722928
Oct 22 2013  6:03:12:476AM                 2.870076
Oct 22 2013  6:03:22:480AM                 2.697094
=========================
Total Summary Information
=========================
Transaction Log Growth Rate      Min GB/h        Max GB/h        Avg GB/h
---------------------------   --------------  --------------  --------------
                                  0.000000        2.870076        1.823028
```

Usage

- You cannot run scripts or procedures that collect monitoring data (for example, sp_sysmon) while sp_logging_rate runs. Because sp_logging_rate collects and clears monitor counter as it runs, the monitoring counter information these scripts or procedures collect will not be accurate.
- sp_logging_rate produces unreliable results if you specify an amount of time for interval = '<hh:mm:ss>' that is greater than the amount of time you specify for 'day, <hh:mm:ss>'.
- When you specify values for interval = '<hh:mm:ss>' and 'day, <hh:mm:ss>', keep in mind:
  - If the value you specify for interval = '<hh:mm:ss>' is greater than the value you specify for 'day, <hh:mm:ss'>, SAP ASE issues an error message and sp_logging_rate produces no result set.
  - sp_logging_rate may produce an unreliable result if that ratio for 'day, <hh:mm:ss>' to interval = '<hh:mm:ss>' is too small. For example, if you specify day,00:10:00, and interval='00:04:00', sp_logging_rate collects only two values, prints an average value, with the first value as the maximum, and the second value as the minimum. A better ratio produces a more reliable result set.

Permissions

You must have system administrator privileges to execute sp_logging_rate.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

1.179 sp_loginconfig

(Windows only) Displays the value of one or all integrated security parameters.

Syntax

```
sp_loginconfig ["<parameter_name>"]
```

Parameters

<parameter_name>

is the name of the integrated security parameter you want to examine. Values are:

- `login mode`
- `default account`
- `default domain`
- `set host`
- `key _`
- `key $`
- `key @`
- `key #`

Examples

Example 1

Displays the values of all integrated security parameters:

```
sp_loginconfig
```

```
name                config_item
---------------------- ----------------------
login mode          standard
default account     NULL
default domain      NULL
set host            false
key _               domain separator
key $               space
key @               space
key #               -
```

Example 2

Displays the value of the `login mode` security parameter:

```
sp_loginconfig "login mode"
```

```
name                config_item
---------------------- ----------------------
login mode          standard
```

Usage

There are additional considerations when using `sp_loginconfig`:

- The values of integrated security parameters are stored in the Windows Registry. See the chapter on login security in *Configuration Guide for Windows* for instructions on changing the parameters.

- sp_loginconfig displays the <config_item> values that were in effect when you started the SAP ASE server. If you changed the Registry values after starting the SAP ASE server, those values are not reflected in the sp_loginconfig output.

See also *Configuration Guide for Windows*.

Permissions

The permission checks for sp_loginconfig differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with manage any login privilege.
Disabled	With granular permissions disabled, you must be a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_revokelogin [page 703]

1.180 sp_logininfo

(Windows only) Displays all roles granted to Windows users and groups with sp_grantlogin.

Syntax

```
sp_logininfo ["<login_name>" | "<group_name>"]
```

Parameters

<login_name>

is the network login name of the Windows user.

<group_name>

is the Windows group name.

Examples

Example 1

Displays the permissions granted to the Windows user "regularjoe":

```
sp_logininfo regularjoe
```

```
account name    mapped login name  type            privilege
--------------- ------------------ --------------- --------------
HAZE\regularjoe HAZE_regularjoe    user            'oper_role'
```

Example 2

Displays all permissions that were granted to Windows users and groups with `sp_grantlogin`:

```
sp_logininfo
```

```
account name            mapped login name       type        privilege
---------------         -------------------     ------------  ------------
BUILTIN\Administrators  BUILTIN\Administrators  group
        'sa_role sso_role oper_role sybase_ts_role navigator_role
              replication_role'
HAZE\regularjoe         HAZE_regularjoe        user         'oper_role'
PCSRE\randy             PCSRE_alexander        user         'default'
```

Usage

There are additional considerations when using `sp_logininfo`:

- `sp_logininfo` displays all roles granted to Windows users and groups with `sp_grantlogin`.
- You can omit the domain name and domain separator (`\`) when specifying the Windows user name or group name.

See also `grant`, `setuser` in *Reference Manual: Commands*.

Permissions

The permission checks for `sp_logininfo` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `manage roles` privilege.
Disabled	With granular permissions disabled, you must be a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_displaylogin [page 270]
sp_grantlogin [page 392]
sp_revokelogin [page 703]
sp_role [page 705]
sp_who [page 846]

1.181 sp_logiosize

Changes the log I/O size used by the SAP ASE server to a different memory pool when doing I/O for the transaction log of the current database.

Syntax

```
sp_logiosize ["syslogs" | "sysimrslogs"]["default" | "<size>" | "all"]
```

Parameters

`"syslogs" | "sysimrslogs"`

indicates that you are updating the log I/O size for `syslogs` or `sysimrslogs`. If you do not specify the log type, (`syslogs` or `sysimrslogs`), `sp_logiosize` uses `syslogs` by default. That is, issuing sp_logiosize and sp_logiosize "syslogs" both result in the server updating syslogs.

default

sets the log I/O size for the current database to the SAP ASE server's default value (two logical pages), if a memory pool that is two logical pages is available in the cache. Otherwise, the SAP ASE server sets the log I/O size to one logical page. Since default is a keyword, the quotes are required when specifying this parameter.

<size>

is the size to set the log I/O for the current database. Values are multiples of the logical page size, up to four times the amount. You must enclose the value in quotes.

all

displays the log I/O size configured for all databases grouped by the cache name.

Examples

Example 1

Displays the log I/O size configured for the current database:

```
sp_logiosize
```

```
The transaction log for database 'master' will use I/O size of 2 Kbytes.
```

Example 2

Changes the log I/O size of the current database to use the 8K memory pool. If the database's transaction log is bound to a cache that does not have an 8K memory pool, the SAP ASE server returns an error message indicating that such a pool does not exist, and the current log I/O size does not change:

```
sp_logiosize "8"
```

Example 3

Changes the log I/O size of the current database to the SAP ASE server's default value (one logical page size). If a memory pool the size of the logical page size does not exist in the cache used by the transaction log, the SAP ASE server uses the 2K memory pool:

```
sp_logiosize "default"
```

Example 4

Displays the log I/O size configured for all databases:

```
sp_logiosize "all"
```

```
Cache name: default data cache
Data base                       Log I/O Size
------------------------------  ------------
master                          2 Kb
tempdb                          2 Kb
model                           2 Kb
sybsystemprocs                  2 Kb
```

```
pubs3                            2 Kb
pubtune                          2 Kb
dbccdb                           2 Kb
sybsyntax                        2 Kb
```

Example 5

Changes the log I/O size for sysimrslogs:

```
sp_logiosize "sysimrslogs" "32"
```

Usage

There are additional considerations when using `sp_logiosize`:

- `sp_logiosize` displays or changes the log I/O size for the current database. Any user can execute `sp_logiosize` to display the configured log I/O size. Only a system administrator can change the log I/O size.
- If you specify `sp_logiosize` with no parameters, the SAP ASE server displays the log I/O size of the current database.
- When you change the log I/O size, it takes effect immediately. The SAP ASE server records the new I/O size for the database in the `sysattributes` table.
- Any value you specify for `sp_logiosize` must correspond to an existing memory pool configured for the cache used by the database's transaction log. Specify these pools using the `sp_poolconfig` system procedure.
  The SAP ASE server defines the default log I/O size of a database as two logical pages, if a memory pool the size of two logical pages is available in the cache. Otherwise, the SAP ASE server sets the log I/O size to one logical page (a memory pool of one logical page is always present in any cache). For most work loads, a log I/O size of two logical pages performs much better than one of one logical page, so each cache used by a transaction log should have a memory pool the size of a logical page. See the *System Administration Guide* and the *Performance and Tuning Guide* for more information about configuring caches and memory pools.
- If the transaction logs for one or more databases are bound to a cache of type `logonly`, any memory pools in that cache that have I/O sizes larger than the log I/O size defined for those databases is not used. For example, on a 2K server, assume that only two databases have their transaction logs bound to a "log onlyF cache containing 2K, 4K, and 8K memory pools. By default, `sp_logiosize` sets the log I/O size for these parameters at 4K, and the 8K pool is not used. Therefore, to avoid wasting cache space, be cautious when configuring the log I/O size.
- During recovery, only the logical page size memory pool of the default cache is active, regardless of the log I/O size configured for a database. Transactions logs are read into this pool of the default cache, and all transactions that must be rolled back, or rolled forward, read data pages into the default data cache.

Permissions

Any user can execute `sp_logiosize` to display the log I/O size values.

The following permission checks for `sp_logiosize` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with manage data cache privilege.
Disabled	With granular permissions disabled, you must be a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_cacheconfig [page 118]
sp_poolconfig [page 669]

1.182 sp_logintrigger

Sets and displays the global login trigger. This global login trigger has the same characteristics as a personal login script. It is executed before any personal login script for every user that tries to log in, including system administrators and security officers.

Syntax

```
sp_logintrigger '<global login trigger name>'
```

Parameters

<global login trigger name>

is the name of the global login trigger. Login triggers must be created in the master database.

If you include no parameter, sp_logintrigger displays the current login trigger status and name if it exists, and no rows if there is no global login trigger defined.

Examples

Example 1

Sets a global login trigger using `sp_logintrigger`:

```
sp_logintrigger 'master.dbo.myproc'
```

Example 2

Returns an updated global login trigger:

```
1> sp_logintrigger
2> go
Global login trigger               Status
---------------------------------- -------
sybsystemprocs.dbo.myproc          Enabled
(1 row affected)
(return status = 0
```

Example 3

When a global login trigger does not exist:

```
1> sp_logintrigger
2> go
Global login trigger Status
-------------------- ------
(0 rows affected)
```

Example 4

Deletes a global login trigger specified earlier with `sp_logintrigger`:

```
sp_logintrigger 'drop'
```

Usage

To find out if a global login trigger is defined and enabled, use the `@@logintrigger` global variable.

There is a difference between this global login and the private login script. This global login trigger is stored by name in `sysattributes`, while the private login script is stored only by object ID.

Permissions

The permission checks for `sp_logintrigger` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `manage security configuration` privilege to set a new login trigger.

Setting	Description
	Any user can execute `sp_logintrigger` to display the current global login trigger.
Disabled	With granular permissions disabled, you must be a user with sso_role to set a new login trigger. Any user can execute `sp_logintrigger` to display the current global login trigger.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

1.183 sp_maplogin

Maps external users to SAP ASE logins.

Syntax

```
sp_maplogin (<authentication_mech> | null), (<client_username> | null),
     (<action> | <login_name> | null)
```

Parameters

`<authentication_mech>`

specifies the mechanism used for authenticating the login account.

`<client_username>`

is an external user name. This user name can be an operating system name, a user name for an LDAP server, or anything else that the PAM library can understand. A null value indicates that any login name is valid.

`<action>`

indicates `create login` or `drop`. When `\create login` is used, the login is created as soon as the login is authenticated. `drop` is used to remove logins.

`<login_name>`

is an SAP ASE login that already exists in `syslogins`

Examples

Example 1

Maps external user "jsmith" to SAP ASE user "guest". Once authenticated, "jsmith" gets the privileges of "guest". The audit login record shows both the <client_username> and the SAP ASE user name:

```
sp_maplogin NULL, "jsmith", "guest"
```

Example 2

Tells the SAP ASE server to create a new login for all external users authenticated with PAM, in case a login does not already exist:

```
sp_maplogin PAM, NULL, "create login"
```

Usage

Use sp_maplogin to map an external name or client name, such as "ase.open.user," defined in an LDAP directory to the SAP ASE login name of "aseopenuser." That is, the <client_username> follows the rules of a name in an LDAP server, and the <login_name> follows the SAP ASE rules for identifiers.

If you are using LDAP User Authentication and the name in the LDAP server differs from the SAP ASE login name, use sp_maplogin so the LDAP server uses the <client_username> for authentication, and the SAP ASE <login_name> for identity within the SAP ASE server. That is, "isql -U <client_username>..." has the identity of <login_name> within the SAP ASE server.

Use sp_helpmaplogin to determine the <client_username> and <login_name>, such as:

```
1> sp_helpmaplogin
2> go
```

```
authentication   client name     login name
----------------------------------------------
LDAP              ase.open.user   aseopenuser
```

```
C:\> isql -Uase.open.user -Pasepass
1> select @@authmech
2> go
```

```
------------------
ldap
```

Permissions

The permission checks for sp_maplogin differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `manage any login` privilege.
Disabled	With granular permissions disabled, you must be a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide > Auditing*.

Related Information

sp_helpmaplogin [page 467]

1.184 sp_merge_dup_inline_default

Removes existing duplicate inline default objects, converting the unique inline defaults to sharable inline default objects.

Syntax

```
sp_merge_dup_inline_default [@report_only = {yes | no}
    [, @show_progress = {yes | no}]]
```

Parameters

`@report_only`

reports the number of unique inline defaults in the current database but performs no changes if you specify `yes`. If you specify `no`:

- `sp_merge_dup_inline_default` removes duplicate inline defaults, and all unique inline defaults are changed to sharable inline defaults
- Existing column definitions referencing the duplicate inline defaults are updated to reference the sharable inline defaults

The default value for `@report_only` is `yes`.

`@show_progress`

if set to `yes`, `sp_merge_dup_inline_default` displays hash marks to show progress when `@report_only` is set to `no`.

The default value for `@show_progress` is `no`.

Examples

Example 1

Runs `sp_merge_dup_inline_default` against the `pubs2` database without any options. `sp_merge_dup_inline_default` makes no changes, but displays an informational message indicating the approximate number of unique inline defaults:

```
sp_merge_dup_inline_default
```

```
=====================================================
sp_merge_dup_inline_default is used to identify duplicate inline default
objects,
subsequently to convert one of them into sharable inline default object and
remove the
rest. As the result, it will remove entries from sysobjects, syscomments and
sysprocedures. It will also update entries in syscolumns, syscomments and
sysprocedures.
Following is the current state of your inline default objects found out by
sp_merge_dup_inline_default and what it could potentially do to them. By
default,
sp_merge_dup_inline_default only reports the current state and this warning
message. If
you really intend to carry out the changes, please rerun this stored
procedure using
sp_merge_dup_inline_default @report_only = "NO"
Database pubs2 has about 0 unique inline defaults If you convert them into
sharable inline
defaults, the rest of total 0 duplicate defaults can be removed from the
system catalogs.
=====================================================
```

Example 2

Converts the unique inline default to shareable inline defaults:

```
sp_merge_dup_inline_default @report_only = 'NO'
```

```
Total 2 duplicate defaults are removed and 7 defaults are converted to
sharable inline
defaults. Database is modified and in single-user mode. System Administrator
(SA) must
reset it to multi-user mode with sp_dboption.
```

Example 3

Produces the following output if there are no duplicate inline defaults:

```
sp_merge_dup_inline_default @report_only = 'NO'
```

```
Database is not modified. Please try it later if duplicate inline defaults do
exist and
the current resource limitation is preventing this conversion process.
```

Example 4

Includes the `show_progress` parameter to indicate progress:

```
sp_merge_dup_inline_default @report_only = 'NO', @show_progress = "YES"
```

```
Calculating...
Converting...
[#                                                   ]
[##########                                          ]
[################### ]
[############################ ]
[##################################### ]
[############################################## ]
[################################################### ]
[####################################################]
Total 2 duplicate defaults are removed and 7 defaults
are converted to sharable inline defaults.
Database is modified and in single-user mode.
System Administrator (SA) must reset it to multi-user mode with sp_dboption
```

Usage

There are additional considerations when using `sp_merge_dup_inline_default`:

- You cannot run `sp_merge_dup_inline_default` on system databases.
- User databases must be in single-user mode before you run `sp_merge_dup_inline_default`.
- You may re-run `sp_merge_dup_inline_default` if the system procedure aborts.
- If `sp_merge_dup_inline_default` issues an error message stating that the SAP ASE server is out of locks:
  - Increase the value for `number of locks`, or
  - Reduce the lock promotion threshold with `sp_setpglockpromote` or `sp_setrowlockpromote`.

  Re-run `sp_merge_dup_inline_default`, and reset the values after `sp_merge_dup_inline_default` finishes.
- `sp_merge_dup_inline_default` changes only inline default objects for which the default value is a literal string constant or simple numbers (the literal string constant cannot include escaped string delimiters).
- `sp_merge_dup_inline_default` does not remove any duplicate inline default objects if their source text in `syscomments` is “`encrypted`.”

Permissions

The permission checks for `sp_merge_dup_inline_default` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with manage database privilege.
Disabled	With granular permissions disabled, you must be a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

1.185 sp_metrics

Backs up, drops, and flushes QP metrics—always captured in the default running group, which is group 1 in each respective database—and their statistics on queries.

Syntax

```
sp_metrics ['backup' <backup_group_ID> | 'drop', '<gid>'[, '<id>'] |
     'flush' | 'help', '<command>']
```

Parameters

backup

moves saved QP metrics from the default running group to a backup group, backs up the QP metrics from the old server into a backup group, and moves saved QP metrics from the default running group to a backup group.

<backup_group_ID>

is the ID of the group the QP metrics from the old server into a backup group. To move saved QP metrics from the default running group to a backup group.

drop

removes QP metrics from the system catalog. If you do not provide '<id>', sp_metrics drops the whole group you specified with '<gid>'.

<gid>

is the group ID of the QP metrics from the system catalog.

<id>

is the ID of the QP metrics from the system catalog.

flush

flushes all aggregated metrics in memory to the system catalog. The aggregated metrics for all statements in memory are zeroed out.

'help', '<command>'

provides usage information on `sp_metrics` commands.

Examples

Example 1

Move the QP metrics from a default group to a backup group:

```
sp_metrics 'backup', '3'
```

Example 2

Provides information about `sp_metrics flush`:

```
sp_metrics 'help', 'flush'
```

Usage

Access metric information using a `select` statement with `order by` against the `sysquerymetrics` view.

Use to back up the QP metrics from the old server into a backup group. To move saved QP metrics from the default running group to a backup group, to remove QP metrics from the system catalog. Flush all aggregated metrics in memory to the system catalog.

See also `select`, `set` in *Reference Manual: Commands*.

Permissions

The permission checks for `sp_metrics` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `manage server` privilege or with `monitor qp performance` privilege (for `filter`, `show`, `help`).
Disabled	With granular permissions disabled, you must be a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_configure [page 203]

1.186 sp_modify_resource_limit

Changes a resource limit by specifying a new limit value, or the action to take when the limit is exceeded, or both.

Syntax

```
sp_modify_resource_limit {<name>, <appname>}
    <rangename>, <limittype>, <limitvalue>, <enforced>, <action>, <scope>
```

Parameters

<name>

is the SAP ASE login to which the limit applies. To modify a limit that applies to all users:

- Of a particular application, specify NULL for <name>.
- Using any application, specify NULL for both <name> and <appname>.

<appname>

is the name of the application to which the limit applies. To modify a limit that applies to:

- All applications used by <name>, specify NULL for <appname>.
- A particular application, specify the application name that the client program passes to the SAP ASE server in the login packet.
- All users using any application, specify NULL for both <name> and <appname>.

<rangename>

is the time range during which the limit is enforced. You cannot modify this value, but you must specify a non-null value to uniquely identify the resource limit.

<limittype>

is the type of resource to which the limit applies. You cannot modify this value, but you must specify a non-null value to uniquely identify the resource limit. The value must be one of the following:

- `row_count` – limits the number of rows a query can return
- `elapsed_time` – limits the number of seconds in wall-clock time that a query batch or transaction can run
- `io_cost` – limits either the actual cost, or the optimizer's cost estimate, for processing a query
- `tempdb_space` – limits the number of pages from a `tempdb` database that a single session can have

<limit_value>

is the maximum amount of the server resource that the login or application can use before the SAP ASE server enforces the limit. This must be a positive integer less than or equal to 2^{31} or `null` to retain the existing value. The following table indicates what value to specify for each limit type:

- `row_count` – the maximum number of rows a query can return before the limit is enforced
- `elapsed_time` – the maximum number of seconds in wall-clock time that a query batch or transaction can run before the limit is enforced
- `io_cost` – a unitless measure derived from optimizer's costing formula
- `tempdb_space` – limits the number of pages from a temporary database that a single session can have.

<enforced>

determines whether the limit is enforced prior to or during query execution. You cannot modify this value. Use `null` as a placeholder.

<action>

is the action to take when the limit is exceeded. The following codes apply to all limit types:

- `1` – issues a warning
- `2` – aborts the query batch
- `3` – aborts the transaction
- `4` – kills the session
- `null` – retains the existing value

<scope>

is the scope of the limit. You cannot modify this value. You can use `null` as a placeholder.

Examples

Example 1

Modifies a resource limit that applies to all applications used by "robin" during the `<weekends>` time range:

```
sp_modify_resource_limit robin, NULL, weekends, row_count, 3000, NULL,
    1, NULL
```

The limit issues a warning when a query is expected to return more than 3000 rows.

Example 2

Modifies a resource limit that applies to the `<acctg>` application on all days of the week and at all times of the day:

```
sp_modify_resource_limit NULL, acctg, "at all times", elapsed_time,
    45, 2, 2, 6
```

The limit aborts the query batch when estimated query processing time exceeds 45 seconds.

Example 3

This example changes the value of the resource limit that restricts elapsed time to all users using any application during the `tu_wed_7_10` time range:

```
sp_modify_resource_limit NULL, NULL, tu_wed_7_10, elapsed_time, 90, null,
null, 2
```

The limit value for elapsed time decreases to 90 seconds (from 120 seconds). The values for time of execution, action taken, and scope remain unchanged.

Example 4

This example changes the action taken by the resource limit that restricts the row count of all ad hoc queries and applications run by "joe_user" during the `saturday_night` time range. The previous value for action was 3, which aborts the transaction when a query exceeds the specified row count. The new value is to 2, which aborts the query batch. The values for limit type, time of execution, and scope remain unchanged:

```
sp_modify_resource_limit joe_user, NULL,
saturday_night, row_count, NULL, NULL, 2, NULL
```

Usage

There are additional considerations when using `sp_modify_resource_limit`:

- You cannot change the login or application to which a limit applies or specify a new time range, limit type, enforcement time, or scope.
- The modification of a resource limit causes the limits for each session for that login and/or application to be rebound at the beginning of the next query batch for that session.
- SAP ASE provides resource limits to help system administrators prevent queries and transactions from monopolizing server resources. Resource limits, however, are not fully specified until they are bound to a time range.

For more information, see the *System Administration Guide*.

Permissions

The permission checks for `sp_modify_resource_limit` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `manage resource limit` privilege.
Disabled	With granular permissions disabled, you must be a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_add_resource_limit [page 18]
sp_drop_resource_limit [page 287]
sp_help_resource_limit [page 407]

1.187 sp_modify_time_range

Changes the start day, start time, end day, and end time associated with a named time range.

Syntax

```
sp_modify_time_range <name>, <startday>, <endday>, <starttime>, <endtime>
```

Parameters

<name>

is the name of the time range. This must be the name of a time range stored in the systimeranges system table of the master database.

<startday>

is the day of the week on which the time range begins. This must be the full weekday name for the default server language, as stored in the syslanguages system table of the master database, or null to keep the existing <startday>.

<endday>

is the day of the week on which the time range ends. This must be the full weekday name for the default server language, as stored in the syslanguages system table of the master database, or null to keep the existing end day. The <endday> can fall either earlier or later in the week than the <startday>, or it can be the same day as the <startday>.

<starttime>

is time of day at which the time range begins. Specify the <starttime> in terms of a twenty-four hour clock, with a value between 00:00 and 23:59. Use the following form, or null to keep the existing <starttime>:

```
"<HH>:<MM>"
```

<endtime>

is the time of day at which the time range ends. Specify the <endtime> in terms of a twenty-four hour clock, with a value between 00:00 (midnight) and 23:59. Use the following form, or null to keep the existing <endtime>:

```
"<HH>:<MM>"
```

The <endtime> must occur later in the day than the< starttime>, unless <endtime> is 00:00.

> **i Note**
>
> For time ranges that span the entire day, specify a start time of "00:00" and an end time of "23:59".

Examples

Example 1

Changes the end day of the "business_hours" time range from Friday to Saturday. Retains the existing start day, start time, and end time:

```
sp_modify_time_range business_hours, NULL, Saturday, NULL, NULL
```

Example 2

Specifies a new end day and end time for the "before_hours" time range:

```
sp_modify_time_range before_hours, Monday, Saturday, NULL, "08:00"
```

Usage

There are additional considerations when using `sp_modify_time_range`:

- You cannot modify the "at all times" time range.
- It is possible to modify a time range so that it overlaps with one or more other time ranges.
- The modification of time ranges through the system stored procedures does not affect the active time ranges for sessions currently in progress.
- Changes to a resource limit that has a transaction as its scope does not affect any transactions currently in progress.

For more information, see the *System Administration Guide*.

Permissions

The permission checks for `sp_modify_time_range` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `manage resource limit` privilege.
Disabled	With granular permissions disabled, you must be a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_add_resource_limit [page 18]
sp_add_time_range [page 23]
sp_drop_time_range [page 290]

1.188 sp_modifylogin

Deprecated by SAP ASE version 15.7. To modify a login account in SAP ASE, use the `alter login` command. See *Reference Manual: Commands > Commands > alter login*.

1.189 sp_modifystats

Allows the system administrator, or any user with permission to execute the procedure and update statistics on the target table, to modify the density values of columns in `sysstatistics`.

Syntax

```
sp_modifystats [<database>].[<owner>].<table_name>, {"<column_group>" | "all"},
  modify_density, {range | total}, {absolute | factor}, "<value>"
  modify_default_selectivity, {inequality | inbetween}, {absolute | factor},
"<value>"
  modify_unique {range | total}, {absolute | factor}, "<value>"
```

Or:

```
sp_modifystats [<database>].[<owner>].<table_name>,
<column_name> | null,
    REMOVE_SKEW_FROM_DENSITY
    REMOVE_STICKINESS
```

Parameters

`<table_name>`

is the name of the table to change. Specify the database name if the table is in another database, and specify the owner's name if more than one table of that name exists in the database. The default value for `<owner>` is the current user, and the default value for `<database>` is the current database.

`<column_group>`

an ordered list of column names. To change a statistic for multiple columns (such as a density value), list the columns in the order used to create the statistic. Separate the column names with commas. For example, if your table has a density statistic on columns `a1`, `a2`, `a3`, `a4`:

- "`a1`" modifies column `a1`.
- "`a1,a2,a3`" modifies the column group `a1`,`a2`,`a3`,

- You can also use a wildcard character , %, with the column_group parameter to represent a range of characters. For example, "a1,%,a3" modifies the groups a1,a2,a3 and a1, a4, a3, and so on; "a1,%" modifies the groups a1,a2 and a1,a2,a3, and so on, but not a1; "a1%" modifies the groups a1,a2 and a1,a2,a3, and so on, as well as a1.

all

modifies all column group for this table. Because "all" is a keyword, it requires quotes.

modify_density

allows you to modify either the range or total density of a column or column group to the granularity specified in the <value> parameter. Range cell density represents the average number of duplicates of all values that are represented by range cells in a histogram. <value> is either the specified density value or a multiple for the current density. Must be between zero and one, inclusive, if absolute is specified. See the *Performance and Tuning Guide* for more information.Where:

- range – modifies the range cell density.
- total – modifies the total cell density.
- absolute – ignore the current value and use the number specified by the <value> parameter.
- factor – multiply the current statistical value by the <value> parameter.

modify_default_selectivity

specifies the default selectivity value. Must be between zero and one, inclusive. Where:

- inequality – indicates columns in which the predicate has an upper bound or a lower bound, but not both, and includes these range operators: > =, <=, >, <. The default value for inequality is .33
- inbetween – indicates columns in which the predicate includes the upper bound and lower bound, and includes these range operators: > =, <=, >, <. The default value for inbetween is .25
- absolute – ignore the current value and use the number specified by the value parameter.
- factor – multiply the current statistical value by the value parameter.

modify_unique

allows you to modify the range unique or total unique values of a column or column group to the granularity specified in the value parameter.

- range – modifies the estimate for the number of unique values found in the range cells of the histogram. range does not include the frequency cells (that is, single-valued histogram cells). The estimate is represented as a fraction between 0.0 and 1.0, equal to:

  ```
  unique_range_values / (range_cell_rows * total
  rows_in_table)
  ```
- total – modifies the estimate of the number of unique values for the column or column group (including the NULL value). The optimizer uses this value to estimate group by and distinct cardinality. It is represented as a fraction between 0.0 and 1.0 where the 1.0/<unique count> is stored in the catalogs.

- `absolute` – ignore the current value and use the number specified by the value parameter.
- `factor` – multiply the current statistical value by the value parameter.

REMOVE_STICKINESS

removes the stickiness associated with the specified column. Specify `null` to remove the stickiness from all columns in the table.

"Stickiness" occurs when the SAP ASE server retains the memory for these `update statistics` parameters:

- `using step values`
- `sampling`
- `histogram_tuning_factor`
- `hashing`
- `no_hashing`
- `partial_hashing`

Once a phrase is "sticky," the SAP ASE server retains its behavior for that column on subsequent `update statistics` commands, even if you do not explicitly specify the parameters.

<column_name >

is the name of a column in that table.

REMOVE_SKEW_FROM_DENSITY

allows the system administrator to change the total density of a column to be equal to the range density, which is useful when data skew is present. Total density represents the average number of duplicates for all values, those in both frequency and range cells. Total density is used to estimate the number of matching rows for joins and for search arguments with a value that is unknown when the query is optimized. See the *Performance and Tuning Guide* for more information.

`REMOVE_SKEW_FROM_DENSITY` also updates the total density of any composite column statistics for which this column is the leading attribute. Most commonly, a composite index for which this column is the leading attribute would produce these composite column statistics, but they can also be produced when you issue a composite `update statistics` command.

Examples

Example 1

Changes the range density for column group `c00`, `c01` in table `tab_1` to 0.50000000:

```
sp_modifystats  "tab_1", "c00, c01", MODIFY_DENSITY, range, absolute, "0.5"
```

Example 2

The total density for column group `c00`, `c01` in `tab_1` is multiplied by 0.5; that is, divided in half:

```
sp_modifystats  "tab_1", "c00,c01", MODIFY_DENSITY, total, factor, "0.5"
```

Example 3

The total density for all the columns in table `tab_1` is multiplied by 0.5:

```
sp_modifystats  "tab_1", "all", MODIFY_DENSITY, total, factor, "0.5"
```

Example 4

Total density for all column groups starting with `c12` is changed to equal the range density:

```
sp_modifystats "tab_1", "c12" REMOVE_SKEW_FROM_DENSITY
```

Example 5

Sets the default selectivity of inequality predicates with unknown constants (for example, `a1>@v1`) to 0.09:

```
sp_modifystats t10, a1, MODIFY_DEFAULT_SELECTIVITY, inequality, absolute,
"0.09"
```

Example 6

Sets the default selectivity for column a2 to use a value of 0.11 if you specify upper bound and a lower bound predicates with unknown constants (for example, `a2>@v1` and `a2<@v2`):

```
sp_modifystats t10, a2, MODIFY_DEFAULT_SELECTIVITY, inbetween, absolute,
"0.11"
```

Example 7

Modifies the range value for all columns for table t10 by a factor of 0.13:

```
sp_modifystats t10, "all", MODIFY_UNIQUE, range, factor, "0.13"
```

Example 8

Modifies the total unique value for all columns for table t10 to an absolute value of 0.14, which indicates there are (1.0 / 0.14) = 7.1428 unique values for each column in the table:

```
sp_modifystats t10, "all", MODIFY_UNIQUE, total, absolute, "0.14"
```

Usage

There are additional considerations when using `sp_modifystats`:

- - Allows the system administrator to modify the density values of a column—or columns—in `sysstatistics`.
  - Use `optdiag` to view a table's statistics. See the *Performance and Tuning Guide* for more information about table density and using `optdiag`.
  - Any modification you make to the statistics with `sp_modifystats` is overwritten when you run `update statistics`. To make sure you are using the most recent statistical modifications, you should run `sp_modifystats` after you run `update statistics`.
  - Because `sp_modifystats` modifies information stored in the `sysstatistics` table, you should make a backup of statistics before execute running `sp_modifystats` in a production system.
  - You can use `modify_default_selectivity` only on an individual column, not a column group.

    - SAP ASE uses the default selectivity for `modify_default_selectivity` when an unknown constant prevents it from using a histogram to estimate selectivity of the respective predicate. The default selectivity for a search argument using inequality is 33%. inequality search arguments include columns for which there is an upper bound predicate or a lower bound predicate, but not both, and use the >=, <=, >, < range operators. The default selectivity for search arguments that include an `inbetween` search arguments is 25%. `inbetween` search arguments include columns that have both an upper bound predicate and a lower bound predicate, or use the between operator.

See also `update statistics` in *Reference Manual: Commands*.

Permissions

The permission checks for `sp_modifystats` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `update statistics` on the object or with `manage any statistics` privilege. You must have`execute` permission on the procedure.
Disabled	With granular permissions disabled, you must be a user with `update statistics` on the object or sa_role. You must have `execute` permission on the procedure.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Tables used

`sysstatistics`

1.190 sp_modifythreshold

Modifies a threshold by associating it with a different threshold procedure, free-space level, or segment name.

Syntax

```
sp_modifythreshold <dbname>, <segname>, <free_space>
    [,< new_proc_name>][, <new_free_space>][, <new_segname>]
```

Parameters

<dbname>

is the database for which to change the threshold. This must be the name of the current database.

<segname>

is the segment for which to monitor free space. Use quotes when specifying the "default" segment.

<free_space>

is the number of free pages at which the threshold is crossed. When free space in the segment falls below this level, the SAP ASE server executes the associated stored procedure.

<new_proc_name>

is the new stored procedure to execute when the threshold is crossed. The procedure can be located in any database on the current SAP ASE server or on an Open Server. Thresholds cannot execute procedures on remote SAP ASE servers.

<new_free_space>

is the new number of free pages to associate with the threshold. When free space in the segment falls below this level, the SAP ASE server executes the associated stored procedure.

<new_segname>

is the new segment for which to monitor free space. Use quotes when specifying the "default" segment.

Examples

Example 1

Modifies a threshold on the "default" segment of the mydb database to execute when free space on the segment falls below 175 pages instead of 200 pages. NULL is a placeholder indicating that the procedure name is not being changed:

```
sp_modifythreshold mydb, "default", 200, NULL, 175
```

Example 2

Modifies a threshold on the data_seg segment of mydb so that it executes the new_proc procedure:

```
sp_modifythreshold mydb, data_seg, 250, new_proc
```

Usage

- You cannot use sp_modifythreshold to change the amount of free space or the segment name for the last-chance threshold.
- Use sp_helpthreshold for information about existing thresholds.
- Use sp_dropthreshold to drop a threshold from a segment.
- Each database can have up to 256 thresholds, including the last-chance threshold.
- Each threshold must be at least 2 times @@thresh_hysteresis pages from the next closest threshold.

See also:

- create procedure, dump transaction in *Reference Manual: Commands*
- *System Administration Guide*.

Permissions

The permission checks for sp_modifythreshold differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with manage database privilege.
Disabled	With granular permissions disabled, you must be the database owner or a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_addthreshold [page 62]
sp_dboption [page 228]
sp_dropthreshold [page 323]
sp_helpthreshold [page 492]
sp_thresholdaction [page 808]

1.190.1 Crossing a Threshold

When a threshold is crossed, the SAP ASE server executes the associated stored procedure. The SAP ASE server uses the following search path for the threshold procedure:

- If the procedure name does not specify a database, the SAP ASE server looks in the database in which the threshold was crossed.
- If the procedure is not found in this database and the procedure name begins with "`sp_`", the SAP ASE server looks in the `sybsystemprocs` database.
- If the procedure is not found in either database, the SAP ASE server sends an error message to the error log.

The SAP ASE server uses a hysteresis value, the global variable `@@thresh_hysteresis`, to determine how sensitive thresholds are to variations in free space. Once a threshold executes its procedure, it is deactivated. The threshold remains inactive until the amount of free space in the segment rises to `@@thresh_hysteresis` pages above the threshold. This prevents thresholds from executing their procedures repeatedly in response to minor fluctuations in free space.

1.190.2 The Last-Chance Threshold

By default, the SAP ASE server monitors the free space on the segment where the log resides and executes `sp_thresholdaction` when the amount of free space is less than that required to permit a successful dump of the transaction log. This amount of free space, the last-chance threshold, is calculated by the SAP ASE server and cannot be changed by users.

If the last-chance threshold is crossed before a transaction is logged, the SAP ASE server suspends the transaction until log space is freed. Use `sp_dboption` to change this behavior for a particular database. Setting the `abort tran on log full` option to `true` causes the SAP ASE server to roll back all transactions that have not yet been logged when the last-chance threshold is crossed.

You cannot use `sp_modifythreshold` to change the free-space value or segment name associated with the last-chance threshold.

Only databases that store their logs on a separate segment can have a last-chance threshold. Use `sp_logdevice` to move the transaction log to a separate device.

Related Information

sp_logdevice [page 566]

1.190.3 Creating Threshold Procedures

Any user with `create procedure` permission can create a threshold procedure in a database. Usually, a system administrator creates `sp_thresholdaction` in the `master` database, and database owners create threshold procedures in user databases.

`sp_modifythreshold` does not verify that the specified procedure exists. It is possible to associate a threshold with a procedure that does not yet exist.

`sp_modifythreshold` checks to ensure that the user modifying the threshold procedure has been granted the “sa_role”. All system roles active when the threshold procedure is created are modified in `systhresholds` as valid roles for the user writing the procedure.

The SAP ASE server passes four parameters to a threshold procedure:

- `@dbname`, `varchar(30)`, which identifies the database
- `@segment_name`, `varchar(30)`, which identifies the segment
- `@space_left`, `int`, which indicates the number of free pages associated with the threshold
- `@status`, `int`, which has a value of 1 for last-chance thresholds and 0 for other thresholds

These parameters are passed by position rather than by name; your threshold procedure can use other names for them, but the procedure must declare them in the order shown and with the correct datatypes.

It is not necessary to create a different procedure for each threshold. To minimize maintenance, create a single threshold procedure in the `sybsystemprocs` database that can be executed by all thresholds.

Include `print` and `raiserror` statements in the threshold procedure to send output to the error log.

1.190.4 Executing Threshold Procedures

Tasks that are initiated when a threshold is crossed execute as background tasks. These tasks do not have an associated terminal or user session. If you execute `sp_who` while these tasks are running, the `status` column shows "background".

The SAP ASE server executes the threshold procedure with the permissions of the user who modified the threshold, at the time he or she executed `sp_modifythreshold`, minus any permissions that have since been revoked.

Each threshold procedure uses one user connection, for as long as it takes to execute the procedure.

1.190.5 Disabling Free-Space Accounting

Use the `no free space acctg` option of `sp_dboption` to disable free-space accounting on non-log segments.

You cannot disable free-space accounting on log segments.

> ⚠ Caution
>
> System procedures cannot provide accurate information about space allocation when free-space accounting is disabled.

Related Information

sp_dboption [page 228]

1.191 sp_modifyuser

Allows you to grant users `read only` access to objects owned by other users on standby servers.

Syntax

```
sp_modifyuser "<user_name1>", "resolve as", "<user_name2>"
```

Parameters

`<user_name1>`

is the name of a database user whose object references are resolved on behalf of `<user_name2>`.

`<user_name2>`

is the name of the database user whose privileges you are mapping.

Examples

Example 1

Grants user joe read-only privileges for objects owned by user bob on the standby server:

```
sp_modifyuser "joe", "resolve as", "bob"
```

Example 2

Removes the mappings:

```
sp_modifyuser "userA", "resolve as",""
```

Usage

- The user accessing another user's object must have `select` permission on the object being accessed.
- The user granted read only permission (that is, `<user_name1>`) may run only select and cursor fetch statements on the data.
- The object resolution does not take effect if the user granted the read-only privileges runs `set user`, `set proxy`, or the `set role` commands after issuing `sp_modifyuser ... resolve as`.

Permissions

You must be the database owner to issue `sp_modifyuser ... resolve as`.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

1.192 sp_monitor

Displays statistics about the SAP ASE server.

Syntax

The syntax is divided by command type for clarity, since many of the types have parameters of their own. The following code paragraph shows the syntax of the stored procedure as a whole, followed by the syntax of each command type interface.

```
sp_monitor [[connection | statement], [cpu | diskio | elapsed time]]
     [event, [<spid> ]]
     [<procedure>, [<dbname>, [<procname>[, summary | detail]]]]
     [enable] [disable]
     [help],
     [deadlock][procstack]
```

Parameters

connection

displays information on each connection. `connection` uses the following monitoring tables:

- `monProcessSQLText`
- `monProcessActivity`

statement

displays information on each statement. `statement` uses the following monitoring tables:

- `monProcessSQLText`
- `monProcessStatement`

cpu | diskio | elapsed time

these parameters order the output of `sp_monitor connection` or `sp_monitor statement`.

- `cpu` – indicates the amount of CPU time consumed by each different connection or statement.
- `diskio` – indicates the number of physical reads performed by each connection or statement.
- `elapsed time` – indicates the sum of the CPU time and the wait times for each connection or statement.

event

displays three possibilities. When you specify:

- No option – only user tasks are displayed.
- `sp_monitor, event, "-1"` – wait information about all tasks, both user and system, is displayed.
- `sp_monitor, event, "spid"` – wait information pertaining to only the specified server process ID is displayed.

`<spid>`

allows you to obtain `event` information for a specific task by entering its `<spid>`. You must specify the numeric value of `<spid>` within quotation marks.

`<procedure>`

displays statistics about stored procedures:

ProcName	The stored procedure being monitored.
DBNAME	The database in which the stored procedure is located.
NumExecs	The approximate number of executions of this specific stored procedure.
AvgCPUTime	The average CPU time that it takes for the stored procedure to execute.
AvgPhysicalReads	The average number of disk reads performed by the stored procedure.
AvgLogicalReads	The average number of logical reads performed by the stored procedure.
AvgMemUsed_KB	The average amount of memory in KB used by the stored procedure.

`<procedure>` uses the `monSysStatement` monitoring table.

`<dbname>`

displays information on procedures for the specified database.

`<procname>`

displays information on the specified procedure.

`summary | detail`

displays either summary information, which provides an average of all instances of the procedure, or detailed information, which provides information on every instance of the stored procedure.

`enable`

enables the new options for `sp_monitor`. It turns on the configuration parameter required to begin monitoring.

`disable`

disables monitoring.

`help`

displays the syntax and examples for `sp_monitor`, and also reports extensive information on using this procedure for deadlock analysis:

```
sp_monitor 'help', 'deadlock'
```

The `help` option also provides command-specific examples.

`deadlock`

tells `sp_monitor` to process historical data from the `monDeadlock` table, and prints out a block of output for each instance of deadlock.

`procstack`

examines the execution context of a task, including that of a deeply nested stored procedure. The stack of procedures executed is extracted from the `monProcessProcedures` monitoring table.

Examples

Example 1

Reports information about how busy the SAP ASE server has been:

```
sp_monitor
```

```
last_run               current_run          seconds
-------------------    -------------------  ---------
Jan 29 1987 10:11AM    Jan 29 1987 10:17AM  314
cpu_busy           io_busy     idle
---------------    ---------   --------------
4250(215)-68%      67(1)-0%    109(100)-31%
packets_received       packets_sent    packet_errors
----------------       ------------    ------------
781(15)                10110(9596)     0(0)
total_read     total_write total_errors    connections
-----------    -------------------------   -----------
394(67)        5392(53)    0(0)            15(1)
```

Example 2

Shows how to display information about connections:

```
1> sp_monitor "connection"
2> go
```

```
spid    LoginName    ElapsedTime  LocksHeld  SQLText
----    ---------    -----------  ---------  -----------------
12      sa           90300        2          exec get_employee_salaries
27      sa           17700        1          exec get_employee_perks
```

By default, the output by default is sorted in the descending order of the ElapsedTime.

Example 3

Identifies the connections performing the most physical reads:

```
1> sp_monitor "connection","diskio"
2> go
```

```
spid  LoginName  Physical_Reads  LocksHeld  SQLText
----  ---------  --------------  ---------  --------------------------
12    sa         117             2          exec get_employee_salaries
27    sa         1               0          exec get_employee_perks
```

Example 4

Displays information about each statement:

```
1> sp_monitor "statement"
2> go
```

```
spid   LoginName   ElapsedTime   SQLText
----   ---------   -----------   --------------------------
12     sa          100           exec get_employee_salaries
```

Example 5

Displays the events each task spent time waiting for and the duration of the wait, reported in descending order of wait times:

```
1> sp_monitor "event"
2> go
```

```
SPID   WaitTime    Description
------ ----------- ------------------------------------------
6      108200      hk: pause for some time
29     108200      waiting for incoming network data
10     107800      waiting while allocating new client socket
15     17100       waiting for network send to complete
14     5900        waiting for CTLIB event to complete
14     400         waiting for disk write to complete
7      200         hk: pause for some time
7      100         waiting on run queue after yield
12     100         waiting for network send to complete
```

Example 6

Displays event data for spid 14:

```
1> sp_monitor "event","14"
2> go
```

```
WaitTime    Description
----------- -----------------------------------
9000 waiting for CTLIB event to complete
600 waiting for disk write to complete
200 waiting for disk write to complete
100 waiting on run queue after yield
100 wait for buffer write to complete
```

Example 7

Provides a summary of most recently run procedures, sorted in descending order of average elapsed time. This example provides historical monitoring information rather than the current state:

```
1> sp_monitor "procedure"
2> go
```

```
Average Procedure Statistics
============================
ProcName       DBName  AvgElapsedTime AvgCPUTime AvgWaitTime AvgPhysicalReads
AvgLogicalReads AvgPacketsSent NumExecs
-----------------------------------------------------------------------
neworder_remote   tpcc   1833     16    1083     26   96    0     6
neworder_local    tpcc   1394     13    1181     31   122   0     38
tc_startup        tpcc   1220     3     1157     0    3     0     59
```

```
delivery          tpcc    1000     0      800       23    49     0      2
```

Usage

> i Note
>
> Before using the new parameters associated with `sp_monitor`, you must set up monitoring tables and the related stored procedures needed to enable. See *Performance and Tuning: Monitoring and Analyzing > Installing Monitoring Tables*.

- The SAP ASE server keeps track of how much work it has done in a series of global variables. `sp_monitor` displays the current values of these global variables and how much they have changed since the last time the procedure executed.
- For each column, the statistic appears in the form `<number>(<number>)-<number>%` or `<number>(<number>)`.
  - The first number refers to the number of seconds (for `cpu_busy`, `io_busy`, and `idle`) or the total number (for the other columns) since the SAP ASE server restarted.
  - The number in parentheses refers to the number of seconds or the total number since the last time `sp_monitor` was run. The percent sign indicates the percentage of time since `sp_monitor` was last run.

  For example, if the report shows `cpu_busy` as `"4250(215)-68%"`, it means that the CPU has been busy for 4250 seconds since the SAP ASE server was last started, 215 seconds since `sp_monitor` last ran, and 68 percent of the total time since `sp_monitor` was last run.

  For the `total_read` column, the value `394(67)` means there have been 394 disk reads since the SAP ASE server was last started, 67 of them since the last time `sp_monitor` was run.
- This list shows the monitoring tables accessed by monitoring type, as well as the configuration option and its type for each table:

  connection
  - `monProcessSQLext`
    - `max SQL text monitored` – Value
    - `SQL batch capture` – Boolean
  - `monProcessActivity`
    - `wait event timing` – Boolean
    - `per object statistics active` – Boolean

  `procstack`
  - `monProcessProcedures`
    - None – N/A

  `statement`
  - `monProcessSQLText`
    - `max SQL text monitored` – Value
    - `SQL batch capture` – Boolean
  - `monProcessStatement`
    - `statement statistics active` – Boolean
    - `per object statistics active` – Boolean
    - `wait event timing` – Boolean

event	○ `monProcessWaits` ○ `wait event timing` – Value ○ `process event waits` – Boolean
procedure	○ `monSysStatement` ○ `statement statistics active` – Boolean ○ `per object statistics active` – Boolean ○ `statement pipe max messages` – Value ○ `statement pipe active` – Boolean
deadlock	○ `monDeadlock` ○ `deadlock pipe max messages` – Value ○ `deadlock pipe active` – Boolean

- `sp_monitor connection` monitors connections actively executing T-SQL only, and does not report on all connections.
- You must run `sp_monitor` from the `master` database. However, if you are analyzing deadlock data archived in another database, you can run `sp_monitor deadlock` from that database.
- `sp_monitor event` no longer displays all tasks (including system tasks), when called with no options. In SAP ASE version 15.0.2 and above, the event option provides three possibilities. When:
  - No option is provided – only user tasks are displayed.
  - You specify `sp_monitor, event, "-1"`, wait information about all tasks, both user and system, is displayed.
  - You specify `sp_monitor, event, "spid"`, wait information pertaining to only the specified server process ID is displayed.
- The following describes the columns in the `sp_monitor` report, the equivalent global variables, if any, and their meanings. With the exception of `last_run`, `current_run` and `seconds`, these column headings are also the names of global variables — except that all global variables are preceded by `@@`. There is also a difference in the units of the numbers reported by the global variables — the numbers reported by the global variables are not milliseconds of CPU time, but machine ticks:

Column Heading	Equivalent Variable and Description
last_run	Clock time at which the `sp_monitor` procedure last ran.
current_run	Current clock time.
seconds	Number of seconds since `sp_monitor` last ran.
cpu_busy	`@@cpu_busy`. Number of seconds in CPU time that the SAP ASE server's CPU was doing SAP ASE work.
io_busy	`@@io_busy`. Number of seconds in CPU time that the SAP ASE server has spent doing input and output operations.
idle	`@@idle`. Number of seconds in CPU time that the SAP ASE server has been idle.
packets_received	`@@pack_received`. Number of input packets read by the SAP ASE server.
packets_sent	`@@pack_sent`. Number of output packets written by the SAP ASE server.

Column Heading	Equivalent Variable and Description
packet_errors	@@packet_errors.Number of errors detected by the SAP ASE server while reading and writing packets.
total_read	@@total_read. Number of disk reads by the SAP ASE server.
total_write	@@total_write. Number of disk writes by the SAP ASE server.
total_errors	@@total_errors. Number of errors detected by the SAP ASE server while reading and writing.
connections	@@connections. Number of logins or attempted logins to the SAP ASE server.

- The first time sp_monitor runs after SAP ASE start-up, the number in parentheses is meaningless.
- The SAP ASE server's housekeeper task uses the server's idle cycles to write changed pages from cache to disk. This process affects the values of the cpu_busy, io_busy, and idle columns reported by sp_monitor. To disable the housekeeper task and eliminate these effects, set the housekeeper free write percent configuration parameter to 0:

```
sp_configure "housekeeper free write percent", 0
```

- You must run sp_monitor when a representative workload is running on the system.
- Typically, run procedures in this sequence:
  - Run sp_monitor enable
  - Invoke sp_monitor options
  - Run sp_monitor disable when you have completed the monitoring
- When you are using sp_monitor procedure, the number of rows returned can be very large; you may want to use the summary option instead of the detail option. It may also take a while for this command to complete on an active system.

Permissions

The permission checks for sp_monitor are the same whether or not granular permissions is enabled:

- The database owner of sybsystemprocs can execute sp_monitor and can grant execute permission to other users
- The stored procedure is created with execute as owner. The owner is sa. The owner requires mon_role, which user sa has by default.

For more information see *Monitoring Tables* in *Performance and Tuning: Monitoring and Analyzing*.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_who [page 846]

1.193 sp_monitorconfig

Displays cache usage statistics regarding metadata descriptors for indexes, objects, databases, and the kernel resource memory pool. sp_monitorconfig also reports statistics on auxiliary scan descriptors used for referential integrity queries, and usage statistics for transaction descriptors and DTX participants.

Syntax

```
sp_monitorconfig "<configname>"[, "<result_tbl_name>"][, "full"]
```

Parameters

<configname>

is either all, or part of the configuration parameter name with the monitoring information that is being queried. Valid configuration parameters are listed in the "Usage" section. Specifying all displays descriptor help information for all indexes, objects, databases, and auxiliary scan descriptors in the server.

"<result_tbl_name>"

(optional) is the name of the table you create to save the stored procedure results. If you pass a table name for <result_tabl_name> that does not already exist, sp_monitorconfig creates a table to hold the result set.

"full"

returns a set of values for the configname that you specify. The values are:

- config_val – reports the configured value
- system_val – reports the systems default value when there's novalue configured
- total_val – reports the actual value used

Examples

Example 1

Shows all items that are open:

```
sp_monitorconfig "open"
```

```
Configuration option is not unique.
option_name                    config_value run_value
-----------------------------   ----------  ----------
number of open databases                12           12
number of open objects                 500          500
curread change w/ open cursors           1            1
open index hash spinlock ratio         100          100
number of open indexes                 500          500
open index spinlock ratio              100          100
open object spinlock ratio             100          100
number of open partitions              500          500
```

Example 2

Shows the status for all configurations:

```
sp_monitorconfig "all"
```

```
-------------
Usage information at date and time: May  6 2010  4:32PM.
Name                   Num_free Num_active Pct_act Max_Used Reuse_cnt Instance
_Name
--------------------   --------- --------- -------  ------- ---------
 -------------
additional network
memory  1358436  809440   37.34    825056        0           NULL
audit queue
size               100       0    0.00         0        0           NULL
disk i/o
structures            256       0    0.00        29        0           NULL
heap memory per
user          4096       0    0.00         0        0           NULL
. . .
size of process object
he     3000       0    0.00          0        0          NULL
size of shared class
heap     6144       0    0.00          0        0          NULL
size of unilib
cache        306216     816    0.27        816        0          NULL
txn to pss
ratio               400       0    0.00          0        0         NULL
```

Example 3

Shows 61 active object metadata descriptors, with 439 free. The maximum used at a peak period since the SAP ASE server was last started is 61:

```
sp_monitorconfig "open objects"
```

```
Usage information at date and time: Apr 22 2002  2:49PM.
Name                   Num_free Num_active Pct_act Max_Used Reuse_cnt Instance
_Name
--------------------   --------- --------- -------  ------- ---------
 -------------
```

```
number of open
objects        439      61    12.20        61        0           NULL
```

You can then reset the size to 550, for example, to accommodate the 439 maximum used metadata descriptors, plus space for 10 percent more:

```
sp_configure "number of open objects", 330
```

Example 4

Shows the maximum number of index metadata descriptors, which is 44:

```
sp_monitorconfig "open indexes"
```

```
Usage information at date and time: Apr 22 2002  2:49PM.
Name                   Num_free Num_active Pct_act Max_Used Reuse_cnt Instance
_Name
--------------------   --------- --------- -------  ------- ---------
 -------------
number of open
indexes        556     44      7.33        44        0           NULL
```

You can reset the size to 100, the minimum acceptable value:

```
sp_configure "number of open indexes", 100
```

Example 5

Shows the number of active scan descriptors as 30, though the SAP ASE server is configured to use 200. Use the `number of aux scan descriptors` configuration parameter to reset the value to at least 32. A safe setting is 36, to accommodate the 32 scan descriptors, plus space for 10 percent more:

```
sp_monitorconfig "aux scan descriptors"
```

```
Usage information at date and time: Apr 22 2002  2:49PM.
Name                   Num_free Num_active Pct_act Max_Used Reuse_cnt Instance
_Name
--------------------   --------- --------- -------  ------- ---------
 -------------
number of aux scan
descri     170     30    15.00         32        0           NULL
```

Example 6

The SAP ASE server is configured for five open databases, all of which have been used in the current session:

```
sp_monitorconfig "number of open databases"
```

```
Name                   Num_free Num_active Pct_act Max_Used Reuse_cnt Instance
_Name
--------------------   --------- --------- -------  ------- ---------
 -------------
number of open
databses         0      5    100.00         5  Yes              NULL
```

However, as indicated by the `Reuse_cnt` column, an additional database needs to be opened. If all 5 databases are in use, an error may result, unless the descriptor for a database that is not in use can be reused. To prevent an error, reset `number of open databases` to a higher value.

Example 7

Only 10.2 percent of the transaction descriptors are currently being used. However, the maximum number of transaction descriptors used at a peak period since the SAP ASE server was last started is 523:

```
sp_monitorconfig "txn to pss ratio"
```

```
Usage information at date and time: Apr 22 2002  2:49PM.
Name                   Num_free Num_active Pct_act Max_Used Reuse_cnt Instance
_Name
--------------------   --------- --------- -------  ------- ---------
 -------------
txn to pss
ratio              784     80     10.20       523        0           NULL
```

Example 8

Using the optional parameter `<result_tbl_name>` to create a user table saves the `sp_monitorconfig` result to this table:

```
create table sample_table
(Name varchar(35),
Config_val int,
System_val int,
Total_val int,
Num_free int,
Num_active int,
Pct_act char(6),
Max_Used int,
Reuse_cnt int,
Date varchar(30),
Instance_Name varchar(35))
```

The name of the table created becomes the second parameter of `sp_monitorconfig`. Capture the values for `number of locks` and `number of alarms` in `sample_table`:

```
sp_monitorconfig "locks", sample_table
sp_monitorconfig "number of alarms", sample_table
```

Display the values captured in `sample_table`:

```
select * from sample_table
```

```
Name               Config_val System_val Total_val Num_free Num_active
Pct_act Max_used Reuse_cnt   Date                Instance_Name
------------------- ----------- ---------- --------- --------- ----------
------- -------- ---------   ------------------- ------------------------
 number of locks         5000        684      5000     4915         85
1.70        117         0    Aug 23 2006  6:53AM
 number of alarms            40        0        40       28         12
30.00        13         0    Aug 23 2006  6:53AM
```

The result set saved to the table accumulates until you delete or truncate the table.

> **i Note**
>
> If `sample_table` is in another database, you must provide its fully qualified name in quotes.

Example 9

Displays the `configure_value`, `system_value`, and `run_value` columns of all the configurations:

```
sp_monitorconfig "all", null, "full"
go
```

```
Usage information at date and time: Mar 23 2004  5:15PM
Name                    Configure Value  System Value  Run Value
Num_free   Num_active  Pct_act  Max_Used  Reuse_cnt   Instance_Name
-----------------------    -----------       ----------      -------
---------  ----------  -------  --------  ---------   --------------------
additional network memory             0        2167876      2167876
  1358436      809440    37.34    825056          0                  NULL
audit queue size                    100              0          100
      100           0     0.00         0          0                  NULL
disk i/o structures                 256              0          256
      256           0     0.00        29          0                  NULL
heap memory per user               4096            563         4096
     4096           0     0.00         0          0                  NULL
kernel resource memory             4096              0         4096
     3567         529    12.92       529          0                  NULL
max cis remote connection             0            100          100
      100           0     0.00         0          0                  NULL
. . .
size of shared class heap          6144              0         6144
     6144           0     0.00         0          0                  NULL
size of unilib cache            0307032         307032       306216
      816           0      .27       816          0                  NULL
txn to pss ratio                     16              0           16
      400           0     0.00         0           0                 NULL
```

Usage

There are additional considerations when using `sp_monitorconfig`:

- The output for `additional network memory` reports the utilization statistics for the global network memory pool regardless of whether or not memory has been added to this pool by setting additional network memory to a positive value.
- If the `max cis remote connections` configuration parameter has a `config_value`, the `system_val` reports a value of zero (0).
- The `Max_Used` value reported by `sp_monitorconfig` for the `number of locks` configuration parameter can report a value larger than the highest number of locks used. Use these values when monitoring locks:
  - `Num_active` – indicates the number of active locks being used
  - `Num_free` – indicates the number of free locks
  - `Pct_act` – indicates the percentage of active locks

  The `Max_Used` field displayed indicates the number of locks currently available in cache, and not the maximum number used. `sp_monitorconfig` uses this interpretation only for locks, and not for reporting on any other values.
- If you reconfigure a resource using a value that is smaller than the original value it was given, the resource does not shrink, and the `Num_active` configuration parameter can report a number that is larger than `Total_val`. The resource shrinks and the numbers report correctly when the SAP ASE server restarts.

- `sp_monitorconfig` displays cache usage statistics regarding metadata descriptors for indexes, objects, and databases, such as the number of metadata descriptors currently in use by the server.
- `sp_monitorconfig` also reports the number of auxiliary scan descriptors in use. A scan descriptor manages a single scan of a table when queries are run on the table.
- `sp_monitorconfig` monitors the following resources:
  - `additional network memory`
  - `audit queue size`
  - `heap memory per user`
  - `max cis remote connection`
  - `max memory`
  - `max number network listeners`
  - `memory per worker process`
  - `max online engines`
  - `number of alarms`
  - `number of aux scan descriptors`
  - `number of devices`
  - `number of dtx participants`
  - `number of java sockets`
  - `number of large i/o buffers`
  - `number of locks`
  - `number of mailboxes`
  - `number of messages`
  - `number of open databases`
  - `number of open indexes`
  - `number of open objects`
  - `number of open partitions`
  - `number of remote connections`
  - `number of remote logins`
  - `number of remote sites`
  - `number of sort buffers`
  - `number of user connections`
  - `number of worker processes`
  - `partition groups`
  - `permission cache entries`
  - `procedure cache size`
  - `size of global fixed heap`
  - `size of process object heap`
  - `size of shared class heap`
  - `size of unilib cache`
  - `txn to pss ratio`
- The `number of sort buffers` configuration parameter is not a server-wide setting; it specifies and limits the number of sort buffers per sort. However, the `sp_monitorconfig` counters are reported server-wide. If more than one sort operation is in progress, and each of them is using a large number of sort

buffers (up to the value of `number of sort buffers`), the total number of sort buffers can exceed the value of `number of sort buffers`.
The server uses sort buffers for sort operations like `update statistics`, `create index`, `order by`, `sort merge join`, reformatting (`store_index`) and so on. Each operation can use a number of sort buffers, up to value configured for `number of sort buffers`. If multiple connections are running with sort operations,the number of used sort buffers may be larger than the value of `number of sort buffers`. This is an expected result. However, issuing `sp_monitorconfig "number of sort buffers"` shows higher numbers than the configured value.

- SAP ASE uses the value of `heap memory per user` as a seed value for configuring the global heap pool. The value for global heap memory is based on this formula:

  ```
  ("number of user connections" + "number of worker processes") X "heap memory
  per user"
  ```

  When it starts, the server allocates the global heap memory pool based on the value of `heap memory per user` and the number of configured user connections and worker processes, and users acquire heap memory from the global heap memory pool as needed.
  `sp_monitorconfig "heap memory per user"` displays information about the usages of the global pool per user. The `Num_active` and `Max_Used` counters displayed by `sp_monitorconfig "heap memory per user"` represent the total memory used from the global heap memory pool, and values greater than the configured value for`heap memory per user` are expected.
- The columns in the `sp_monitorconfig` output provide the following information:
  - `Num_free` – specifies the number of available metadata or auxiliary scan descriptors not currently used.
  - `Num_active` – specifies the number of metadata or auxiliary scan descriptors installed in cache (that is, active).
  - `Pct_active` – specifies the percentage of cached or active metadata or auxiliary scan descriptors.
  - `Max_Used` – specifies the maximum number of metadata or auxiliary scan descriptors that have been in use since the server was started.
  - `Reuse_cnt` – specifies whether a metadata descriptor was reused in order to accommodate an increase in indexes, objects, or databases in the server. The returned value is `Yes`, `No` or `NA` (for configuration parameters that do not support the reuse mechanism, such as the number of `aux scan descriptors`).
- Use the value in the `Max_Used` column as a basis for determining an appropriate number of descriptors; be sure to add about 10 percent for the final setting. For example, if the maximum number of index metadata descriptors used is 142, you might set the `number of open indexes` configuration parameter to 157.
- If the `Reused` column states `Yes`, reset the configuration parameter to a higher value. When descriptors need to be reused, there can be performance problems, particularly with open databases. An open database contains a substantial amount of metadata information, which means that to fill up an open database, the SAP ASE server needs to access the metadata on the disk many times; the server can also have a spinlock contention problem. To check for spinlock contention, use the system procedure `sp_sysmon`. See the *Performance and Tuning Series: Monitoring Adaptive Server with sp_sysmon*. To find the current number of indexes, objects, or databases, use `sp_countmetadata`.
- To get an accurate reading, run `sp_monitorconfig` during a normal SAP ASE peak time period. You can run `sp_monitorconfig` several times during the peak period to ensure that you are actually finding the maximum number of descriptors used.

- <result_tbl_name> creates a table using the following syntax:

  ```
  create table table_name(
      Name varchar(35), Num_free int,
      Num_active int, Pct_act char(6),
      Max_Used int, Reuse_cnt int,
      Date varchar(30))
  ```

  All the result information is saved in this table, which returns no standard output.
- Some configuration parameters, such as <number of sort buffers> and <txn to pss ratio>, are dependent on the number of configured user connections, while other configuration parameters, such as <max number of network listeners>, are per engine.
- For the configuration value <permission cache entries>, the values of Num_free, Num_active, Pct_act, and Max_Used are averages of per connection values, however Reuse_cnt is a server-wide value.
- The output of sp_monitorconfig uses the number of user connections and online engines to calculate the values for the columns num_free, num_active, pct_act and max_used.
- The updates on the internal monitor counters are done without using synchronization methods because of performance reasons. For this reason, a multi-engine SAP ASE server under heavy load might report numbers in the sp_monitorconfig output that are not a completely accurate.
- You might see the number of active locks as greater than 0 on an idle system. These "active" locks are reserved and used internally.

Permissions

The permission checks for sp_monitorconfig differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with mon_role or have manage server privileges.
Disabled	With granular permissions disabled, you must be a user with either mon_role or sa_role.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_configure [page 203]
sp_countmetadata [page 215]

sp_helpconfig [page 424]
sp_helpconstraint [page 434]
sp_sysmon [page 791]

1.194 sp_monitor_server

Provides server-wide monitoring information.

Syntax

```
sp_monitor_server [<server_name>]
```

Parameters

<server_name>

is the name of the server.

Examples

Example 1

Displays the current server monitoring information:

```
sp_monitor_server
```

```
last_run             current_run          seconds
-------------------- -------------------  -------
May 10 2010  4:23PM  May 10 2010  4:23PM       1
(1 row affected)
cpu_busy       io_busy        idle
-------------  -------------- ------------
      0(0)-0%         0(0)-0%     21(0)-0%
packets_received  packets_sent  packet_errors
----------------  ------------  -------------
            0(0)          0(0)             0(0)
total_read    total_write   total_errors   connections
------------  ------------  -------------  -----------
1743(0)             146(0)          0(0)         1(0)
```

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

1.195 sp_nvbindcache

Binds databases to non-volatile cache.

Syntax

```
sp_nvbindcache <nv_cache_name>, <database_name>
```

Parameters

`<nv_cache_name>`

is the name of the named NV cache.

`<database_name>`

is the name of the database you are binding.

Examples

Example

This example binds a database named `tdb1` to an NV cache named `nvcache1`:

```
1> sp_nvbindcache nvcache1, tdb1
2> go
```

```
database: tdb1 found bound to NV cache: nvcache1
Binding/Unbind operations between databases and NV caches are critical
operations, please be
careful before initiating the process
(return status = 0)
```

Usage

You can specify only a database when using `sp_nvbindcache` to create a binding to an NV cache. SAP ASE displays an error if you specify an object other than a database in the procedure.

See *System Administration Guide Volume 2 > Configuring Data Caches > NV Cache Management* for details about NV caches.

Permissions

A user requires sa_role to execute `sp_nvbindcache`.

1.196 sp_nvcacheconfig

Manages (creates, changes, drops, and adds) non-volatile cache on a non-volatile device that is already created.

Syntax

```
sp_nvcacheconfig <cachename>,'device=<device_name>'[,
'dirty_threshold=<threshold_percent>'][, selectivity=<selectivity_value>]
```

Parameters

`<cachename>`

is the name of the NV cache.

`device=<device_name>`

is the non-volatile device on which the NV cache resides. Setting `device=NULL` deletes the NV cache.

`dirty_threshold=<threshold_percent>`

specifies the threshold of dirty buffer in NV cache, beyond which the NV cache lazy cleaner task cleans this cache. The valid values are:

- The minimum value is 10
- The maximum value is 90
- The default value is 50

If the value is low, the NV cache lazy cleaner perform frequent writes to the HDD to clean pages in NV cache.

selectivity=`<selectivity_value>`

determines the pages to evict from the NV cache. `<selectivity_value>` is one of:

- 0 – evicts all pages being unhashed from the main memory cache.
- 1 – evicts pages accessed more than once (the default setting). A value of 1 filters out many infrequently accessed pages.
- 5 – evicts pages accessed more than 5 times.

Examples

Create NV cache

Enables the `memscale` feature, creates an NV cache device named `cachedisk`, then creates a NV cache named `nvc`:

```
sp_configure 'enable mem scale', 1
go
disk init
name = 'cachedisk',
physname = './cachedisk.dat',
type = 'nvcache',
size = '1000M'
sp_nvcacheconfig nvc, 'device=cachedisk'
go
(return status = 0)
sp_nvcacheconfig
go
 NV Cache Name   NV Cache Size   Dirty Threshold     Selectivity
 --------------- ---------------- -----------------   ------------
 nvc             1024.00 MB                      50              1
(1 row affected)
 NV Cache Name   NV Device Name   NV Device Location
 --------------- ---------------- --------------------
 nvc             cachedisk        ./cachedisk.dat
(return status = 0)
```

Create NV cache

Creates an NV cache named `nvc` on a device named `cachedisk`, with a dirty threshold percentage of 40:

```
sp_nvcacheconfig 'nvc', 'device=cachedisk', 'dirty_threshold=40'
go
```

Delete NV cache

Deletes an NV cache named `nvCache1`:

```
sp_nvcacheconfig nvCache1,'device=NULL'
NV cache = nvCache1 is being deleted
(return status = 0)
sp_nvcacheconfig
go
No NV Cache exists for this server
(return status = 1)
```

Create an NV cache with selectivity

Creates a cache with a selectivity of 5

```
sp_nvcacheconfig nvc, 'device=cachedisk', 'selectivity=5'
```

Display NV cache

Displays information about all named NV caches:

```
sp_nvcacheconfig
go
```

```
 NV Cache Name   NV Cache Size   Dirty Threshold      Selectivity
 --------------- --------------- -----------------    ------------
 nvc             100.00 MB                      50               5
 nvc1            10.00 MB                       50               1
 nvc2            10.00 MB                       50               1
 nvc3            10.00 MB                       50               1
(1 row affected)
 NV Cache Name   NV Device Name   NV Device Location
 --------------- ---------------- --------------------
 nvc1            cachedisk1       ./cachedisk1.dat
 nvc2            cachedisk2       ./cachedisk2.dat
 nvc3            cachedisk3       ./cachedisk3.dat
(return status = 0)
```

Display a specific NV cache

This example displays information about an NV cache named "nvc1":

```
sp_nvcacheconfig nvc1
go
```

```
 NV Cache Name   NV Cache Size   Dirty Threshold    Selectivity
 --------------- --------------- -----------------  ------------
 nvc1            10.00 MB                       50             1
(1 row affected)
 NV Cache Name   NV Device Name   NV Device Location
 --------------- ---------------- --------------------
 nvc1            cachedisk1       ./cachedisk1.dat
(return status = 0)
```

Usage

- This stored procedure will make sure the non-volatile device is already created and is of special type "non-volatile cache." Issuing `sp_helpdevice` displays `NV cache device` on the NV cache device.
- Before you can create a named NV cache, create and activate the device on which the NV cache will reside by using the `disk init` utility. For example:

  Sample Code

  ```
  disk init name="NV_CACHE1",
   physname="/my_dev11/user1/cssdDir/bootClust/devDir/nvdev11.dat",
  size="1000M",
   type='nvcache'
  ```

- You can only create NV cache on devices created with type "nvcache."
- There is a one-to-one mapping ratio between NV caches and devices; that is, you cannot create two caches for a single device, and so on.
- The size of the cache is determined by the size of the device, as reported by the `sysdevices` table.

- Before invoking `sp_nvcacheconfig`, make sure the device is active.

See *System Administration Guide Volume 2 > Configuring Data Caches > NV Cache Management* for details about NV caches.

Permissions

Users must have sa_role to execute `sp_nvcacheconfig`.

1.197 sp_nvhelpcache

Provides information about non-volatile cache.

Syntax

```
sp_nvhelpcache [<NV_cachename>]
```

Parameters

`<NV_cachename>`

is an optional parameter that specifies the name of the NV cache.

Examples

Example 1

This example displays information about an NV cache named `nvcache1`:

```
1> sp_nvhelpcache
2> go
 cachename dbname dbid validity
 --------- ------ ---- --------
 nvc1      db        4        1
(1 row affected)
 NV Cache Name   NV Cache Size   Dirty Threshold Percent
 --------------- --------------- -------------------------
 nvc1            10.00 MB                               50
(1 row affected)
 NV Cache Name   NV Device Name   NV Cache Device Location
 --------------- ---------------- --------------------------
 nvc1               cachedisk1        ./cachedisk1.dat
(1 row affected)
```

Usage

See *System Administration Guide Volume 2 > Configuring Data Caches > NV Cache Management* for details about NV caches.

Permissions

Any user can use `sp_nvhelpcache`.

1.198 sp_nvunbindcache

Drops the database binding for the named non-volatile cache.

Syntax

```
sp_ununbindcache <database_name>
```

Parameters

`<database_name>`
is the name of the database with the binding you are removing from the NV cache.

Examples

Unbind the NV cache

```
1> sp_ununbindcache tdb1
2> go
```

```
database: tdb1 found bound to NV cache: nvcache1
Binding/Unbind operations between databases and NV caches are critical
operations, please be
```

```
careful before initiating the process
(return status = 0)
```

Usage

See *System Administration Guide Volume 2 > Configuring Data Caches > NV Cache Management* for details about NV caches.

Permissions

Users must have sa_role to execute `sp_unbindssdcache`.

1.199 sp_object_stats

Shows lock contention, lock wait-time, and deadlock statistics for tables and indexes.

Syntax

```
sp_object_stats <interval>[, <top_n>[, <dbname>, <objname>[, <rpt_option>]]]
```

Parameters

`<interval>`

specifies the time period for the sample. It must be in HH:MM:SS form, for example "00:20:00".

`<top_n>`

is the number of objects to report, in order of contention. The default is 10.

`<dbname>`

is the name of the database to report on. If no database name is given, contention on objects in all databases is reported.

`<objname>`

is the name of a table to report on. If a table name is specified, the database name must also be specified.

`<rpt_option>`

specifies the report type:

- `rpt_locks` reports grants, waits, deadlocks and wait times for the tables with the highest contention. `rpt_locks` is the default.
- `rpt_objlist` reports only the names of the objects that had the highest level of lock activity.

Examples

Example 1

Reports lock statistics on the top 10 objects server-wide:

```
sp_object_stats "00:20:00"
```

Example 2

Reports only on tables in the `pubtune` database, and lists the five tables that experienced the highest contention:

```
sp_object_stats "00:20:00", 5, pubtune
```

Example 3

Shows only the names of the tables that had the highest locking activity, even if contention and deadlocking does not take place:

```
sp_object_stats "00:15:00", @rpt_option = "rpt_objlist"
```

Usage

There are additional considerations when using `sp_object_stats`:

- `sp_object_stats` reports on the shared, update, and exclusive locks acquired on tables during a specified sample period. The following reports shows the `titles` tables:

```
Object Name: pubtune..titles (dbid=7, objid=208003772,lockscheme=Datapages)
  Page Locks     SH_PAGE                UP_PAGE               EX_PAGE$
  ----------    ----------             ----------             ----------
  Grants:         94488                  4052                   4828
  Waits:               532                   500                   776
  Deadlocks:             4                     0                    24
  Wait-time:      20603764 ms           14265708 ms           2831556 ms
  Contention:         0.56%                 10.98%                 13.79%
 *** Consider altering pubtune..titles to Datarows locking.
```

The meaning of the values are:

  - `Grants` – the number of times the lock was granted immediately.
  - `Waits` – the number of times the task needing a lock had to wait.
  - `Deadlocks` – the number of deadlocks that occurred.
  - `Wait-time` – the total number of milliseconds that all tasks spent waiting for a lock.

    - `Contention` – the percentage of times that a task had to wait or encountered a deadlock.
- `sp_object_stats` recommends changing the locking scheme when total contention on a table is more than 15 percent, as follows:
    - If the table uses allpages locking, it recommends changing to datapages locking.
    - If the table uses datapages locking, it recommends changing to datarows locking.
- Trace flag 1213 is enabled internally when you first execute `sp_object_stats` and disabled when the procedure is finished. If you cancel the system procedure before it finished, you must check if trace 1213 is still enabled and then disable it manually with dbcc traceoff:

```
dbcc traceoff (1213)
```

  Issue this query to determine if trace flag 1213 is currently set:

```
select * from sysoptions where number = 1213
```

- `sp_object_stats` creates a table named `tempdb..syslkstats`. This table is not dropped when the stored procedure completes, so it can be queried by a system administrator using Transact-SQL.
- Only one user at a time should execute `sp_object_stats`. If more than one user tries to run `sp_object_stats` simultaneously, the second command may be blocked, or the results may be invalid.
- The `tempdb..syslkstats` table is dropped and re-created each time `sp_object_stats` is executed.
- The structure of `tempdb..syslkstats` is:

Column name	Datatype	Description
`dbid`	`smallint`	Database ID
`objid`	`int`	Object ID
`lockscheme`	`smallint`	Integer values 1–3: ○ 1 – allpages ○ 2 – datapages ○ 3 – datarows
`page_type`	`smallint`	○ 0 – data page ○ 1 – index page
`stat_name`	`char(30)`	The statistics represented by this row The values in the `stat_name` column are composed of three parts: ○ The first part is "`ex`" for exclusive lock, "`sh`" for shared lock, or "`up`" for update lock. ○ The second part is "`pg`" for page locks, or "`row`" for row locks. ○ The third part is "`grants`" for locks granted immediately, "`waits`" for locks that had to wait for other locks to be released, "`deadlocks`" for deadlocks, and "`waittime`" for the time waited to acquire the lock.
`stat_value`	`float`	The number of grants, waits or deadlocks, or the total wait time.

- If you specify a table name, `sp_object_stats` displays all tables by that name. If more than one user owns a table with the specified name, output for these tables displays the object ID, but not the owner name.

See also:

- alter table in *Reference Manual: Commands*

Permissions

The permission checks for sp_object_stats differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with manage server privilege.
Disabled	With granular permissions disabled, you must be a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

1.200 sp_objectsegment

Reports the partition name, segment name, and creation date for the specified object.

Syntax

```
sp_objectsegment <object_name>
```

Parameters

<object_name>

is the name of the object. Acceptable objects are:

- System tables
- Views
- User tables
- System procedures

- Defaults
- Rules
- Triggers
- Referential constraints
- Check constraints
- Extended types
- Functions
- Computed columns
- Partitions

Examples

Example 1

Reports information about the authors table:

```
sp_objectsegment authors
```

```
Partition_name    Data_located_on_segment     When_created
-----------------  -----------------------     ------------
auidind_576002052                   default     Feb  9 2012 11:18AM
```

Permissions

Any user may run `sp_objectsegment`.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

1.201 sp_opt_querystats

Returns a performance analysis for the selected query.

Syntax

```
sp_opt_querystats "<query_text>" | help [, "<diagnostic_options>" | null
    [, <database_name>] [, <user_name>]]
```

Parameters

"<query_text>"

is the text of the query you are analyzing, enclosed in quotation marks.

help

displays syntax and usage information for `sp_opt_querystats`.

<diagnostic_options>

(Optional) the diagnostic parameters based on `set` options. The diagnostic parameters and the `set` options are:

statio	`set statistics io on`
stattime	`set statistics time on`
showplan	`set showplan on`
missingstats	`set option show_missing_stats long`
resource	`set statistics resource on`
switches	`show switches`
option_show_long	`set option show long` `option_show_long` and `option_show` are mutually exclusive.
option_show	`set option show on`
showdata	`set nodata on` `set nodata on` is not executed when you include `showdata`.
plancost	`set statistics plancost on`

Only available when you specify the `exec` or `allexec` options.

exec

`set noexec on`

`set noexec on` is not executed when you include `exec`.

allrows_mix

`set plan optgoal allrows_mix`

`allrows_mix`, `allrows_oltp`, and `allrows_dss` are mutually exclusive.

allrows_oltp

`set plan optgoal allrows_oltp`

allrows_dss

`set plan optgoal allrows_dss`

diagmode

Returns enhanced progress information.

all

Enables the first seven options.

`all` and `allexec` cannot be combined with other parameters, and are mutually exclusive.

allexec

Enables the first seven options.

The `allexec` option includes the `all` option.

null

`sp_opt_querystats` requires three parameters to specify the name of a database. If you do not require diagnostic options, enter a value of `null` for this parameter to specify a value for the `<database_name>` parameter.

<database_name>

(optional) the name of the database in which the query is executed. Use this parameter if the query you are analyzing does not have fully qualified tables.

<user_name>

(Optional) name of the user who executes the query within the database specified by the `<database_name>` parameter. This user must already exist in the database, and the login executing `sp_opt_querystats` must have permission to execute the `setuser` command in that database.

Examples

Example 1

Analyzes a `select` command on the `pubs2` database:

```
sp_opt_querystats 'select * from pubs2.dbo.authors'
```

Example 2

Analyzes a `select` command on the `pubs2` database, and includes information based on enabling these `set` commands: `set showplan`, `set statistics io`, `set option show`, `set statistics plancost on`:

```
sp_opt_querystats 'select * from pubs2.dbo.authors',
   'showplan,statio,option_show, plancost'
```

Usage

There are additional considerations when using `sp_opt_querystats`:

- You must include the `exec` command for `sp_opt_querystats` to execute the query.
- To run `sp_opt_querystats` as a different user, include the `setuser` command with the `exec immediate` command or in an out query context.
- You must include the `showdata` command for `sp_query_stats` to return the result set.
- After you issue `set quoted_identifier on`, you may surround `sp_opt_querystats` options with quotes. For example:

  ```
  sp_opt_querystats 'select "col" from "MYTABLE"', 'all','DB'
  ```

- The option list must be enclosed in quotation marks if you include more than one option, or if you specify the keyword `all`.
- Running `sp_opt_querystats` without any options is the same as running it with the `all` option.

Permissions

Any user can execute `sp_opt_querystats`. Permission checks do not differ based on the granular permissions settings.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

1.202 sp_optgoal

Creates a user-defined optimization goal, and defines the set of active criteria included in the goal.
This system procedure contains the functionality to make optimization goals that are run and saved into global optimization levels in the server using `sp_configure`. You can use this at the session level using the `set` command, or globally via `sp_configure`.

Syntax

```
sp_optgoal '<goal_name>’, <action>
```

Parameters

`<goal_name>`

name of the goal you are creating. `<goal_name>` cannot be longer than 12 characters.

`<action>`

action for `sp_optgoal` to perform. One of:

- `show | null | no action` – displays the contents of the goal.
- `save` – creates new goal or updates and existing goal.
- `delete` – deletes the goal.

Examples

Example 1

If you set these goals for the current session:

```
SET PLAN OPTLEVEL ase_current
SET PLAN  OPTGOAL allrows_mix
SET HASH_JOIN 1
```

This command saves these settings in a goal named `goal_1`:

```
sp_optgoal 'goal_1', 'save'
```

Either of these allow you to use the settings for goal_1 for the current session:

- Using the `set` command:

  ```
  set plan optgoal goal_1
  ```

- Using sp_configure:

  ```
  sp_configure "optimization goal", 1, "goal_1"
  ```

Example 2

Deletes goal_1:

```
sp_optgoal 'goal_1', 'delete'
```

Usage

sp_optgoal with no parameters displays a list of all user-defined optimizer goals.

Permissions

The permission checks for sp_optgoal differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, users with sa_role and sa_serverprivs_role must have manage opt goal privilege to create or delete a goal. By default, sa_role and sa_serverprivs_role are granted the manage opt goal privilege. Once created, all users can use the goal. Any user can run sp_optgoal 'show'.
Disabled	With granular permissions disabled, you must be a user with sa_role to create or delete a goal. However, once created, all users can use the goal. Any user can run sp_optgoal 'show'.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide > Auditing*.

1.203 sp_options

Shows option values.

Syntax

```
sp_options [ [show | help
     [, <option_name> | <category_name> | null
     [, dflt | non_dflt | null [, <spid>] ] ] ] ]
```

Parameters

`show`

lists the current and default values of all options, grouped according to their category. Issuing `sp_options` show with an option name specified gives you the current and default value for the individual option. You can also specify a session ID, and whether you want to view options with default settings or options with non-default settings.

`help`

indicates that you wish to show usage information. You achieve the same result when you issue `sp_options` with no parameters.

`<option_name>`

is the name of the option.

`<category_name>`

is the category of the option.

`null`

indicates the option for which you want to view the settings.

`dflt | non_dflt | null`

indicates whether to show options with default settings or to show options with non-default settings.

`<spid>`

specifies the session ID. Use the session ID to view other session settings.

Examples

Example 1

Shows `sp_options` usage:

```
1> sp_options
2> go
```

```
Usage:
sp_options [ [show | help
            [, <option_name>|<category_name>|null
               [, dflt | non_dflt | null
                    [, <spid>] ] ] ] ]
```

Example 2

Shows a list of all current and default options:

```
1> sp_options show
2> go
```

```
Category: Query Tuning
name                      currentsetting       defaultsetting       scope
------------------------------------------ ------------------------------
optgoal                     allrows_mix          allrows_mix          0
opttimeoutlimit             40                   10                   0
merge_join                  1                    1                    4
hash_join                   0                    0                    4
nl_join                     1                    1                    4
distinct_sorted             1                    1                    4
distinct_sorting            1                    1                    4
distinct_hashing            1                    1                    4
group_sorted                1                    1                    4
group_hashing               1                    1                    4
group_inserting             0                    0                    4
order_sorting               1                    1                    4
append_union_all            1                    1                    4
merge_union_all             1                    1                    4
merge_union_distinct        1                    1                    4
hash_union_distinct         1                    1                    4
store_index                 1                    1                    4
bushy_space_search          0                    0                    4
parallel_query              1                    1                    4
replicated_partition        0                    0                    4
ase125_primed               0                    0                    4
index_intersection          0                    0                    4
index_union                 1                    1                    4
multi_table_store_ind       0                    0                    4
advanced_aggregation        0                    0                    4
opportunistic_distinct_view 1                    1                    4
repartition_degree          3                    1                    2
scan_parallel_degree        0                    1                    2
resource_granularity        10                   10                   2
parallel_degree             0                    1                    2
statistics simulate         0                    0                    4
forceplan                   0                    0                    7
prefetch                    1                    1                    6
metrics_capture             0                    0                    6
process_limit_action        quiet                quiet                2
plan replace                0                    0                    4
plan exists check           0                    0                    4
plan dump                   0                    0                    4
plan load                   0                    0                    4
```

```
(39 rows affected)
(return status = 0)
```

Example 3

Shows the current and default setting for an individual option:

```
1> sp_options show, "index_intersection"
2> go
```

```
name               category      currentsetting  defaultsetting  scope
-----------------------------------------------------------------------
index_intersection Query Tuning  0               0               4
(1 row affected)
(return status = 0)
```

Example 4

Shows only the default setting for an individual option:

```
1> sp_options show, "index_intersection", dflt
2> go
```

```
name                    defaultsetting
--------------------------------------
index_intersection      0
(1 row affected)
(return status = 0)
```

Example 5

Shows the current and default settings for a category:

```
1> sp_options show, "Query Tuning"
2> go
```

```
Category: Query Tuning
name                        currentsetting  defaultsetting  scope
-----------------------------------------------------------------
optgoal                     allrows_mix     allrows_mix     0
opttimeoutlimit             10              10              0
merge_join                  1               1               4
hash_join                   0               0               4
nl_join                     1               1               4
distinct_sorted             1               1               4
distinct_sorting            1               1               4
distinct_hashing            1               1               4
group_sorted                1               1               4
group_hashing               1               1               4
group_inserting             0               0               4
order_sorting               1               1               4
append_union_all            1               1               4
merge_union_all             1               1               4
merge_union_distinct        1               1               4
hash_union_distinct         1               1               4
store_index                 1               1               4
bushy_space_search          0               0               4
parallel_query              1               1               4
replicated_partition        0               0               4
ase125_primed               0               0               4
index_intersection          0               0               4
index_union                 1               1               4
multi_table_store_ind       0               0               4
advanced_aggregation        0               0               4
```

```
opportunistic_distinct_view 1               1               4
repartition_degree          3               1               2
scan_parallel_degree        0               1               2
resource_granularity        10              10              2
parallel_degree             0               1               2
statistics simulate         0               0               4
forceplan                   0               0               7
prefetch                    1               1               6
metrics_capture             0               0               6
process_limit_action        quiet           quiet           2
plan replace                0               0               4
plan exists check           0               0               4
plan dump                   0               0               4
plan load                   0               0               4
(39 rows affected)
(return status = 0)
```

Example 6

Shows the default settings for the Query Tuning category:

```
1> sp_options show, "Query Tuning", dflt
2> go
```

```
Category: Query Tuning
name                        defaultsetting
--------------------------------------------
optgoal                     allrows_mix
opttimeoutlimit             10
merge_join                  1
hash_join                   0
nl_join                     1
distinct_sorted             1
distinct_sorting            1
distinct_hashing            1
group_sorted                1
group_hashing               1
group_inserting             0
order_sorting               1
append_union_all            1
merge_union_all             1
merge_union_distinct        1
hash_union_distinct         1
store_index                 1
bushy_space_search          0
parallel_query              1
replicated_partition        0
ase125_primed               0
index_intersection          0
index_union                 1
multi_table_store_ind       0
advanced_aggregation        0
opportunistic_distinct_view 1
repartition_degree          1
scan_parallel_degree        1
resource_granularity        10
parallel_degree             1
statistics simulate         0
forceplan                   0
prefetch                    1
metrics_capture             0
process_limit_action        quiet
plan replace                0
plan exists check           0
plan dump                   0
plan load                   0
(39 rows affected)
```

```
(return status = 0)
```

Example 7

Shows the options that use non-default settings in the Query Tuning category:

```
1> sp_options show, "Query Tuning", non_dflt
2> go
```

```
Category: Query Tuning
name                 currentsetting   defaultsetting
----------------------------------------------------
repartition_degree   3                1
scan_parallel_degree 0                1
parallel_degree      0                1
(3 rows affected)
(return status = 0)
```

Example 8

Shows the options in the Query Tuning category:

```
1> sp_options, show, null
2> go
```

```
Category: Query Tuning
name                        currentsetting defaultsetting scope
------------------------------------------ -------------- -----
optgoal                     allrows_mix    allrows_mix        0
opttimeoutlimit             10             10                 0
merge_join                  1              1                  4
hash_join                   0              0                  4
nl_join                     1              1                  4
distinct_sorted             1              1                  4
distinct_sorting            1              1                  4
distinct_hashing            1              1                  4
group_sorted                1              1                  4
group_hashing               1              1                  4
group_inserting             0              0                  4
order_sorting               1              1                  4
append_union_all            1              1                  4
merge_union_all             1              1                  4
merge_union_distinct        1              1                  4
hash_union_distinct         1              1                  4
store_index                 1              1                  4
bushy_space_search          0              0                  4
parallel_query              1              1                  4
replicated_partition        0              0                  4
ase125_primed               0              0                  4
index_intersection          0              0                  4
index_union                 1              1                  4
multi_table_store_ind       0              0                  4
advanced_aggregation        0              0                  4
opportunistic_distinct_view 1              1                  4
repartition_degree          3              1                  2
scan_parallel_degree        0              1                  2
resource_granularity        10             10                 2
parallel_degree             0              1                  2
statistics simulate         0              0                  4
forceplan                   0              0                  7
prefetch                    1              1                  6
metrics_capture             0              0                  6
process_limit_action        quiet          quiet              2
plan replace                0              0                  4
plan exists check           0              0                  4
plan dump                   0              0                  4
plan load                   0              0                   4
(39 rows affected)
(return status = 0)
```

Example 9

Shows a list of the default settings for the Query Tuning category:

```
1> sp_options show, null, dflt
2> go
```

```
Category: Query Tuning
name                        defaultsetting
--------------------------- --------------
optgoal                     allrows_mix
opttimeoutlimit             10
merge_join                  1
hash_join                   0
nl_join                     1
distinct_sorted             1
distinct_sorting            1
distinct_hashing            1
group_sorted                1
group_hashing               1
group_inserting             0
order_sorting               1
append_union_all            1
merge_union_all             1
merge_union_distinct        1
hash_union_distinct         1
store_index                 1
bushy_space_search          0
parallel_query              1
replicated_partition        0
ase125_primed               0
index_intersection          0
index_union                 1
multi_table_store_ind       0
advanced_aggregation        0
opportunistic_distinct_view 1
repartition_degree          1
scan_parallel_degree        1
resource_granularity        10
parallel_degree             1
statistics simulate         0
forceplan                   0
prefetch                    1
metrics_capture             0
process_limit_action        quiet
plan replace                0
plan exists check           0
plan dump                   0
plan load                   0
(39 rows affected)
(return status = 0)
```

Example 10

Shows the options that are set to a non-default setting in the Query Tuning category:

```
1> sp_options show, null, non_dflt
2> go
```

```
Category: Query Tuning
name                 currentsetting defaultsetting
-------------------- -------------- --------------
```

```
repartition_degree   3              1
scan_parallel_degree 0              1
parallel_degree      0              1
(3 rows affected)
(return status = 0)
```

Example 11

If you enter a parameter that `sp_options` does not understand, you receive the following message:

```
1> sp_options show, "incorrect option"
2> go
```

```
Msg 19615, Level 16, State 1:
Procedure 'sp_options', Line 436:
No option or category matching 'incorrect option' is
found. Valid categories are:
category
------------
Query Tuning
(1 row affected)
(return status = 1)
```

Example 12

Shows correct usage:

```
1> sp_options help
2> go
```

```
Usage:
sp_options [ [show | help
            [, <option_name>|<category_name>|null
               [, dflt | non_dflt | null
                    [, <spid>] ] ] ] ]
```

Usage

Use `sp_options` to view settings for the following options:

- `set plan dump / load`
- `set plan exists check`
- `set forceplan`
- `set plan optgoal`
- `set [optCriteria]`
- `set plan opttimeoutlimit`
- `set plan replace`
- `set statistics simulate`
- `set metrics_capture`
- `set prefetch`
- `set parallel_degree number`
- `set process_limit_action`
- `set resource_granularity number`

- `set scan_parallel_degree number`
- `set repartition_degree number`

Permissions

Any user can execute `sp_options`. Permission checks do not differ based on the granular permissions settings.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

1.204 sp_p

Displays the shortened output of the query plan from the `sp_showplan` system procedure. The shortened output consists of resource statistics output which includes rows affected, object list, and number of rows in the object list

Syntax

```
sp_p <spid>
```

Parameters

spid

is the process id for any user connection. Use `sp_who` to see spids.

Examples

Example 1

Displays the shortened showplan output for <spid> number of 112:

```
sp_p 112




------------------------------------------------------------------------------
------------------------------------------------------------------------------
-------------------------------------
-
select a.au_lname, pv.title, sv.qty, sv.stor_name from authors a, titleauthor
ta, pubsview pv, storesview sv where a.au_id = ta.au_id and ta.title_id =
pv.title_id and pv.title_id =
sv.title_id

(1 row affected)
Tables:
TABLE:          [stores]                rows: 7         use count: 1
datachange: 100
TABLE:          [salesdetail]           rows: 116       use count: 1
datachange: 0
TABLE:          [sales]                 rows: 30        use count: 1
datachange: 0
TABLE:          [authors]               rows: 23        use count: 1
datachange: 0
TABLE:          [titleauthor]           rows: 25        use count: 1
datachange: 0
TABLE:          [titles]                rows: 18        use count: 1
datachange: 0
TABLE:          [publishers]            rows: 3         use count: 1
datachange: 0
total number of tables used: 7
total number of worktables: 1
Views:
VIEW:           [pubsview]              use count: 1    merged
VIEW:           [storesview]            use count: 1    materialized
total number of views used: 2
total number of views materialized: 1
Proccache used during compilation: 348 .
Total estimated LIO: 1330.425382 .
Total estimated PIO: 42.318160 .
Total estimated CPU time: 22368.677267 .
Query has started at: 2018/06/13 09:50:50.72 .
Query is running for: 0 ms.
Rows affected: 2
(return status = 0)
```

Usage

- Execute the sp_p system procedure to see the short plan output of any user connection.
- The Rows affected output is dynamic, and may change each time you run it because its value is based on the rows affected during the current execution.

Permissions

Any user can execute sp_p.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

1.205 sp_passthru

(Component Integration Services only) Allows the user to pass a SQL command buffer to a remote server.

Syntax

```
sp_passthru <server>, <command>, <errcode>, <errmsg>, <rowcount>
    [, <arg1>, <arg2>, ... <argn>]
```

Parameters

<server>

is the name of a remote server to which the SQL command buffer is passed. The class of this server must be a supported, non-local server class.

<command>

is the SQL command buffer. It can hold up to 255 characters.

<errcode>

is the error code returned by the remote server, if any. If no error occurred at the remote server, the value returned is 0.

<errmsg>

is the error message returned by the remote server. It can hold up to 1024 characters. This parameter is set only if <errcode> is a nonzero number; otherwise NULL is returned.

<rowcount>

is the number of rows affected by the last command in the command buffer. If the command was an insert, delete, or update, this value represents the number of rows affected even though none were returned. If the last command was a query, this value represents the number of rows returned from the external server.

`<arg1>` ... **`<argn>`**

receives the results from the last row returned by the last command in the command buffer. You can specify up to 250 `<arg>` parameters. All must be declared as output parameters.

Examples

Example 1

Returns the date from the Oracle server in the output parameter `<@oradate>`. If an Oracle error occurs, the error code is placed in `<@errcode>` and the corresponding message is placed in `<@errmsg>`, and `<@rowcount>` is set to 1:

```
sp_passthru ORACLE, "select date from dual", <@errcode> output,
    <@errmsg> output, <@rowcount> output, <@oradate> output
```

Usage

- `sp_passthru` allows the user to pass a SQL command buffer to a remote server. The syntax of the SQL statement or statements being passed is assumed to be the syntax native to the class of server receiving the buffer. No translation or interpretation is performed. Results from the remote server are optionally placed in output parameters.
  Use `sp_passthru` only when Component Integration Services is installed and configured.
- You can include multiple commands in the command buffer. For some server classes, the commands must be separated by semicolons. See the *Component Integration Services User's Guide* for a more complete discussion of query buffer handling in passthru mode.

Permissions

Any user can execute `sp_passthru`. Permission checks do not differ based on the granular permissions settings.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_autoconnect [page 97]
sp_remotesql [page 689]

1.205.1 Return Parameters and sp_passthru

The output parameters <arg1> ... <argn> becomes set to the values of corresponding columns from the last row returned by the last command in the command buffer. The position of the parameter determines which column's value the parameter contains. <arg1> receives values from column 1, <arg2> receives values from column 2, and so on.

If there are fewer optional parameters than there are returned columns, the excess columns are ignored. If there are more parameters than columns, the remaining parameters are set to NULL.

An attempt is made to convert each column to the datatype of the output parameter. If the datatypes are similar enough to permit **implicit** conversion, the attempt succeeds. For information on implicit conversion, see *Reference Manual: Building Blocks* > *Transact-SQL Functions*. See the *Component Integration Services Users Guide* for information on which datatype represents the datatypes from each server class when in passthru mode.

1.206 sp_password

Deprecated by SAP ASE version 15.7. To add or change a password for a login account in SAP ASE, use the `create login` and `alter login` commands. See *create login* and *alter login* in *Reference Manual: Commands* > *Commands*.

1.207 sp_passwordpolicy

Allows a user with sso_role to configure login and password policy options.

Syntax

- To specify, remove, and list new password complexity options:

```
sp_passwordpolicy {"set" | "clear" | "list"}, <policy_option>, <option_value>
```

- To verify the password complexity options:

```
sp_passwordpolicy "validate password options"
```

- To generate asymmetric key pairs for network login password encryption:

  ```
  sp_passwordpolicy "regenerate keypair"
  ```

- To set the network password encryption key size.

  ```
  sp_passwordpolicy {"set" | "clear" | "list"}, "RSA keysize","<size>"
  ```

- To expire passwords:

  ```
  sp_passwordpolicy "expire role passwords", "[<rolename> | <wildcard>]"
  ```

  ```
  sp_passwordpolicy "expire login passwords", "[<login_name> | <wildcard>]"
  ```

  ```
  sp_passwordpolicy "expire stale role passwords", "<datetime>"
  ```

  ```
  sp_passwordpolicy "expire stale login passwords", "<datetime>"
  ```

- To display a brief description of all commands, options, and their values:

  ```
  sp_passwordpolicy "help"
  ```

Parameters

set

sets a value to an option. When using set, you must specify the <policy_option>.

clear

deletes the row for the option specified in the master.dbo.sysattributes table. Because clear deletes **all** the option rows in the sysattributes table if no policy option is specified, you must specify <policy_option> when using clear.

list

lists the values of the options specified. When using list, you must specify the <policy_option>.

<policy_option>, <option_value>

string or (varchar). Is the option parameter for set, clear, and list, with <option_value> being the their values:

allow password downgrade

ends the password downgrade period. During the password downgrade period, passwords are stored in syslogins in both old and new encodings to allow user passwords to retained if the server is downgraded, for example, to SAP ASE 15.0.2.

disallow simple passwords

specifying a value of 1 turns this option on; a value of 0 turns it off.

enable last login updates

enables or disables code in SAP ASE authentication that records the timestamp when each login occurs. The parameter:

- `"set"` – sets the value of this attribute
- `"list"` – displays the current value of the attribute
- `"clear"` – deletes the row from `sysattributes`. Although `"clear"` deletes the row from `sysattributes`, the last setting is still effective until you restart the SAP ASE server, or when `"set"` sets the new value.

`expire login`

specifies that when new logins are created or when the SSO changes login passwords, the passwords for those logins are marked as expired, thus forcing those users to change their password when they first log in.

`keypair regeneration period`

indicates the regenerating period of the RSA key pair. Its option values are `{([<keypair regeneration frequency>], <datetime of first generation>) | (<keypair regeneration frequency>, [<datetime of first generation>])}`

`<keypair regeneration frequency>`

is the frequency of regeneration of an RSA key pair. The valid range of values (in hours) is from 1 to 8,760. The default value is NULL, in which case a key pair is regenerated every 24 hours. It specifies the duration's format specifier, using:

- `'T*M'` – indicates duration in minutes, replacing the asterisk (*) with a numeric value, such as `"T2M"` for two minutes.
- `'H'` – indicates duration in hours.
- `'D'` – indicates duration in days. This is the default if you do not specify another format.
- `'W'` – indicates duration in weeks.
- `'M'` – indicates duration in months.
- `'Y'` – indicates duration in years.

`<datetime of first generation>`

is the date and time of when the key-pair is first generated. If you specify only the time for the value of `<datetime of first generation>`, RSA key pair regeneration is scheduled for that time of day in the next 24-hour period. If you:

- Specify `<datetime of first generation>` – the SAP ASE server regenerates a new RSA key pair immediately if that time has elapsed; otherwise the SAP ASE server waits until that specified time.
- Do not specify `<datetime of first generation>` – the SAP ASE server regenerates a new RSA key pair at a time that is obtained by adding `<keypair regeneration period>` to the time when the most recent RSA key pair was generated, if this calculated time is not elapsed; otherwise the SAP ASE server regenerates a new RSA key pair immediately.

Subsequent generations of key pairs occur based on when the most recent key pair was generated and the value of `<keypair regeneration period>`.

> **i Note**
>
> You cannot simultaneously set the value of `<keypair regeneration frequency>` and `<datetime of first generation>` to NULL.

`keypair error retry [wait | count]`

specifies the various configurations you can set for regenerating a key pair after a failed attempt:

- `wait` – specifies the amount of time to wait after a failure before regenerating the keypair.
- `count` – specifies how many times you want the SAP ASE server to attempt to regenerate a key pair after a failure.

`rsa keysize`

indicates the network password encryption key size.

- `set` – specifies the keysize. Configure the key size to 1024 and increment 512 bytes up to 4096. Default key size is 2048 bits.
- `clear` – sets the key size to the default size.
- `list` – shows the set key size.

`maximum failed logins`

indicates the maximum number of failed logins allowed in a session before the account is locked.

`min alpha in password`

indicates the minimum number of alphabetic characters in a password.

`min digits in password`

indicates the minimum number of digits to be allowed in a password.

`min lower char in password`

indicates the minimum number of lower case characters allowed in a password.

`min special char in password`

indicates the minimum number of special characters allowed in a password.

`min upper char in password`

indicates the minimum number of uppercase characters allowed in a password.

`minimum password length`

indicates the minimum length of the password.

`password exp warn interval`

indicates the password expiration warning interval in days.

`systemwide password expiration`	indicates the system-wide password expiration in days.
`unique keypair per session`	specifies the configurations you can set for generating a unique key pair for every user: - `1` – specifies to generate a new key pair for every user connection. - `0` – specifies that all connections share the same RSA key pair. i Note If `sp_configure "net password encryption reqd"` is configured to `3`, this password policy option is ignored because a unique keypair per session is not needed to secure the password.

`"expire login passwords", "[<login_name> | <wildcard>]"`

expires login passwords, all logins or logins matching a wild card pattern. The column status in `master` database catalog `syslogins` is updated with a status bit LOGIN_EXPIRED (0x4) to indicate the password is expired.

`"expire role passwords", "[<rolename> | <wildcard>]"`

expires the password of a role, all roles or roles matching a wild-card pattern. The column status in master database catalog syssrvroles is updated with a status bit ROLE_EXPIRED (0x4) to indicate the password is expired:

`"expire stale login passwords", "<datetime>"`

expires login passwords have not been changed after a datetime specified. The column status in `master` database catalog `syslogins` is updated with a status bit LOGIN_EXPIRED (0x0004) to indicate that the password is expired. See *Reference Manual: Building Blocks* > *Entering Date and Time Data* for an explanation of how `datetime` values are entered.

`"expire stale role passwords", "<datetime>"`

expires role passwords have not been changed after a datetime specified. The column status in `master` database catalog `syssrvroles` is updated with a status bit ROLE_EXPIRED (0x4) to indicate the password is expired.

`"regenerate keypair"`

generates the asymmetric key pairs to be used for network login password encryption.There is no catalog update for this option; the actions occur only in memory fields.

`"validate password options"`

reports errors or inconsistencies in the password complexity option values set, including length and expiration. The result is reported in a tabular format, with each row representing a validation step, the result of the step, and the validation test performed. The result is one of Pass, Fail, or Not Applicable (NA). If any validation test fails, the return status is set to 1.

Examples

The outputs in these examples have been reformatted for clarity, and may not resemble the output you see on your screen if you execute this procedure.

Example of Password Expiration Warning Interval

Sets a password expiration warning interval to seven days before the password expires:

```
sp_passwordpolicy 'set',
      'password exp warn interval', '7'
```

Example of List

Lists the option for minimum number of special characters:

```
sp_passwordpolicy 'list',
      'min special char in password'
```

Example to Disallow Simple Passwords

Resets `disallow simple passwords` to the default value:

```
sp_passwordpolicy 'clear', 'disallow simple passwords'
```

Example to Validate Password Options

These examples demonstrate using `validate password options`.

These password complexity options and their values are stored in the server:

```
minimum password length:       8
min alpha in password:         2
min digits in password:        2
min upper char in password:    2
min lower char in password:    2
```

To validate these options, enter:

```
sp_passwordpolicy 'validate password options'
Validation Step      Pass/Fail/NA    Validation Test
---------------      ------------    -----------------------------
min alpha in password         Fail   'min alpha in password' > = 'min
                                      upper char in password + 'min
                                      lower char in password'
minimum password length - 1   Pass   'minimum password length' > = 'min
                                      digits in password' + 'min special
                                      char in password' + 'min alpha in
                                      password'
minimum password length - 2   Pass   'minimum password length' > = 'min
                                      digits in password' + min special
                                      char in password' + 'min upper
                                      char in password' + 'min lower
                                      char in password'
maximum password length - 1   Pass   'max password length' > = 'min
                                      digits in password' + 'min
                                      special char in password' + 'min
                                      alpha in password'
maximum password length – 2   Pass   'max password length' > = 'min
                                      digits in password' + 'min special
                                      char in password' + 'min upper
                                      char in password' + 'min lower
                                      char in password'
password exp warn interval    NA     'password exp warn interval' < =
                                        'systemwide password expiration'
(6 rows affected)
(return status = 1)
```

There is one failure: The sum of `min upper char in password + min lower char in password` is greater than the value of `min alpha in password`, so the validation step `min alpha in password` fails.

Example to Regenerate Key Pair

Sets the HouseKeeper task to automatically regenerate a key pair every two hours, starting on August 15, 2007 at 12:01 a.m.:

```
sp_passwordpolicy "set", "keypair regeneration period",
    "2H", "Aug 15 2007 12:01 AM"
```

Example to Wait to Regenerate Key Pair

Sets how long the SAP ASE server should wait before trying to regenerate the key pair after a failed attempt:

```
sp_passwordpolicy 'set', 'keypair error retry wait', '10'
```

Example of Retry Attempts to Regenerate Key Pair

Sets number of times the SAP ASE server should attempt to regenerate the key pair after a failure to 5:

```
sp_passwordpolicy 'set', 'keypair error retry count', '5'
```

Example to Display Brief Descriptions

Displays brief description about all commands, options and their values:

```
sp_passwordpolicy "help"
go
```

```
sp_ passwordpolicy Usage: sp_passwordpolicy 'help'
sp_ passwordpolicy Usage: sp_passwordpolicy command [, option1 [, option2 [,
option3]]]
sp_passwordpolicy commands:
sp_passwordpolicy 'set',
                  {'enable last login updates' | 'disallow simple passwords' |
                   'min digits in password' | 'min alpha in password' |
                   'min special char in password' | 'min upper char in
password' |
                   'min lower char in password' | 'password exp warn
interval' |
                   'systemwide password expiration' | 'minimum password
length' |
                   'maximum failed logins' | 'expire login' |
                   'allow password downgrade' | 'keypair error retry wait' |
                   'keypair error retry count' | 'unique keypair per session'
|
                   'RSA keysize'},
                  'value'
sp_passwordpolicy 'set', 'keypair regeneration period',
                         {'regeneration_period' |
                          null, 'datetime' |
                          'regeneration_period', 'datetime'}
sp_passwordpolicy 'list',
                  ['enable last login updates' | 'disallow simple passwords' |
                   'min digits in password' | 'min alpha in password' |
                   'min special char in password' | 'min upper char in
password' |
                   'min lower char in password' | 'password exp warn
interval' |
                   'systemwide password expiration' | 'minimum password
length' |
                   'maximum failed logins' | 'expire login' |
                   'allow password downgrade' |
                   'keypair error retry wait' | 'keypair error retry count' |
                   'keypair regeneration period' | 'unique keypair per
session' | 'RSA keysize']
sp_passwordpolicy 'clear',
                  {'enable last login updates' | 'disallow simple passwords' |
                   'min digits in password' | 'min alpha in password' |
                   'min special char in password' | 'min upper char in
password' |
                   'min lower char in password' | 'password exp warn
interval' |
                   'systemwide password expiration' | 'minimum password
length' |
                   'maximum failed logins' | 'expire login' |
                   'keypair error retry wait' | 'keypair error retry count' |
                   'keypair regeneration period' | 'unique keypair per
session' |
                   'RSA keysize'}
sp_passwordpolicy 'expire login passwords'[, '{loginame | wildcard}']
sp_passwordpolicy 'expire role passwords'[, '{rolename | wildcard}']
sp_passwordpolicy 'expire stale login passwords', 'datetime'
sp_passwordpolicy 'expire stale role passwords', 'datetime'
sp_passwordpolicy 'regenerate keypair'[, 'datetime']
sp_passwordpolicy 'validate password options'
(return status = 0)
```

Example to Validate Options

Validating the following options stored in the SAP ASE server:

```
minimum password length:        8
min digits in password:         2
min special char in password:   2
min alpha in password:          6
min upper char in password:     3
min lower char in password:     3
```

```
sp_passwordpolicy 'validate password options'
```

```
Validation Step         Pass/Fail/NA   Validation Test
---------------         ------------  -----------------------------
min alpha in password        Pass     'min alpha in password' > = 'min upper
                                       char in password' + 'min lower
                                       char in password'
minimum password length-1    Fail     'minimum password length' > = 'min
                                       digits in password' + 'min special
                                       char in password' + 'min alpha in
password'
minimum password length-2    Fail     'minimum password length' > = 'min
                                       digits in password' + 'min special
                                       char in password' + 'min upper
                                       char in password' + 'min lower
                                       char in password'
maximum password length-1    Pass     'max password length' > = 'min
                                       digits in password' + 'min special
                                       char in password' + 'min alpha in
password'
maximum password length-2    Pass     'max password length' > = 'min
                                       digits in password' + 'min
                                       special char in password' + 'min
                                       upper char in password' + 'min
                                       lower char in password'
password exp warn interval   NA       'password exp warn interval' < =
                                      'systemwide password expiration'
(6 rows affected)
(return status = 1)
```

There are two failures in step 2 and step 3.The sum of `min digits in password`, `min special char in password` and `min alpha in password` is greater than the value of `minimum password length`, so the validation step `minimum password length -1` fails. The sum of `min digits in password`, `min special char in password`, `min upper char in password`, and `min lower char in password` is greater than the value of `minimum password length`, so the validation step `minimum password length -2` fails.

Example to Validate Password Options

Illustrates the option `'validate password options'`.

These password complexity options and their values are stored in the server:

```
minimum password length:       8
min alpha in password:         2
min digits in password:        2
min upper char in password:    2
min lower char in password:    2
```

```
sp_passwordpolicy 'validate password options'
```

```
Validation Step             Pass/Fail/NA  Validation Test
---------------             ------------  --------------------------
min alpha in password       Fail          'min alpha in password' > = 'min
                                           upper char in password + 'min
                                           lower char in password'
minimum password length - 1 Pass          'minimum password length' > = 'min
                                           digits in password' + 'min special
                                           char in password' + 'min alpha in
                                           password'
minimum password length - 2 Pass          'minimum password length' > = 'min
                                           digits in password' + min special
                                           char in password' + 'min upper
                                           char in password' + 'min lower
                                           char in password'
maximum password length - 1 Pass          'max password length' > = 'min
                                           digits in password' + 'min
                                           special char in password' + 'min
                                           alpha in password'
maximum password length – 2 Pass          'max password length' > = 'min
                                           digits in password' + 'min special
                                           char in password' + 'min upper
                                           char in password' + 'min lower
                                           char in password'
password exp warn interval   NA           'password exp warn interval' < =
                                          'systemwide password expiration'
(6 rows affected)
(return status = 1)
```

There is one failure: The sum of `min upper char in password + min lower char in password` is greater than the value of `min alpha in password`, so the validation step `min alpha in password` fails.

Validating the following options stored in the SAP ASE server:

```
minimum password length:        8
```

```
min digits in password:         2
min special char in password:   2
min alpha in password:          6
min upper char in password:     3
min lower char in password: 3
```

```
sp_passwordpolicy 'validate password options'
```

```
Validation Step           Pass/Fail/NA   Validation Test
---------------           ------------   --------------------------
min alpha in password      Pass          'min alpha in password' > = 'min
upper
                                          char in password' + 'min lower
                                          char in password'
minimum password length-1  Fail          'minimum password length' > = 'min
                                          digits in password' + 'min special
                                          char in password' + 'min alpha in
                                          password'
minimum password length-2  Fail          'minimum password length' > = 'min
                                          digits in password' + 'min special
                                          char in password' + 'min upper
                                          char in password' + 'min lower
                                          char in password'
maximum password length-1  Pass          'max password length' > = 'min
                                          digits in password' + 'min special
                                          char in password' + 'min alpha in
                                          password'
maximum password length-2  Pass          'max password length' > = 'min
                                          digits in password' + 'min
                                          special char in password' + 'min
                                          upper char in password' + 'min
                                          lower char in password'
password exp warn interval    NA         'password exp warn interval' < =
                                         'systemwide password expiration'
(6 rows affected)
(return status = 1)
```

There are two failures in step 2 and step 3.

The sum of `min digits in password`, `min special char in password` and `min alpha in password` is greater than the value of `minimum password length`, so the validation step `minimum password length -1` fails. The sum of `min digits in password`, `min special char in password`, `min upper char in password`, and `min lower char in password` is greater than the value of `minimum password length`, so the validation step `minimum password length -2` fails.

Validating the following options stored in the SAP ASE server:

```
minimum password length:      8
min digits in password:       11
min special char in password: 11
min alpha in password:        11
min upper char in password:   1
min lower char in password:   1
```

```
sp_passwordpolicy 'validate password options'
```

```
Validation Step           Pass/Fail/NA   Validation Test
---------------           ------------   --------------------------
min alpha in password      Pass           'min alpha in password' > = 'min
                                           upper char in password' + 'min
                                           lower char in password'
minimum password length-1  Fail           'minimum password length' > = 'min
```

```
                                           digits in password' + 'min
                                           special char in password' + 'min
                                           alpha in password'
minimum password length-2  Fail           'minimum password length' > = 'min
                                           digits in password' + 'min special
                                           char in password' + 'min upper
                                           char in password' + 'min lower
                                           char in password'
maximum password length-1  Fail           'max password length' > = 'min
                                           digits in password' + 'min special
                                           char in password' + 'min alpha in
                                           password'
maximum password length-2  Pass           'max password length' > = 'min
                                           digits in password' + 'min special
                                           char in password' + 'min upper
                                           char in password' + 'min lower
                                           char in password'
password exp warn interval  NA            'password exp warn interval' < =
                                          'systemwide password expiration'
(6 rows affected)
(return status = 1)
```

There are three failures, including a serious one, a failure in a test for maximum password length, where the sum of the required password components is greater than the maximum password allowed.

Validating the following options stored in the SAP ASE server:

```
minimum password length:       8
min digits in password:        2
min special char in password:  1
min alpha in password:         4
min upper char in password:    0
min lower char in password:    0
```

```
sp_passwordpolicy 'validate password options'
```

```
Validation Step            Pass/Fail/NA   Validation Test
---------------            ------------   --------------------------
min alpha in password      Pass           'min alpha in password' > = 'min
                                           upper char in password' + 'min
                                           lower char in password'
minimum password length-1  Pass           'minimum password length' > =
                                          'min digits in password' + 'min
                                           special char in password' +
                                          'min alpha in password'
minimum password length-2  Pass           'minimum password length' > =
                                          'min digits in password' + 'min
                                           special char in password' +
                                          'min upper char in password' +
                                          'min lower char in password'
maximum password length-1  Pass           'max password length' > = 'min
                                           digits in password' + 'min
                                           special char in password' + 'min
                                          'min alpha in password'
maximum password length-2  Pass           'max password length' > = 'min
                                           digits in password' + 'min
                                           special char in password' + 'min
                                           upper char in password' + 'min
                                           lower char in password'
password exp warn interval NA             'password exp warn interval' < =
                                          'systemwide password expiration'
(6 rows affected)
(return status = 0)
```

There are no failures with these settings. This reports all five rows returned, and a return status of 0.

Usage

- sp_passwordpolicy information is stored in the master.dbo.sysattributes table.
- Once the SAP ASE server has regenerated a new RSA key pair, subsequent generations use a formula of the last time when RSA key pair was generated, combined with the value you specified for <keypair regeneration frequency>.
- The value of <keypair regeneration period> is stored in master..sysattributes under a new password policy class.
- A default value of NULL for the option indicates that this row does not exist in sysattributes and the key pair is generated on when the SAP ASE server is restarted, and every 24 hours thereafter.
  These two stored procedures do the same thing:

  ```
  sp_passwordpolicy 'set', 'keypair regeneration period', NULL [,
      <datetime of first generation>]
  ```

  ```
  sp_passwordpolicy 'regenerate keypair' [, <datetime of first generation>]
  ```
- These global variable use the information from keypair regeneration period:
  - @@lastkpgendate – reflects the datetime of when the last key pair was generated.
  - @@nextkpgendate – reflects when the key pair is next generated.

Permissions

The permission checks for sp_passwordpolicy differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with manage security configuration privilege.
Disabled	With granular permissions disabled, you must be a user with sso_role.

Auditing

An audit option "password" audits these actions:

- sp_passwordpolicy 'set', '<option_name>', '<option_value>'
- sp_passwordpolicy 'clear', '<option_name>'
- sp_passwordpolicy 'expire login passwords'
- sp_passwordpolicy 'expire stale login passwords'
- sp_passwordpolicy 'regenerate keypair'

- `sp_passwordpolicy 'expire role passwords'`
- `sp_passwordpolicy 'expire stale role passwords'`
- `sp_passwordpolicy 'validate password options'`

The `sp_passwordpolicy` parameters are recorded in `extrainfo` for event 115. For example:

```
sp_passwordpolicy 'validate password options'
```

The `extrainfo` is:

```
sa_role sso_role oper_role sybase_ts_role mon_role; ; ; ;
    PASSWORD_ADMIN clear policy min digits in password   ; ; sa/ase;
```

The execution of `sp_passwordpolicy` to regenerate RSA key pair within a specified period is audited and event 115 is recorded.

In addition, when ASE regenerates the RSA key pair, event 117 is recorded if `security` option has been enabled.

For example if you run:

```
sp_passwordpolicy 'set','keypair regeneration period','1','Apr 14 2015 12:40AM'
```

First, event 115 is recorded:

```
event  extrainfo
-------------------------------------------------------------------
115    sa_role sso_role oper_role sybase_ts_role mon_role; ; ; ; PASSWORD_ADMIN
     set policy keypair regeneration period 1 Apr 14 2015 12:40AM ; ; sa/ase;
```

Then, once the keypair is regenerated at the time that you specified in the command, event 117 is recorded:

```
event  extrainfo
-------------------------------------------------------------------
115    sa_role sso_role oper_role sybase_ts_role navigator_role replication_role
     dtm_tm_role ha_role mon_role js_admin_role messaging_role js_client_role
     js_user_role webservices_role keycustodian_role hadr_admin_role_gp
     replication_maint_role_gp; ; ; ; ; ; ;
```

When `sp_passwordpolicy 'set', 'disallow simple passwords', 1` is set and you use `create login` to create a login that has a simple password, the `security` audit option records event 125. For example:

```
event  extrainfo
-------------------------------------------------------------------
125    sa_role sso_role oper_role sybase_ts_role mon_role; ; ; ; ; ; sa/ase;
```

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

1.207.1 Login Password Complexity Checks and sp_passwordpolicy

The login password complexity checks are extended to role passwords.

The complexity checks are:

- `disallow simple passwords`
- `min digits in password`
- `min alpha in password`
- `min special char in password`
- `min upper char in password`
- `min lower char in password`
- `systemwide password expiration`
- `password exp warn interval`
- `minimum password length`
- `maximum failed logins`
- `expire login`

1.207.2 High-Availability and Password Policy Options

The SAP ASE high-availability functionality synchronizes password policy options between primary and secondary servers.

The password policy options are:

- `disallow simple passwords`
- `min digits in password`
- `min alpha in password`
- `min special char in password`
- `min upper char in password`
- `min lower char in password`
- `systemwide password expiration`
- `password exp warn interval`
- `minimum password length`
- `maximum failed login`
- `expire login`
- `keypair regeneration period`
- `keypair error retry wait`
- `keypair error retry count`

The SAP ASE server uses a "`password policy`" quorum attribute to check the inconsistency of any of those values on both the primary and secondary servers, except `keypair regeneration period`, `keypair error retry wait`, and `keypair error retry count`.

A high-availability advisory check succeeds when all those value are the same on both servers, and fail when the values differ. For example:

```
sp_companion "MONEY1", do_advisory, 'all'
go
```

```
Attribute Name   Attrib Type  Local Value  Remote Value  Advisory
---------------  -----------  -----------  -----------  -------
expire login     password po   1            0            2
maximum failed   password po   3            5            2
min alpha in pa  assword po   10           12            2
```

A value of 2 set in the `advisory` column of the output indicates that the user cannot proceed with the cluster operation unless the values on both the companions match.

The output of `sp_companion do_advisory` also indicates the inconsistency in any of the particular password policy checks on both servers.

1.208 sp_pciconfig

Manages the Java PCI Bridge. Enables or disables arguments and directives, changes configuration values, and reports configuration values.

> **Note**
>
> Do not use `sp_pciconfig` to change arguments or directives unless instructed to do so by SAP Product Support.

Syntax

```
sp_pciconfig {disable {<directive> | <argument>} |
    enable {<directive> | <argument>} |
    list {<list_type>[, formatted] | units | units, <units_type>[, formatted] } |
    report {<directive>[, formatted] |
        <directive>, args[, formatted] |
        <argument>[, formatted]} |
    update {<number_arg>, <old_value new_value>}}
```

Parameters

`disable`

disables the specified directive or argument.

`<directive>`

is the name of any valid directive.

<argument>

is the name of any valid argument.

enable

enables a specified directive or argument.

list

lists groups of related arguments as, for example, `sp_pciconfig "list", "directive"` or `sp_pceiconfig "list", "enabled"`. Also, lists all arguments of a specific type as, for example, `sp_pciconfig "list", "units", "switch"`.

<list_type>

specifies a type of list. Values are:

- `directives` – list of directives
- `enabled` – list of enabled arguments
- `disabled` – list of disabled arguments
- `argnames` – list of argument names

formatted

specifies that displayed list is to be formatted for readability.

> i Note
>
> In formatted reports, the process of improving readability may result in the truncation of wide columns. In addition, column headings may be overridden and may not match the actual table column name. Do not format reports if the output is parsed or potential data truncation is not acceptable.

units

when used with `list`, generates a list of `<units_type>` currently in use.

report

creates a report based on arguments supplied. Usually used to generate a report for an argument to see its current value and whether or not it is enabled. Can also be used to generate a report for a directive or its arguments.

<directive>

specifies all arguments within a specified directive.

update

modifies the numeric value of arguments where units = number. Cannot be used with arguments where units = switch.

<number_arg>

is an argument of `units` = number.

<old_value>

is the current value for `<number_arg_name>`.

<new_value>

is a new value for `<number_arg_name>`.

Usage

Enabling and disabling a directive works like a toggle. When a directive is:

- Enabled – the SAP ASE server uses the configured value (enabled or disabled) of each argument. This is the value stored in `sybpcidb`.
- Disabled – the SAP ASE server disregards the configured value (enabled or disabled) of each argument and treats all arguments of the directive as disabled, although the base value of each argument is retained in `sybpcidb`.

Arguments can be individually enabled or disabled. Arguments for `sp_pciconfig` directives are of these types:

- switch – these arguments turn a feature on or off. For example, if the argument for logging is enabled, a log file is generated; if the argument for logging is disabled, no log file is generated.
- string – these arguments are for strings and numbers, which are treated like strings. Enabling a string argument ensures that the SAP ASE server uses the configured value. Disabling a string argument means that the SAP ASE server ignores the configured value and uses the default value. The configured and default values may be the same or different.

Configuration directives for `sp_pciconfig` are:

Directive	Description
`PCI_BRIDGE_X_OPT`	The PCI Bridge configuration parameters
`PCI_BRIDGE_LOGOPT`	The plug-in `diagserver` report facility
`PCI_BRIDGE_INSTR`	The PCI Bridge instrumentation settings

Table 15: PCI_BRIDGE_X_OPT Arguments

The PCI Bridge configuration parameters

Argument	Units Type	Default Value	Default State	Description
`pci_xopt_maxthreads`	number	1056	Enabled	Maximum available PCI Bridge PLB-controlled threads.
`pci_xopt_event_scheduling`	number	0	Enabled	Default PCI Bridge scheduling.
`pci_xopt_failover_engine`	number	-1	Enabled	Default engine to which a slot should fail over.
`pci_xopt_runtime_alloc_escape`	number	1	Enabled	Allow runtime escapes on memory allocation requests above PC Bridge maximum memory allocation unit.
`pci_xopt_slotring_cycle`	number	-1	Enabled	Disable PCI Bridge slotring washing.
`pci_xopt_slotring_wash_th`	number	76	Enabled	Default PCI Bridge slotring washing threshold percentage.

Table 16: PCI_BRIDGE_LOGOPT Arguments

The plug-in `diagserver` report facility

Argument	Units Type	Default Value	Default State	Description
pci_logopt_asehi	switch	None	Disabled	PCI Bridge ASE host interface dispatch logging.
pci_logopt_jst	switch	None	Disabled	PCI Bridge Job Scheduler task dispatch logging.
pci_logopt_jvm	switch	None	Disabled	PCI Bridge JVM dispatch logging.
pci_logopt_omni	switch	None	Disabled	PCI Bridge OMNI dispatch logging.
pci_logopt_pci	switch	None	Disabled	Generic PCI Bridge logging (probe [pci/pca]).
pci_logopt_runtime	switch	None	Disabled	PCI Bridge runtime dispatch logging.
pci_logopt_xml	switch	None	Disabled	PCI Bridge XML dispatch logging.

Table 17: PCI_BRIDGE_INSTR Arguments

The PCI Bridge instrumentation settings

Argument	Units Type	Default Value	Default State	Description
BRIDGE	number	1	Disabled	Forces full instrumentation (noisy).
CELL	number	1	Disabled	Forces all CELL synchronization to Report.
JAVA	number	1	Disabled	Forces all Java-related entries to Report.
JCS	number	1	Disabled	Forces all JCS entries to Report.
JDBC	number	1	Disabled	Forces all JDBC entries to Report.
JVMHOST	number	1	Disabled	Forces all ASE JVM host API entries to Report.
JVMJNI	number	1	Disabled	Forces all JVM JNI external entries to Report.
PCIS	number	1	Disabled	Forces all PCI Service code to Report.
PLB	number	1	Disabled	Forces all PLB code to Report.
SLOTRING	number	1	Disabled	Forces all "slot-ring" code to Report.
SYNC	number	1	Disabled	Forces all SYNChronization code to Report.
TPM	number	1	Disabled	Forces all TPM code to Report.
fetch_classdata	number	1	Enabled	Forces all fetch_classdata hits to Report.
pcis_service	number	2	Disabled	Forces all pcis_service hits to Freeze.

Permissions

The permission checks for sp_pciconfig differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with manage server configuration privilege.

Setting	Description
Disabled	With granular permissions disabled, you must be a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_jreconfig [page 530]

1.209 sp_placeobject

Puts future space allocations for a table or index on a particular segment on a particular segment, including for a specific partition.

Syntax

```
sp_placeobject <segname>, <objname>[, <partitionname>]
```

Parameters

`<segname>`

is the name of the segment on which to locate the table or index.

`<objname>`

is the name of the table or index for which to place subsequent space allocation on the segment `<segname>`. Specify index names in the form "`<tablename>.<indexname>`"

`<partitionname>`

(optional) is the name of the partition, which allows you to set the segment for a specific partition.

Examples

Example 1

Places all subsequent space allocation for the table authors on the segment named "segment3":

```
sp_placeobject segment3, authors
```

Example 2

Places all subsequent space allocation for the employee table's index named employee_nc on the segment named indexes:

```
sp_placeobject indexes, 'employee.employee_nc'
```

Example 3

Places all subsequent space allocation for the my_tab table's segment called my_seg2 in partition part1:

```
sp_placeobject my_seg2, my_tab, part1
```

Usage

There are additional considerations when using sp_placeobject:

- Using this procedure does not affect the location of existing table or index data, including existing partitions or new partitions added in the future if no segment is specified for the new partition. Changing the segment used by a table or index can spread the data among multiple segments.
- If you use sp_placeobject with a clustered index, the table moves with the index.
- You can specify a segment when you create a table or an index with create table or create index. You can also specify a segment at the partition level as part of a partition definition. Partitions without segment specification uses the segment specified at the table/index level. If no segment is specified for the table/index level, the data goes on the default segment.
- When sp_placeobject splits a table or an index across more than one disk fragment, the diagnostic command dbcc displays messages about the data that resides on the fragments that were in use for storage before sp_placeobject executed. Ignore those messages.

See also alter table, dbcc in *Reference Manual: Commands*.

Permissions

The permission checks for sp_placeobject differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be the table owner or a user with manage database privilege.

Setting	Description
Disabled	With granular permissions disabled, you must be the database owner, table owner, or a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_addsegment [page 56]
sp_dropsegment [page 319]
sp_extendsegment [page 365]
sp_helpindex [page 454]
sp_helpsegment [page 478]

1.210 sp_plan_dbccdb

Recommends suitable sizes for new `dbccdb` and `dbccalt` databases, lists suitable devices for `dbccdb` and `dbccalt`, and suggests a cache size and a suitable number of worker processes for the target database.

Syntax

```
sp_plan_dbccdb [<dbname>]
```

Parameters

<dbname>

specifies the name of the target database. If `<dbname>` is not specified, `sp_plan_dbccdb` makes recommendations for all databases in `master..sysdatabases`.

Examples

Example 1

Returns configuration recommendations for creating a dbccdb database suitable for checking the master database. The dbccdb database already existed at the time this command was run, so the size of the existing database is provided for comparison:

```
sp_plan_dbccdb master
```

```
Recommended size for dbccdb database is 50MB (data = 48MB, log = 2MB).
dbccdb database already exists with size 280MB.
Recommended values for workspace size, cache size and process count are:
dbname                   scan ws  text ws  cache  comp mem  process count
master                   128K     48K      640K   0K        1
```

Example 2

Returns configuration recommendations for creating a dbccdb database suitable for checking all databases in the server. The output includes Compression Memory Requirement, which has a non-zero value only for archive databases using any compressed device. No dbccdb database existed at the time this command was run:

```
sp_plan_dbccdb
```

```
Recommended size for dbccdb database is 50MB (data = 48MB, log = 2MB).
dbccdb database already exists with size 280MB.
Recommended values for workspace size, cache size and process count are:
dbname                   scan ws  text ws  cache  comp mem  process count
master                   128K     48K      640K   0K        1
tempdb                   656K     176K     1280K  0K        2
model                    64K      48K      640K   0K        1
sybsystemdb              64K      48K      640K   0K        1
sybsystemprocs           1488K    384K     640K   0K        1
sybsecurity              272K     80K      1280K  0K        2
adb                      80K      64K      1920K  12M       3
```

Example 3

Returns configuration recommendations for creating a dbccdb database suitable for checking pubs2:

```
sp_plan_dbccdb pubs2
```

```
Recommended size for dbccdb is 4MB.
Recommended devices for dbccdb are:
Logical Device Name      Device Size Physical Device Name
sprocdev                 28672      /remote/sybase/devices/srv_sprocs_dat
tun_dat                  8192       /remote/sybase/devices/srv_tun_dat
tun_log                  4096       /remote/sybase/devices/srv_tun_log
Recommended values for workspace size, cache size and process count are:
dbname     scan ws    text ws    cache    process count
pubs2      64K        64K        640K     1
```

Usage

There are additional considerations when using sp_plan_dbccdb:

- sp_plan_dbccdb recommends suitable sizes for creating new dbccdb and dbccalt databases, lists suitable devices for the new database, and suggests cache size and a suitable number of worker processes for the target database.
- If you specify dbccdb, sp_plan_dbccdb recommends values for dbccalt, the alternate database. If you specify dbccalt, sp_plan_dbccdb recommends values for dbccdb.
- sp_plan_dbccdb does not report values for existing dbccdb and dbccalt databases. To gather configuration parameters for an existing dbccdb or dbccalt database, use sp_dbcc_evaluatedb.

See also dbcc in *Reference Manual: Commands*.

Permissions

The permission checks for sp_plan_dbccdb differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, any user may execute the procedure.
Disabled	With granular permissions disabled, you must be the database owner or a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

dbcc Stored Procedures [page 894]
sp_dbcc_evaluatedb [page 906]

1.211 sp_poolconfig

Creates, drops, resizes, and provides information about memory pools within data caches.

Syntax

-
  ```
  sp_poolconfig <cache_name>[, "<mem_size> [P | K | M | G]", "<config_pool>K"
      [, "<affected_pool> K"], instance <instance_name>]
  ```
- To change a pool's wash size:

  ```
  sp_poolconfig <cache_name>, "<affected_poolK>", "wash=<size>[P|K|M|G]"
  ```
- To change a pool's asynchronous prefetch percentage:

  ```
  sp_poolconfig <cache_name>, "<affected_poolK>",
      "local async prefetch limit=<percent> "
  ```

Parameters

<cache_name>

is the name of an existing data cache.

<mem_size>

is the size of the memory pool to be created or the new total size for an existing pool with the specified I/O size. The minimum size of a pool is 256 logical server pages. For a 2K logical page size server, the minimum size is 256K. Specify size units with `P` for pages, `K` for kilobytes, `M` for megabytes, or `G` for gigabytes. The default is kilobytes.

<config_pool>

is the I/O size performed in the memory pool where the memory is to be allocated or removed.

Valid I/O sizes are multiples of the logical page size, up to four times the amount.

<affected_pool>

is the size of I/O performed in the memory pool where the memory is to be deallocated, or the pools attributes such as `'wash size'` and `'prefetch limit'` are to be modified. If `<affected_pool>` is not specified, the memory is taken from the lowest logical page size memory pool.

<instance_name>

(Cluster Edition) is the name of the instance with the buffer pool you are adjusting.

wash=<size>

Changes the wash size (the point in the cache at which the SAP ASE server writes dirty pages to disk) for a memory pool.

local async prefetch limit=<percent>

sets the percentage of buffers in the pool that can be used to hold buffers that have been read into cache by asynchronous prefetch, but that have not yet been used. Valid values are 0–100. Setting the prefetch limit to 0 disables asynchronous prefetching in a pool.

Examples

Example 1

Creates a 16K pool in the data cache `pub_cache` with 10 MB of space. All space is taken from the default 2K memory pool:

```
sp_poolconfig pub_cache, "10M", "16K"
```

Example 2

Creates 16 MB of space to the 32K pool from the 64K pool of `pub_cache`:

```
sp_poolconfig pub_cache, "16M", "32K", "64K"
```

Example 3

Reports the current configuration of `pub_cache`:

```
sp_poolconfig "pub_cache"
```

Example 4

Removes the 16K memory pool from `pub_cache`, placing all of the memory assigned to it in the 2K pool:

```
sp_poolconfig pub_cache, "0K", "16K"
```

Example 5

Changes the wash size of the 2K pool in `pubs_cache` to 508K:

```
sp_poolconfig pub_cache, "2K", "wash=508K"
```

Example 6

Changes the asynchronous prefetch limit for the 2K pool to 15 percent:

```
sp_poolconfig pub_cache, "2K", "local async prefetch limit=15"
```

Example 7

(Cluster environment) Creates a a 16KB buffer pool of size 25 MB in the default data cache on instance blade1:

```
sp_poolconfig 'default data cache', '25M', '16K', 'instance blade1'
```

Example 8

(Cluster environment) Displays the buffer pool configuration in the default data cache on instance blade1:

```
sp_poolconfig 'default data cache', 'instance blade1'
```

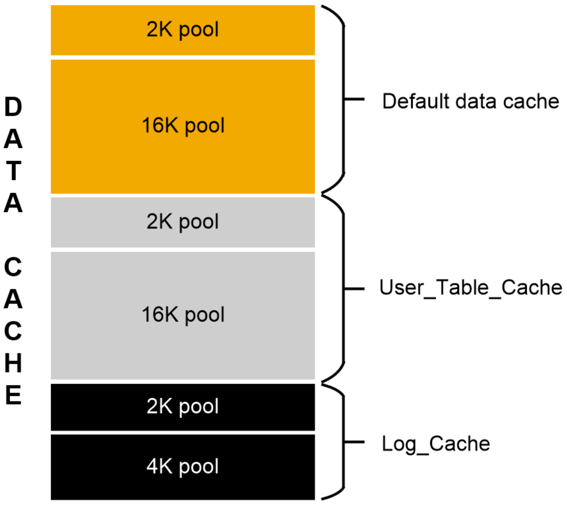
Example 9

(Cluster environment) Displays the buffer pool configuration for named cache `c_log` on all instances in the cluster:

```
sp_poolconfig c_log
```

Usage

- When you create a data cache with `sp_cacheconfig`, all space is allocated to the logical page size memory pool. `sp_poolconfig` divides the data cache into additional pools with larger I/O sizes.
- If no large I/O memory pools exist in a cache, the SAP ASE server performs I/O in logical page size units, the size of a data page, for all of the objects bound to the cache. You can often enhance performance by configuring pools that perform large I/O. A 16K memory pool reads and writes eight data pages in a single I/O for a 2K logical page size server.
- The combination of cache name and I/O size must be unique. In other words, you can specify only one pool of a given I/O size in a particular data cache in `sp_poolconfig` commands.
- Only one `sp_poolconfig` command can be active on a single cache at one time. If a second `sp_poolconfig` command is issued before the first one completes, it sleeps until the first command completes.
- The following figure shows a data cache on a server that uses 2K logical pages with:
  - The default data cache with a 2K pool and a 16K pool
  - A user cache with a 2K pool and a 16K pool
  - A log cache with a 2K pool and a 4K pool



- You can create pools with I/O sizes up to 16K in the default data cache for a 2K page size server.
- The minimum size of a memory pool is 256 logical pages (for example, a 2K logical page size server, the minimum size is 512K). You cannot reduce the size of any memory pool in any cache to less than 256 pages by transferring memory to another pool.
- Two circumstances can create pool less than 512K:
  - If you attempt to delete a pool by setting its size to zero, and some of the pages are in use, `sp_poolconfig` reduces the pool size as much as possible, and prints a warning message. The status for the pool is set to "Unavailable/deleted".

    - If you attempt to move buffers to create a new pool, and enough buffers cannot be moved to the new pool, `sp_poolconfig` moves as many buffers as it can, and the cache status is set to "Unavailable/too small."

  In both of these cases, you can retry to command at a later time. The pool is also deleted or be changed to the desired size when the server is restarted.
- You can create memory pools while the SAP ASE server is active; no restart is needed for them to take effect. However, the SAP ASE server can move only "free" buffers (buffers that are not in use or that do not contain changes that have not been written to disk). When you configure a pool or change its size, the SAP ASE server moves as much memory as possible to the pool and prints an informational message showing the requested size and the actual size of the pool. After a restart of the SAP ASE server, all pools are created at the configured size.
- Some `dbcc` commands and `drop table` perform only logical page size I/O. `dbcc checkstorage` can perform large I/O, and `dbcc checkdb` performs large I/O on tables and logical page size I/O on indexes.
- Most SAP ASE servers perform best with I/O configured for transactions logs that is twice the logical page size. The SAP ASE server uses the default I/O size of twice the logical page size if the default cache or a cache with a transaction log bound to it is configured with a memory pool twice the logical page size. Otherwise, it uses the logical page size memory pool.
- You can increase the default log I/O size for a database using the `sp_logiosize` system procedure. However, the I/O size you specify must have memory pools of the same size in the cache bound to the transaction log. If not, the SAP ASE server uses the logical page size memory pools.

Permissions

The permission checks for `sp_poolconfig` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `manage data cache` privilege to reconfigure memory pools. Any user can execute `sp_poolconfig` to retrieve information about memory pools.
Disabled	With granular permissions disabled, you must be a user with sa_role to reconfigure memory pools. Any user can execute `sp_poolconfig` to retrieve information about memory pools.

Auditing

You can enable `config_history` auditing option to audit this procedure. Values in `event` and `extrainfo` columns from the `sysaudits` table are:

Audit option	Event	Command or access audited	Information in `extrainfo`:
`config_history`	154	`sp_poolconfig`	• **Roles** – Current active roles • **Keywords or options** – NULL • **Previous value** – NULL • **Current value** – NULL • **Other information** – Includes procedure name, parameter name, old value, new value, mode (static or active), and instance ID • **Proxy information** – Original login name, if `set proxy` in effect

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_cacheconfig [page 118]
sp_helpcache [page 420]
sp_logiosize [page 574]
sp_unbindcache [page 817]
sp_unbindcache_all [page 820]

1.211.1 Wash Percentage and sp_poolconfig

The default value for the wash size differs depending on the pool size.

Pool Size	Default Wash Size
Less than 300 MB	The default wash size is set to 20 percent of the buffers in the pool.
Greater than 300 MB	The default wash size is 20 percent of the number of buffers in 300 MB.

The minimum setting for the wash size is 10 buffers, and the maximum setting is 80 percent of the size of the pool.

Each memory pool contains a wash area at the least recently used (LRU) end of the chain of buffers in that pool. Once dirty pages (pages that have been changed while in cache) move into the wash area, the SAP ASE server initiates asynchronous writes on these pages. The wash area must be large enough so that pages can be written to disk before they reach the LRU end of the pool. Performance suffers when the SAP ASE server needs to wait for clean buffers.

The default percentage, placing 20 percent of the buffers in the wash area, is sufficient for most applications. If you are using an extremely large memory pool, and your applications have a very high data modification rate, you may want to increase the size to 1 or 2 percent of the pool. Run `sp_sysmon` to look for recommendations, or contact SAP Technical Support for more information about choosing an effective wash size.

1.211.2 Local Asynchronous Prefetch Percentage and sp_poolconfig

The default value for a pool's asynchronous prefetch percentage is set by the configuration parameter `global async prefetch limit`. The pool limit always overrides the global limit.

To disable prefetch in a pool (if the global limit is a nonzero number), set the pool's limit to 0.

See the *Performance and Tuning Guide* for information on the performance impact of changes to the asynchronous prefetch limit.

1.212 sp_post_xpload

Checks and rebuilds indexes after a cross-platform `load database` where the endian types are different.

Syntax

```
sp_post_xpload [force]
```

Parameters

`force`

when specified, uses `reindex_opt_force` for `dbcc reindex` in `sp_post_xpload`.

Examples

Example 1

Once the database is loaded from another platform, rebuilds its indexes by executing:

```
sp_post_xpload
```

Usage

- The following indexes are rebuilt on all user tables in the database:
  - Nonclustered index on an APL table
  - Clustered index on a DOL table
  - Nonclustered index on a DOL table
- Indexes on system tables are not processed with `sp_post_xpload` only. System table indexes are rebuilt when `online database` is executed.
- You can also rebuild indexes using `drop index` and `create index`.
- Run `sp_post_xload` only when the database is loaded across platforms with different endian types.
- Where the index status is suspect, reset the index by executing `sp_post_xpload`, `drop index`, or `create index`.
- Stored procedures are recompiled from the SQL text in `syscomments` at the first execution after the `load database`. Use `dbcc upgrade_object` to upgrade objects if you do not have permission to recompile from text.

See also `dump database`, `load database` in *Reference Manual: Commands*.

Permissions

The permission checks for `sp_post_xload` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `load database` privilege or `own database` privilege on the database.
Disabled	With granular permissions disabled, you must be a user with `sa_role`.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

1.212.1 Handling Suspect Partitions in Cross-Platform Dump and Load Operations

During the first `online database` command, after you execute `load database` across two platforms with different endian types, the hash partition is marked suspect.

Any global clustered index on a round-robin partition, which has an internally generated partition condition with a `unichar` or `univarchar` partition key, is marked suspect.

After the database is online, use `sp_post_xpload` to fix the suspect partitions and indexes.

1.213 sp_primarykey

Defines a primary key on a table or view.

Syntax

```
sp_primarykey <tabname>, <col1>[, <col2>, <col3>, ..., <col8>]
```

Parameters

`<tabname>`

is the name of the table or view on which to define the primary key.

`<col1>`

is the name of the first column that makes up the primary key. The primary key can consist of from one to eight columns.

Examples

Example 1

Defines the `au_id` field as the primary key of the table `authors`:

```
sp_primarykey authors, au_id
```

Example 2

Defines the combination of the fields lastname and firstname as the primary key of the table employees:

```
sp_primarykey employees, lastname, firstname
```

Usage

There are additional considerations when using sp_primarykey:

- Executing sp_primarykey adds the key to the syskeys table. Only the owner of a table or view can define its primary key. sp_primarykey does not enforce referential integrity constraints; use the primary key clause of the create table or alter table command to enforce a primary key relationship.
- Define keys with sp_primarykey, sp_commonkey, and sp_foreignkey to make explicit a logical relationship that is implicit in your database design. An application program can use the information.
- A table or view can have only one primary key. To display a report on the keys that have been defined, execute sp_helpkey.
- The installation process runs sp_primarykey on the appropriate columns of the system tables.

See also alter table, create table, create trigger in *Reference Manual: Commands*.

Permissions

You must be the table owner to execute sp_primarykey. Permission checks do not differ based on the granular permissions settings.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_commonkey [page 191]
sp_dropkey [page 306]
sp_foreignkey [page 387]
sp_helpjoins [page 460]
sp_helpkey [page 462]

1.214 sp_procxmode

Displays or changes the execution modes associated with stored procedures.

Syntax

```
sp_procxmode [<procname >[,< tranmode>]]
```

Parameters

<procname>

is the name of the stored procedure with the transaction mode you are examining or changing.

<tranmode>

is the execution mode for the stored procedure. Values are:

- `chained`
- `unchained`
- `anymode`
- `Dynamic Ownership Chain`
- `No Dynamic Ownership Chain`
- `enable_dc`
- `disable_dc`

Examples

Example 1

Displays the transaction mode for all stored procedures in the current database:

```
sp_procxmode
```

```
procedure name      user name   transaction mode
------------------  ---------   ----------------
byroyalty           dbo         Unchained
discount_proc       dbo         Unchained
history_proc        dbo         Unchained
insert_sales_proc   dbo         Unchained
insert_detail_proc  dbo         Unchained
storeid_proc        dbo         Unchained
storename_proc      dbo         Unchained
title_proc          dbo         Unchained
```

```
titleid_proc         dbo          Unchained
```

Example 2

Displays the transaction mode of the stored procedure `byroyalty`:

```
sp_procxmode byroyalty
```

```
procedure name   transaction mode
--------------   ----------------
byroyalty        Unchained
```

Example 3

Changes the transaction mode for the stored procedure `byroyalty` in the `pubs2` database from `unchained` to `chained`:

```
sp_procxmode byroyalty, "chained"
```

Example 4

Enables deferred compilation for the `storeid_proc` stored procedure in the `pubs2` database:

```
sp_procxmode "storeid_proc", "enable_dc"
```

Disables deferred compilation for the same stored procedure:

```
sp_procxmode "storeid_proc", "disable_dc"
```

Usage

There are additional considerations when using `sp_procxmode`:

- To change the transaction mode of a stored procedure, you must be the owner of the stored procedure, the owner of the database containing the stored procedure, or the system administrator. The database owner or system administrator can change the mode of another user's stored procedure by qualifying it with the database and user name. For example:

  ```
  sp_procxmode "otherdb.otheruser.newproc", "chained"
  ```
- To use `sp_procxmode`, turn off `chained`transaction mode using the `chained` option of the `set` command. By default, this option is turned off.
- When you use `sp_procxmode` with no parameters, it reports the transaction modes of every stored procedure in the current database.
- To examine a stored procedure's transaction mode (without changing it), enter:

  ```
  sp_procxmode <procname>
  ```
- To change a stored procedure's transaction mode, enter:

  ```
  sp_procxmode <procname>, <tranmode>
  ```
- When you create a stored procedure, the SAP ASE server tags it with the current session's transaction mode. This means:

    - You can execute chained stored procedures only in sessions using `chained` transaction mode.
    - You can execute unchained stored procedures only in sessions using `unchained` transaction mode.

  To execute a particular stored procedure in either chained or unchained sessions, set its transaction mode to `anymode`.
- If you attempt to run a stored procedure under the wrong transaction mode, the SAP ASE server returns a warning message, but the current transaction, if any, is not affected.
- Executing `sp_procxmode procname, 'Dynamic Ownership Chain'` makes sure that any Dynamic SQL (execute immediate) statements within the stored procedure get their permissions checked against the procedure creator.
- Executing `sp_procxmode procname, 'No Dynamic Ownership Chain'` (the default behavior if omitted) makes sure that any Dynamic SQL (execute immediate) statements within the stored procedure get their permissions checked against the procedure executor.
- If you enable deferred compilation for a stored procedure using the `enable_dc` parameter, then you must manually recompile this stored procedure.

See also:

- `begin transaction`, `commit`, `save transaction`, `set` in *Reference Manual: Commands*

Permissions

The permission checks for `sp_procxmode` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be the owner of the procedure or a user with `manage database` privilege. Any user can execute `sp_procxmode` to for its own procedure.
Disabled	With granular permissions disabled, you must be the database owner, the owner of the procedure, or a user with sa_role. Any user can execute `sp_procxmode` to display the transaction mode.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide > Auditing*.

1.215 sp_querysmobj

(Only when the TSM is licensed at your site) Queries the Tivoli Storage Manager (TSM) for a list of the SAP ASE backup objects.

Syntax

```
sp_querysmobj "syb_tsm", "<output_file>", "<server_name>"
    {, "<database_name>", "<object_name>", "<dump_type>",
    "<until_time>", "<bs_name>"}
```

Parameters

syb_tsm

is the keyword that invokes the libsyb_tsm.so module that enables communication with TSM.

<output_file>

is the file to which Backup Server writes the list of TSM backup objects.

<server_name>

is the name of the SAP ASE server associated with the TSM backup objects.

<database_name>

is the name of the database associated with the TSM backup objects. An asterisk (*) indicates all databases.

<object_name>

is the name of the TSM backup object as provided in the dump database or dump transaction command. If this parameter is omitted, all backup objects are queried. An asterisk (*) indicates all backup objects.

<dump_type>

is the backup object type to be queried. Valid values are:

- DB – database backup objects created by the dump database command.
- XACT – database backup objects created by the dump transaction command.
- * – all database backup objects. This is the default.

until_time

is the date timestamp. All backup objects matching the criteria entered in sp_querysmobj before the specified time are queried. If you omit this parameter, all backup objects matching the specified criteria are queried.

<bs_name>

is the name of the remote Backup Server. If <bs_name> is omitted, the default, SYB_BACKUP, is used.

Examples

Example 1

Queries all TSM backup objects for the SAP ASE "demo_svr1" and writes the list to/tmp/qtsm/5_1.out:

```
sp_querysmobj "syb_tsm", "/tmp/qtsm/5_1.out", "demo_srv1"
```

Example 2

Queries all TSM backup objects for the SAP ASE "demo_svr1" and the database pubs2 and writes the list to /tmp/qtsm/5_2.out:

```
sp_querysmobj "syb_tsm", "/tmp/qtsm/5_2.out", "demo_srv1", "pubs2"
```

Example 3

Queries all TSM database backup objects for the SAP ASE "demo_svr1" and the database pubs2 and writes the list to /tmp/qtsm/5_3.out:

```
sp_querysmobj "syb_tsm", "/tmp/qtsm/5_3.out", "demo_srv1", "pubs2", "*", "DB"
```

Usage

See also *Using Backup Server with IBM Tivoli Storage Manager*.

Permissions

The permission checks for sp_querysmobj differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must have dump any database privilege.
Disabled	With granular permissions disabled, you must be a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide > Auditing*.

Related Information

sp_deletesmobj [page 251]

1.216 sp_recompile

Causes each stored procedure and trigger that uses the named table to be recompiled the next time it runs.

Syntax

```
sp_recompile <objname>
```

Parameters

<objname>

is the name of a table in the current database.

Examples

Example 1

Recompiles each trigger and stored procedure that uses the table `titles` the next time the trigger or stored procedure is run:

```
sp_recompile titles
```

Usage

There are additional considerations when using `sp_recompile`:

- Compilation involves the optimizer creating a query plan that is stored in procedure cache from the normalized query tree stored in `sysprocedures`. This occurs whenever a procedure or trigger is executed and no free plan for it is found in procedure cache. As you add indexes or make other changes to your database that affect its statistics, these query plans may lose efficiency. By recompiling the stored procedures and triggers that act on a table, you can optimize the queries for maximum efficiency.

> i Note
>
> Do not run sp_recompile when executing create index or update statistics. These commands results in minor schema changes, which then automatically recompile stored procedures and triggers that reference the target table on next execution.

- sp_recompile looks for <objname> only in the current database. Running it causes triggers and stored procedures that reference <objname> to recompile the next time they are executed.
- You cannot use sp_recompile on system tables.
- In SAP ASE versions 12.5 and earlier, sp_recompile could influence adhoc queries that you execute. The SAP ASE server would return a schema change error (error number 540), and abort the adhoc query. sp_recompile no longer affects such adhoc queries, and you no longer see error 540.

See also:

- create index, update statistics in *Reference Manual: Commands*

Permissions

Any user can execute sp_recompile. Permission checks do not differ based on the granular permissions settings.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

1.217 sp_refit_admin

(Cluster environments only) Provides an interface to perform various disk refit-related actions, such as showing the current status of the disk refit process, resetting the state of the disk refit process, skipping the disk refit process for an instance, and so on.

Syntax

```
sp_refit_admin ['help'] | 'status' | ['reset' | 'skiperfit' [, <instance_name>]]
    |[ 'removedevice', <device_name>]
```

Parameters

`help`

displays information on `sp_refit_admin` syntax and usage.

`status`

displays the current status of the disk refit process. It lists all the instances and their private devices for which disk refit is still pending. If no such device exists, it prints a message saying so.

`reset`

resets the state of the disk refit process. It takes an optional parameter `<instance_name>`.

If `<instance_name>` is not supplied, this parameter resets the disk refit process back to the beginning of Phase One, so that subsequent `disk refit` command starts the disk refit process from Phase One and refits all the regular shareable devices, as well as private devices of the instance.

If `<instance_name>` is supplied, this parameter resets the disk refit process back to the beginning of Phase Two for that instance, so that a subsequent `disk refit` command on that instance starts the disk refit process from Phase Two for that instance, and refits only the private devices of that instance.

`skiprefit`

skips running Phase Two of the disk refit process for one or all instances in the cluster without dropping the device. This parameter is meaningful only after the completion of Phase One of the disk refit process. It takes `<instance_name>` as an optional parameter.

`removedevice`

removes a device from the disk refit process. This parameter requires the name of the device that is to be removed, as the input parameter `<device_name>` or `<instance_name>`.

Examples

Example 1

Resets the state of the disk refit process to the start of Phase One:

```
sp_refit_admit 'reset'
```

After executing `reset`, the user must run Phase One and Phase Two of the disk refit process.

Example 2

Resets the state of the disk refit process on the instance named 'cluster1_instance1' to the start of Phase Two for the instance:

```
sp_refit_admin 'reset', 'cluster1_instance1'
```

This interface removes `sysdatabases` entry for all the databases created on the private devices owned by 'cluster1_instance1', and the `sysusages` entries corresponding to the private devices owned by 'cluster1_instance1'. After executing, you must run Phase Two of `disk refit` on 'cluster1_instance1'.

Example 3

Skips the disk refit process of all the refit-pending private devices of instance `'cluster1_instance1'`:

```
sp_refit_admin 'skiprefit', 'cluster1_instance1'
```

This example removes the `sysdatabases` entry for all the databases that use any of the refit-pending private devices owned by `'cluster1_instance1'`, and removes all the entries in `sysusages` for all the deleted databases.

To skip the disk refit process on all the refit-pending private devices of all the instances in the cluster, enter:

```
sp_refit_admin 'skiprefit'
```

Example 4

To remove the device ''device1' from the disk refit process:

```
sp_refit_admin 'removedevice', 'device1'
```

This action removes the `sysdatabases` entry for all databases created on `'device1'`, and all the sysusages entries corresponding to `'device1'`. It also removes `'device1'` from `sysdevices`.

Usage

There are additional considerations when using `sp_refit_admin`:

- You must follow the instructions in *Clusters Users Guide > Troubleshooting* after executing `skiprefit`, to ensure the consistency of the system tables before resuming normal operation.
- Use `removedevice` only during the disk refit process, to remove the device from the refit process. Do not use it in place of `sp_dropdevice`
- You can use `sp_refit_admin` even when the instance is started with the `-m` option and trace flag 3608 ON.

For information on problems encountered with `disk refit`, see the *Troubleshooting and Error Guide*

Permissions

The permission checks for `sp_refit_admin` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `manage disk` privilege.
Disabled	With granular permissions disabled, you must be a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide > Auditing*.

1.218 sp_remoteoption

Displays or changes remote login options.

Syntax

```
sp_remoteoption [<remoteserver>[, <loginame>
    [, <remotename>[, <optname>[, <optvalue>]]]]]
```

Parameters

<remoteserver>

is the name of the server that executes RPCs on this server.

> i Note
>
> This manual page uses the term "local server" to refer to the server that is executing the remote procedures that are run from a "remote server."

<loginame>

is the login name that identifies the local login for the <remoteserver>, <loginame>, <remotename> combination.

<remotename>

is the remote user name that identifies the remote login for the <remoteserver>, <loginame>, <remotename> combination.

<optname>

is the name of the option to change. Currently, there is only one option, trusted, which means that the local server accepts remote logins from other servers without user-access verification for the particular remote login. The default is to use password verification. The SAP ASE server understands any unique string that is part of the option name. Use quotes around the option name if it includes embedded blanks.

<optvalue>

is either true or false. true turns the option on, false turns it off.

Examples

Example 1

Displays a list of the remote login options:

```
sp_remoteoption
```

```
Settable remote login options.
remotelogin_option
------------------------
trusted
```

Example 2

Defines the remote login from the remote server GATEWAY to be trusted; that is, the password is not checked:

```
sp_remoteoption GATEWAY, churchy, pogo, trusted, true
```

Example 3

Defines the remote login "pogo" from the remote server GATEWAY as a login that is not trusted; that is, the password is checked:

```
sp_remoteoption GATEWAY, churchy, pogo, trusted, false
```

Example 4

Defines all logins from GATEWAY that map to login "albert" on the local server to be trusted:

```
sp_remoteoption GATEWAY, albert, NULL, trusted, true
```

Usage

There are additional considerations when using `sp_remoteoption`:

- To display a list of the remote login options, execute `sp_remoteoption` with no parameters.
- If you have used `sp_addremotelogin` to map all users from a remote server to the same local name, specify `trusted` for those users. For example, if all users from server GOODSRV that are mapped to "albert" are trusted, specify:

  ```
  sp_remoteoption GOODSRV, albert, NULL, trusted, true
  ```

  If the logins are not specified as `trusted`, they cannot execute RPCs on the local server unless they specify local server passwords when they log into the remote server. When they use Open Client Client-Library, users can specify a password for server-to-server connections with the routine `ct_remote_pwd`. `isql` and `bcp` do not permit users to specify a password for RPC connections.
  If users are logged into the remote server using "unified login", the logins must also be trusted on the local server, or they must specify passwords for the server when they log into the remote server.
  See the *System Administration Guide* for more information about setting up servers for remote procedure calls and for using "unified login."

See also `isql` in the *Utility Guide*.

Permissions

The permission checks for `sp_remoteoption` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `manage any remote login` privilege.
Disabled	With granular permissions disabled, you must be a user with sso_role.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_addremotelogin [page 53]
sp_dropremotelogin [page 313]
sp_helpremotelogin [page 470]

1.219 sp_remotesql

(Component Integration Services only) Establishes a connection to a remote server, passes a query buffer to the remote server from the client, and relays the results back to the client.

Syntax

```
sp_remotesql <server>, <query>[, <query2>, ... , <query254>]
```

Parameters

`<server>`

is the name of a remote server defined with `sp_addserver`.

<query>

is a query buffer a with maximum length of 255 characters.

<query2> ... **<query254>**

is a query buffer with a maximum length of 255 characters. If supplied, these arguments are concatenated with the contents of `<query1>` into a single query buffer.

Examples

Example 1

Passes the query buffer to FREDS_SERVER, which interprets `select @@version` and returns the result to the client. The SAP ASE server does not interpret the result:

```
sp_remotesql FREDS_SERVER, "select @@version"
```

Example 2

Uses `sp_remotesql` in a stored procedure. This example and the previous example return the same information to the client:

```
create procedure freds_version
as
exec sp_remotesql FREDS_SERVER, "select @@version"
go
exec freds_version
go
```

Example 3

Concatenates two query buffers into a single buffer, and passes the complete `insert` statement to the server DCO_SERVER for processing. The syntax for the `insert` statement is a format that DCO_SERVER understands. The returned information is not interpreted by the server. This example also examines the value returned in `@@error`.

```
sp_remotesql DCO_SERVER,
"insert into remote_table
(numbercol,intcol, floatcol,datecol )",
"values (109.26,75, 100E5,'10-AUG-85')"
select @@error
```

Example 4

Illustrates the use of local variables as parameters to `sp_remotesql`:

```
declare @servname varchar(30)
declare @querybuf varchar(200)
select @servname = "DCO_SERV"
select @querybuf = "select table_name
    from all_tables
    where owner = 'SYS'"
exec sp_remotesql @servname, @querybuf
```

Usage

There are additional considerations when using `sp_remotesql`:

- `sp_remotesql` establishes a connection to a remote server, passes a query buffer to the remote server from the client, and relays the results back to the client. The local server does not intercept results.
- You can use `sp_remotesql` within another stored procedure.
- The query buffer parameters must be a character expression with a maximum length of 255 characters. If you use a query buffer that is not `char` or `varchar`, you get datatype conversion errors.
- `sp_remotesql` sets the global variable `@@error` to the value of the last error message returned from the remote server if the severity of the message is greater than 10.
- If `sp_remotesql` is issued from within a transaction, the SAP ASE server verifies that a transaction has been started on the remote server before passing the query buffer for execution. When the transaction terminates, the remote server is directed to commit the transaction. The work performed by the contents of the query buffer is part of the unit of work defined by the transaction.
  If transaction control statements are part of the query buffer, it is the responsibility of the client to ensure that the transaction `commit` and `rollback` occur as expected. Mixing Transact-SQL with transaction control commands in the query buffer can cause unpredictable results.
- The local server manages the connection to the remote server. Embedding `connect to` or `disconnect` commands in the query buffer causes results that require interpretation by the remote server. This is not required or recommended. Typically, the result is a syntax error.

See also `connect to...disconnect` in *Reference Manual: Commands*.

Permissions

Any user can execute `sp_remotesql`. Permission checks do not differ based on the granular permissions settings.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_addserver [page 58]
sp_autoconnect [page 97]
sp_passthru [page 644]

1.220 sp_rename

Changes the name of a user-created object or user-defined datatype in the current database.

Syntax

```
sp_rename <objname>, <newname> [, "index" | "column" | "partition"]
```

Parameters

<objname>

is the original name of the user-created object (table, view, column, partition, stored procedure, index, trigger, default, rule, check constraint, referential constraint, or user-defined datatype). If the object to be renamed is a column in a table, `<objname>` must be in the form "`<table>.<column>`". If the object is an index, `<objname>` must be in the form "`<table>.<indexname>`".

<newname>

is the new name of the object or datatype. The name must conform to the rules for identifiers and must be unique to the current database.

index

specifies that the object you are renaming is an index, not a column. This argument allows you to rename an index that has the same name as a column, without dropping and re-creating the index.

column

specifies that the object you are renaming is a column, not an index. This argument is part of the same option as the `index` argument.

partition

specifies that the object you are renaming is a partition when the table-partition name conflicts with a column or index name.

Examples

Example 1

Renames the `titles` table to `books`:

```
sp_rename titles, books
```

Example 2

Renames the `title` column in the `books` table to `bookname`:

```
sp_rename "books.title", bookname
```

Example 3

Renames the `titleind` index in the `books` table to `titleindex`:

```
sp_rename "books.titleind", titleindex
```

Example 4

Renames the user-defined datatype `tid` to `bookid`:

```
sp_rename tid, bookid
```

Example 5

Renames the `title_id` index in the `titles` table to `isbn`:

```
sp_rename "titles.title_id", isbn, "index"
```

Example 6

Renames the table index `my_tab.ind1.i_part1` to `i_part1_rename`:

```
sp_rename "my_tab.ind1.i_part1", i_part1_rename
```

Example 7

Renames the index partition `my_tab.ind1.ind1_928003306` to `ind1_928003306_rename` using `"partition"` to avoid conflicts between the table-partition name and index name:

```
sp_rename "my_tab.ind1.ind1_928003306", ind1_928003306_rename, "partition"
```

Usage

There are additional considerations when using `sp_rename`:

- `sp_rename` changes the name of a user-created object or datatype. You can change only the name of an object or datatype in the database in which you issue `sp_rename`.
- When you are renaming a column or index, do not specify the table name in `<newname>`. See Examples 2, 3, and 5.
- If a column and an index have the same name, use the `[,"<index>" | "<column>"]` argument, which specifies whether to rename the index or the column. In the following sample, assume that both an index and a column named `idx` exist:

```
sp_rename "t.idx", new_idx, "column"
-------------
Column name has been changed. (Return status = 0)
sp_rename "t.idx", new_idx, "index"
-------------
Index name has been changed. (Return status = 0)
```

- If you change the name of a an object or column name referenced by a view, you see a warning message, such as:

  ```
  Changing an object or column name could break
  existing stored procedures, cached statements or
  other compiled objects.
  ```

- `sp_engine` can run in sessions using chained transaction mode if there are no open transactions.
- You cannot change the names of system objects and system datatypes.

Permissions

You must be the object owner to execute `sp_rename`. Permission checks do not differ based on the granular permissions settings.

Use the `setuser` command to assume another database user's identity to rename objects owned by other users.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_depends [page 253]

sp_rename [page 692]

1.221 sp_rename_qpgroup

Renames an abstract plan group.

Syntax

```
sp_rename_qpgroup <old_name>, <new_name>
```

Parameters

<old_name>

is the current name of the abstract plan group.

<new_name>

is the new name for the group. The specified <new_name> cannot be the name of an existing abstract plan group in the database.

Examples

Example 1

Changes the name of the group from dev_plans to prod_plans:

```
sp_rename_qpgroup dev_plans, prod_plans
```

Usage

There are additional considerations when using sp_rename_qpgroup:

- Use sp_rename_qpgroup to rename an abstract plan group. You cannot use the name of an existing plan group for the new name.
- sp_rename_qpgroup does not affect the contents of the renamed group. IDs of existing abstract plans are not changed.
- You cannot rename the default abstract plan groups, ap_stdin and ap_stdout.
- sp_rename_qpgroup cannot be run in a transaction.

Permissions

The permission checks for sp_rename_qpgroup differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with manage abstract plans privilege.
Disabled	With granular permissions disabled, you must be the database owner or a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_help_qpgroup [page 410]

1.222 sp_renamedb

Changes the name of a user database.

Syntax

```
sp_renamedb <dbname>, <newname>
```

Parameters

`<dbname>`

is the original name of the database.

`<newname>`

is the new name of the database. Database names must conform to the rules for identifiers and must be unique.

Examples

Example 1

Renames the `accounting` database to `financial`:

```
sp_renamedb accounting, financial
```

Example 2

Renames the database named work, which is a Transact-SQL reserved word, to workdb. This example shows how sp_dboption is used to place the work database in single-user mode before renaming it and restore it to multi-user mode afterward:

```
sp_dboption work, single, true
go
use work
go
checkpoint
go
sp_renamedb work, workdb
go
use master
go
sp_dboption workdb, single, false
go
use workdb
go
checkpoint
go
```

Usage

There are additional considerations when using sp_renamedb:

- sp_renamedb changes the name of a database. You cannot rename system databases or databases with external referential integrity constraints.
- The system administrator must place a database in single-user mode with sp_dboption before renaming it and must restore it to multi-user mode afterward.
- sp_renamedb fails if any table in the database references, or is referenced by, a table in another database. Use the following query to determine which tables and external databases have foreign key constraints on primary key tables in the current database:

  ```
  select object_name(tableid), db_name(frgndbid)
  from sysreferences
  where frgndbid is not null
  ```

  Use the following query to determine which tables and external databases have primary key constraints for foreign key tables in the current database:

  ```
  select object_name(reftabid), db_name(pmrydbid)
  from sysreferences
  where pmrydbid is not null
  ```

  Use alter table to drop the cross-database constraints in these tables. Then, rerun sp_renamedb.
- When you change a database name:
  - Drop all stored procedures, triggers, and views that include the database name
  - Change the source text of the dropped objects to reflect the new database name
  - Re-create the dropped objects
  - Change all applications and SQL source scripts that reference the database, either in a use <database_name> command or as part of a fully qualified identifier (in the form <dbname>.[<owner>].<objectname>)

- If you use scripts to run `dbcc` commands or `dump database` and `dump transaction` commands on your databases, be sure to update those scripts.

> ⚠ Caution
>
> Procedures, triggers, and views that depend on a database with a name that has been changed work until they are re-created. Change the definitions of any dependent objects when you execute `sp_renamedb`. Find dependent objects with `sp_depends`.

See also `create database` in *Reference Manual: Commands*.

Permissions

The permission checks for `sp_renamedb` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `own database` privilege on the database.
Disabled	With granular permissions disabled, you must be a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_changedbowner [page 133]
sp_dboption [page 228]
sp_depends [page 253]
sp_helpdb [page 438]
sp_rename [page 692]

1.223 sp_reportstats

Reports statistics on system usage.

Syntax

```
sp_reportstats [<loginame>]
```

Parameters

<loginame>

is the login name of the user to show accounting totals for.

Examples

Example 1

Displays a report of current accounting totals for all SAP ASE users:

```
sp_reportstats
```

```
Name    Since         CPU     Percent CPU  I/O     Percent I/O
------  ------------  -----   ------------ -----   -------------
julie   jun 19 1993   10000   24.9962%     5000    24.325%
jason   jun 19 1993   10002   25.0013%     5321    25.8866%
ken     jun 19 1993   10001   24.9987%     5123    24.9234%
kathy   jun 19 1993   10003   25.0038%     5111    24.865%
Total CPU   Total I/O
---------   ---------
40006       20555
```

Example 2

Displays a report of current accounting totals for user "kathy":

```
sp_reportstats kathy
```

```
Name    Since         CPU     Percent CPU   I/O     Percent I/O
------  ------------  -----   ------------  -----   -------------
kathy   Jul 24 1993   498     49.8998%      48392   9.1829%
Total CPU   Total I/O
---------   ----------
998         98392
```

Usage

There are additional considerations when using `sp_reportstats`:

- `sp_reportstats` prints out the current accounting totals for all logins, as well as each login's individual statistics and percentage of the overall statistics. `sp_reportstats` accepts one parameter, the login name of the account to report. With no parameters, `sp_reportstats` reports on all accounts.
- The units reported for "CPU" are SAP ASE clock ticks.
- The "probe" user exists for the two-phase commit probe process, which uses a challenge-and-response mechanism to access the SAP ASE server.

Permissions

The permission checks for `sp_reportstats` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `manage server` privilege.
Disabled	With granular permissions disabled, you must be a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_clearstats [page 163]
sp_configure [page 203]

1.224 sp_restore_system_role

Restores the system defined role or database owner to the default role privilege configuration.

Syntax

```
sp_restore_system_role [<role_name>[, all_dbs]]
```

Parameters

<role_name>

One of sa_role, sso_role, oper_role, replication_role, keycustodian_role, sa_serverprivs_role, and dbo. A usage message is displayed if no parameter is specified.

all_dbs

Restores the database owner or the role to the default role privilege configuration in all online databases. If `all_dbs` is not specified, only perform the change in the current database.

Examples

Example 1

Restore sso_role to the default role privilege configuration in all databases:

```
sp_restore_system_role sso_role, all_dbs
```

Example 2

Restores sa_role to the default role privilege configuration in `db1` only:

```
use db1
```

```
sp_restore_system_role sa_role
```

Example 3

Restore dbo to the default privilege configuration in master:

```
use master
```

```
sp_restore_system_role dbo
```

Usage

There are additional considerations when using `sp_restore_system_role`:

- `sp_restore_system_role` restores a system-defined role, user-defined role sa_serverprivs_role, or database owner to the default role privilege configuration. The allowed system-defined roles include: sa_role, sso_role, oper_role, replication_role, and keycustodian_role. For the list of privileges granted to the above roles or database owner in the default role privilege configuration, see *Using Granular Permissions* in the *Security Administration Guide*.
- When you specify `all_dbs`, the restoration operation does not apply to `sybsecurity` database. You need to manually restore privileges of the role or database owner in `sybsecurity` if needed.

Permissions

The permission checks for `sp_restore_system_role` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `manage server permissions` privileges to restore sa_role, and a user with `manage security permissions` to restore other roles or the database owner. To use `all_dbs` option, you also need to have `use any database` privilege.
Disabled	With granular permissions disabled, you must be a user with sa_role to restore sa_role, and a user with sso_role to restore other roles and the database owner.

Auditing

You can enable `dbcc` auditing option to audit this procedure. Values in `event` and `extrainfo` columns from the `sysaudits` table are:

Information	Value
Audit option	`dbcc`
Event	81
Command or access audited	Execution of a `dbcc` command
Information in **`extrainfo`**	• **Roles** – Current active roles • **Keywords or options** – `upgd_grantrev_sysrole_perms` • **Previous value** – NULL • **Current value** – NULL • **Other information** – parameter list • **Proxy information** – Original login name, if `set proxy` in effect

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

1.225 sp_revokelogin

(Windows only) Revokes SAP ASE roles and default permissions from Windows users and groups when Integrated Security mode or Mixed mode (with Named Pipes) is active.

Syntax

```
sp_revokelogin {<login_name> | <group_name>}
```

Parameters

`<login_name>`

is the network login name of the Windows user.

`<group_name>`

is the Windows group name.

Examples

Example 1

Revokes all permissions from the Windows user named "jeanluc":

```
sp_revokelogin jeanluc
```

Example 2

Revokes all roles from the Windows Administrators group:

```
sp_revokelogin Administrators
```

Usage

Use sp_revokelogin only when the SAP ASE server is running in Integrated Security mode or Mixed mode, when the connection is Named Pipes. If the SAP ASE server is running in Standard mode, or in Mixed mode using a connection other than Named Pipes, use the revoke command.

If you revoke a user's roles and default privileges with sp_revokelogin, that user can no longer log into the SAP ASE server over a trusted connection.

See also grant, revoke, setuser in *Reference Manual: Commands*.

Permissions

The permission checks for sp_revokelogin differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with manage roles privilege.
Disabled	With granular permissions disabled, you must be a user with sa_role.

Auditing

Values in event and extrainfo columns from the sysaudits table are:

Information	Value
Audit option	exec_procedure
Event	38
Command or access audited	Execution of a procedure
Information in **extrainfo**	• **Roles** – Current active roles • **Keywords or options** – upgd_grantrev_sysrole_perms • **Previous value** – NULL • **Current value** – NULL • **Other information** – parameter list • **Proxy information** – Original login name, if set proxy in effect

Related Information

sp_droplogin [page 309]

sp_dropuser [page 326]

sp_logininfo [page 572]

1.226 sp_role

Deprecated by SAP ASE 15.7. To grant or revoke roles, use the `grant role` or `revoke role` commands. See *grant role* and *revoke role* in *Reference Manual: Commands* > *Commands*.

Related Information

sp_activeroles [page 15]
sp_displayroles [page 276]
sp_displayroles [page 276]

1.227 sp_securityprofile

Lists the attributes or bindings associated with a login profile.

Syntax

```
sp_securityprofile 'attributes','login profile',
    {<wildcard> | <login_profile_name> | 'default'}
```

```
sp_securityprofile 'bindings', 'login profile'
    [, {<wildcard> | login_profile_name | 'default'}
    [, 'login' ,{<wildcard> | <login_name>}]]
```

```
sp_securityprofile 'help'
```

Parameters

`attributes`

specifies to list attributes associated with a login profile.

`login profile`

specifies to obtain information about login profiles.

`bindings`

when `login` is specified, list binding of login accounts. When `login profile` is specified, list bindings of login profiles.

`login`

specifies to obtain information about login accounts.

`<wildcard> | <login_profile_name> | default`

specifies the login profile in which to obtain information. Options include a specific a name of a login profile, the default login profile, or wildcard characters can be used identify login profiles.

`<wildcard>`|**`<login_name>`**

specifies to use a specific login account name or allows the use of wildcard characters to identify login accounts.

`help`

displays usage.

Examples

Example 1

Lists all attributes of the default login profile.

```
sp_securityprofile 'attributes', 'login profile', 'default'
```

```
Name                             Value
------------                     ----------------
login profile                    def_login_profile
default                          yes
default database                 master
default language                 NULL
login script                     NULL
auto activated roles             emp_role
auto activated roles             def_role
manually activated roles         special_role
authenticate with                ANY
track lastlogin                  TRUE
stale period                     180D
```

Example 2

Displays all the attributes associated with all login profiles.

```
sp_securityprofile 'attributes', 'login profile', '%'
```

```
Name                             Value
----------                       ----------------
login profile                    def_login_profile
default                          yes
default database                 master
default language                 NULL
login script                     NULL
auto activated roles             emp_role
auto activated roles             def_role
authenticate with                ANY
track lastlogin                  TRUE
stale period                     180D
```

```
Name                         Value
-----------                  ----------------
login profile                eng_login_profile
default
default database             work
login script                 engr_script
auto activated roles         emp_role
auto activated roles         def_role
auto activated roles         engr_role
authenticate with            LDAP
Name                         Value
------------                 ----------------
login profile                mgr_login_profile
default
default database             work
login script                 mgr_script
auto activated roles         emp_role
auto activated roles         def_role
auto activated roles         mgr_role
manually activated roles     activate_emp_role
authenticate with            LDAP
Name                         Value
-------------                ----------------
login profile                sa_login_profile
manually activated roles     admin_role
default
```

Example 3

Displays all login accounts associated with a specific login profile.

```
sp_securityprofile 'bindings', 'login profile', 'engr_login_profile'
```

```
Login name          Login profile name
-----------         ----------------
anderson            eng_login_profile
gupta               eng_login_profile
lchang              eng_login_profile
tsato               eng_login_profile
```

Example 4

Displays the login profile for the login account named `sa`.

```
sp_securityprofile 'bindings', 'login profile', null, 'login', 'sa'
```

```
Login name          Login profile name
-----------         ----------------
sa                  sa_login_profile
```

Usage

Precedence rules are followed for attributes no set in profiles.

See also:

- `create login profile`, `alter login profile` in *Reference Manual: Commands*
- *Applying Login Profile and Password Policy Attributes* in the *Security Administration Guide*
- `sp_displaylogin`

Permissions

The permission checks for `sp_securityprofile` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `manage any login profile` privilege.
Disabled	With granular permissions disabled, you must be a user with sso_role to see attributes and bindings of all login profiles. For a non-privileged login account: • You can only see the attributes of a login profile associated with the login (either directly or the default login profile). • You cannot see the bindings of a login profile with login accounts.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

1.228 sp_sendmsg

(UNIX only) Sends a message to a User Datagram Protocol (UDP) port.

Syntax

```
sp_sendmsg <ip_address>, <port_number>, <message>
```

Parameters

`<ip_address>`

is the IP address of the machine where the UDP application is running.

`<port_number>`

is the port number of the UDP port.

<message>

is the message to send, up to 4096 characters in length.

Examples

Example 1

```
sp_sendmsg "120.10.20.5", 3456, "Hello World"
```

This sample C program listens on a port that you specify and echoes the messages it receives. For example, to receive the `sp_sendmsg` calls for this example, use:

```
updmon 3456
#include <stdlib.h>
#include <stdio.h>
#include <sys/types.h>
#include <sys/socket.h>
#include <netinet/in.h>
#include <arpa/inet.h>
#include <unistd.h>
#include <fcntl.h>
main(argc, argv)
int argc; char *argv[];
{
        struct sockaddr_in sadr;
        int portnum,sck,dummy,msglen;
        char msg[256];
        if (argc < 2) {
                printf(“Usage: udpmon <udp portnum>\n”);
                exit(1);
        }
        if ((portnum=atoi(argv[1])) < 1) {
                printf("Invalid udp portnum\n");
                exit(1);
        }
        if ((sck=socket(AF_INET,SOCK_DGRAM,IPPROTO_UDP)) < 0) {
                printf("Couldn't create socket\n");
                exit(1);
        }
        sadr.sin_family = AF_INET;
        sadr.sin_addr.s_addr = inet_addr("0.0.0.0");Sends the message "Hello
World" to IP address 120.10.20.5 using port
              3456:
        if (bind(sck,&sadr,sizeof(sadr)) < 0) {
                printf("Couldn't bind requested udp port\n");
                exit(1);
        }
        for (;;)
        {
                if((msglen=recvfrom(sck,msg,sizeof(msg),0,NULL,&dummy)) < 0)
                        printf("Couldn't recvfrom() from udp port\n");
                printf("%.*s\n", msglen, msg);
        }
}
```

Usage

There are additional considerations when using `sp_sendmsg`:

- To enable the use of UDP messaging, a system security officer must set the configuration parameter `allow sendmsg` to 1.
- No security checks are performed with `sp_sendmsg`. Be very cautious when using `sp_sendmsg` to send sensitive information across the network. By enabling this functionality, the user accepts any security problems that result from its use.

See also:

- `syb_sendmsg` in *Reference Manual: Building Blocks*

Permissions

Any user can execute `sp_sendmsg`. Permission checks do not differ based on the granular permissions settings.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

1.229 sp_serveroption

Displays or changes remote server options.

Syntax

```
sp_serveroption [<server>, <optname>, <optvalue>]
```

Parameters

`<server>`

is the name of the remote server for which to set the option.

<optname>

is the name of the option to be set or unset. The following table lists the option names.

mutual authentication	sets mutual authentication for all connections to the remote server using Kerberos authentication.
net password encryption	specifies whether to initiate connections with a remote server with the client side password encryption handshake or with the normal (unencrypted password) handshake sequence. The default is `false` (no network encryption).
allow password downgrade	
readonly	(Component Integration Services only) specifies that access to the server named is read only.
security mechanism	specifies the security mechanism for the remote server. Enables Kerberos authentication for connections to the remote server when your login is authenticated using the Kerberos mechanism.
server cost	(Component Integration Services only) specifies the cost of a single exchange under the user's control, on a per-server basis. See *Understanding Component Integration Services* in *Understanding CIS* for more information.
server logins	(Component Integration Services only) to fully support remote logins, Client-Library provides connection properties that enable CIS to request a server connection. This connection is recognized at the receiving server as a server connection (as opposed to an ordinary client connection), allowing the remote server to validate the connection through the use of `sysremotelogins` as if the connection were made by a site handler. When enabled, Omni connects to the specified server using the CS_LOGIN_TYPE connection property, with type set to LREMUSER. Also, if the remote server is an SAP ASE server, the CS_LOGIN_REMOTE_SERVER property is set to the value of the local server name, and remote passwords are set using `ct_remote_pwd()`.
server principal	sets the server principal name for a remote server.
negotiated logins	(Component Integration Services only) this option is necessary if CIS connections to XP server or Backup Server are required.

When enabled, Omni connects to the specified server using the CS_SEC_CHALLENGE property, and establishes a callback handler that can respond appropriately to login challenges from XP Server and Backup Server.

`timeouts`

when unset (`false`), disables the normal timeout code used by the local server, so the site connection handler does not automatically drop the physical connection after one minute with no logical connection. The default is `false`.

`use message confidentiality`

sets message confidentiality for all connections to the remote server using Kerberos authentication.

`use message integrity`

sets message integrity for all connections to the remote server using Kerberos authentication.

`cis hafailover`

(Component Integration Services only) if enabled, instructs Open Client to use automatic failover when connections fail. In this case, CIS connection failures automatically failover to the server specified in directory services (such as the `interface` file and ldap server) as the failover server.

The SAP ASE server accepts any unique string that is part of the option name. Use quotes around the option name if it includes embedded blanks.

`<optvalue>`

is `true` (on) or `false` (off) for all options except the `security mechanism` option.

For the `security mechanism` option, specify the name of the security mechanism. To see the names of the security mechanisms available on a server, execute:

```
select * from syssecmechs
```

Examples

Example 1

Displays a list of the server options:

```
sp_serveroption
```

```
Settable server options.
------------------------
cis hafailover
enable login redirection
external engine auto start
incompatible sort order
mutual authentication
negotiated logins
net password encryption
readonly
relocated joins
```

```
security mechanism
server cost
server logins
server principal
timeouts
use message confidentiality
use message integrity
```

Example 2

Tells the server not to time out inactive physical connections with the remote server GATEWAY:

```
sp_serveroption GATEWAY, "timeouts", false
```

Example 3

Specifies that when connecting to the remote server GATEWAY, GATEWAY sends back an encryption key to encrypt the password to send to it:

```
sp_serveroption GATEWAY, "net password encryption", true
```

Example 5

Specifies Kerberos authentication for connections to remote server S2.

```
sp_serveroption S2, "security mechanism", csfkrb5
```

Example 6

Specifies mutual authentication for all connections to the remote server using Kerberos authentication.

```
sp_serveroption TEST3, "mutual authentication", true
```

Usage

There are additional considerations when using `sp_serveroption`:

- To display a list of server options that can be set by the user, use `sp_serveroption` with no parameters.
- After `timeouts` is set to `false`, the site handlers continue to run until one of the two servers is shut down.
- The `net password encryption` option allows clients to specify whether to send passwords in plain text or encrypted form over the network when initiating a remote procedure call. If `net password encryption` is `true`, the initial login packet is sent without passwords, and the client indicates to the remote server that encryption is desired. The remote server sends back an encryption key, which the client uses to encrypt its passwords. The client then encrypts its passwords, and the remote server uses the key to authenticate them when they arrive.
- To set network password encryption for a particular `isql` session, you can use a command line option for `isql`.
- The `security mechanism`, `mutual authentication`, `use message confidentiality`, and `use message integrity` options apply to Kerberos logins only.

See also:

- See the *System Administration Guide* for more information on server options.
- `isql` in the *Utility Guide*

Permissions

The permission checks for sp_serveroption differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with manage server privilege. For a shared-disk cluster, you must be a user with manage server and manage cluster privileges. Any user can execute sp_serveroption with no parameters to display a list of options.
Disabled	With granular permissions disabled, you must be a user with sa_role to set the timeouts option. You must be a user with sso_role to set: • net password encryption • security mechanism • mutual authentication • use message confidentiality • use message integrity Any user can execute sp_serveroption with no parameters to display a list of options.

Auditing

You can enable config_history auditing option to audit this procedure. Values in event and extrainfo columns from the sysaudits table are:

Information	Value
Audit option	config_history
Event	154
Command or access audited	sp_serveroption
Information in **extrainfo**	• **Roles** – Current active roles • **Keywords or options** – NULL • **Previous value** – NULL • **Current value** – NULL • **Other information** – Includes procedure name, parameter name, old value, new value, mode (static or active), and instance ID • **Proxy information** – Original login name, if set proxy in effect

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_helpserver [page 481]
sp_password [page 646]

1.230 sp_set_qplan

Changes the text of the abstract plan of an existing plan without changing the associated query.

Syntax

```
sp_set_qplan <id>, <plan>
```

Parameters

<id>

is the ID of the abstract plan.

<plan>

is a new abstract plan.

Examples

Example 1

Changes the text of the abstract plan:

```
sp_set_qplan 563789159,
        "( g_join (scan t1) (scan t2))"
```

Usage

There are additional considerations when using `sp_set_qplan`:

- Use `sp_set_qplan` to change the abstract plan of an existing plan. You can specify a maximum of 255 characters for a plan. If the abstract plan is longer than 255 characters, drop the old plan with `sp_drop_qplan`, then use `create plan` to create a new plan for the query.

- When you change a plan with `sp_set_qplan`, plans are not checked for valid abstract plan syntax and the plan is not checked for compatibility with the SQL text. Immediately check all plans modified with `sp_set_qplan` for correctness by running the query for the specified ID.
- To find the ID of a plan, use `sp_help_qpgroup`, `sp_help_qplan`, or `sp_find_qplan`. Plan IDs are also returned by `create plan` and are included in `showplan` output.

See also `create plan` in *Reference Manual: Commands*.

Permissions

The permission checks for `sp_set_qplan` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `manage abstract plans` privilege. Any user can execute `sp_set_qplan` to change the text of a plan for which they own.
Disabled	With granular permissions disabled, you must be the database owner or a user with sa_role. Any user can execute `sp_set_qplan` to change the text of a plan for which they own.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_drop_qpgroup [page 284]
sp_drop_qplan [page 285]
sp_find_qplan [page 374]
sp_help_qplan [page 412]

1.231 sp_setlangalias

Assigns or changes the alias for an alternate language.

Syntax

```
sp_setlangalias <language>, <alias>
```

Parameters

<language>

is the official language name of the alternate language.

<alias>

is the new local alias for the alternate language.

Examples

Example 1

Assigns the alias name "français" for the official language name "french":

```
sp_setlangalias french, français
```

Usage

`<alias>` replaces the current value of `syslanguages.alias` for the official name; the `set language` command can use the new `<alias>` in place of the official language name.

See also `set` in *Reference Manual: Commands*.

Permissions

The permission checks for `sp_setlangalias` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `manage server` privilege.
Disabled	With granular permissions disabled, you must be a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_addlanguage [page 43]
sp_droplanguage [page 308]
sp_helplanguage [page 464]

1.232 sp_setpglockpromote

Sets or changes the lock promotion thresholds for a database, for a table, or for the SAP ASE server.

Syntax

```
sp_setpglockpromote {"database" | "table"},
    <objname>, <new_lwm>, <new_hwm>, <new_pct>
```

```
sp_setpglockpromote server, NULL, <new_lwm>, <new_hwm>, <new_pct>
```

Parameters

`server`

sets server-wide values for the lock promotion thresholds.

`"database" | "table"`

specifies whether to set the lock promotion thresholds for a database or table. “database” and “table” are Transact-SQL keywords, so the quotes are required.

<objname>

is either the name of the table or database for which you are setting the lock promotion thresholds or `null`, if you are setting server-wide values.

<new_lwm>

specifies the value to set for the low watermark (LWM) threshold. The LWM must be less than or equal to the high watermark (HWM). The minimum value for LWM is 2. This parameter can be `null`.

<new_hwm>

specifies the value to set for the lock promotion HWM threshold. The HWM must be greater than or equal to the LWM. The maximum HWM is 2,147,483,647. This parameter can be `null`.

<new_pct>

specifies the value to set for the lock promotion percentage (PCT) threshold. PCT must be between 1 and 100. This parameter can be `null`.

Examples

Example 1

Sets the server-wide lock promotion LWM to 200, the HWM to 300, and the PCT to 50:

```
sp_setpglockpromote "server", NULL, 200, 300, 50
```

Example 2

Sets lock promotion thresholds for the `master` database:

```
sp_setpglockpromote "database", master, 1000, 1100, 45
```

Example 3

Sets lock promotion thresholds for the `titles` table in the `pubs2` database. This command must be issued from the `pubs2` database:

```
sp_setpglockpromote "table", "pubs2..titles", 500, 700, 10
```

Example 4

Changes the HWM threshold to 1600 for the `master` database. The thresholds were previously set with `sp_setpglockpromote`. This command must be issued from the `master` database:

```
sp_setpglockpromote "database", master, @new_hwm=1600
```

Usage

There are additional considerations when using `sp_setpglockpromote`:

- You can display database-level lock promotions using `sp_helpdb <dbname>` and table-level locks using `sp_helpdb <tablename>`.
- `sp_setpglockpromote` configures the lock promotion values for a table, for a database, or for the SAP ASE server.
  The SAP ASE server acquires page locks on a table until the number of locks exceeds the lock promotion threshold. `sp_setpglockpromote` changes the lock promotion thresholds for an object, a database, or the server. If the SAP ASE server is successful in acquiring a table lock, the page locks are released.
  When the number of locks on a table exceeds the HWM threshold, the SAP ASE server attempts to escalate to a table lock. When the number of locks on a table is below the LWM, the SAP ASE server does not attempt to escalate to a table lock. When the number of locks on a table is between the HWM and LWM and the number of locks exceeds the PCT threshold, the SAP ASE server attempts to escalate to a table lock.
- Lock promotion thresholds for a table override the database or server-wide settings. Lock promotion thresholds for a database override the server-wide settings.
- Lock promotion thresholds for the SAP ASE server do not need initialization, but you must initialize database and table lock promotion thresholds by specifying LWM, HWM, and PCT with `sp_setpglockpromote`, which creates a row for the object in `sysattributes` when it is first run for a database or table. Once the thresholds have been initialized, then they can be modified individually, as in Example 4.
- For a table or a database, `sp_setpglockpromote` sets LWM, HWM, and PCT in a single transaction. If `sp_setpglockpromote` encounters an error while updating any of the values, then all changes are aborted and the transaction is rolled back. For server-wide changes, one or more thresholds may fail to be updated while others are successfully updated. The SAP ASE server returns an error message if any values fail to be updated.
- To view the server-wide settings for the lock promotion thresholds, use `sp_configure "lock promotion"` to see all three threshold values. To view lock promotion settings for a database, use `sp_helpdb`. To view lock promotion settings for a table, use `sp_help`.

Permissions

The permission checks for `sp_setpglockpromote` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `manage lock premotion threshold` privilege.
Disabled	With granular permissions disabled, you must be a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_configure [page 203]
sp_dropglockpromote [page 301]
sp_help [page 396]
sp_helpdb [page 438]

1.233 sp_setpglockpromote_ptn

Sets partition-lock promotion thresholds at the server, database, and table level.

Syntax

- To set the partition lock promotion threshold at the server level:

```
sp_setpglockpromote_ptn "server", null, <new_lwm>, <new_hwm>, <new_pct>
```

- To set the partition lock promotion threshold at the database or table level:

```
sp_setpglockpromote_ptn "database | table",
    <objname>, <new_lwm>, <new_hwm>, <new_pct>
```

Parameters

`server`

sets server-wide values for the lock promotion thresholds.

`"database" | "table"`

specifies whether to set the lock promotion thresholds for a database or table. These are Transact-SQL keywords and therefore, require quotes.

`<objname>`

is either the name of the partition, table, or database for which you are setting the lock promotion thresholds, or null, if you are setting server-wide values. If you are setting partition-wide values, use the format <table_name>.<partition_name> for the <objname>.

<new_lwm>

specifies a minimum number of page locks that must be acquired before SAP ASE acquires a partition lock.

<new_hwm>

specifies a maximum number of page locks allowed on the object before SAP ASE attempts to escalate to a partition lock.

<new_pct>

specifies the percentage of locked pages (based on the table size) above which SAP ASE attempts to acquire a partition lock when the number of locks is between the <new_hwm> and <new_lwm> lock promotions.

Examples

Example 1

Sets the server-wide partition lock promotion threshold values LWM to 200, the HWM to 300, and the PCT to 50:

```
sp_setpglockpromote_ptn "server", NULL, 200, 300, 50
```

Example 2

Sets partition lock promotion thresholds for the master database:

```
sp_setpglockpromote_ptn "database", master, 1000, 1100, 45
```

Example 3

Sets partition lock promotion thresholds for the titles table in the pubs2 database. This command must be issued from the pubs2 database:

```
sp_setpglockpromote_ptn "table", "pubs2..titles", 500, 700, 10
```

Permissions

Any user can execute sp_setpglockpromote_ptn.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

1.234 sp_setpsexe

Sets custom execution attributes for a session while the session is active.

Syntax

```
sp_setpsexe <spid>, <exeattr>, <value>
```

Parameters

<spid>

is the ID of the session for which to set execution variables. Use `sp_who` to see `spids`.

<exeattr>

identifies the execution attribute to be set. Values are `priority` and `enginegroup`.

<value>

is the new value of `exeattr`. Values for each attribute are:

- If `<exeattr>` is `priority`, `<value>` is `HIGH`, `MEDIUM`, or `LOW`.
- If `<exeattr>` is `enginegroup`, `<value>` is the name of an existing engine group.

Examples

Example 1

This example sets the priority of the process with an ID of 1 to HIGH:

```
sp_setpsexe 1, "priority", "HIGH"
```

Usage

There are additional considerations when using `sp_setpsexe`:

- Execution attribute values specified with `sp_setpsexe` are valid for the current session only and do not apply after the session terminates.
- Use `sp_setpsexe` with caution or it can result in degraded performance. Changing attributes "on the fly", using `sp_setpsexe`, can help if the process is not getting CPU time; however, if the performance problem is due to something else, such as locks, changing execution attributes could make the problem worse.

- Because you can only set execution attributes for sessions, sp_setpsexe cannot be set for a worker process spid.
- Except for the housekeeper spid, you cannot set execution attributes for system spids.
- sp_setpsexe does not work if there are no online engines in the associated engine group.

Permissions

The permission checks for sp_setpsexe differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with manage any execution class privilege. Any user can execute sp_setpsexe to lower the priority of a process owned by that user.
Disabled	With granular permissions disabled, you must be a user with sa_role. Any user can execute sp_setpsexe to lower the priority of a process owned by that user.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_addexeclass [page 35]

sp_bindexeclass [page 110]

sp_dropexeclass [page 296]

sp_showexeclass [page 743]

1.235 sp_setrowlockpromote

Sets or changes row-lock promotion thresholds for a datarows-locked table, for all datarows-locked tables in a database, or for all datarows-locked tables on a server.

Syntax

```
sp_setrowlockpromote "server", NULL, <new_lwm>, <new_hwm>, <new_pct>
```

```
sp_setrowlockpromote {"database" | "table"},
    <objname>, <new_lwm>, <new_hwm>, <new_pct>
```

Parameters

server

sets server-wide values for the row lock promotion thresholds.

"database" | "table"

specifies whether to set the row-lock promotion thresholds for a database or table.

<objname>

is either the name of the table or database for which you are setting the row-lock promotion thresholds or `null`, if you are setting server-wide values.

<new_lwm>

specifies the value to set for the low watermark (LWM) threshold. The LWM must be less than or equal to the high watermark (HWM). The minimum value for LWM is 2. This parameter can be `null`.

<new_hwm>

specifies the value to set for the high watermark (HWM) threshold. The HWM must be greater than or equal to the LWM. The maximum HWM is 2,147,483,647. This parameter can be `null`.

<new_pct>

specifies the value to set for the lock promotion percentage (PCT) threshold. PCT must be between 1 and 100. This parameter can be `null`.

Examples

Example 1

Sets row lock promotion values for all datarows-locked tables in the `engdb` database:

```
sp_setrowlockpromote "database", engdb, 400, 400, 95
```

Example 2

Sets row lock promotion values for the `sales` table:

```
sp_setrowlockpromote "table", sales, 250, 250, 100
```

Usage

There are additional considerations when using `sp_setrowlockpromote`:

- You can display database-level lock promotions using `sp_helpdb <dbname>` and table-level locks using `sp_helpdb <tablename>`.
- `sp_setrowlockpromote` sets or changes row-lock promotion thresholds for a table, a database, or the SAP ASE server.
  The SAP ASE server acquires row locks on a datarows-locked table until the number of locks exceeds the lock promotion threshold. If the SAP ASE server is successful in acquiring a table lock, the row locks are released.
  When the number of row locks on a table exceeds the HWM, the SAP ASE server attempts to escalate to a table lock. When the number of row locks on a table is below the LWM, the SAP ASE server does not attempt to escalate to a table lock. When the number of row locks on a table is between the HWM and LWM, and the number of row locks exceeds the PCT threshold as a percentage of the number of rows in a table, the SAP ASE server attempts to escalate to a table lock.
- Lock promotion is always two-tiered, that is, row locks are promoted to table locks. The SAP ASE server does not promote from row locks to page locks.
- Lock promotion thresholds for a table override the database or server-wide settings. Lock promotion thresholds for a database override the server-wide settings.
- To change the lock promotion thresholds for a database, you must be using the `master` database. To change the lock promotion thresholds for a table in a database, you must be using the database where the table resides.
- Server-wide row lock promotion thresholds can also be set with `sp_configure`. When you use `sp_setrowlockpromote` to change the values server-wide, it changes the configuration parameters, and saves the configuration file. When you first install SAP ASE, the server-wide row lock promotion thresholds set by the configuration parameters are:

Parameters	Thresholds
row lock promotion HWM	200
row lock promotion LWM	200
row lock promotion PCT	100

  See the *System Administration Guide* for more information.

- The system procedure `sp_sysmon` reports on row lock promotions.
- Database-level row lock promotion thresholds are stored in the `master..sysattributes` table. If you dump a database, and load it only another server, you must set the row lock promotion thresholds on the new server. Object-level row lock promotion thresholds are stored in the `sysattributes` table in the user database, and are included in the dump.

Permissions

The permission checks for `sp_setrowlockpromote` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `manage lock promotion threshold` privilege.
Disabled	With granular permissions disabled, you must be a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_configure [page 203]
sp_droprowlockpromote [page 315]
sp_helpdb [page 438]
sp_sysmon [page 791]

1.236 sp_setrowlockpromote_ptn

Sets partition-lock promotion thresholds at the server, database, and table level.

Syntax

- To set the partition lock promotion threshold at the server level::

```
sp_setrowlockpromote_ptn "server", null, <new_lwm>, <new_hwm>, <new_pct>
```

- To set the partition lock promotion threshold at the database or table level:

```
sp_setrowlockpromote_ptn "database | table",
    <objname>, <new_lwm>, <new_hwm>, <new_pct>
```

Parameters

server

sets server-wide values for the lock promotion thresholds.

"database" | "table"

specifies whether to set the lock promotion thresholds for a database or table. These are Transact-SQL keywords and therefore, require quotes.

<objname>

is either the name of the partition, table, or database for which you are setting the lock promotion thresholds, or null, if you are setting server-wide values. If you are setting partition-wide values, use the format <table_name>.<partition_name> for the <objname>.

<new_lwm>

specifies a minimum number of row locks that must be acquired before SAP ASE acquires a partition lock.

<new_hwm>

specifies a maximum number of row locks allowed on the object before SAP ASE attempts to escalate to a partition lock.

<new_pct>

specifies the percentage of locked rows (based on the table size) above which SAP ASE attempts to acquire a partition lock when the number of locks is between the <new_hwm> and <new_lwm> lock promotions.

Examples

Example 1

Sets the server-wide partition lock promotion threshold values LWM to 200, the HWM to 300, and the PCT to 50:

```
sp_setrowlockpromote_ptn "server", NULL, 200, 300, 50
```

Example 2

Sets partition lock promotion thresholds for the `master` database:

```
sp_setrowlockpromote_ptn "database", master, 1000, 1100, 45
```

Example 3

Sets partition lock promotion thresholds for the titles table in the `pubs2` database. This command is issued this from the `pubs2` database:

```
sp_setrowlockpromote_ptn "table", "pubs2..titles", 500, 700, 10
```

Permissions

Any user can execute `sp_setrowlockpromote_ptn`.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide > Auditing*.

1.237 sp_setsuspect_granularity

Displays or sets the recovery fault isolation mode for a user database, which governs how recovery behaves when it detects data corruption.

Syntax

```
sp_setsuspect_granularity [<dbname>
    [, "database" | "page" [, "read_only"]]]
```

Parameters

<dbname>

is the name of the database for which to display or set the recovery fault isolation mode. For displaying, the default is the current database. For setting, you must be in the `master` database and specify the target `<dbname>`.

database

marks the entire database suspect, which makes it inaccessible, if the recovery process detects that any of its data is suspect.

page

marks only the corrupt pages suspect, making them inaccessible, if recovery detects corrupt data in the database. The rest of the data is accessible.

read_only

if specified, marks the entire database `read only` if recovery marks any pages suspect.

Examples

Example 1

Displays the recovery fault isolation mode for the current database:

```
sp_setsuspect_granularity
```

```
DB Name  Cur. Suspect Gran.  Cfg. Suspect Gran.  Online mode
-------  ------------------  ------------------  -----------
pubs2    database           database           read/write
```

Example 2

Displays the current and configured recovery fault isolation mode for the `pubs2` database:

```
sp_setsuspect_granularity pubs2
```

Example 3

The next time recovery runs in the `pubs2` database, if any corrupt pages are detected, only the suspect pages are taken offline and the rest of the database is brought online:

```
sp_setsuspect_granularity pubs2, "page"
```

```
DB Name       Cur. Suspect Gran. Cfg. Suspect Gran.
------------- ------------------ -----------------
pubs2          database             database
sp_setsuspect_granularity: The new values will become effective
    during the next recovery of the database ’pubs2’.
```

Example 4

The next time recovery runs in the pubs2 database, if any corrupt pages are detected, only the suspect pages are taken offline and the rest of the database is brought online in read only mode:

```
sp_setsuspect_granularity pubs2, "page", "read_only"
```

Example 5

The next time recovery runs in the pubs2 database, if any corrupt data is detected, the entire database is marked suspect and taken offline:

```
sp_setsuspect_granularity pubs2, "database"
```

Usage

There are additional considerations when using sp_setsuspect_granularity:

- sp_setsuspect_granularity displays and sets the recovery fault isolation mode. This mode governs whether recovery marks an entire database or only the corrupt pages suspect when it detects that any data that it requires has been corrupted. See the *System Administration Guide* for more information.
- The default recovery fault isolation mode of a user database is "database". You can set the recovery fault isolation mode only for a user database, not for a system database.
- The Cluster Edition allows only the database option with sp_setsuspect_granularity.
- You must be in the master database to set the recovery fault isolation mode.
- Data marked suspect due to corruption persists across SAP ASE server start-ups. When certain pages have been marked suspect, they remain offline after you reboot the server.
- When part or all of a database is marked suspect, the suspect data is not accessible to users unless a system administrator has made the suspect data accessible with the sp_forceonline_db and sp_forceonline_page procedures.
- General database corruption, such as a corrupt database log or the unavailability of another resource not specific to a page, causes the entire database to be marked suspect, even if the recovery fault isolation mode is "page."
- If you do not specify page or database, the SAP ASE server displays the current and configured settings. The current setting is the one that was in effect the last time recovery was executed in the database. The configured setting is the one that is in effect the next time recovery is executed in the database.
- If the database comes online in read_only mode, no user can modify any of its data, including data that is unaffected by the suspect pages and is thus online. However, the system administrator can make the database writeable using the sp_dboption system procedure to set read only to false. In this case, users could then modify the online data, but the suspect data would remain inaccessible.

See also dump database, dump transaction, load database in *Reference Manual: Commands*.

Permissions

The permission checks for sp_setsuspect_granularity differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with own database privilege on the specified database to set the recovery fault isolation mode. Any user can execute sp_setsuspect_granularity to display settings.
Disabled	With granular permissions disabled, you must be a user with sa_role to set the recovery fault isolation mode. Any user can execute sp_setsuspect_granularity to display settings.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_dboption [page 228]
sp_forceonline_db [page 380]
sp_forceonline_page [page 385]
sp_listsuspect_db [page 551]
sp_listsuspect_page [page 554]
sp_setsuspect_threshold [page 732]

1.238 sp_setsuspect_threshold

Displays or sets the maximum number of suspect pages that the SAP ASE server allows in a database before marking the entire database suspect.

Syntax

```
sp_setsuspect_threshold [<dbname> [, <threshold>]]
```

Parameters

<dbname>

is the name of the database for which you want to display or set the suspect escalation threshold. The default is the current database.

<threshold>

indicates the maximum number of suspect datapages that recovery allows before marking the entire database suspect. The default is 20 pages. The minimum is 0.

Examples

Example 1

Sets the maximum number of suspect pages to 5. If there are more than 5 suspect pages, recovery marks the entire database suspect:

```
sp_setsuspect_threshold pubs2, 5
```

Example 2

Displays the current and configured settings for the suspect escalation threshold for the pubs2 database:

```
sp_setsuspect_threshold pubs2
```

Example 3

Displays the current and configured settings for the recovery fault isolation threshold for the current user database:

```
sp_setsuspect_threshold
```

Usage

There are additional considerations when using sp_setsuspect_threshold:

- You must be in the master database to set the suspect escalation threshold with sp_setsuspect_threshold.
- If you do not specify the number of pages, the SAP ASE server displays the current and configured settings. The current setting is the one that was in effect the last time recovery was executed in the database. The configured setting is the one that is in effect the next time recovery is executed in the database.

Permissions

The permission checks for sp_setsuspect_threshold differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `own database` privilege on the database to set the escalation threshold. Any user can execute `sp_setsuspect_threshold` to display settings.
Disabled	With granular permissions disabled, you must be a user with `sa_role` to set the the escalation threshold. Any user can execute `sp_setsuspect_threshold` to display settings.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_forceonline_db [page 380]
sp_forceonline_page [page 385]
sp_listsuspect_db [page 551]
sp_listsuspect_page [page 554]
sp_setsuspect_granularity [page 729]

1.239 sp_setup_table_transfer

Run once in each database containing the tables marked for incremental transfer to create the `spt_TableTransfer` table in this database.

Syntax

```
sp_setup_table_transfer
```

Usage

Although it is optional, you should run sp_setup_table_transfer before you transfer a table. If you do not run sp_setup_table_transfer, the SAP ASE server automatically creates spt_TableTransfer when a table is marked for incremental transfer or when you perform the first transfer.

Permissions

The permission checks for sp_setup_table_transfer differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with manage database privilege.
Disabled	With granular permissions disabled, you must be the database owner or a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

1.240 sp_shmdumpconfig

Specifies the dump condition of a shared memory dump, and displays current settings. You must enable the dump on conditions configuration parameter to perform shared memory dumps.

Syntax

```
sp_shmdumpconfig "<action>", <type>, <value>, <max_dumps>, <dump_dir>,
    <dump_file>, <option1>, <option2>, <option3>, <option4>, <option5>
```

Parameters

"action"

action requested. One of:

`add` Adds the specified shared memory dump conditions.

`drop` Drops the specified shared memory dump conditions.

`update` Changes the settings for an existing memory dump condition.

`reset` Resets the dump count for a shared memory dump condition.

`display` Displays the current shared memory dump conditions.

`config` One of:

- `include errorlog` – determines if the errorlog file is included in the dump file:
  - 0 – do not include the error log in the dump file.
  - 1 – include the errorlog in the dump file.
- `merge files` – determines if the dump files are merged after a parallel dump:
  - 0 – do not merge dump files.
  - 1 – merge the dump files.

`<type>`, **`<value>`**

valid values are:

- `error` – Generates a dump file for the specified server error number (for example, error numbers 1105 or 813).
- `signal` – Generates a dump file when the specified operating system signal occurs (for example, signals 11 or 10).
- `severity` – Generates a dump file when an error occurs with a severity equal to or greater than the specified severity. See *Diagnosing System Problems* in the *System Administration Guide Volume 1* for more information about error severity levels.
- `module` – Generates a dump file for a range of server error numbers. The range is delimited by multiples of 100, for example 800 or 1200.
- `defaults`
- `timeslice` – Generates a dump file when a process receives a timeslice error.
- `panic` Generates a dump file when a server panic occurs. A server panic terminates the SAP ASE server after perfoming the shared memory dump.
- `message` – Generates a dump file when a specified error log message occurs. Contact SAP Technical Support to optain specific error message numbers.
- `dbcc` – Sets up a configuration with defaults and omissions as requested. Upon the next occurrence of the problem, issue `dbcc memdump` at the `isql` prompt to create a memory dump.

`max_dumps`

maximum number of dumps generated for a dump condition. The dump count is reset each time you restart the server. You can also reset the dump count with the `reset <action>` parameter.

`<dump_dir>`

is the directory in which the SAP ASE server creates the dump file. The "sybase" user must have `read` and `write` permission in this directory.

You should set the <dump_dir> to a known, consistent location. Make sure there is sufficient space in this directory to hold the required number of dump files. Remove a <dump_dir> setting by performing an update action with two double quotes ("") as the <dump_dir> value:

```
sp_shmdumpconfig 'update', signal, 11, null, null, ""
```

<dump_file>

is the file name for the dump. If you do not supply a file name, the SAP ASE server creates a name that is guaranteed to be unique. If you provide a file name, all files for the affected conditions use this name, and existing files are overwritten.

<option1>, . . . , <option5>

determine whether areas of SAP ASE memory are included in the dump file (by default, the procedure cache is included). One of:

- include_page – Include all pages from data caches.
- omit_page – Omit all pages from data caches.
- default_page – Use the default value when including data cache pages.
- include_proc – Include all pages from the procedure cache.
- omit_proc – Omit all pages from the procedure cache.
- default_proc – Use the default values for the procedure cache.
- include_unused – Include unused pages.
- omit_unused – Omit unused pages.
- default_unused – Use the default value for unused pages.
- core – produce a core dump if this event is triggered.
- nocore – do not produce a core dump.
- csmd – produce a csmd if this event is triggered.
- nocsmd – do not produce a csmd.

> i Note
>
> For the core dump options (core, nocore, csmd, nocsmd), the default behavior is to produce a csmd (configured shared memory dump) but not a core, therefore the nocore option is only used to switch off a previously requested core dump using the update function.

Values for these options override the system-wide default settings. Specify default_cache, default_proc, or default_unused to inherit the appropriate value from the system-wide default settings.

Unless you are instructed otherwise by SAP Product Support, you should include the procedure cache in all shared memory dumps.

halt

determines if the SAP ASE server halts the engine while writing the dump file. One of:

- no_halt – no engines halted during the dump. Use this option if you do not want to use shared memory dumps (for example, because the downtime is unacceptable or because the event triggering the shared memory dump is based on a synchronization problem, and you need to see what other engines are doing).

Memory dumps made with the `no_halt` option may contain a "fuzzy" image and the dump file likely contains corrupted lock tables, run queues, and so on.

- `default_halt`
- `halt`

Examples

Example 1

Requests a one-time memory dump on signal 11:

```
sp_shmdumpconfig "add", signal, 11, 1, "dump_dir"
```

Example 2

Requests a memory dump on the occurrence of a 605 error:

```
sp_shmdumpconfig 'add', error, 605, null, null, null,
    include_page
```

The equivalent on Windows is a `STATUS_ACCESS_VIOLATION (0xc0000005)` message:

```
declare @sig int
select @sig=hextoint("0xc0000005")
exec sp_shmdumpconfig 'add', signal, @sig,1,"dump_dir"
```

Example 3

Requests a memory dump for the 8xx range of errors:

```
sp_shmdumpconfig 'add', module, 800
```

Example 4

Removes a previously defined dump_file by performing an `update` action with two double quotes ("") as the `<dump_file>` value:

```
sp_shmdumpconfig 'update', signal, 11, null, null, null, ""
```

Example 5

Configure both a shared memory dump and core dump on Windows exception 0xc0000028 STATUS_BAD_STACK:

```
declare @sig int
select @sig=hextoint("0xc0000028")
exec sp_shmdumpconfig 'add', signal, @sig, 1, dump_dir,
dump_file,'csmd','core'
```

Usage

The `sp_shmdumpconfig` stored procedure uses positional parameters. When setting a parameter that falls to the right of parameters you do not want to set, specify null values for the unset parameters.

Permissions

The permission checks for `sp_shmdumpconfig` differ based on your granular permissions settings. If `action` is equal to `add`, `update`, `reset`:

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `manage server configuration` privilege.
Disabled	With granular permissions disabled, you must be a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

1.241 sp_show_options

Prints all the server options that have been set in the current session.

Syntax

```
sp_show_options
```

Examples

Example 1

Displays the output from `sp_show_options`:

```
create procedure sp_show_options
as
select a.number, a.name
        from master.dbo.spt_values a, master.dbo.spt_values c
        where   c.type = "P"
        and a.type='N'
        and c.low <= datalength(@@options)
        and a.number = c.number
        and convert(tinyint,substring(@@options, c.low, 1)) & c.high != 0
    return (0)
```

```
go
```

```
1> sp_show_options
2> go
```

```
 number      name
 ----------- ----------------------------
           7 arithabort
           8 numeric_truncation
          13 control
          40 prefetch
          41 triggers
          42 replication
          43 replication force_dll
          48 transactional_rpc
          58 remote_indexes
          62 statement_cache
          64 proc_return_status
          65 proc_output_params
(12 rows affected)
(return status = 0)
```

Usage

@@options the array of bits corresponding to server options. For every option, "low" is the byte number in @@options, and "high" is the bit within that byte corresponding to the option. If the bit is set, print name of that option.

Permissions

Any user can execute . Permission checks do not differ based on the granular permissions settings.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide > Auditing*.

1.242 sp_showcontrolinfo

Displays information about thread pool assignments, bound client applications, logins, and stored procedures.

Considerations for Process Mode

When you configure the SAP ASE server for process mode, `sp_showcontrolinfo` displays information about engine group assignments, bound client applications, logins, and stored procedures.

Syntax

```
sp_showcontrolinfo [<object_type>, <object_name>, <spid> ]
```

Parameters

`<object_type>`

one of:

- `AP` for application
- `LG` for login
- `PR` for stored procedure
- `EG` for thread pool (threaded mode) or engine group (process mode)
- `SV` for service task
- `PS` for process
- `DF` for user-defined default execution class

If you do not specify an `<object_type>` or specify an `<object_type >`of null, `sp_showcontrolinfo` displays information about all types.

`<object_name>`

is the name of the application, login, stored procedure, or engine group. Do not specify an `<object_name>` if you specify `PS` or `DF` as the `<object_type>`. If you do not specify an `<object_name>` (or specify an `<object_name>` of `null`), `sp_showcontrolinfo` displays information about all object names.

`<spid>`

is the SAP ASE process ID. Specify a `spid` only if you specify `PS` as the `<object_type>`. If you do not specify a `spid` (or specify a `spid` of `null`), `sp_showcontrolinfo` displays information for all `spid`s. Use `sp_who` to see `spid`s.

Examples

Example 1

Shows all user-assigned execution class-to-object bindings:

```
sp_showcontrolinfo
```

Example 2

Displays the execution class of the isql application:

```
sp_showcontrolinfo 'AP', 'isql'
```

Example 3

Displays the execution class for all processes assigned to thread pools:

```
sp_showcontrolinfo 'PS'
```

Example 4

Displays the execution class for spid 7:

```
sp_showcontrolinfo 'PS', null, 7
```

Usage

There are additional considerations when using sp_showcontrolinfo:

- When used with no parameters, sp_showcontrolinfo displays information about all user-assigned thread pool assignments, bound client applications, logins, and stored procedures. When used with the <object_type> parameter, sp_showcontrolinfo provides information on an individual basis about application, login, or stored procedure bindings to an execution class, thread pool compositions, and session-level attribute bindings. See *Distributing Engine Resources* in the *Performance and Tuning Series: Basics*.
- When run in process mode, sp_showcontrolinfo replaces thread_pool with the engine_group and engine columns.
- Unless object_type is PR, execute sp_showcontrolinfo from the master database. If object_type is PR, execute sp_showcontrolinfo from the database in which the procedure resides.
- If <object_type >is:
  - null – sp_showcontrolinfo displays execution class information for objects that match the other parameters.
  - DF – <object_name> and spid should be null, and sp_showcontrolinfo shows information about the user-defined default execution class.
- If <object_name> is null, sp_showcontrolinfo displays the binding information for all applications, logins, and stored procedures.
- If <spid> is null, sp_showcontrolinfo displays execution class information for objects that match the other parameters.

See also isql in the *Utility Guide*.

Permissions

Any user can execute `sp_showcontrolinfo`. Permission checks do not differ based on the granular permissions settings.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_addexeclass [page 35]
sp_bindexeclass [page 110]
sp_clearpsexe [page 161]
sp_dropengine [page 294]
sp_dropexeclass [page 296]
sp_showexeclass [page 743]
sp_showpsexe [page 763]
sp_unbindexeclass [page 824]
sp_who [page 846]

1.243 sp_showexeclass

Displays the execution class attributes and the thread pool name associated with the specified execution class.

Considerations for Process Mode

In process mode, `sp_showexeclass` displays the execution class attributes and the engines in any engine group associated with the specified execution class.

Syntax

```
sp_showexeclass [<execlassname>]
```

Parameters

<execlassname>

is the name of an execution class.

Examples

Example 1

Displays the priority and thread pool for all execution classes:

```
sp_showexeclass
```

```
classname              priority      threadpool
-------------------    ---------     ----------------
EC1                         HIGH    syb_default_pool
EC2                       MEDIUM    syb_default_pool
EC3                             LOW     syb_default_pool
```

Example 2

Displays the attribute values of execution class `EC1`:

```
sp_showexeclass 'EC1'
```

```
classname              priority      threadpool
-------------------    ---------     ----------------
EC1                           HIGH      syb_default_pool
```

Usage

If `<execlassname>` is NULL or absent, `sp_showexeclass` displays the priority and thread pool attribute values for all execution classes, including the attribute values of the system-defined classes `EC1`, `EC2`, and `EC3`.

Permissions

Any user can execute `sp_showexeclass`. Permission checks do not differ based on the granular permissions settings.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_addexeclass [page 35]
sp_bindexeclass [page 110]
sp_dropexeclass [page 296]
sp_showcontrolinfo [page 741]
sp_unbindexeclass [page 824]

1.244 sp_showoptstats

Similar in function to the `optdiag` standalone utility in an XML document but in a system procedure format, `sp_showoptstats` extracts and displays statistics and histograms for various data objects from system tables such as `systabstats` and `sysstatistics`.

Syntax

```
sp_showoptstats
[[<database_name>.[<owner>].]{<table_name>|<prs_name>}]
,[<column_name>], [h]
```

Parameters

`<database_name>`

is the name of the database for which `sp_showoptstats` displays statistics and histograms. `<dbname>` has these restrictions:

- Cross-database execution is not supported
- You must currently be in the specified database to execute `sp_showoptstats`.
- If you do not specify a database, `sp_showoptstats` displays statistics and histograms about the current database

`<owner>`

is the name of the table owner. If owner name is not specified, the current user or dbo is used. displays statistics and histograms.

<table_name>

is the name of the table for which sp_showoptstats<table_name> has these restrictions:

- If you do not specify a table, sp_showoptstats displays statistics and histograms about all tables in the current database. However, to reduce the length of output, sp_showoptstats does not display column statistics and histograms are at database level.
- <table_name> must exist in the current database.

<prs_name>

displays the name of the precomputed result set for which you are displaying statistics.

- No parameter – includes statistical information for all precomputed result sets in the current database.
- A precomputed result set – includes statistical information for precomputed result sets.

<column_name>

is the name of the column for which the SAP ASE server displays statistics and histograms. If you do not specify a column, the SAP ASE server displays the statistics for all columns and all indexes on the table you specify. If you specify a <column_name>, sp_showoptstats displays statistics and histograms for only this column

h

displays help information about the procedure.

Examples

Example 1

Displays statistics for all user tables in the pubs2 database:

```
1> use pubs2
2> go
1> sp_showoptstats 'pubs2..publishers'
2> go
```

Example 2

Displays statistics and histograms for the publishers table in the pubs2 database, in XML format:

```
1> sp_showoptstats publishers
```

```
 <?xml version="1.0" encoding="UTF-8"?>
<optStats>
  <procVersion>sp_showoptstats/1.1/AnyPlatform/AnyOS/Tues April 3 14:21:21
      2012</procVersion>
  <serverVersion>SAP ASE/15.7.0/EBF 20161 SMP ESD#02
      Prelim#2/P/x86_64/Enterprise Linux/ase157x/3087/64-bit/FBO/Tue
      May 15 05:35:01 2012</serverVersion>
    <serverName></serverName>
    <specifiedDatabase>pubs2</specifiedDatabase>
    <specifiedTableOwner></specifiedTableOwner>
    <specifiedTable>publishers</specifiedTable>
    <specifiedCol></specifiedCol>
    <tables>
        <tableOwner>dbo</tableOwner>
        <tableName>publishers</tableName>
        <clusteredIndStats>
            <indName>pubind</indName>
            <colList>"pub_id"</colList>
            <stats>
                <pgCnt>1</pgCnt>
                <emptyPgCnt>0</emptyPgCnt>
                <rowCnt>3.0000000000000000</rowCnt>
                <fwdRowCnt>0.0000000000000000</fwdRowCnt>
                <delRowCnt>0.0000000000000000</delRowCnt>
                <CRCnt>1.0000000000000000</CRCnt>
                <oamAllocPgCnt>2</oamAllocPgCnt>
                <firstExtLeafPgs>0</firstExtLeafPgs>
                <dataRowSz>39.333333333333357</dataRowSz>
                <indHeight>1</indHeight>
                <joinDegree>0.0000000000000000</joinDegree>
                <unusedPgCnt>14</unusedPgCnt>
                <oamPgCnt>1</oamPgCnt>
                <derivedStats>
                    <clusterRatio>0.0000000000000000</clusterRatio>
                    <spaceUtil>0.0072162426614481</spaceUtil>
                    <IOEfficiency>0.5000000000000000</IOEfficiency>
                </derivedStats>
            </stats>
        </clusteredIndStats>
        <colStats>
            <colName>pub_id</colName>
            <lastUpdate>May 15 2012  4:44:40:136PM</lastUpdate>
            <cellDensity>0.3333333333333333</cellDensity>
            <totalDensity>0.3333333333333333</totalDensity>
            <select>default used (0.33)</select>
            <inBetSel>default used (0.25)</inBetSel>
            <rangeVal>0.3333333333333333</rangeVal>
            <totalVal>0.3333333333333333</totalVal>
            <avgColWidth>default used (4.00)</avgColWidth>
            <statsVer>4</statsVer>
            <histogram>
                <colName>pub_id</colName>
                <dataType>char(4)</dataType>
                <requestedStepCnt>20</requestedStepCnt>
                <actualStepCnt>6</actualStepCnt>
                <samplingPct>0</samplingPct>
                <TuningFact>20</TuningFact>
                <steps>
                    <step>1</step>
                    <weight>0.00000000</weight>
                    <equation>&lt;</equation>
                    <value>"0736"</value>
                </steps>
                <steps>
                    <step>2</step>
                    <weight>0.33333334</weight>
                    <equation>=</equation>
                    <value>"0736"</value>
                </steps>
                <steps>
                    <step>3</step>
                    <weight>0.00000000</weight>
                    <equation>&lt;</equation>
                    <value>"0877"</value>
                </steps>
                <steps>
                    <step>4</step>
                    <weight>0.33333334</weight>
                    <equation>=</equation>
                    <value>"0877"</value>
                </steps>
                <steps>
                    <step>5</step>
                    <weight>0.00000000</weight>
                    <equation>&lt;</equation>
                    <value>"1389"</value>
                </steps>
                <steps>
                    <step>6</step>
                    <weight>0.33333334</weight>
                    <equation>=</equation>
                    <value>"1389"</value>
                </steps>
            </histogram>
        </colStats>
        <noStatsCol>city,pub_name,state
        </noStatsCol>
    </tables>
</optStats>
```

Example 3

Shows the syntax of the procedure:

```
1> sp_showoptstats a,b,h
2> go
```

```
Usage: sp_showoptstats  [[database.[owner].]table], [column], [option]
(return status = 0)
```

Example 4

Shows output for the `prs1` precomputed result set:

```
sp_showoptstats prs1
------------------------------------------------------------------------
 <?xml version="1.0" encoding="UTF-8"?>
 <optStats>
    <procVersion>sp_showoptstats/1.1/AnyPlatform/AnyOS/
                 Tues April 3 14:21:21 2012</procVersion>
    <serverVersion>Adaptive Server Enterprise/15.7.1/EBFXXXXX SMP
     ''/P/x86_64/Enterprise Linux/asecarina/ENG/64-bit/DEBUG/Mon
     Jul 9 00:16:37 2012</serverVersion>
    <serverName></serverName>
    <specifiedDatabase>prsdb</specifiedDatabase>
    <specifiedTableOwner></specifiedTableOwner>
    <specifiedTable>prs1</specifiedTable>
    <specifiedCol></specifiedCol>
    <tables>
        <tableOwner>dbo</tableOwner>
        <tableName>prs1</tableName>
        <tableType>precomputed result set</tableType>
        <tableStats>
 . . .
        </noStatsCol>
    </tables>
 </optStats>
```

Usage

There are additional considerations when using `sp_showoptstats`:

- You cannot execute `sp_showoptstats` across databases.
- `sp_showoptstats` does not include the system tables unless you explicitly specify them.
- Nonprintable and `univarchar` characters appear in hexidecimal format.
- `sp_showoptstats` displays both global and partition-level statistics.
- When the output is larger than the value you set for `@@textsize`, the SAP ASE server returns a message to increase the `@@textsize` setting so that it can display the large output.
- Parameter values that include a period (.) require double quotation marks.
- You can issue `sp_showoptstats` against system tables.
- `sp_showoptstats` does not return statistical information if you specify only the database and owner.

The DTD file for the XML output of `sp_showoptstats` is:

```
<?xml version="1.0" encoding="UTF-8"?>
<!ELEMENT optStats (procVersion, serverVersion, serverName?, specifiedDatabase?,
   specifiedTableOwner?, specifiedTable?, specifiedCol?, tables*)>
<!ELEMENT procVersion (#PCDATA)>
<!ELEMENT serverVersion (#PCDATA)>
<!ELEMENT serverName (#PCDATA)>
<!ELEMENT specifiedDatabase (#PCDATA)>
<!ELEMENT specifiedTableOwner (#PCDATA)>
<!ELEMENT specifiedTable (#PCDATA)>
<!ELEMENT specifiedCol (#PCDATA)>
<!ELEMENT tables (tableOwner, tableName, partitionCnt?,
  (tableStats|clusteredIndStats|indStats|partitionStats|
   partitionClusteredIndStats|partitionIndStats)*,
  (colStats|colPartitionStats)*, noStatsCol?)>
<!ELEMENT tableOwner (#PCDATA) >
<!ELEMENT tableName (#PCDATA) >
<!ELEMENT tableStats (tableName, stats)>
<!ELEMENT clusteredIndStats (indName, colList, stats)>
<!ELEMENT indName (#PCDATA) >
<!ELEMENT colList (#PCDATA) >
<!ELEMENT partitionStats (partition*, stats*)>
<!ELEMENT partition (#PCDATA) >
<!ELEMENT partitionIndStats (indName, partition, colList, stats)>
<!ELEMENT partitionClusteredIndStats (indName, partition, colList, stats)>
<!ELEMENT stats (pgCnt?, leafCnt?, (emptyPgCnt|emptyLeafCnt)?, CRCnt?,
   indCRCnt?, indPgCRCnt?, (dataRowCRCnt|leafRowCRCnt)?, rowCnt?, fwdRowCnt?,
   delRowCnt?, indPgCRCnt?, CRCnt?, oamAllocPgCnt?,
   (firstExtDataPgs|firstExtLeafPgs)?, (dataRowSz|leafRowSz)?, indHeight?,
   dataPages?, joinDegree?, unusedPgCnt?, oamPgCnt?, derivedStats?) >
<!ELEMENT pgCnt (#PCDATA) >
<!ELEMENT leafCnt (#PCDATA) >
<!ELEMENT CRCnt (#PCDATA) >
<!ELEMENT indCRCnt (#PCDATA) >
<!ELEMENT dataRowCRCnt (#PCDATA) >
<!ELEMENT leafRowCRCnt (#PCDATA) >
<!ELEMENT emptyPgCnt (#PCDATA) >
<!ELEMENT emptyLeafCnt (#PCDATA) >
<!ELEMENT rowCnt (#PCDATA) >
<!ELEMENT fwdRowCnt (#PCDATA) >
<!ELEMENT delRowCnt (#PCDATA) >
<!ELEMENT oamAllocPgCnt (#PCDATA) >
<!ELEMENT firstExtDataPgs (#PCDATA) >
<!ELEMENT firstExtLeafPgs (#PCDATA) >
<!ELEMENT dataRowSz (#PCDATA) >
<!ELEMENT leafRowSz (#PCDATA) >
<!ELEMENT indHeight (#PCDATA) >
```

```
<!ELEMENT dataPages (#PCDATA) >
<!ELEMENT joinDegree (#PCDATA) >
<!ELEMENT unusedPgCnt (#PCDATA) >
<!ELEMENT oamPgCnt (#PCDATA) >
<!ELEMENT rowClusterRatio (#PCDATA) >
<!ELEMENT derivedStats (clusterRatio, indClusterRatio?,
   (dataClusterRatio|rowClusterRatio)?, spaceUtil?, IOEfficiency?) >
<!ELEMENT clusterRatio (#PCDATA) >
<!ELEMENT indClusterRatio (#PCDATA) >
<!ELEMENT dataClusterRatio (#PCDATA) >
<!ELEMENT spaceUtil (#PCDATA) >
<!ELEMENT IOEfficiency (#PCDATA) >
<!ELEMENT indStats (indName, colList, stats?) >

<!ELEMENT colStats ((colName|colGroup)?, lastUpdate?, cellDensity?,
   totalDensity?, select?, inBetSel?, rangeVal?, totalVal?, avgColWidth?,
   statsVer? statsSamDen?, statsSamU?, histogram?) >

<!ELEMENT colGroup (#PCDATA) >
<!ELEMENT lastUpdate (#PCDATA) >
<!ELEMENT cellDensity (#PCDATA) >
<!ELEMENT totalDensity (#PCDATA) >
<!ELEMENT selectivity (#PCDATA) >
<!ELEMENT inBetweenSelectivity (#PCDATA) >
<!ELEMENT rangeVal (#PCDATA) >
<!ELEMENT totalVal (#PCDATA) >
<!ELEMENT avgColWidth (#PCDATA) >
<!ELEMENT statsVer (#PCDATA) >
<!ELEMENT statsSamDen (#PCDATA) >
<!ELEMENT statsSamU (#PCDATA) >
<!ELEMENT colPartitionStats (ptnName,(colName|colGroup)?, lastUpdate?,
   cellDensity?, totalDensity?, select?, inBetSel?, rangeVal?, totalVal?,
   avgColWidth?, statsVer? statsSamDen?, statsSamU?, histogram?) >
<!ELEMENT ptnName (#PCDATA) >
<!ELEMENT histogram (colName, dataType, requestedStepCnt, actualStepCnt,
   samplingPct?, TuningFact?, statsOutRan?, statsHashLow?, statsHashHigh?,
   statsSamSt?, statsStepSt?, statsHtSt?, statsPHashSt?, statsHashSt?,
   statsNoHashSt?, steps*) >
<!ELEMENT colName (#PCDATA) >
<!ELEMENT dataType (#PCDATA) >
<!ELEMENT requestedStepCnt (#PCDATA) >
<!ELEMENT actualStepCnt (#PCDATA) >
<!ELEMENT samplingPct (#PCDATA) >
<!ELEMENT TuningFact (#PCDATA) >
<!ELEMENT statsOutRan (#PCDATA) >
<!ELEMENT statsHashLow (#PCDATA) >
<!ELEMENT statsHashHigh (#PCDATA) >
<!ELEMENT statsSamSt (#PCDATA) >
<!ELEMENT statsStepSt (#PCDATA) >
<!ELEMENT statsHtSt (#PCDATA) >
<!ELEMENT statsPHashSt (#PCDATA) >
<!ELEMENT statsHashSt (#PCDATA) >
<!ELEMENT statsNoHashSt (#PCDATA) >
<!ELEMENT steps (step, weight, equation, value) >
<!ELEMENT step (#PCDATA) >
<!ELEMENT weight (#PCDATA) >
<!ELEMENT equation (#PCDATA) >
<!ELEMENT value (#PCDATA) >
<!ELEMENT noStatsCol (#PCDATA) >
```

See also:

- *Statistics Tables and Displaying Statistics with optdiag* in *Performance and Tuning Series: Improving Performance with Statistical Analysis*
- `optdiag` in the *Utility Guide*

Permissions

Any user can execute `sp_showoptstats`. Permission checks do not differ based on the granular permissions settings.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

1.245 sp_showplan

Displays the `showplan` output for any user connection for the current SQL statement or for a previous statement in the same batch.

Syntax

```
sp_showplan <spid>, <batch_id> output,
    <context_id> output,
    <stmt_num> output,
     <display_level>
```

To display the showplan output for the current SQL statement without specifying the `batch_id`, `context_id`, or `stmt_num`:

```
sp_showplan <spid>, null, null, null
```

Parameters

`<spid>`

is the process ID for any user connection. Use `sp_who` to see `spid`s.

`<batch_id>`

is a unique, nonnegative number for a batch

`<context_id>`

is a unique number for every procedure (or trigger) executed in a batch.

`<stmt_num>`

is the number of the current statement within a batch. The <stmt_num> must be a positive number.

<display_level>

determines how sp_showplan displays the operator tree and resource statistics. One of:

- short – prints resource statistics output which includes rows affected, object list, and number of rows in the object list
- full – prints the operator tree in output, including total rows
- long – prints the operator tree, which includes total rows, and prints resource statistics, which includes rows affected, object list, and number of rows in the object list in output

If you do not provide a value for <display_level>, sp_showplan displays the minimal level of output.

If you set the <display_level> to short, full, or long, the output prints the datachange counters for tables. The datachange counter indicates if the statistic of a table is stale. The output also prints the datachange counters for tables when you execute the sp_p or sp_sp system stored procedure.

Examples

Example 1

Displays the query plan for the current statement running in the user session with a <spid> value of 99, as well as values for the <batch_id>, <context_id>, and <statement_id> parameters. These values can be used to retrieve query plans in subsequent iterations of sp_showplan for the user session with a <spid> of 99:

```
declare @batch int
declare @context int
declare @statement int
exec sp_showplan 99, @batch output, @context output, @statement output
```

Example 2

Displays the showplan output for the current statement running in the user session with a <spid> parameters. These values can be used to retrieve value of 99:

```
sp_showplan 99, null, null, null
```

Example 3

Displays the operator tree and the resource statistics for spid number 62:

```
sp_showplan 62, null, null, null, 'long'
```

Example 4

Displays the shortened showplan output for <spid> number of 112:

```
sp_showplan 112, @display_lvl="short"
```

```




------------------------------------------------------------------------------
------------------------------------------------------------------------------
------------------------------------------------------------------------------
------------------------------------------------------------------------------
------------------------------------------------------------------------------
------------------------------------------------------------------------------
--------------------------------------------
select a.au_lname, pv.title, sv.qty, sv.stor_name from authors a, titleauthor
ta, pubsview pv, storesview sv where a.au_id = ta.au_id and ta.title_id =
pv.title_id and pv.title_id =
sv.title_id

(1 row affected)
Tables:
TABLE:          [stores]                rows: 7         use count: 1
datachange: 100
TABLE:          [salesdetail]           rows: 116       use count: 1
datachange: 0
TABLE:          [sales]                 rows: 30        use count: 1
datachange: 0
TABLE:          [authors]               rows: 23        use count: 1
datachange: 0
TABLE:          [titleauthor]           rows: 25        use count: 1
datachange: 0
TABLE:          [titles]                rows: 18        use count: 1
datachange: 0
TABLE:          [publishers]            rows: 3         use count: 1
datachange: 0
total number of tables used: 7
total number of worktables: 1
Views:
VIEW:           [pubsview]              use count: 1    merged
VIEW:           [storesview]            use count: 1    materialized
total number of views used: 2
total number of views materialized: 1
Proccache used during compilation: 348 .
Total estimated LIO: 1330.425382 .
Total estimated PIO: 42.318160 .
Total estimated CPU time: 22368.677267 .
Query has started at: 2018/06/13 09:53:33.72 .
Query is running for: 1010 ms.
Rows affected: 21
(return status = 0)
```

Example 5

Displays the full `showplan` output for `<spid>` number of 133:

```
sp_showplan 133, @display_lvl="full"




------------------------------------------------------------------------------
------------------------------------------------------------------------------
------------------------------------------------------------------------------
------------------------------------------------------------------------------
------------------------------------------------------------------------------
------------------------------------------------------------------------------
--------------------------------------------
select a.au_lname, pv.title, sv.qty, sv.stor_name from authors a, titleauthor
ta, pubsview pv, storesview sv where a.au_id = ta.au_id and ta.title_id =
pv.title_id and pv.title_id =
sv.title_id

(1 row affected)
Tables:
TABLE:          [stores]                rows: 7         use count: 1
datachange: 100
TABLE:          [salesdetail]           rows: 116       use count: 1
datachange: 0
TABLE:          [sales]                 rows: 30        use count: 1
datachange: 0
TABLE:          [authors]               rows: 23        use count: 1
datachange: 0
TABLE:          [titleauthor]           rows: 25        use count: 1
datachange: 0
TABLE:          [titles]                rows: 18        use count: 1
datachange: 0
TABLE:          [publishers]            rows: 3         use count: 1
datachange: 0
total number of tables used: 7
total number of worktables: 1
Views:
VIEW:           [pubsview]              use count: 1    merged
VIEW:           [storesview]            use count: 1    materialized
total number of views used: 2
total number of views materialized: 1
Final abstract plan text:
        ( nl_join ( nl_join ( nl_join ( nl_join ( i_scan auidind ( table ( a
authors ) ) ) ( i_scan taind ( table ( ta titleauthor ) ) ) ) ( i_scan
titleidind titles ) ) ( i_scan pubind publishers ) ) ( store_index
( group_hashing ( nl_join ( nl_join ( t_scan sto
         res ) ( i_scan salesdetailind salesdetail ) ) ( i_scan salesind
sales ) ) ) ) ) ( prop ( table ( a authors ) ) ( parallel 1 ) ( prefetch 4 )
( lru ) ) ( prop ( table ( ta titleauthor ) ) ( parallel 1 ) ( prefetch 4 )
( lru ) ) ( prop titles ( parallel 1
         ) ( prefetch 4 ) ( lru ) ) ( prop publishers ( parallel 1 )
( prefetch 4 ) ( lru ) ) ( prop stores ( parallel 1 ) ( prefetch 4 )
( lru ) ) ( prop salesdetail ( parallel 1 ) ( prefetch 4 ) ( lru ) ) ( prop
sales ( parallel 1 ) ( prefetch 4 ) ( lru ) )
QUERY PLAN FOR STATEMENT 1 (at line 1).
Optimized using Serial Mode
    STEP 1
==================== Lava Operator Tree ====================
============================================================
        The type of query is SELECT.
        14 operator(s) under root
       |ROOT:EMIT Operator (VA = 14)
       |
       |   |SEQUENCER Operator (Sequential Mode)(VA = 13) has 2 children.
       |   |
       |   |   |STORE Operator (VA = 6)
       |   |   |  Worktable2 created, in allpages locking mode, for
REFORMATTING.
       |   |   |  Creating clustered index.
       |   |   |
       |   |   |   |INSERT Operator (VA = 5)
       |   |   |   |  The update mode is direct.
       |   |   |   |
       |   |   |   |   |HASH VECTOR AGGREGATE Operator (VA = 4)
       |   |   |   |   |  GROUP BY
       |   |   |   |   |  Evaluate Grouped SUM OR AVERAGE AGGREGATE.
       |   |   |   |   | Using Worktable1 for internal storage.
       |   |   |   |   |  Key Count: 3
       |   |   |   |   |
       |   |   |   |   |   |N-ARY NESTED LOOP JOIN Operator (VA = 3) has 3
children.
       |   |   |   |   |   |
       |   |   |   |   |   |   |SCAN Operator (VA = 0)
       |   |   |   |   |   |   |  FROM TABLE
       |   |   |   |   |   |   |  stores
       |   |   |   |   |   |   |  (Total Rows: 7)
       |   |   |   |   |   |   |  Table Scan.
       |   |   |   |   |   |   |  Forward Scan.
       |   |   |   |   |   |   |  Positioning at start of table.
       |   |   |   |   |   |   |  Using I/O Size 4 Kbytes for data pages.
       |   |   |   |   |   |   |  With LRU Buffer Replacement Strategy for
data pages.
       |   |   |   |   |   |
       |   |   |   |   |   |   |SCAN Operator (VA = 1)
       |   |   |   |   |   |   |  FROM TABLE
       |   |   |   |   |   |   |  salesdetail
       |   |   |   |   |   |   |  (Total Rows: 116)
      |   |   |   |   |   |   |  Index : salesdetailind
       |   |   |   |   |   |   |  Forward Scan.
       |   |   |   |   |   |   |  Positioning by key.
       |   |   |   |   |   |   |  Keys are:
       |   |   |   |   |   |   |    stor_id ASC
       |   |   |   |   |   |   |  Using I/O Size 4 Kbytes for index leaf
pages.
       |   |   |   |   |   |   |  With LRU Buffer Replacement Strategy for
index leaf pages.
       |   |   |   |   |   |   |  Using I/O Size 4 Kbytes for data pages.
       |   |   |   |   |   |   |  With LRU Buffer Replacement Strategy for
data pages.
       |   |   |   |   |   |
       |   |   |   |   |   |   |SCAN Operator (VA = 2)
       |   |   |   |   |   |   |  FROM TABLE
       |   |   |   |   |   |   |  sales
       |   |   |   |   |   |   |  (Total Rows: 30)
       |   |   |   |   |   |   |  Using Clustered Index.
       |   |   |   |   |   |   |  Index : salesind
       |   |   |   |   |   |   |  Forward Scan.
       |   |   |   |   |   |   |  Positioning by key.
       |   |   |   |   |   |   |  Index contains all needed columns. Base
table will not be read.
       |   |   |   |   |   |   |  Keys are:
       |   |   |   |   |   |   |    stor_id ASC
       |   |   |   |   |   |   |  Using I/O Size 4 Kbytes for index leaf
pages.
       |   |   |   |   |   |   |  With LRU Buffer Replacement Strategy for
index leaf pages.
       |   |   |   |
       |   |   |   |  TO TABLE
       |   |   |   |  Worktable2.
       |   |
       |   |   |N-ARY NESTED LOOP JOIN Operator (VA = 12) has 5 children.
       |   |   |
       |   |   |   |SCAN Operator (VA = 7)
       |   |   |   |  FROM TABLE
       |   |   |   |  authors
       |   |   |   |  a
       |   |   |   |  (Total Rows: 23)
       |   |   |   |  Using Clustered Index.
       |   |   |   |  Index : auidind
       |   |   |   |  Forward Scan.
       |   |   |   |  Positioning at index start.
       |   |   |   |  Using I/O Size 4 Kbytes for index leaf pages.
       |   |   |   |  With LRU Buffer Replacement Strategy for index leaf
pages.
       |   |   |   |  Using I/O Size 4 Kbytes for data pages.
       |   |   |   |  With LRU Buffer Replacement Strategy for data pages.
       |   |   |
       |   |   |   |SCAN Operator (VA = 8)
       |   |   |   |  FROM TABLE
       |   |   |   |  titleauthor
       |   |   |   |  ta
       |   |   |   |  (Total Rows: 25)
       |   |   |   |  Using Clustered Index.
       |   |   |   |  Index : taind
       |   |   |   |  Forward Scan.
       |   |   |   |  Positioning by key.
       |   |   |   |  Index contains all needed columns. Base table will not
be read.
       |   |   |   |  Keys are:
       |   |   |   |    au_id ASC
       |   |   |   |  Using I/O Size 4 Kbytes for index leaf pages.
       |   |   |   |  With LRU Buffer Replacement Strategy for index leaf
pages.
       |   |   |
       |   |   |   |SCAN Operator (VA = 9)
       |   |   |   |  FROM TABLE
       |   |   |   |  titles
       |   |   |   |  from view: pubsview
       |   |   |   |  (Total Rows: 18)
       |   |   |   |  Using Clustered Index.
       |   |   |   |  Index : titleidind
       |   |   |   |  Forward Scan.
       |   |   |   |  Positioning by key.
       |   |   |   |  Keys are:
       |   |   |   |    title_id ASC
       |   |   |   |  Using I/O Size 4 Kbytes for index leaf pages.
       |   |   |   |  With LRU Buffer Replacement Strategy for index leaf
pages.
       |   |   |   |  Using I/O Size 4 Kbytes for data pages.
       |   |   |   |  With LRU Buffer Replacement Strategy for data pages.
       |   |   |
       |   |   |   |SCAN Operator (VA = 10)
       |   |   |   |  FROM TABLE
       |   |   |   |  publishers
       |   |   |   |  from view: pubsview
       |   |   |   |  (Total Rows: 3)
       |   |   |   |  Using Clustered Index.
       |   |   |   |  Index : pubind
       |   |   |   |  Forward Scan.
       |   |   |   |  Positioning by key.
       |   |   |   |  Index contains all needed columns. Base table will not
be read.
       |   |   |   |  Keys are:
       |   |   |   |    pub_id ASC
       |   |   |   |  Using I/O Size 4 Kbytes for index leaf pages.
       |   |   |   |  With LRU Buffer Replacement Strategy for index leaf
pages.
       |   |   |
       |   |   |   |SCAN Operator (VA = 11)
       |   |   |   |  FROM TABLE
       |   |   |   |  Worktable2.
       |   |   |   |  Using Clustered Index.
       |   |   |   |  Forward Scan.
       |   |   |   |  Positioning by key.
       |   |   |   |  Using I/O Size 4 Kbytes for data pages.
       |   |   |   |  With LRU Buffer Replacement Strategy for data pages.
Query has started at: 2018/06/15 10:18:36.73 .
Query is running for: 0 ms.
Rows affected: 95
(return status = 0)
```

Example 6

Displays the long `showplan` output for `<spid>` number of 133:

```
sp_showplan 133, @display_lvl="long"
```

```
--------------------------------------------------------------------------------
--------------------------------------------------------------------------------
--------------------------------------------------------------------------------
--------------------------------------------------------------------------------
--------------------------------------------------------------------------------
--------------------------------------------------------------------------------
--------------------------------------------
select a.au_lname, pv.title, sv.qty, sv.stor_name from authors a, titleauthor
ta, pubsview pv, storesview sv where a.au_id = ta.au_id and ta.title_id =
pv.title_id and pv.title_id =
sv.title_id

(1 row affected)
Tables:
TABLE:          [stores]                rows: 7         use count: 1
datachange: 100
TABLE:          [salesdetail]           rows: 116       use count: 1
datachange: 0
TABLE:          [sales]                 rows: 30        use count: 1
datachange: 0
TABLE:          [authors]               rows: 23        use count: 1
datachange: 0
TABLE:          [titleauthor]           rows: 25        use count: 1
datachange: 0
TABLE:          [titles]                rows: 18        use count: 1
datachange: 0
TABLE:          [publishers]            rows: 3         use count: 1
datachange: 0
total number of tables used: 7
total number of worktables: 1
Views:
VIEW:           [pubsview]              use count: 1    merged
VIEW:           [storesview]            use count: 1    materialized
total number of views used: 2
total number of views materialized: 1
Final abstract plan text:
        ( nl_join ( nl_join ( nl_join ( nl_join ( i_scan auidind ( table ( a
authors ) ) ) ( i_scan taind ( table ( ta titleauthor ) ) ) ) ( i_scan
titleidind titles ) ) ( i_scan pubind publishers ) ) ( store_index
( group_hashing ( nl_join ( nl_join ( t_scan sto
         res ) ( i_scan salesdetailind salesdetail ) ) ( i_scan salesind
sales ) ) ) ) ) ( prop ( table ( a authors ) ) ( parallel 1 ) ( prefetch 4 )
( lru ) ) ( prop ( table ( ta titleauthor ) ) ( parallel 1 ) ( prefetch 4 )
( lru ) ) ( prop titles ( parallel 1
         ) ( prefetch 4 ) ( lru ) ) ( prop publishers ( parallel 1 )
( prefetch 4 ) ( lru ) ) ( prop stores ( parallel 1 ) ( prefetch 4 )
( lru ) ) ( prop salesdetail ( parallel 1 ) ( prefetch 4 ) ( lru ) ) ( prop
sales ( parallel 1 ) ( prefetch 4 ) ( lru ) )
QUERY PLAN FOR STATEMENT 1 (at line 1).
Optimized using Serial Mode
    STEP 1
==================== Lava Operator Tree ====================
============================================================
        The type of query is SELECT.
        14 operator(s) under root
       |ROOT:EMIT Operator (VA = 14)
       |
       |   |SEQUENCER Operator (Sequential Mode)(VA = 13) has 2 children.
       |   |
       |   |   |STORE Operator (VA = 6)
       |   |   |  Worktable2 created, in allpages locking mode, for
REFORMATTING.
       |   |   |  Creating clustered index.
       |   |   |
       |   |   |   |INSERT Operator (VA = 5)
       |   |   |   |  The update mode is direct.
       |   |   |   |
       |   |   |   |   |HASH VECTOR AGGREGATE Operator (VA = 4)
       |   |   |   |   |  GROUP BY
       |   |   |   |   |  Evaluate Grouped SUM OR AVERAGE AGGREGATE.
       |   |   |   |   | Using Worktable1 for internal storage.
       |   |   |   |   |  Key Count: 3
       |   |   |   |   |
       |   |   |   |   |   |N-ARY NESTED LOOP JOIN Operator (VA = 3) has 3
children.
       |   |   |   |   |   |
       |   |   |   |   |   |   |SCAN Operator (VA = 0)
       |   |   |   |   |   |   |  FROM TABLE
       |   |   |   |   |   |   |  stores
       |   |   |   |   |   |   |  (Total Rows: 7)
       |   |   |   |   |   |   |  Table Scan.
       |   |   |   |   |   |   |  Forward Scan.
       |   |   |   |   |   |   |  Positioning at start of table.
       |   |   |   |   |   |   |  Using I/O Size 4 Kbytes for data pages.
       |   |   |   |   |   |   |  With LRU Buffer Replacement Strategy for
data pages.
       |   |   |   |   |   |
       |   |   |   |   |   |   |SCAN Operator (VA = 1)
       |   |   |   |   |   |   |  FROM TABLE
       |   |   |   |   |   |   |  salesdetail
       |   |   |   |   |   |   |  (Total Rows: 116)
       |   |   |   |   |   |   |  Index : salesdetailind
       |   |   |   |   |   |   |  Forward Scan.
       |   |   |   |   |   |   |  Positioning by key.
       |   |   |   |   |   |   |  Keys are:
       |   |   |   |   |   |   |    stor_id ASC
       |   |   |   |   |   |   |  Using I/O Size 4 Kbytes for index leaf
pages.
       |   |   |   |   |   |   |  With LRU Buffer Replacement Strategy for
index leaf pages.
       |   |   |   |   |   |   |  Using I/O Size 4 Kbytes for data pages.
       |   |   |   |   |   |   |  With LRU Buffer Replacement Strategy for
data pages.
       |   |   |   |   |   |
       |   |   |   |   |   |   |SCAN Operator (VA = 2)
       |   |   |   |   |   |   |  FROM TABLE
       |   |   |   |   |   |   |  sales
       |   |   |   |   |   |   |  (Total Rows: 30)
       |   |   |   |   |   |   |  Using Clustered Index.
       |   |   |   |   |   |   |  Index : salesind
       |   |   |   |   |   |   |  Forward Scan.
       |   |   |   |   |   |   |  Positioning by key.
       |   |   |   |   |   |   |  Index contains all needed columns. Base
table will not be read.
       |   |   |   |   |   |   |  Keys are:
       |   |   |   |   |   |   |    stor_id ASC
       |   |   |   |   |   |   |  Using I/O Size 4 Kbytes for index leaf
pages.
       |   |   |   |   |   |   |  With LRU Buffer Replacement Strategy for
index leaf pages.
       |   |   |   |
       |   |   |   |  TO TABLE
       |   |   |   |  Worktable2.
       |   |
       |   |   |N-ARY NESTED LOOP JOIN Operator (VA = 12) has 5 children.
       |   |   |
       |   |   |   |SCAN Operator (VA = 7)
       |   |   |   |  FROM TABLE
       |   |   |   |  authors
       |   |   |   |  a
       |   |   |   |  (Total Rows: 23)
       |   |   |   |  Using Clustered Index.
       |   |   |   |  Index : auidind
       |   |   |   |  Forward Scan.
       |   |   |   |  Positioning at index start.
       |   |   |   |  Using I/O Size 4 Kbytes for index leaf pages.
       |   |   |   |  With LRU Buffer Replacement Strategy for index leaf
pages.
       |   |   |   |  Using I/O Size 4 Kbytes for data pages.
       |   |   |   |  With LRU Buffer Replacement Strategy for data pages.
       |   |   |
       |   |   |   |SCAN Operator (VA = 8)
       |   |   |   |  FROM TABLE
       |   |   |   |  titleauthor
       |   |   |   |  ta
       |   |   |   |  (Total Rows: 25)
       |   |   |   |  Using Clustered Index.
       |   |   |   |  Index : taind
       |   |   |   |  Forward Scan.
       |   |   |   |  Positioning by key.
       |   |   |   |  Index contains all needed columns. Base table will not
be read.
       |   |   |   |  Keys are:
       |   |   |   |    au_id ASC
       |   |   |   |  Using I/O Size 4 Kbytes for index leaf pages.
       |   |   |   |  With LRU Buffer Replacement Strategy for index leaf
pages.
       |   |   |
       |   |   |   |SCAN Operator (VA = 9)
       |   |   |   |  FROM TABLE
       |   |   |   |  titles
       |   |   |   |  from view: pubsview
       |   |   |   |  (Total Rows: 18)
       |   |   |   |  Using Clustered Index.
       |   |   |   |  Index : titleidind
       |   |   |   |  Forward Scan.
       |   |   |   |  Positioning by key.
       |   |   |   |  Keys are:
       |   |   |   |    title_id ASC
       |   |   |   |  Using I/O Size 4 Kbytes for index leaf pages.
       |   |   |   |  With LRU Buffer Replacement Strategy for index leaf
pages.
       |   |   |   |  Using I/O Size 4 Kbytes for data pages.
       |   |   |   |  With LRU Buffer Replacement Strategy for data pages.
       |   |   |
       |   |   |   |SCAN Operator (VA = 10)
       |   |   |   |  FROM TABLE
       |   |   |   |  publishers
       |   |   |   |  from view: pubsview
       |   |   |   |  (Total Rows: 3)
       |   |   |   |  Using Clustered Index.
       |   |   |   |  Index : pubind
       |   |   |   |  Forward Scan.
       |   |   |   |  Positioning by key.
       |   |   |   |  Index contains all needed columns. Base table will not
be read.
       |   |   |   |  Keys are:
       |   |   |   |    pub_id ASC
       |   |   |   |  Using I/O Size 4 Kbytes for index leaf pages.
       |   |   |   |  With LRU Buffer Replacement Strategy for index leaf
pages.
       |   |   |
       |   |   |   |SCAN Operator (VA = 11)
       |   |   |   |  FROM TABLE
       |   |   |   |  Worktable2.
       |   |   |   |  Using Clustered Index.
       |   |   |   |  Forward Scan.
       |   |   |   |  Positioning by key.
       |   |   |   |  Using I/O Size 4 Kbytes for data pages.
       |   |   |   |  With LRU Buffer Replacement Strategy for data pages.
Proccache used during compilation: 350 .
```

```
Total estimated LIO: 1330.425382 .
Total estimated PIO: 42.318160 .
Total estimated CPU time: 22368.677267 .
Query has started at: 2018/06/15 10:19:04.73 .
Query is running for: 0 ms.
Rows affected: 47
(return status = 0)
```

Usage

There are additional considerations when using `sp_showplan`:

- `sp_showplan` displays the `showplan` output for a currently executing SQL statement or for a previous statement in the same batch. The `Rows affected` output is dynamic, and may change each time you run it because its value is based on the rows affected during the current execution.
- To see the query plan for the previous statement within the same batch, execute `sp_showplan` again with the same parameter values, but subtract 1 from the statement number. Using this method, you can view all the statements in the statement batch back to query number one.
- `sp_showplan` can run in sessions using chained transactions after you use `sp_procxmode` to change the transaction mode to `anymode`.
- If the `<context_id>` is greater than 0 for a SQL batch, the current statement is embedded in a stored procedure (or trigger) called from the original SQL batch. Select the `sysprocesses` row with the same `<spid>` value to display the procedure ID and statement ID.
- To see only the long plan output for any user or connection run the`sp_sp` system stored procedure. For more information, see sp_sp [page 765].
- Issue the`sp_p` system stored procedure to see a shortened `sp_showplan` output consisting of resource statistics output which includes rows affected, object list, and number of rows in the object list. For more information, see sp_p [page 642].

Permissions

The permission checks for `sp_showplan` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `monitor qp performance` privilege or the same user that issued the target process to issue `sp_showplan`.
Disabled	With granular permissions disabled, you must be a user with sa_role or the same user that issued the target process to issue `sp_showplan`.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_who [page 846]
sp_p [page 642]
sp_sp [page 765]

1.246 sp_showprogress

Displays progress of an `update statistics` command.

Syntax

```
sp_showprogress <spid>[, <display_option>]
```

Parameters

`<spid>`

Process ID of the running update statistics command.

`<display_option>`

Determines the amount of information `sp_showprogress` displays. One of:

- `short` – (the default) displays general information about the running `update statistics` command.
- `long` – display detailed information about the running `update statistics` command.

Examples

Example 1

Displays detailed information about the currently running `update statistics` running on spid 15:

```
sp_showprogress 15, 'long'
Session 15 is running:          UPDATE STATISTCIS
Table name:                     BW.SAPSR3.E_10
Starting time:                  Dec  9 2014  9:45:31:850PM
Sampling level:                 50
Histogram tuning factor:        20
Number of consumers:            0
Step count:                     20
Total row number of table:      300000916
Table data scan:
Local index id: 2
Local index id: 3
Local index id: 4
Local index id: 5
Local index id: 6
Local index id: 7
Local index id: 8
        Partition id: 793946369
                Completed in: 23000 ms
                Ratio: 1304761 row/sec
        Partition id: 777946312
                Running time: 7000 ms, Processed 30.2264% of rows
                Ratio: 1294727 row/sec
Total number of scans: 80. Completed: 2.
        Data partitions to scan: 10     Completed: 0
        Global indexes to scan: 0       Completed: 0
        Local indexes to scan: 70       Completed: 2
Overall completion of this process(Based on processed row count): 1.6280%
Total running time: 30000 ms
(return status = 0)
```

Example 2

Displays general information about the currently running `update statistics` running on spid 15:

```
sp_showprogress 15
Session 15 is running:          UPDATE STATISTCIS
Table name:                     BW.SAPSR3.E_10
Starting time:                  Dec  9 2014  9:45:31:850PM
Sampling level:                 50
Histogram tuning factor:        20
Number of consumers:            0
Step count:                     20
Total row number of table:      300000916
Total number of scans: 80. Completed: 5.
        Data partitions to scan: 10     Completed: 0
        Global indexes to scan: 0       Completed: 0
        Local indexes to scan: 70       Completed: 5
Overall completion of this process(Based on processed row count): 5.4461%
Total running time: 102990 ms
(return status = 0)
```

Usage

- sp_showprogress displays the progress currently executing "update statistics" commands.
- sp_showprogress reports an error if the value for <spid> is not valid. In this example, there is no spid with a value of 22 running on the server:

  ```
  sp_showprogress 22
  go
  There is no active server process for the specified spid value '22'.  Possibly
  the user connection has terminated.
  (return status = 1)
  Permissions:
  ```

- sp_showprogress reports an error if the process is running an unsupported command:

  ```
  sp_showprogress 33
  go
  Command 'select @return_value = show_progress(@spid, @display_level)' is
  unsupported
  (return status = 1)
  ```

Permissions

You must have the same user identity as the target process, or you must have the sa_role role or the monitor qp performance permission to execute sp_showprogress

1.247 sp_showpsexe

Displays execution class, current priority, and thread pool affinity for all client sessions running on the SAP ASE server.

Considerations for Process Mode

sp_showpsexe displays engine information instead of task affinity.

Syntax

```
sp_showpsexe [<spid>]
```

Parameters

<spid>

is the SAP ASE session ID for which you want a report. The <spid> must belong to the application or login executing sp_showpsexe. Use sp_who to list spids.

Examples

Example 1

Displays execution class, current priority, and affinity for all current client sessions:

```
sp_showpsexe
```

```
spid   appl_name   login_name   exec_class  current_priority     task_affinity
----   ----------  ----------   ----------  ----------------    ---------------
   5   NULL        NULL         NULL        LOW                  syb_default_po
ol
   6   NULL        NULL         NULL        MEDIUM               syb_default_po
ol
   7   NULL        NULL         NULL        LOW
              syb_default_pool
  26   isql        sa           EC2         MEDIUM               syb_default_po
ol
```

Example 2

Displays the application name, login name, current priority, and engine affinity of the process with spid 5:

```
sp_showpsexe 5
```

```
spid   appl_name   login_name   exec_class  current_priority     task_affinity
----   ----------  ----------   ----------  ----------------    ---------------
  5    NULL         NULL         NULL       LOW                  syb_default_po
ol
```

Usage

There are additional considerations when using sp_showpsexe:

- sp_showpsexe displays execution class, current priority, and affinity for all sessions (objects with an <spid>). See *Distributing Engine Resources* in *Performance and Tuning Series: Basics*.
- If the <spid> is NULL or absent, sp_showpsexe reports on all sessions currently running on the SAP ASE server.
- sp_showpsexe does not report information for the following system processes: deadlock, checkpoint, network, auditing, and mirror handlers. It does display information for the housekeeper <spid.>

Permissions

Any user can execute `sp_showpsexe`. Permission checks do not differ based on the granular permissions settings.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_addengine [page 33]
sp_addexeclass [page 35]
sp_bindexeclass [page 110]
sp_clearpsexe [page 161]
sp_dropengine [page 294]
sp_dropexeclass [page 296]
sp_showcontrolinfo [page 741]
sp_showexeclass [page 743]
sp_unbindexeclass [page 824]

1.248 sp_sp

Displays the extended output of the query plan from the `sp_showplan` system procedure.

Syntax

```
sp_sp <spid>
```

Parameters

spid

is the process id for any user connection. Use `sp_who` to see spids.

Examples

Example 1

Displays the extended `showplan` output for `<spid>` number of 112:

```
sp_sp 112


------------------------------------------------------------------------------
------------------------------------------------------------------------------
-----------------------------------------------------
select a.au_lname, pv.title, sv.qty, sv.stor_name from authors a, titleauthor
ta, pubsview pv, storesview sv where a.au_id = ta.au_id and ta.title_id =
pv.title_id and pv.title_id = sv.title_id
(1 row affected)
Tables:
TABLE:          [stores]                rows: 7         use count: 1
datachange: 100
TABLE:          [salesdetail]           rows: 116       use count: 1
datachange: 0
TABLE:          [sales]                 rows: 30        use count: 1
datachange: 0
TABLE:          [authors]               rows: 23        use count: 1
datachange: 0
TABLE:          [titleauthor]           rows: 25        use count: 1
datachange: 0
TABLE:          [titles]                rows: 18        use count: 1
datachange: 0
TABLE:          [publishers]            rows: 3         use count: 1
datachange: 0
total number of tables used: 7
total number of worktables: 1
Views:
VIEW:           [pubsview]              use count: 1    merged
VIEW:           [storesview]            use count: 1    materialized
total number of views used: 2
total number of views materialized: 1
Final abstract plan text:
        ( nl_join ( nl_join ( nl_join ( nl_join ( i_scan auidind ( table ( a
authors ) ) ) ( i_scan taind ( table ( ta titleauthor ) ) ) ) ( i_scan
titleidind titles ) ) ( i_scan pubind publishers ) ) ( store_index
( group_hashing ( nl_join ( nl_join ( t_scan sto
         res ) ( i_scan salesdetailind salesdetail ) ) ( i_scan salesind
sales ) ) ) ) ) ( prop ( table ( a authors ) ) ( parallel 1 ) ( prefetch 4 )
( lru ) ) ( prop ( table ( ta titleauthor ) ) ( parallel 1 ) ( prefetch 4 )
( lru ) ) ( prop titles ( parallel 1
         ) ( prefetch 4 ) ( lru ) ) ( prop publishers ( parallel 1 )
( prefetch 4 ) ( lru ) ) ( prop stores ( parallel 1 ) ( prefetch 4 )
( lru ) ) ( prop salesdetail ( parallel 1 ) ( prefetch 4 ) ( lru ) ) ( prop
sales ( parallel 1 ) ( prefetch 4 ) ( lru ) )
QUERY PLAN FOR STATEMENT 1 (at line 2).
Optimized using Serial Mode
    STEP 1
==================== Lava Operator Tree ====================
============================================================
        The type of query is SELECT.
        14 operator(s) under root
       |ROOT:EMIT Operator (VA = 14)
       |
       |   |SEQUENCER Operator (Sequential Mode)(VA = 13) has 2 children.
       |   |
       |   |   |STORE Operator (VA = 6)
       |   |   |  Worktable2 created, in allpages locking mode, for
REFORMATTING.
       |   |   |  Creating clustered index.
       |   |   |
       |   |   |   |INSERT Operator (VA = 5)
       |   |   |   |  The update mode is direct.
       |   |   |   |
       |   |   |   |   |HASH VECTOR AGGREGATE Operator (VA = 4)
       |   |   |   |   |  GROUP BY
       |   |   |   |   |  Evaluate Grouped SUM OR AVERAGE AGGREGATE.
       |   |   |   |   | Using Worktable1 for internal storage.
       |   |   |   |   |  Key Count: 3
       |   |   |   |   |
       |   |   |   |   |   |N-ARY NESTED LOOP JOIN Operator (VA = 3) has 3
children.
       |   |   |   |   |   |
       |   |   |   |   |   |   |SCAN Operator (VA = 0)
       |   |   |   |   |   |   |  FROM TABLE
       |   |   |   |   |   |   |  stores
       |   |   |   |   |   |   |  (Total Rows: 7)
       |   |   |   |   |   |   |  Table Scan.
       |   |   |   |   |   |   |  Forward Scan.
       |   |   |   |   |   |   |  Positioning at start of table.
       |   |   |   |   |   |   |  Using I/O Size 4 Kbytes for data pages.
       |   |   |   |   |   |   |  With LRU Buffer Replacement Strategy for
data pages.
       |   |   |   |   |   |
       |   |   |   |   |   |   |SCAN Operator (VA = 1)
       |   |   |   |   |   |   |  FROM TABLE
       |   |   |   |   |   |   |  salesdetail
       |   |   |   |   |   |   |  (Total Rows: 116)
       |   |   |   |   |   |   |  Index : salesdetailind
       |   |   |   |   |   |   |  Forward Scan.
       |   |   |   |   |   |   |  Positioning by key.
       |   |   |   |   |   |   |  Keys are:
       |   |   |   |   |   |   |    stor_id ASC
       |   |   |   |   |   |   |  Using I/O Size 4 Kbytes for index leaf
pages.
       |   |   |   |   |   |   |  With LRU Buffer Replacement Strategy for
index leaf pages.
       |   |   |   |   |   |   |  Using I/O Size 4 Kbytes for data pages.
       |   |   |   |   |   |   |  With LRU Buffer Replacement Strategy for
data pages.
       |   |   |   |   |   |
       |   |   |   |   |   |   |SCAN Operator (VA = 2)
       |   |   |   |   |   |   |  FROM TABLE
       |   |   |   |   |   |   |  sales
       |   |   |   |   |   |   |  (Total Rows: 30)
       |   |   |   |   |   |   |  Using Clustered Index.
       |   |   |   |   |   |   |  Index : salesind
       |   |   |   |   |   |   |  Forward Scan.
       |   |   |   |   |   |   |  Positioning by key.
       |   |   |   |   |   |   |  Index contains all needed columns. Base
table will not be read.
       |   |   |   |   |   |   |  Keys are:
       |   |   |   |   |   |   |    stor_id ASC
       |   |   |   |   |   |   |  Using I/O Size 4 Kbytes for index leaf
pages.
       |   |   |   |   |   |   |  With LRU Buffer Replacement Strategy for
index leaf pages.
       |   |   |   |
       |   |   |   |  TO TABLE
       |   |   |   |  Worktable2.
       |   |
       |   |   |N-ARY NESTED LOOP JOIN Operator (VA = 12) has 5 children.
       |   |   |
       |   |   |   |SCAN Operator (VA = 7)
       |   |   |   |  FROM TABLE
       |   |   |   |  authors
       |   |   |   |  a
       |   |   |   |  (Total Rows: 23)
       |   |   |   |  Using Clustered Index.
       |   |   |   |  Index : auidind
       |   |   |   |  Forward Scan.
       |   |   |   |  Positioning at index start.
       |   |   |   |  Using I/O Size 4 Kbytes for index leaf pages.
       |   |   |   |  With LRU Buffer Replacement Strategy for index leaf
pages.
       |   |   |   |  Using I/O Size 4 Kbytes for data pages.
       |   |   |   |  With LRU Buffer Replacement Strategy for data pages.
       |   |   |
       |   |   |   |SCAN Operator (VA = 8)
       |   |   |   |  FROM TABLE
       |   |   |   |  titleauthor
       |   |   |   |  ta
       |   |   |   |  (Total Rows: 25)
       |   |   |   |  Using Clustered Index.
       |   |   |   |  Index : taind
       |   |   |   |  Forward Scan.
      |   |   |   |  Positioning by key.
       |   |   |   |  Index contains all needed columns. Base table will not
be read.
       |   |   |   |  Keys are:
       |   |   |   |    au_id ASC
       |   |   |   |  Using I/O Size 4 Kbytes for index leaf pages.
       |   |   |   |  With LRU Buffer Replacement Strategy for index leaf
pages.
       |   |   |
       |   |   |   |SCAN Operator (VA = 9)
       |   |   |   |  FROM TABLE
       |   |   |   |  titles
       |   |   |   |  from view: pubsview
       |   |   |   |  (Total Rows: 18)
       |   |   |   |  Using Clustered Index.
       |   |   |   |  Index : titleidind
       |   |   |   |  Forward Scan.
       |   |   |   |  Positioning by key.
       |   |   |   |  Keys are:
       |   |   |   |    title_id ASC
       |   |   |   |  Using I/O Size 4 Kbytes for index leaf pages.
       |   |   |   |  With LRU Buffer Replacement Strategy for index leaf
pages.
       |   |   |   |  Using I/O Size 4 Kbytes for data pages.
       |   |   |   |  With LRU Buffer Replacement Strategy for data pages.
       |   |   |
       |   |   |   |SCAN Operator (VA = 10)
       |   |   |   |  FROM TABLE
       |   |   |   |  publishers
       |   |   |   |  from view: pubsview
       |   |   |   |  (Total Rows: 3)
       |   |   |   |  Using Clustered Index.
       |   |   |   |  Index : pubind
       |   |   |   |  Forward Scan.
       |   |   |   |  Positioning by key.
       |   |   |   |  Index contains all needed columns. Base table will not
be read.
       |   |   |   |  Keys are:
       |   |   |   |    pub_id ASC
       |   |   |   |  Using I/O Size 4 Kbytes for index leaf pages.
       |   |   |   |  With LRU Buffer Replacement Strategy for index leaf
pages.
       |   |   |
       |   |   |   |SCAN Operator (VA = 11)
       |   |   |   |  FROM TABLE
        |   |   |   | Worktable2.
        |   |   |   | Using Clustered Index.
        |   |   |   | Forward Scan.
       |   |   |   | Positioning by key.
        |   |   |   | Using I/O Size 4 Kbytes for data pages.
        |   |   |   | With LRU Buffer Replacement Strategy for data pages.
Proccache used during compilation: 348 .
Total estimated LIO: 1330.425382 .
Total estimated PIO: 42.318160 .
Total estimated CPU time: 22368.677267 .
Query has started at: 2018/06/13 09:50:15.74 .
Query is running for: 0 ms.
Rows affected: 51
(return status = 0)
```

Usage

- Execute the `sp_sp` system procedure to see the long plan output of any user connection.
- The `Rows affected` output is dynamic, and may change each time you run it because its value is based on the rows affected during the current execution.

Permissions

Any user can execute `sp_sp`.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

1.249 sp_shrink

Frees space on a device or database.

Syntax

- To shrink a device:

```
sp_shrink 'device', <device_name> [, {'<size>[K | M | G ]' | 'drop'} [,
'simulate' ]]
```

- To shrink a database:

```
sp_shrink 'database', <database_name>, <device_name> [, '<size>[K | M | G]'
[, 'simulate' ]]
```

Parameters

<device_name>

is the name of the device from which you are freeing space.

<size>[K | M | G]

is the amount of space you are requesting to free up, followed by a unit specifier (K for kilobytes, M for megabytes, or G for gigabytes). When used for a:

- Device – clears the specified space and truncates the device.
- Database – moves the specified space occupied by the database off the device. If you do not include `<size>` when shrinking a database, SAP ASE moves the database footprint on this device to other devices on which this database exists.

drop

moves the data from this device to other eligible devices, then drops the device once the data is completely removed off this device.

simulate

performs a simulation of the commands that are run to service the request. The commands are not executed.

Examples

Example 1

Shinks or truncates free space in a device named `datadev1`:

```
sp_shrink 'device', 'datadev1'
```

Example 2

Shrinks or truncates a device named `dev1` by 5 GB:

```
sp_shrink 'device', 'dev1', '5G'
```

Example 3

Simulates the shrinking or truncating of a device named `testdat` by 10 GB:

```
sp_shrink 'device', 'testdat', '10G', 'simulate'
```

Example 4

Moves databases off a device named `mydev` and drops the device:

```
sp_shrink 'device', 'mydev', 'drop'
```

Example 5

Shrinks a database named `prod_db` off the device named `prod_datadev` by 5 GB:

```
sp_shrink 'database', 'prod_db', 'prod_datadev', '5G'
```

Example 6

Shrinks a database named `tdb1` completely off a device named `dev2`:

```
sp_shrink 'database', 'tdb1', 'dev2'
```

Example 7

Simulates the shrinking of a database named `tdb1` completely off the `mydatadev` device:

```
sp_shrink 'database', 'tdb1', 'mydatadev', NULL, 'simulate'
```

Usage

- `sp_shrink` only works on data devices.
- `sp_shrink` only works on databases with segregated data and log devices.
- If you do not specify `<size>` or `drop` when shrinking a device, `sp_shrink` truncates the free space at the end of the specified device.

Permissions

Any user can execute `sp_statistics`.

1.250 sp_spaceusage

Reports the space usage for a table, index, or transaction log and estimates the amount of fragmentation for tables and indexes in a database. The estimates are computed using an average row-length for data and index rows, and the number of rows in a table. You can archive the space usage and fragmentation data for future reporting and trends analysis. `sp_spaceusage` `help`, `display`, `archive` and supports a number of actions, including `report`, to indicate the current SAP ASE space usage.

Syntax

The "help" action syntax:

```
sp_spaceusage 'help'[, 'all']
```

```
sp_spaceusage 'help'[, {'display' | 'display summary' | 'report' | 'report
summary' | 'archive'}[, {'database' | 'table' | 'index'|  'syslogs' |
'sysimrslogs'}]]
```

The "display" action syntax:

```
sp_spaceusage 'display [summary] [using unit= {KB | MB | GB | PAGES}]',
    {'database' | 'table' | 'index'},<name>
    [, <where_clause>[, order_by[,<command>]]]
```

```
sp_spaceusage 'display [using unit= {KB | MB | GB | PAGES} ]',
    {'table' | 'index'}, <name>
    [, <select_list>
    [, <where_clause>[, order_by[, <command>]]]]
```

```
sp_spaceusage 'display [using unit={KB | MB | GB | pages}', [,< name>
[,<select_list> [,<where_clause> [,order_by]]]]
```

The "archive" action syntax:

```
sp_spaceusage 'archive [using {<using_item> [,<using_item>]', {'table' |
'index'}, <name>[, <where_clause> [, <command>]]
```

```
sp_spaceusage 'archive [using {<using_item> [,<using_item>]...} ]', <name> [,
<where_clause>]]
```

```
<using_item> = { unit={ KB | MB | GB | PAGES }
    | dbname=<database_name> | prefix=<string>}
```

The "report" action syntax:

```
sp_spaceusage 'report summary [using {<using_item> [,<using_item>]...}',
    {'table' | 'index'}, <name>
    [, <where_clause> [, order_by[, <from_date> [, <to_date>]]]]
```

```
sp_spaceusage 'report [using {<using_item> [,<using_item>]...}',
    {'table' | 'index'}, <name>
    [,<select_list>[, <where_clause> [, order_by[,<from_date> [,<to_date>]]]]]
```

```
sp_spaceusage 'report [using {<using_item> [,<using_item>]...}',
    [, <name>
    [,<select_list>[, <where_clause>[, order_by
    [,<from_date>[, <to_date>]]]]]]
```

```
<using_item> = { unit={ KB | MB | GB | PAGES }
    | dbname=<database_name> | prefix=<string>}
```

```
<name> = {'<database_object>' | 'syslogs' | 'sysimrslogs' | NULL}
```

Parameters

help

displays the entire sp_spaceusage syntax. help <action> displays the syntax for individual actions supported.

display

displays current space usage information for the specified objects. database allows you to display information about any database while located in any other database. That is, you can be currently working in the user_db database, and display usage information for the sybsystemprocs database.

display summary

displays a summary of current space usage information for the specified objects.

archive

archives the space usage report to a table. If the archive table does not already exist, sp_spaceusage creates one. New data is appended to existing data. You can specify a prefix for the archive table name and the database in which the archive table resides with the <using> clause. archive requires that you enable the select into/bulkcopy/pllsort database option in the database in which you are running sp_spaceusage.

report

reports the space usage information for the specified objects from previously archived data. The output is same as the display action. Include the optional using clause to specify the archive table.

report summary

reports a summary of space usage information for the specified object from previously archived data. The output is same as the display summary action. Include the optional using clause to specify the archive table.

<using_item>

specifies the unit, archive database name, and prefix string for the archive table. You can use a <unit> size of kilobytes (KB), megabytes (MB), gigabytes (GB), and pages. By default <unit> size is KB, the current database is the archive database, and no prefix string is assumed.

<name>

is the name of the entity. Depending on the entity type, you can include multipart names such as <owner_name.table_name>, or <owner_name.table_name.index_name>. For the entity type syslogs and sysimrslogs, the name must be syslogs, sysimrslogs, or NULL. Pattern specifiers are allowed for each part of a multipart name to support reporting on multiple objects in one pass.

<select_list>

is the comma-separated list of columns to select in the output columns for the display and report actions. Use * to include all columns in the output. Columns can be renamed using the alias=<name> notation.

<where_clause>

is the filter to apply to the result set. Use with the `display`, `report`, or `archive` actions to selectively filter unnecessary data.

`order_by`

returns query results in the specified columns in sorted order.

`<command>`

command run on the entity selected (table, column, or so on) prior to gathering the space usage information for qualifying objects. The following commands are supported: `update statistics`, `update table statistics`, and `update index statistics`.

`<from_date>`

specifies beginning of the time range you are interested in.

`<to_date>`

specifies end of the time range you are interested in.

Examples

Example 1

Displays a brief description, syntax, and usage information for the display action:

```
sp_spaceusage 'help', 'display'
```

```
Display the space usage information for an entity in the current database.
Usage:
sp_spaceusage 'display', 'database' [, '<dbname>' ]
sp_spaceusage 'display', {'table'|'index'}, <name>
                        [,<select_list> [,<where_clause> [, order_by
[,<command>]]]]
sp_spaceusage 'display summary', {'table'|'index'}, <name>
                        [,<where_clause> [, order_by [, <command>]]]
sp_spaceusage 'display', 'syslogs' [,{'syslogs'|NULL}
                        [,<select_list> [, <where_clause> [, order_by]]]]
sp_spaceusage 'display', 'sysimrslogs' [,{'sysimrslogs'|NULL}
                        [,<select_list> [, <where_clause> [,order_by]]]]
For more information, use:
sp_spaceusage 'help', 'display', 'database'
sp_spaceusage 'help', 'display', 'table'
sp_spaceusage 'help', 'display', 'index'
sp_spaceusage 'help', 'display', 'syslogs'
sp_spaceusage 'help', 'display', 'sysimrslogs'
```

Example 2

Displays a summary of the space usage on the `titles` table:

```
sp_spaceusage 'display summary', 'table', 'titles'
```

```
All the page counts in the result set are in the unit 'KB'.
OwnerName  TableName  Type   UsedPages  RsvdPages  ExpRsvdPages   PctBloatRsvdP
ages
---------  ---------  ----   ---------  --------   ------------
  -----------------
dbo        titles     DATA   6.0        30.0       16.0           87.50
dbo        titles     INDEX  8.0        64.0       32.0          50.00
```

Example 3

Displays the space usage information for the `titles` table:

```
sp_spaceusage 'display', 'table', 'titles'
```

```
All the page counts in the result set are in the unit 'KB'.
OwnerName    TableName    IndId    NumRows    UsedPages    RsvdPages
  ExtentUtil     ExpRsvdPages    PctBloatUsePages     PctBloatRsvdPages
-----------  -----------  ------  -----------  ----------   --------------
  ----------     ------------    ----------------     -----------------
dbo          titles       0       18.0         6.0          30.0
  20.00          16.0            0.0                  87.50
dbo          titles       1       NULL         4.0          32.0
  12.50          16.0            0.00                 100.00
dbo          titles       2       NULL         4.0          32.0
  12.50          16.0            0.00                 100.00
```

Example 4

Displays index entries from the `titles` table with names that start with `title`:

```
sp_spaceusage 'display using unit=MB', 'index', 'titles.title%'
```

```
All the page counts in the result set are in the unit 'MB'.
OwnerName  TableName    IndId  IndexName   UsedPages       RsvdPages
  ExtentUtil   ExpRsvdPages     PctBloatUsedPages   PctBloatRsvdPages
--------   --------     -----  ----------  ----------      ---------
  ----------   ------------     -----------------   ----------------
dbo        titles        0     titles      .005859375     .029296875
  20.00        .015625           0.00               87.50
dbo        titles       1      titleidind  .00390625      .03125
  12.50        .015625           0.00               100.00
dbo        titles       2      titleind    .00390625      .03125
  12.50        .015625           0.00               100.00
(1 row affected)
(return status = 0)
```

Example 5

Displays a summary of the space usage for all index names starting with `<title>` in the `titles` table:

```
sp_spaceusage 'display summary', 'index', 'titles.title%'
```

```
All the page counts in the result set are in the unit of 'KB'.
OwnerName TableName  IndexName   IndId  UsedPages  RsvdPages  ExpRsvdPages
    PctBloatRsvdPages
--------  ---------  ---------   ----- ---------  ----------  ------------
    -----------------
dbo       titles     titles      0     6.0        30.0      16.0
    46.67
dbo       titles     titleidind  1     4.0        32.0      16.0
    50.00
dbo       titles     titleind    2     4.0        32.0      16.0
    50.00
```

Example 6

Displays a summary of the space usage for all indexes starting with <title> in the titles table where the value of PctBloatRsvdPages is less than 50:

```
sp_spaceusage 'display summary', 'index', 'titles.title%',
    'where PctBloatRsvdPages < 50'
```

```
All the page counts in the result set are in the unit 'KB'.
OwnerName  TableName  IndexName  IndId  UsedPages  RsvdPages  ExpRsvdPages
     PctBloatRsvdPages
---------  ---------  ---------  -----  ---------  ---------  ----------
     -----------------
dbo        titles     titles     0      6.0        30.0         16.0
     46.67
```

Example 7

Displays a summary of the space usage for all indexes in the titles table in descending order of PctBloatRsvdPages where the value of PctBloatRsvdPages is greater than 30:

```
sp_spaceusage 'display summary', 'index', 'titles.title%',
   'where PctBloatRsvdPages > 30', 'order by PctBloatRsvdPages desc'
```

```
All the page counts in the result set are in the unit 'KB'.
OwnerName  TableName  IndexName  IndId  UsedPages  RsvdPages  ExpRsvdPages
     PctBloatRsvdPages
---------  ---------  ---------  -----  ---------  ---------  ----------
     -----------------
dbo        titles     titleidind  1     4.0        32.0       16.0
     50.00
dbo        titles     titleind    2     4.0        32.0       16.0
     50.00
dbo        titles     titles      0     6.0        30.0       16.0
     46.67
```

Example 8

Runs update table statistics on the authors table and summarizes its space usage information in the unit <pages>:

```
sp_spaceusage 'display summary using unit=pages', 'table', 'authors', null,
null, null,
 'update table statistics'
```

```
All the page counts in the result set are in the unit 'pages'.
OwnerName TableName Type UsedPages RsvdPages ExpRsvdPages PctBloatRsvdPages
--------- --------- ---- --------- --------- ------------ -----------------
dbo        authors  DATA    2.0          16.0         8.0         100.00
dbo        authors  INDEX   4.0          32.0         16.0         50.00
```

Example 9

Displays the space usage information for the transaction log of the current database (pubs2):

```
sp_spaceusage 'display', 'syslogs'
All the page counts in the result set are in the unit 'KB'.
 TableName TotalPages UsedPages CLRPages FreePages PctUsedPages PctFreePages
 --------- ---------- --------- -------- --------- ------------ ------------
 syslogs      26624.0     120.0      0.0   14984.0         0.45        56.28
```

Example 10

Archives the space usage information for the authors table in the current database into the default table (spaceusage_object for tables and indexes):

```
sp_spaceusage 'archive', 'table', 'authors'
```

```
Data was successfully archived into table 'pubs2.dbo.spaceusage_object'.
```

Example 11

Archives the space usage information for the authors table into the default table (spaceusage_object for tables and indexes) in the pubs3 database:

```
sp_spaceusage 'archive using dbname = pubs3', 'table', 'authors'
```

```
Data was successfully archived into table 'pubs3.dbo.spaceusage_object'.
```

Example 12

Runs update table statistics on the authors table and archives its space usage information into a table in the current database with the prefix monday_ (for this example, monday_spaceusage_object):

```
sp_spaceusage 'archive using dbname = pubs2, prefix=monday_',
  'table','authors', null, 'update table statistics'
```

Example 13

Archives the space usage information for the transaction log of the current database into the default table (spaceusage_tranlog for transaction logs) in the pubs3 database:

```
sp_spaceusage 'archive using dbname=pubs3', 'tranlog'
```

```
Data was successfully archived into table 'pubs3.dbo.spaceusage_tranlog'.
```

Example 14

Reports in detail the last archived space usage information for the authors table from the default table (spaceusage_object for table or index) in the current database:

```
sp_spaceusage 'report', 'table', 'authors'
```

```
All the page counts in the result set are in the unit 'KB'.
All the data in the result set are dated 'Jun 15 2013 11:50PM'.
OwnerName  TableName  IndId  NumRows  UsedPages  RsvdPages  ExtentUtil
   ExpRsvdPages    PctBloatUsedPages    PctBloatRsvdPages
---------  ---------  -----  -------  ---------  ---------  ----------
   ------------    -----------------    -----------------
dbo        authors    0      23.0     4.0        32.0       12.50
   16.0            0.00                 100.00
dbo        authors    1      NULL     4.0        32.0       12.50
   16.0            0.00                 100.00
dbo        authors    2      NULL     4.0        32.0       12.50
   16.0            0.00                 100.00
```

Example 15

Reports in summary the last archived space usage information for the `authors` table from the default table in the `pubs3` database:

```
sp_spaceusage 'report summary using dbname=pubs3', 'table', 'authors'
```

```
All the page counts in the result set are in the unit 'KB'.
All the data in the result set are dated 'Jan 17 2013 11:29AM'.
OwnerName TableName Type UsedPages RsvdPages ExpRsvdPages PctBloatRsvdPages
--------- --------- ---- ---------- --------- ------------ -----------------
dbo       authors   DATA   4.0    32.0      16.0         100.00
dbo       authors   INDEX  8.0    64.0      32.0         50.00
```

Example 16

Reports a summary from the `monday_spaceusage_object` table in the current database the last archived space usage information (in megabytes) for the `authors` table:

```
sp_spaceusage 'report summary using prefix=monday_, unit=MB', 'table',
'authors'
```

```
All the page counts in the result set are in the unit 'MB'.
All the data in the result set are dated 'Jan 17 2013 11:29AM'.
OwnerName TableName Type UsedPages RsvdPages ExpRsvdPages PctBloatRsvdPages
--------- --------- ---- ---------- --------- ------------ -----------------
dbo       authors   DATA   .00390625  .03125  .015625   100.00
dbo       authors   INDEX   .0078125   .0625    .03125   50.00
```

Example 17

Reports the space usage information from the default table in the current database for all the indexes on the `authors` table archived on Jun 9, 2013 or later:

```
sp_spaceusage 'report', 'index', 'authors.%', null, null, null, 'Jun 9 2013'
```

```
All the page counts in the result set are in the unit 'KB'.
ArchiveDateTime      OwnerName  TableName   IndId  IndexName  UsedPages
  RsvdPages  ExtentUtil  ExpRsvdPages  PctBloatUsedPages   PctBloatRsvdPages
---------------      ---------  ---------   -----  ---------  ----------
  ---------  ---------   -----------  ----------------    --------------
Jun  9 2013 12:06AM   dbo       authors      0     authors    4.0
  32.0       12.50       16.0         0.00  100.00
Jun 10 2013 12:05AM  dbo        authors      0     authors    4.0
  32.0       12.50       16.0         0.00  100.00
Jun 11 2013 11:35PM  dbo        authors      0     authors    4.0
  32.0       12.50       16.0         0.00 100.00
Jun  9 2013 12:06AM  dbo        authors      1     auidind    4.0
  32.0       12.50       16.0         0.00  100.00
Jun 10 2013 12:05AM  dbo        authors      1     auidind    4.0
  32.0       12.50       16.0         0.00  100.00
Jun 11 2013 11:35PM  dbo        authors      1     auidind    4.0
  32.0       12.50       16.0         0.00  100.
Jun  9 2013 12:06AM  dbo        authors      2     aunmind    4.0
  32.0       12.50       16.0         0.00  100.00
Jun 10 2013 12:05AM  dbo        authors      2     aunmind    4.0
  32.0       12.50       16.0         0.00  100.00
Jun 11 2013 11:35PM  dbo        authors      2     aunmind    4.0
  32.0       12.50        16.0        0.00  100.00
(1 row affected)
(return status = 0)
```

Example 18

Reports the space usage information for the `authors` table from the default table in the current database archived between June 10, 2013 and June 15, 2013:

```
sp_spaceusage 'report', 'table', 'authors', null, null, null, 'Jun 10 2013',
'Jun 15 2013'
```

```
All the page counts in the result set are in the unit 'KB'.
ArchiveDateTime      OwnerName TableName  IndId  NumRows     UsedPages
 RsvdPages  ExtentUtil  ExpRsvdPages  PctBloatUsedPages  PctBloatRsvdPages
---------------      --------- ---------  -----  -------     ---------
 ---------  ----------  ------------  -----------------  ---------------
Jun 10 2013 12:05AM  dbo       authors    0      23.0        4.0
 32.0       12.50      16.0          0.00                100.00
Jun 11 2013 11:35PM  dbo       authors    0      23.0        4.0
 32.0       12.50      16.0          0.00                100.00
Jun 13 2013 11:46PM  dbo       authors    0      23.0        4.0
 32.0       12.50      16.0          0.00                100.00
Jun 14 2013 11:46PM  dbo       authors    0      23.0        4.0
 32.0       12.50      16.0          0.00                100.00
Jun 14 2013 11:46PM  dbo       authors    0      23.0        4.0
 32.0       12.50      16.0          0.00                100.00
Jun 10 2013 12:05AM  dbo       authors    1      NULL        4.0
 32.0       12.50      16.0          0.00                100.00
Jun 11 2013 11:35PM  dbo       authors    1      NULL        4.0
 32.0       12.50      16.0          0.00                100.00
Jun 13 2013 11:46PM  dbo       authors    1      NULL        4.0
 32.0       12.50      16.0          0.00                100.00
Jun 14 2013 11:46PM  dbo       authors    1      NULL        4.0
 32.0       12.50      16.0          0.00                100.00
Jun 14 2013 11:46PM  dbo       authors    1      NULL        4.0
 32.0       12.50      16.0          0.00                100.00
Jun 10 2013 12:05AM  dbo       authors    2      NULL        4.0
 32.0       12.50      16.0          0.00                100.00
Jun 11 2013 11:35PM  dbo       authors    2      NULL        4.0
 32.0       12.50      16.0          0.00                100.00
Jun 13 2013 11:46PM  dbo       authors    2      NULL        4.0
 32.0       12.50      16.0          0.00                100.00
Jun 14 2013 11:46PM  dbo       authors    2      NULL        4.0
 32.0       12.50      16.0          0.00                100.00
Jun 14 2013 11:46PM  dbo       authors    2      NULL        4.0
 32.0       12.50      16.0          0.00                100.00
(1 row affected)
(return status = 0)
```

Example 19

Displays information about `sybsystemprocs` while using the `pubs2` database (the `sybsystemprocs` information is in bold below):

```
sp_spaceusage 'display using unit=MB', 'database', sybsystemprocs
```

```
All the page counts in the result set are in the unit 'MB'.
 TotalPages UsedPages FreePages PctUsedPages PctFreePages DataPages
IndexPages LOBPages PctData PctIndex PctLOB
 ---------- --------- --------- ------------ ------------ ---------
---------- -------- ------- -------- ------
    400.000   123.625   276.375        30.91        69.09   116.203
6.125    0.063   94.00      4.95   0.05
(1 row affected)
 TableName TotalPages UsedPages CLRPages FreePages  PctUsedPages PctFreePages
 --------- ---------- --------- -------- ---------- ------------ ------------
 syslogs        200.0  1.171875      0.0 198.828125         0.58        99.41
(1 row affected)
```

```
 TableType     Layer       DataPages  UsedPages  RsvdPages  UsedPct
 ------------- ----------- ---------- ---------- ---------- -------
 All Tables    All layers  122.359375   123.5625 145.671875   30.89
 All Tables    Data layer  122.359375 116.734375 131.078125   29.18
 All Tables    Index Layer 122.359375   6.703125   14.09375    1.68
 All Tables    LOB Layer   122.359375       .125         .5    0.03
 System Tables Data layer  116.109375 116.546875 130.328125   29.14
 System Tables Index layer   6.078125   6.671875   13.96875    1.67
 System Tables LOB layer        .0625       .125         .5    0.03
 User Tables   Data layer      .09375      .1875        .75    0.05
 User Tables   Index layer    .015625     .03125       .125    0.01
 User Tables   LOB layer         NULL       NULL       NULL    NULL
```

Example 20

Displays a summary of top-level, aggregated database-wide usage information for the `tpcc` database:

```
sp_spaceusage 'display summary using unit=GB', 'database', tpcc;
```

```
All the page counts in the result set are in the unit 'GB'.
 TotalPages UsedPages FreePages PctUsedPages PctFreePages DataPages
IndexPages LOBPages PctData PctIndex PctLOB
 ---------- --------- --------- ------------ ------------ ---------
---------- -------- ------- -------- ------
     87.891    46.476    41.414        52.88        47.12    35.216
11.259    0.000   75.77    24.22   0.00
(1 row affected)
 TableName TotalPages UsedPages         CLRPages FreePages
PctUsedPages PctFreePages
 --------- ---------- ----------------- -------- ------------------
------------ ------------
 syslogs     58.59375 .2289886474609375      0.0 58.364761352539062
0.39        99.60
(1 row affected, return status = 0)
```

Usage

- `sp_spaceusage` provides space usage information for tables, indexes, and the transaction log of the current database.
- The database in which you are archiving the space usage data must have `sp_dboption ... select into` enabled.
- The archive tables are created if they do not already exist at the time of archiving, otherwise the results are appended to the current table. Because of this, any user running `sp_spaceusage` must have `create table` permission in the archive database.
- While archiving or reporting data, only tables owned by the user running `sp_spaceusage` display the space usage information, in megabytes, for all indexes considered for the archive table. Tables with the same name but owned by another user are ignored. By default, the results are archived to or reported from the `spaceusage_object` table for tables or indexes and `spaceusage_tranlog` for the transaction log. .
- You can use the `<from_date>` and `<to_date>` arguments only for the `report` action when reporting from archived data. The SAP ASE server uses only the data in the archive table that falls within the specified time-range when generating the report. If you do not include a `<from_date>` or a NULL, the SAP ASE server uses all archived data prior to the `<to_date>`. If you do not include a `<to_date>` or NULL, the SAP ASE server uses the current date as the value for `<to_date>`. If you do not include either the `<from_date>` or `<to_date>`, the SAP ASE server uses the most recent data in the archive table to generate the report.

- `sp_spaceusage` results are estimated based on statistical data. These estimates are only as good as the statistics provided. You can run `update statistics` to improve the accuracy of the results.
- The `'display', 'database'` option generates aggregated, database-wide space usage metrics and a summary of space usage information from system and user tables for each level (data, index, LOB, and so on).
- For databases with a large number of objects, `display` may be noticeably slower since running it also involves running execution-space reporting functions for each object or index. In these situations, you can instead issue `display summary` to quickly retrieve database-wide aggregated space metrics.
- The `'display summary', 'database'` option generates aggregated database-wide summary information, but does not investigate to the level of per-table or per-object metrics.
- `sp_spaceusage` displays metrics for `sysimrslogs` for in-memory, row storage-enabled tables, .

Permissions

Any user can execute `sp_spaceusage` to view space usage. However, you may not be able to view certain information about tables that you do not have permissions to view.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

1.251 sp_spaceused

Displays estimates of the number of rows, the number of data pages, the size of indexes, and the space used by a specified table or by all tables in the current database.

Syntax

```
sp_spaceused [<objname >[,1] ]
```

Parameters

`<objname>`

is the name of the table on which to report. If omitted, a summary of space used in the current database appears.

1

prints separate information on the table's indexes and `text/image` storage.

Examples

Example 1

Reports on the amount of space allocated (reserved) for the `titles` table, the amount used for data, the amount used for index(es), and the available (unused) space:

```
sp_spaceused titles
```

```
name       rowtotal   reserved   data    index_size   unused
---------- ---------  ---------  ------- ----------   ----------
titles     18         46 KB      6 KB    4 KB         36 KB
```

Example 2

In addition to information on the `titles` table, prints information for each index on the table:

```
sp_spaceused titles, 1
```

```
index_name           size       reserved   unused
 -------------------- ---------- ---------- ----------
 titleidind           2 KB       32 KB      24 KB
 titleind             2 KB       16 KB      14 KB

 name       rowtotal   reserved   data   index_size unused
---------- --------  ---------  ------- ---------- ----------
titles           18      46 KB     6 KB       4 KB      36 KB
```

Example 3

Displays the space taken up by the `text/image` page storage separately from the space used by the table. The object name for `text/image` storage is "t" plus the table name:

```
sp_spaceused blurbs,1
```

```
index_name           size       reserved   unused
-------------------- ---------- ---------- ----------
blurbs               0 KB       14 KB      12 KB
tblurbs              14 KB      16 KB      2 KB
name       rowtotal reserved    data    index_size unused
---------- -------- ----------- ------- ---------- ----------
blurbs            6       30 KB    2 KB      14 KB      14 KB
```

Example 4

Prints a summary of space used in the current database:

```
sp_spaceused
```

```
database_name   database_size
--------------- ---------------------------
```

```
master           5 MB
reserved    data        index_size  unused
---------   ---------   ----------- --------
2176 KB     1374 KB     72 KB       730 KB
```

Example 5

Reports on the amount of space reserved and the amount of space available for the transaction log:

```
sp_spaceused syslogs
```

```
name       rowtotal   reserved   data    index_size   unused
---------- ---------  ---------  ------- ----------   ----------
syslogs    Not avail. 32 KB     32 KB   0 KB         0 KB
```

Usage

There are additional considerations when using `sp_spaceused`:

- `sp_spaceused` displays estimates of the number of data pages, space used by a specified table or by all tables in the current database, and the number of rows in the tables. `sp_spaceused` computes the `rowtotal` value using the `rowcnt` built-in function. This function uses a value for the average number of rows per data page based on a value in the allocation pages for the object. This method is very fast, but the results are estimates, and update and insert activity change actual values. The `update statistics` command, `dbcc checktable`, and `dbcc checkdb` update the rows-per-page estimate, so `rowtotal` is most accurate after one of these commands executes. Always use `select count(*)` if you need exact row counts.
- `sp_spaceused` reports on the amount of space affected by tables, clustered indexes, and nonclustered indexes.
- The amount of space allocated (reserved) reported by `sp_spaceused` is a total of the data, index size, and available (unused) space.
- Space used by `text` and `image` columns, which are stored as separate database objects, is reported separately in the `index_size` column and is included in the summary line for a table. The object name for `text/image` storage in the `index_size` column is "t" plus the table name.
- When used on `syslogs`, `sp_spaceused` reports `rowtotal` as "Not available". See Example 5.

See also `create index`, `create table`, `drop index`, `drop table` in *Reference Manual: Commands*.

Permissions

Any user can execute `sp_spaceused`. Permission checks do not differ based on the granular permissions settings.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_helpindex [page 454]
sp_statistics [page 880]

1.252 sp_ssladmin

Adds, deletes, and displays a list of server certificates for the SAP ASE server. Additionally, sets and displays cipher suite preferences and protocol versions for SAP ASE.

Syntax

```
sp_ssladmin {[addcert, <certificate_path>[, <password> | NULL]]
     [refreshcert]
     [dropcert, <certificate_path>]
     [lscert]
     [help]
     [lsciphers]
     [setciphers,
     { "TLS1.2" | "TLS1.0" | "FIPS" | "Strong" | "Weak" | "All" |
<quoted_list_of_ciphersuites>}]
     [setprotocol, { "TLS1.2" | NULL }]
      [lsprotocol]}
```

Parameters

`addcert`

adds a certificate for the local server in the certificates file.

`<certificate_path>`

specifies the absolute path to the certificates file on the local server.

`<password>`

the password that is used to encrypt the private key when adding a new server certificate to the certificates file.

refreshcert

activates the newly added certificate on the local server.

NULL

used to require an attended start-up of the SAP ASE server by requesting the password during start-up from the command line.

dropcert

deletes the certificate from the certificate file.

lscert

lists the certificates in the certificate file.

help

displays online help for `sp_ssladmin`.

lsciphers

displays the values for any set cipher suite preferences.

setciphers

sets a specific cipher suite preference. Select one of these options:

- `TLS1.2` – is the set of encryption algorithms supported by TLS version 1.2.
- `TLS1.0` – is the set of encryption algorithms supported by TLS version 1.0.
- `FIPS` – is the set of encryptions, hash, and key exchange algorithms that are FIPS-compliant. The algorithms included in this list are AES, 3DES, SHA1 and SHA2.
- `Strong` – is the set of encryption algorithms using keys longer than 64 bits.
- `Weak` – is the set of encryption algorithms from the set of all supported cipher suites that are not included in the strong set.
- `All` – is the set of default cipher suites.
- `<quoted_list_of_ciphersuites>` – specifies a set of cipher suites as a comma-separated list, ordered by preference. Use quotes (" ") to mark the beginning and end of the list. The quoted list can include any of the predefined sets as well as individual cipher suite names. Unknown cipher suite names cause an error to be reported, and no changes are made to preferences. See *System Administration Guide* > *Confidentiality of Data* for the list of cipher suites included in the defined sets.

setprotocol

sets the protocol version. Select one of these options:

- `TLS1.2` – sets the TLS protocol such that a client must use TLS 1.2 protocol version to successfully connect.
- `NULL` – allows backward compatibility by accepting TLS 1.0 and TLS 1.2 protocol versions from clients. This is the default value.

lsprotocol

displays the protocol version. The return values are:

- When `setprotocol` is set to `TLS1.2`, `lsprotocol` returns `TLSv1.2`.
- When `setprotocol` is set to `NULL`, `lsprotocol` returns `0`.
- When `setprotocol` is not set, such as after an upgrade, then the system catalog holds no value and `lsprotocol` returns NULL.

Examples

Example 1

Adds an entry for the local server, Server1.crt, in the certificates file in the absolute path to `/sybase/ASE-16_0/certificates` (`x:\sybase\ASE-16_0\certificates` on Windows). The private key is encrypted with the password "mypassword". The password should be the one specified when you created the private key:

```
sp_ssladmin addcert, "/sybase/ASE-16_0/certificates/Server1.crt",
    "mypassword"
```

Then, activate the certificate:

```
sp_ssladmin refreshcert
```

Example 2

Deletes the certificate, Server1.crt from the certificates file located in `/sybase/ASE-16_0/certificates` (`x:\sybase\ASE-16_0\certificates` on Windows):

```
sp_ssladmin dropcert , "/sybase/ASE-16_0/certificates/Server1.crt"
```

Example 3

Lists of all server certificates on the local server:

```
sp_ssladmin lscert
go
```

```
certificate_path
----------------------------------------
/sybase/ASE-16_0/certificates/Server1.crt
```

Example 4

Displays the cipher suite preferences have been set:

```
1> sp_ssladmin lsciphers
2> go
```

```
 Cipher Suite Name  Preference
------------------------------
TLS_RSA_WITH_AES_128_CBC_SHA
(1 row affected)
```

Example 5

Uses a quoted list of cipher suites to set preferences in the SAP ASE server:

```
1> sp_ssladmin setciphers, 'TLS_RSA_WITH_AES_128_CBC_SHA,
TLS_RSA_WITH_AES_256_CBC_SHA'
2> go
```

```
The following cipher suites and order of preference are set for SSL
connections:
Cipher Suite Name                                                 Preference
---------------------------------------------------------------- -----------
TLS_RSA_WITH_AES_128_CBC_SHA                                        1
```

```
TLS_RSA_WITH_AES_256_CBC_SHA                                       2
```

Example 6

Sets the TLS protocol such that a client must use protocol version TLS 1.2 to successfully connect, and strictly enforces the use of SSL to only use version TLS 1.2:

```
1> sp_ssladmin setprotocol,'TLS1.2'
2> go
 TLS Protocol Version
 --------------------
 TLSv1.2
(1 row affected)
(return status = 0)
```

Example 7

The cipher suite version that you specify is independent from the protocol version. For example, when the TLS 1.2 protocol version is set, a successful SSL handshake using TLS 1.2 protocol may still negotiate cipher suites defined in TLS 1.0 if cipher suite preferences include TLS 1.0 cipher suites. However, a client that sets the TLS 1.0 protocol version will fail to connect to the server and report a handshake error.

This examples shows the protocol version set to TLS 1.2 and the cipher suite set to the weak cipher suit `TLS_RSA_WITH_RC4_128_SHA`. The weak cipher suit `TLS_RSA_WITH_RC4_128_SHA` is used.

```
1> sp_ssladmin lsprotocol
2> go
TLS Protocol Version
--------------------
TLSv1.2
(1 row affected)
(return status = 0)
1> select @@ssl_protocol
2> go
---------------------
TLSv1.2
(1 row affected)
1> select @@ssl_ciphersuite
2> go
---------------------
TLS_RSA_WITH_RC4_128_SHA
(1 row affected)
```

Example 8

`sp_ssladmin lsprotocol` returns NULL when the protocol is not set:

```
1> sp_ssladmin lsprotocol
2> go
 TLS Protocol Version
 --------------------
(0 rows affected)
(return status = 0)
```

Example 9

`sp_ssladmin lsprotocol` returns 0 when the protocol is set to `NULL`:

```
1> sp_ssladmin lsprotocol
2> go
TLS Protocol Version
 --------------------
  0
(1 row affected)
```

```
(return status = 0)
```

Usage

- The SAP ASE listener must present to the client a certificate. The common name in the certificate must match the common name used by the client in the interfaces file. If they do not match, the server authentication and login fail.
- When NULL is specified as the password, `dataserver` must be started with a `-y` flag. This flag prompts the administrator for the private-key password at the command line.
- The use of NULL as the password is intended to protect passwords during the initial configuration of SSL, before the SSL encrypted session begins.
  After restarting the SAP ASE server with an SSL connection established, use `sp_ssladmin` again, this time using the actual password. The password is then encrypted and stored by the SAP ASE server. Any subsequent starts of the SAP ASE server from the command line would use the encrypted password; you do not have to specify the password on the command line during start up.
- You can specify "localhost" as the `<hostname>` in the `interfaces` file (`sql.ini` on Windows) to prevent clients from connecting remotely. Only a local connection can be established, and the password is never transmitted over a network connection.

See also *Confidentiality of Data* in the *System Administration Guide*.

Permissions

The permission checks for `sp_ssladmin` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `manage security configuration` privilege.
Disabled	With granular permissions disabled, you must be a user with sso_role.

Auditing

You can enable `security` auditing option to audit this procedure. Values in `event` and `extrainfo` columns from the `sysaudits` table are:

Information	Value
Audit option	`security`
Event	99
Command or access audited	security

Information	Value
Information in **extrainfo**	- **Roles** – Current active roles - **Keywords or options** – SSL_ADMIN addcert if adding a certification - **Previous value** – NULL - **Current value** – NULL - **Other information** – Message number - **Proxy information** – Original login name, if set proxy in effect

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide > Auditing*.

1.253 sp_syntax

Displays the syntax of Transact-SQL statements, system procedures, utilities, and other routines for the SAP ASE server, depending on which products and corresponding sp_syntax scripts exist on your server.

Syntax

```
sp_syntax <word>[, <mod>][, <language>]
```

Parameters

word

is the name or partial name of a command or routine; for example, "help", to list all system procedures providing help. To include spaces or Transact-SQL reserved words, enclose the word in quotes.

<mod>

is the name or partial name of one of the modules such as "Transact-SQL" or "Utility". Each sp_syntax installation script adds different modules. Use sp_syntax without any parameters to see which modules exist on your server.

<language>

is the language of the syntax description to be retrieved. <language> must be a valid language name in the syslanguages table.

Examples

Example 1

Displays all `sp_syntax` modules available on your server:

```
sp_syntax
```

Example 2

Displays the syntax and functional description of all routines containing the word or word fragment "disk". Since "disk" is a Transact-SQL reserved word, enclose it in quotes:sp_syntax provides syntax help for Sybase products. These modules are installed on this Server: Module -------------------- Transact-SQL UNIX Utility System Procedure Usage: sp_syntax command [, module [, language]]

```
sp_syntax "disk"
```

Usage

The text for `sp_syntax` is in the database `sybsyntax`sp_syntax provides syntax help for Sybase products.. Load `sp_syntax` and the `sybsyntax` database onto the SAP ASE server with the installation script described in configuration documentation for your platform. If you cannot access `sp_syntax`, see your system administrator for information about installing it on your server.

You can use wildcard characters within the command name you are searching for. However, if you are looking for a command or function that contains the literal "_", you may get unexpected results, since the underscore wildcard character represents any single character.

Permissions

Any user can execute `sp_syntax`. Permission checks do not differ based on the granular permissions settings.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Tables used

`sybsyntax..sybsyntax`

Related Information

sp_helpdb [page 438]

1.254 sp_sysmon

Displays performance information.

Syntax

```
sp_sysmon {'begin_sample' | {{'end_sample' | '<interval>'}[, section]}}
     [, <applmon>=
         {'appl_only' | 'appl_and_login' | 'no_appl' | 'noclear' | 'clear'}
     [, <filter>={<cache_wizard_filter_value> | 'noclear' | 'clear'}
     [, <dumpcounters>={'y' | 'n' | 'noclear' | 'clear' | NULL}
     [, <option>={'noclear' | 'clear' | NULL}]]]]
```

Parameters

begin_sample

Starts sampling. You cannot specify a section when you specify `begin_sample`.

end_sample

Ends sampling and prints the report.

<interval>

Specifies the time period for the sample. It must be in HH:MM:SS form, for example “00:20:00”.

<section>

Is the abbreviation for one of the sections printed by `sp_sysmon`. The values and corresponding names of the report sections are:

- `appmgmt` – Application Management
- `cache wizard` – Cache Wizard
- `dcache` – Data Cache Management

- `diskio` – Disk I/O Management
- `esp` – ESP Management
- `housekeeper` – Housekeeper Task Activity
- `indexmgmt` – Index Management
- `kernel` – Kernel Utilization
- `locks` – Lock Management
- `memory` – Memory Management
- `mdcache` – Metadata Cache Management
- `monaccess` – Monitor Access to Executing SQL
- `netio` – Network I/O Management
- `parallel` – Parallel Query Management
- `pcache` – Procedure Cache Management
- `recovery` – Recovery Management
- `repagent` – RepAgent
- `nvcache` – NV Cache
- `taskmgmt` – Task Management
- `xactmgmt` – Transaction Management
- `xactsum` – Transaction Profile
- `wpm` – Worker Process Management

You can also obtain most of the information available through `sp_sysmon mdcache` report using `sp_monitorconfig`.

`<applmon>`

Specifies whether to print application detail, application and login detail, or no application detail. The default is to omit the application detail. Valid values and the information they report are:

- `appl_only` – CPU, I/O, priority changes and resource limit violations by application name.
- `appl_and_login` – CPU, I/O, priority changes and resource limit violations by application name and login name.
- `no_appl` – skips the by application or by login section of the report. This is the default.

This parameter is only valid when printing the full report and when you specify `appmgmt` for the `<section>`.

`noclear | clear`

Specifies whether to clear or not clear monitor counters:

- `clear` – explicitly clears the monitor counters.
- `noclear` – `sp_sysmon` does not clear the monitor counters. The primarily purpose of the `noclear` parameter is to provide backward compatibility (earlier versions of `sp_sysmon` cleared monitor counters by default).

> i Note
>
> You can use the noclear parameter only when you specify a sample interval in sp_sysmon. You cannot use noclear if you specify begin_sample or end_sample.

By default, sp_sysmon does not clear the monitor counters that are used as source data for the report. If other applications or instances of the sp_sysmon report are running when this is done, clearing the counters may cause the data that they report to be invalid.

<filter>

Is a varchar datatype that allows you to specify a pattern for the cache(s) included in the report.

For example, if it is specified as default data cache, the report only contains information about the default data cache. If it is specified as emp%, the output includes information on all caches with a name matching this pattern.If no value is given the output contains all the caches with the default data cache appearing first, followed by the other caches in alphabetical order.

'cache wizard'

Aids in the monitoring and configuring of data caches for optimal performance.

<dumpcounters>

returns the contents of the master..sysmonitors table (which contains the names and values of all monitor counters) as a result set, after returning the requested report sections.

<option>

Allow you to specify the clear or noclear parameters if you used all the other sp_sysmon parameters to specify alternative sp_sysmon behaviors. Valid values are clear and noclear.

Examples

Monitor Information

Prints monitor information after 10 minutes:

```
sp_sysmon "00:10:00"
```

Disk Management

Prints only the “Disk Management” section of the sp_sysmon report after 5 minutes:

```
sp_sysmon "00:05:00", diskio
```

Data Cache

Starts the sample, executes procedures and a query, ends the sample, and prints only the “Data Cache” section of the report:

```
sp_sysmon begin_sample
go
execute proc1
go
execute proc2
go
select sum(total_sales) from titles
go
sp_sysmon end_sample, dcache
go
```

Full Report

Prints the full report and includes application and login detail for each login:

```
sp_sysmon "00:05:00", @applmon = appl_and_login
```

Not Clearing Counters

Report usage without clearing the counters:

```
sp_sysmon "00:01:00", kernel, noclear
```

You can also use:

```
sp_sysmon "00:01:00", noclear
```

Cache Wizard

Prints a report using the cache wizard:

```
sp_sysmon '00:00:30', 'cache wizard'
```

```
=============================================================================
Cache Wizard
=============================================================================
------------------
default data cache
------------------Run Size        :   100.00 Mb   Usage
%              :      2.86
LR/sec          :    41.10      PR/sec               :     22.57   Hit%:  45.09
Cache Partitions:     4         Spinlock Contention%:      0.00
Buffer Pool Information
-----------------------------------------------------------------------------
IO Size Wash Size  Run Size    APF%   LR/sec   PR/sec   Hit%   APF-Eff% Usage%
------- ---------- ----------- ------ -------- -------- ------ -------- ------
4 Kb     3276 Kb    16.00 Mb  10.00     0.47     0.13  71.43    n/a     0.20
2 Kb    17200 Kb    84.00 Mb  10.00    40.63    22.43  44.79    n/a     3.37
(1 row affected)
Object Statistics
-----------------------------------------------------------------------------
Object                          LR/sec  PR/sec  Hit%   Obj_Cached% Cache_Occp%
------------------------------- ------- ------- ------ ----------- -----------
empdb.dbo.t1                      0.57    0.30  47.06       56.25        0.02
empdb.dbo.t2                      0.30    0.30   0.00       56.25        0.02
empdb.dbo.t3                      0.30    0.30   0.00       56.25        0.02
empdb.dbo.t4                      0.30    0.30   0.00       56.25        0.02
empdb.dbo.t5                      0.30    0.30   0.00       56.25        0.02
empdb.dbo.t6                      0.30    0.30   0.00       56.25        0.02
empdb.dbo.t8                      0.30    0.30   0.00       56.25        0.02
empdb.dbo.t7                      0.57    0.20  64.71       62.50        0.02
tempdb.dbo.tempcachedobjstats     3.63    0.00 100.00       50.00        0.01
tempdb.dbo.tempobjstats           0.47    0.00 100.00       25.00        0.00
Object                          Obj Size    Size in Cache
------------------------------- ----------- -------------
empdb.dbo.t1                         32 Kb       18 Kb
empdb.dbo.t2                         32 Kb       18 Kb
empdb.dbo.t3                         32 Kb       18 Kb
empdb.dbo.t4                         32 Kb       18 Kb
empdb.dbo.t5                         32 Kb       18 Kb
empdb.dbo.t6                         32 Kb       18 Kb
empdb.dbo.t8                         32 Kb       18 Kb
empdb.dbo.t7                         32 Kb       20 Kb
tempdb.dbo.tempcachedobjstats        16 Kb        8 Kb
tempdb.dbo.tempobjstats              16 Kb        4 Kb
---------
company_cache
---------
Run Size        :     1.00 Mb   Usage%              :      0.39
LR/sec          :     0.07      PR/sec              :      0.07   Hit%:   0.00
Cache Partitions:        1      Spinlock Contention%:      0.00
Buffer Pool Information
-----------------------------------------------------------------------------
IO Size Wash Size  Run Size    APF%   LR/sec   PR/sec   Hit%  APF-Eff% Usage%
------- ---------- ----------- ------ -------- -------- ------ -------- ------
2 Kb      204 Kb      1.00 Mb  10.00    0.07    0.07    0.00    n/a     0.39
Object Statistics
-----------------------------------------------------------------------------
Object               LR/sec  PR/sec  Hit%   Obj_Cached% Cache_Occp%
-------------------- ------- ------- ------ ----------- -----------
empdb.dbo.history     0.07    0.07   0.00      25.00      0.39
Object               Obj Size    Size in Cache
-------------------- ----------- -------------
empdb.dbo.history      16 Kb      4 Kb
-------------
companydb_cache
-------------
Run Size        :     5.00 Mb   Usage%              :    100.00
LR/sec          :   380.97      PR/sec              :     56.67   Hit%:  85.13
Cache Partitions:        1      Spinlock Contention%:      0.00
Buffer Pool Information
-----------------------------------------------------------------------------
IO Size Wash Size  Run Size    APF%   LR/sec   PR/sec   Hit%   APF-Eff% Usage%
------- ---------- ----------- ------ -------- -------- ------ -------- ------
2 Kb     1024 Kb    5.00 Mb  10.000   380.97    56.67  85.13  98.42   100.00
Object Statistics
-----------------------------------------------------------------------------
Object                         LR/sec  PR/sec  Hit%   Obj_Cached% Cache_Occp%
----------------------------- ------- ------- ------ ----------- -----------
company_db.dbo.emp_projects     41.07   22.80  44.48       19.64        9.45
company_db.dbo.dept_det         93.03   20.67  77.79       99.08       54.53
company_db.dbo.emp_perf        116.70    2.63  97.74       97.77       34.18
company_db.dbo.dept_locs         0.43    0.17  61.54       50.00        0.16
Object                          Obj Size    Size in Cache
----------------------------- ----------- -------------
company_db.dbo.emp_projects       2464 Kb      484 Kb
company_db.dbo.dept_det           2818 Kb     2792 Kb
company_db.dbo.emp_perf           1790 Kb     1750 Kb
company_db.dbo.dept_locs            16 Kb        8 Kb
TUNING RECOMMENDATIONS
--------------------------------------------------------------------
Usage% for 'default data cache' is low (< 5%)
Usage% for 4k buffer pool in cache:default data cache is low (< 5%)
Usage% for 2k buffer pool in cache:default data cache is low (< 5%)
Usage% for 'company_cache' is low (< 5%)
Usage% for 2k buffer pool in cache:company_cache is low (< 5%)
Consider adding a large I/O pool for 'companydb_cache'
```

NV Cache

Prints only the non-volatile cache section of the `sp_sysmon` report after 20 seconds:

```
sp_sysmon "00:00:20", 'nvcache'
```

```
===============================================================================
=
NV Cache Management
---------------------
Cache Statistics Summary (All NV Caches)
----------------------------------------
     per sec      per xact      count     % of total
     ------------ ------------ ---------- ----------
Cache Search Summary
    Total Cache Hits 96.9 226.1 2035 46.7 %
    Total Cache Misses 110.7 258.2 2324 53.3 %
------------------------- ------------ ------------ ----------
Total Cache Searches 207.6 484.3 4359
Cache Turnover
    Buffers Grabbed 110.1 257.0 2313 n/a
    Buffers Grabbed Dirty 0.0 0.0 0 0.0 %
-------------------------------------------------------------------------------
-
Cache: nvcache
    per sec per xact count % of total
------------------------- ------------ ------------ ---------- ----------
Spinlock Contention n/a n/a n/a 0.0 %
Utilization n/a n/a n/a 100.0 %
Cache Searches
    Cache Hits 96.9 226.1 2035 46.7 %
    Cache Misses 110.7 258.2 2324 53.3 %
------------------------- ------------ ------------ ----------
Total Cache Searches 207.6 484.3 4359
Cache Turnover
    Buffers Grabbed 207.6 484.3 4359 n/a
    Buffers Grabbed Dirty 0.0 0.0 0 0.0 %
Cache Device Reads
Cache Device Writes
- Consider increase size for this cache.
- Consider making NV cache lazy cleaner less aggressive.
- Or consider ratio of sizes of NV cache and
  main memory caches associated with it
-------------------------------------------------------------------------------
-
Cache: nvcache2
    per sec per xact count % of total
------------------------- ------------ ------------ ---------- ----------
Spinlock Contention n/a n/a n/a 0.0 %
Utilization n/a n/a n/a 0.0 %
Cache Searches
    Total Cache Searches 0.0 0.0 0 n/a
------------------------- ------------ ------------ ----------
Total Cache Searches 0.0 0.0 0
Cache Turnover
    Buffers Grabbed 0.0 0.0 0 n/a
Cache Device Reads
Cache Device Writes
- Consider making NV cache lazy cleaner more aggressive.
- Or consider ratio of sizes of NV cache and
  main memory caches associated with it
- Consider making NV cache lazy cleaner less aggressive.
- Or consider ratio of sizes of NV cache and
  main memory caches associated with it
(return status = 0)
```

Usage

There are additional considerations when using `sp_sysmon`:

- `sp_sysmon` displays information about SAP ASE server performance. It sets internal counters to 0, then waits for the specified interval while activity on the server causes the counters to be incremented. When the interval ends, `sp_sysmon` prints information from the values in the counters. See the *Performance and Tuning Guide* for more information.
- To print only a single section of the report, use the valid values for `sp_sysmon <applmon>`.
- If you use `sp_sysmon` in batch mode, with `begin_sample` and `end_sample`, the time interval between executions must be at least one second. You can use `waitfor delay "00:00:01"` to lengthen the execution time of a batch.
- During the sample interval, results are stored in signed integer values. Especially on systems with many CPUs and high activity, these counters can overflow. If you see negative results in your `sp_sysmon` output, reduce your sample time.

See also:

- *Performance and Tuning Series: Monitoring Adaptive Server with sp_sysmon*
- *System Administration Guide Volume 2 > Configuring Data Caches > NV Cache Management* for details about NV caches.

.

Permissions

You must be a user with `execute` permission to run `sp_sysmon`. The permission can be granted to other users by the database owner of `sybsystemprocs`.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide > Auditing*.

1.255 sp_tab_suspectptn

Lists tables with suspect partitions. A range-partitioned table on character-based partition keys can become suspect after a sort-order change, and hash-partitioned tables can become suspect after a cross-platform dump load.

Syntax

```
sp_tab_suspectptn [<table_name>]
```

Parameters

<table_name>

is the name of the table containing suspect partitions.

Usage

If you:

- Provide a table name – the SAP ASE server checks only the table named by <table_name>.
- Do not provide a table name – the SAP ASE server checks all the tables in the current database.

Permissions

Any user can execute sp_tab_suspectptn. Permission checks do not differ based on the granular permissions settings.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_indsuspect [page 528]

1.256 sp_tempdb

sp_tempdb allows users to:

- Create and manage temporary database groups.
- Bind users or applications to the default or other temporary database group or to a specific local temporary database.
- Manage bindings to local temporary databases and temporary database groups.

These bindings are stored in the sysattributes table in master database.

sp_tempdb provides the binding interface for maintaining bindings in sysattributes that are related to the multiple temporary database.

Syntax

```
sp_tempdb [
    [{"create" | "drop"}, "<groupname>"] |
    [{"add" | "remove"}, "<tempdbname>", "<groupname>"] |
    [{"bind", "<objtype>", "<objname>", "<bindtype>", "<bindobj>"
        [, "<scope>", "<hardness>"]} |
        {"unbind", "<objtype>", "<objname>"[, "<scope>"] "<instance_name>"}] |
    ["unbindall_db", "<tempdbname>"] |
    [show[, "all" | "gr" | "db" | "login" | "app"[, "<name>"]] |
    [who, "<dbname>"]
    [help]]
```

Parameters

create

creates the default temporary database group.

drop

drops a temporary database group.

<groupname>

is the name of the temporary database group.

add

adds temporary databases to the default temporary database group.

remove

removes temporary databases from the `default` temporary database group.

`<tempdbname>`

is the name of the temporary database you are adding or removing. For the Cluster Edition, `<tempdbname>` must be a local user temporary database.

`bind`

binds logins and applications to temporary databases or the `default` temporary database group.

`unbind`

unbinds logins and applications to temporary databases or the `default` temporary database group.

`<objtype>`

is the object type. Valid values are:

- `login_name` (or `LG`)
- `application_name` (or `AP`)

Values are not case-sensitive.

`<objname>`

is the name of the object you bind or unbind.

`<bindtype>`

is the bind type. Valid values are:

- `group` (or `GR`)
- `database` (or `DB`)

Values are not case-sensitive.

`<bindobj>`

is the name of the object being bound, and is either a group or a database depending on the `<bindtype>`.

`<scope>`

NULL.

`<instance_name>`

in cluster environments – is the name of the instance owning the local temporary database that is to be unbound. This option is for the Cluster Edition only.

`<hardness>`

hardness – is `hard`, `soft`, or NULL. The default is `soft`. When you set the value of `<hardness>` to `hard`, a failure to assign a temporary database according to the binding results in a failure of the login.

When you set the value to `soft`, such a failure results in the assignment of a temporary database from the default group or a local system temporary database.

unbindall_db

removes all login and application bindings for a given temporary database. It does not remove any database to group memberships. The `<tempdbname>` variable is required with this option.

Existing assignments to active sessions are not affected by this operation.

show

displays information stored in the sysattributes table about the existing groups, group members, login and application bindings, and active sessions that are assigned to a given database. The values are:

- all or no argument – displays the default temporary database group, all database-to-group memberships, and all login and application bindings.
- gr – displays the default temporary database group. sp_tempdb show displays all temporary databases bound to the default temporary database group whether you specify "default" for the <name> option or not.
- db – displays all databases and temporary databases to group memberships. If you provide <name>, then only the database to group memberships for the database <name> are printed.
- login – displays all login bindings where login is not NULL. If you provide <name>, then only the bindings for the login <name> are printed.
- app – displays all bindings where the application is not NULL. If you provide <name>, then the bindings for the application <name> are printed.

> **i Note**
>
> tempdb is always part of the default database group.

who

displays all active sessions assigned to the given temporary database. When using the who parameter, you must use:

- <dbname> – is the name of a temporary database. If you provide a nontemporary database name for <dbname>, sp_tempdb who executes, but does not report any active sessions bound to it.
  If system_view is set to cluster, all active sessions of the cluster are examined.
  If system_view is set to instance, sessions that are active on the current instance are examined
  This command may be executed from any instance in the cluster.

help

displays usage information. Executing sp_tempdb without specifying a command is the same as executing sp_tempdb "help".

Examples

Example 1

Adds mytempdb1 to the default group:

```
sp_tempdb "add", "mytempdb1", "default"
```

Example 2

Removes mytempdb1 from the default group:

```
sp_tempdb "remove", "mytempdb1", "default"
```

Example 3

Binds login "sa" to the default group:

```
sp_tempdb "bind", "lg", "sa", "GR", "default"
```

The value for objtype in this example is login_name. You can substitute login_name with lg or LG.

The value for bindtype in this example is group. You can substitute group with gr or GR.

Example 4

Changes the previous binding of login "sa" from the default group to mytempdb1:

```
sp_tempdb "bind", "lg", "sa", "DB", "mytempdb1"
```

The value for bindtype in this example is database. You can substitute database with db or DB.

Example 5

Binds isql to mytempdb1:

```
sp_tempdb "bind", "ap", "isql", "DB", "mytempdb1"
```

The value for objtype in this example is application_name. You can substitute application_name with ap or AP.

Example 6

Changes the previous binding of isql from mytempdb1 to the default group:

```
sp_tempdb "bind", "ap", "isql", "GR", "default"
```

Example 7

Removes the bindings of login "sa" and application "isql".

```
sp_tempdb "unbind", "lg", "sa"
```

```
sp_tempdb "unbind", "ap", "isql"
```

Example 8

Removes all login and application bindings for the mytempdb1 database:

```
sp_tempdb "unbindall_db", "mytempdb1"
```

Example 9

Demonstrates the sp_temp show command. A selection of the different variations is chosen, and abbreviated sample output is displayed.

```
sp_tempdb show
```

```
Temporary Database Groups
```

```
-------------------------------
default
Database                        GroupName
------------------------------- ----------------
tempdb                          default
mytempdb                        default
mytempdb1                       default
mytempdb2                       default
mytempdb3                       default
Login   Application  Group    Database    Hardness
------- ------------- -------- ----------- --------
NULL   isql          default  NULL        SOFT
sa      NULL          NULL     mytempdb3   HARD
```

Example 10

Displays the `default` temporary database group:

```
sp_tempdb show, "gr"
```

```
Temporary Database Groups
-------------------------------
default
```

Example 11

Displays all the temporary database group names that are bound to the `default` group:

```
sp_tempdb show, "gr", "default"Member Databases
-------------------------------
tempdb
mytempdb
mytempdb1
mytempdb2
mytempdb3
```

Example 12

Displays all the databases-to-group memberships:

```
sp_tempdb show, "db"
```

```
Database              Group
--------------------- ----------------
tempdb                default
mytempdb              default
mytempdb1             default
mytempdb2             default
mytempdb3             default
```

Example 13

Displays all the databases-to-group memberships for the `mytempdb1` database.

```
sp_tempdb show, "db", "mytempdb1"
```

```
Database              Group
--------------------- ----------------
mytempdb1             default
```

Example 14

Displays all the login bindings where login is not NULL:

```
sp_tempdb show, "login"
```

```
Login   Application   Group   Database    Hardness
------- ------------- ------- ----------- --------
sa      NULL          NULL    mytempdb3   HARD
```

Example 15

Displays all active sessions that are assigned to the system `tempdb`:

```
sp_tempdb who, "tempdb"
```

```
spid   loginame
------ ------------------------------
2      NULL
3      NULL
4      NULL
5      NULL
6      NULL
7      NULL
8      NULL
```

Example 16

Displays all active sessions that are assigned to the `mytempdb3` user-created temporary database:

```
sp_tempdb who, "mytempdb3"
```

```
spid   loginame
------ ------------------------------
17      sa
```

Example 17

Displays usage information:

```
sp_tempdb help
```

```
Usage:
sp_tempdb 'help'
sp_tempdb 'create', <groupname>
sp_tempdb 'drop', <groupname>
sp_tempdb 'add', <tempdbname>, <groupname>
sp_tempdb 'remove', <tempdbname>, <groupname>
sp_tempdb 'bind', <objtype>, <objname>, <bindtype>, <bindobj>, <scope>,
          <hardness>
sp_tempdb 'unbind', <objtype>, <objname>, <scope>
sp_tempdb 'unbindall_db', <tempdbname>
sp_tempdb 'show', <command>, <name>
sp_tempdb 'who', <dbname>
<objtype> = ['LG' ('login_name') | 'AP' ('application_name')];
<bindtype> =['GR' ('group') | 'DB' ('database')]
<hardness> = ['hard' | 'soft']
<command> = ['all' | 'gr' | 'db' | 'login' | 'app']
```

Example 18

Displays all temporary databases and the names of the groups to which the temporary databases belong:

```
create temporary database mytempdb
-------------
CREATE DATABASE: allocating 1536 logical pages (3.0 megabytes) on disk
'master'.|
create temporary database mytempdb1
----------
CREATE DATABASE: allocating 1536 logical pages (3.0 megabytes) on disk
'master'.
sp_tempdb 'add', mytempdb,'default'
------------
(return status = 0
sp_tempdb show, db
-------------
Database Group
--------
tempdb default
mytempdb default
mytempdb1
(3 rows affected)
(return status = 0)
```

Usage

There are additional considerations when using `sp_tempdb`:

- To display the distribution of users across all temporary databases, use both options, `show` and `who`:
  - To obtain the names of all temporary databases, execute `sp_tempdb 'show'`.
  - Pass each temporary database name to: `sp_tempdb 'who', <tempdbname>`.

  In SAP ASE versions 15.0 and above, you can obtain the same output by executing `sp_who`.
- When using the `sp_tempdb create` stored procedure, the `<groupname>` variable:
  - Must be a valid identifier
  - Cannot already exist

  The `default` group is the system-generated group, of which `tempdb` is always a member. This `default` group is present if you:
  - Upgrade using the SAP ASE server containing this feature, or
  - Create a new master device.

  If the `default` group is not present, you can create it by using:

  ```
  sp_tempdb create, "default"
  ```

  An error message displays if you attempt to create a `default` group that already exists.
- To add a temporary database to the `default` temporary database group, both the temporary database and the group name must already exist. When you use `sp_tempdb add` to add a `<tempdbname>` to a set of databases that are members of the `default` temporary database group, `<tempdbname>` becomes available for round-robin assignment from within that group.

  > **i Note**
  >
  > `sp_tempdb add` fails if `<tempdbname>` is not already part of the global list of available temporary databases in the SAP ASE server.

User-created temporary databases need not belong to the `default` temporary database group. The system `tempdb` is implicitly a member of the `default` group.
If you try to add a temporary database to the `default` temporary database group when it is already a part of that group, you get an error message, and no changes take place in `sysattributes`.

Permissions

The permission checks for `sp_tempdb` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `manage server` privilege.
Disabled	With granular permissions disabled, you must be a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

1.257 sp_tempdb_markdrop

(Cluster Edition) Places a local system temporary database in the drop state.

Syntax

```
sp_tempdb_markdrop <database_name> [, {'mark' | 'unmark'}]
```

Parameters

`<database_name>`

is the name of the local system temporary database you are dropping

`mark`

marks the specified database for dropping.

`unmark`

clears the mark from the database.

Examples

Example 1

Marks a local system temporary database named "old_cluster_tempdb1" to be dropped:

```
sp_tempdb_markdrop 'old_cluster_tempdb1', 'mark'
```

Example 2

Removes the mark from the local system temporary database "old_cluster_tempdb1":

```
sp_tempdb_markdrop 'old_cluster_tempdb1, 'unmark'
```

Usage

To delete the last local temporary database:

1. Use `sp_tempdb_markdrop` to place the local system temporary database in the drop state.
2. Shut down and restart the instance that owns the last local temporary database.

> i Note
>
> After you mark the local system temporary database to be dropped, the owner instance restarts if there are no other active instances. This instance does not use the marked local system temporary database when it starts.

3. Use `drop database` to delete the last local system temporary database.

Permissions

The permission checks for `sp_tempdb_markup` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with the `own database` privilege on the specified database or the `manage cluster` privilege.
Disabled	With granular permissions disabled, you must be the database owner or a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

1.258 sp_thresholdaction

Executes automatically when the number of free pages on the log segment falls below the last-chance threshold, unless the threshold is associated with a different procedure. SAP does not provide this procedure.

Syntax

When a threshold is crossed, the SAP ASE server passes the following parameters to the threshold procedure by position:

```
sp_thresholdaction @<dbname>,
    @<segment_name>,
    @<space_left>,
    @<status>
```

Parameters

@<dbname>

is the name of a database where the threshold was reached.

@<segment_name>

is the name of the segment where the threshold was reached.

@<space_left>

is the threshold size, in logical pages.

@<status>

is 1 for the last-chance threshold; 0 for all other thresholds.

Examples

Example 1

Creates a threshold procedure for the last-chance threshold that dumps the transaction log to a tape device:

```
create procedure sp_thresholdaction
        @dbname varchar(30),
        @segmentname varchar(30),
        @space_left int,
        @status int
as
        dump transaction @dbname to tapedump1
```

Usage

There are additional considerations when using sp_thresholdaction:

- sp_thresholdaction must be created by the database owner (in a user database), or a system administrator (in the sybsystemprocs database), or a user with create procedure permission.
- You can add thresholds and create threshold procedures for any segment in a database.
- When the last-chance threshold is crossed, the SAP ASE server searches for the sp_thresholdaction procedure in the database where the threshold event occurs. If it does not exist in that database, the SAP ASE server searches for it in sybsystemprocs. If it does not exist in sybsystemprocs, it searches master. If the SAP ASE server does not find the procedure, it sends an error message to the error log.
- sp_thresholdaction should contain a command to truncate the transaction log.
- By design, the last-chance threshold allows enough free space to record a dump transaction command. There may not be enough space to record additional user transactions against the database. Only commands that are not recorded in the transaction log (dump transactionselect, fast bcp, readtext, and writetext) and commands that might be necessary to free additional log space (dump transaction, dump database, and alter database) can be executed. By default, other commands are suspended and a message is sent to the error log. To abort these commands rather than suspend them, use the dumpabort tran on log full option of sp_dboption followed by the checkpoint command.

For waking suspended processes:

- Once the dump transaction command frees sufficient log space, suspended processes automatically awaken and complete.
- If fast bcp, writetext, or select into have resulted in unlogged changes to the database since the last backup, the last-chance threshold procedure cannot execute a dump transaction command. When this occurs, use dump database to make a copy of the database, then use dump transaction to truncate the transaction log.
- If this does not free enough space to awaken the suspended processes, it may be necessary to increase the size of the transaction log. Use the log on option of the alter database command to allocate additional log space.
- As a last resort, system administrators can use sp_who to determine which processes are suspended, then use the kill command to kill them.

See also create procedure, dump transaction in *Reference Manual: Commands*.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_addthreshold [page 62]
sp_dboption [page 228]
sp_dropthreshold [page 323]
sp_helpsegment [page 478]
sp_helpthreshold [page 492]
sp_modifythreshold [page 597]
sp_who [page 846]

1.259 sp_tran_dumpable_status

If you cannot make a transaction dump on a database, sp_tran_dumpable_status displays the reasons the dump is not possible.

Syntax

```
sp_tran_dumpable_status [<database_name>]
```

Parameters

<database_name>

name of the database you are researching.

Examples

Example 1

Describes the reasons you cannot currently make a transaction dump on sybsystemprocs:

```
sp_tran_dumpable_status sybsystemprocs
```

```
bit              description
-----------       ----------------------------
          2       Log is not on its own device
          8       Trunc log on ckpt is set
         32       Dump tran with truncate_only
         64       Database is new or upgraded
```

Usage

This system procedure simply calls the tran_dumpable_status built-in function.

Permissions

Any user can execute tran_dumpable_status. Permission checks do not differ based on the granular permissions settings.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

1.260 sp_transactions

Reports information about active transactions.

Syntax

```
sp_transactions ["xid", <xid_value>] |
    ["state", {"heuristic_commit" | "heuristic_abort"
    | "prepared" | "indoubt"} [, "xactname"]] |
    ["gtrid", <gtrid_value>]
```

Parameters

<xid_value>

is a transaction name from the `xactname` column of `master.dbo.systransactions`.

<gtrid_value>

is the global transaction ID name for a transaction coordinated by the SAP ASE server.

Examples

Example 1

Displays general information about all active transactions:

```
sp_transactions
```

```
xactkey                        type   coordinator starttime         state
   connection dbid spid loid failover srvname  namelen  xactname
------------------------------ ----   ----------- ----------------  ---------
   ---------- ---- ---- ---- -------- -------- -------  -------------------
0x00000b1700040000dd6821390001 Local    None        Jun 1 1999 3:47PM Begun
   Attached       1   1    2 Resident Tx       NULL     17
$user_transaction
0x00000b1700040000dd6821390001 Remote   ASTC        Jun 1 1999 3:47PM Begun
   NA             0   8    0 Resident Tx        caserv2 108
00000b1700040000dd6821390001-aa01f04ebb9a-00000b1700040000dd6821390001-aa0
1f04ebb9a-caserv1-caserv1-0002
```

Example 2

Displays detailed information for the specified transaction:

```
sp_transactions "xid", "00000b1700040000dd6821390001-
aa01f04ebb9a-00000b1700040000dd6821390001-aa01f04ebb9a-caserv1-caserv1-0002"
```

```
xactkey                        type        coordinator starttime        state
   connection dbid spid loid  failover  srvname  namelen  xactname
      commit_node            parent_node
gtrid
------------------------------ ----------- ----------- ----------
       -------     ---------- ------ ------ ---------  -------- ---------
---------- -------
      -------------   -------------  -------------
0x00000b2500080000dd6821960001 External    ASTC       Jun 1 1999 3:47PM  Begun
   Attached      1    8  139  Resident  Tx       NULL         108
00000b1700040000dd6821390001-aa01f04ebb9a-00000b1700040000dd6821390001-aa0
1f04ebb9a-caserv1-caserv1-0002
caserv1            caserv1
00000b1700040000dd6821390001-aa01f04ebb9a
```

Example 3

Displays general information about transactions that are in the “prepared” state:

```
sp_transactions "state", "prepared"
```

Example 4

Displays only the transaction names of transactions that are in the “prepared” state:

```
sp_transactions "state", "prepared", "xactname"
```

Example 5

Displays status information for transactions having the specified global transaction ID:

```
sp_transactions "gtrid", "00000b1700040000dd6821390001-aa01f04ebb9a"
```

```
xactkey                        type    coordinator starttime          state
   connection dbid spid loid failover srvname  namelen   xactname
commit_node
parent_node
------------------------------ ------- ---------- -----------------
 -----------
    ---------- ------ ------ ----------- ------------ --------------- -------
-------------
-------------
0x00000b1700040000dd6821390001 Local   None        Jun 1 1999 3:47PM  Begun
   Attached     1     1    2  Resident Tx      NULL       17  $user_transactio
n
caserv1
caserv1
```

Usage

There are additional considerations when using `sp_transactions`:

- `sp_transactions` translates data from the `systransactions` table to display information about active transactions. `systransactions` itself comprises data in the `syscoordinations` table, as well as in-memory information about active transactions.
- `sp_transactions` with no keywords displays information about all active transactions.
- `sp_transactions` with the `xid` keyword displays the `gtrid`, `commit_node`, and `parent_node` columns only for the specified transaction.
- `sp_transactions` with the `state` keyword displays information only for the active transactions in the specified state.
  `sp_transactions` with both `xid` and `xactname` displays only the transaction names for transactions in the specified state.
- `sp_transactions` with the `gtrid` keyword displays information only for the transactions with the specified global transaction ID.
- `sp_transactions` replaces the `sp_xa_scan_xact` procedure provided with XA-Library and XA-Server products.

The columns for `sp_transactions` output are:

Column	Description
xactkey	The column shows the internal transaction key that the SAP ASE server uses to identify the transaction.
type	The column indicates the type of transaction: • “Local” means that the transaction was explicitly started on the local SAP ASE server with a `begin transaction` statement. • “Remote” indicates a transaction executing on a remote SAP ASE server. • “External” means that the transaction has an external coordinator associated with it. For example, transactions coordinated by a remote SAP ASE server, MSDTC, or an X/Open XA transaction manager are flagged as “External.” • “Dtx_State” is a special state for distributed transactions coordinated by the SAP ASE server. It indicates that a transaction on the local server was either committed or aborted, but the SAP ASE server has been unable to resolve a branch of that transaction on a remote participant. This may happen in cases where the SAP ASE server loses contact with a server it is coordinating.
coordinator	The column indicates the method or protocol used to manage a distributed transaction. The values for coordinator are: • None – transaction is not a distributed transaction and does not require a coordinating protocol. • ASTC – transaction is coordinated using the SAP ASE transaction coordination services. • XA – transaction is coordinated by the X/Open XA-compliant transaction manager via the SAP ASE XA-Library interface. Such transaction managers include Encina, CICS, and Tuxedo. • DTC – transaction is coordinated by MSDTC. • SYB2PC – transaction is coordinated using Sybase two-phase commit protocol.
starttime	The column indicates the time that the transaction started.
state	The column indicates the state of the transaction at the time `sp_transactions` ran: • Begun – transaction has begun but no updates have been performed. • Done Command – transaction completed an update command. • Done – X/Open XA transaction has finished modifying data. • Prepared • Transaction has successfully prepared. • In Command – transaction is currently modifying data. • In Abort Cmd – execution of the current command in the transaction has been aborted. • Committed – transaction has successfully committed, and the commit log record has been written. • In Post Commit – transaction has successfully committed, but is currently deallocating transaction resources. • In Abort Tran – transaction is being aborted. This may happen either as a result of an explicit command, or because of a system failure. • In Abort Savept – transaction is being rolled back to a savepoint.

Column	Description
	• Begun-Detached – transaction has begun, but there is no thread currently attached to it. • Done Cmd-Detached – transaction has finished modifying data, and no thread is currently attached to it. • Done-Detached – transaction modifies no more data, and no thread is currently attached to it. • Prepared-Detached – transaction has successfully prepared, and no thread is currently attached to it. • Heur Committed – transaction has been heuristically committed using the `dbcc complete_xact` command. • Heur Rolledback – transaction has been heuristically rolled back using the `dbcc complete_xact` command.
connection	The column indicates whether or not the transaction is currently associated with a thread: • “Attached” indicates that the transaction has an associated thread of control. • “Detached” indicates that there is no thread currently associated with the transaction. Some external transaction managers, such as CICS and TUXEDO, use the X/Open XA “suspend” and “join” semantics to associate different threads with the same transaction.
dbid	The column indicates the database ID of the database in which transaction started.
spid	The column indicates the server process ID associated with the transaction. If the transaction is “Detached,” the “spid” value is 0.
loid	The column indicates the unique lock owner ID from `master.dbo.systransactions`.
failover	The column indicates the failover state for the transaction: • “Resident Tx” indicates that the transaction started and is executing on the same server. “Resident Tx” is displayed under normal operating conditions, and on systems that do not utilize SAP ASE high availability features. • “Failed-over Tx” is displayed after there has been a failover to a secondary companion server. “Failed-over Tx” means that a transaction originally started on a primary server and reached the prepared state, but was automatically migrated to the secondary companion server (for example, as a result of a system failure on the primary server). The migration of a prepared transaction occurs transparently to an external coordinating service. • “Tx by Failover-Conn” indicates that there was an attempt to start the transaction on a designated server, but the transaction was instead started on the secondary companion server. This occurs when the original server has experienced a failover condition.
srvname	The column indicates the name of the remote server on which the transaction is executing. This column is only meaningful for remote transactions. For local and external transactions, `srvname` is null.
namelen	The column indicates the total length of the `<xactname>` value.

Column	Description
	<xactname> is the transaction name. For local transactions, the transaction name may be defined as part of the `begin transaction` command. External transaction managers supply unique transaction names in a variety of formats. For example, X/Open XA-compliant transaction managers supply a transaction ID (<xid>) consisting of a global transaction identifier and a branch qualifier, both of which are stored in <xactname>.
gtrid	For transactions coordinated by the SAP ASE server, the column displays the global transaction ID. Transaction branches that are part of the same distributed transaction share the same `gtrid`. You can use a specific `gtrid` with the `sp_transactions gtrid` keyword to determine the state of other transaction branches in the same distributed transaction. `sp_transactions` cannot display the `gtrid` for transactions that have an external coordinator. For transactions coordinated by an X/Open XA-compliant transaction manager, MSDTC, or SYB2PC, the `gtrid` column shows the full transaction name supplied by the external coordinator.
commit_node	For transactions coordinated by the SAP ASE server, the column indicates the server that executes the outermost block of the distributed transaction. This outermost block ultimately determines the commit status of all subordinate transactions. For transactions not coordinated by the SAP ASE server, `commit_node` displays one of these values: ● <server_name> – commit or parent node is an SAP ASE server with the specified <server_name>. ● XATM – commit or parent node is an X/Open XA-compliant transaction manager. ● MSDTCTM – ommit or parent node is MSDTC. ● SYB2PCTM – transaction is coordinated using SYB2PC protocol.
parent_node	For transactions coordinated by the SAP ASE server, the column indicates the server that is coordinating the external transaction on the local server. For transactions not coordinated by the SAP ASE server, `parent_node` displays the same values as those displayed by `commit_node`. i Note The values for `commit_node` and `parent_node` can be different, depending on the levels of hierarchy in the distributed transaction.

See also *Using Adaptive Server Distributed Transaction Management Features*.

Permissions

Any user can execute `sp_transactions`. Permission checks do not differ based on the granular permissions settings.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide > Auditing*.

Related Information

sp_lock [page 559]
sp_who [page 846]

1.261 sp_unbindcache

Unbinds a database, table, index, text object, or image object from a data cache.

Syntax

```
sp_unbindcache <dbname>[,[<owner>.]<tablename>
    [, <indexname> | "text only"]]
```

Parameters

<dbname>

is the name of database to be unbound or the name of the database containing the objects to be unbound.

<owner>

is the name of the table's owner. If the table is owned by the database owner, the owner name is optional.

<tablename>

is the name of the table to be unbound from a cache or the name of a table with an index, text object, or image object that is to be unbound from a cache.

<indexname>

is the name of an index to be unbound from a cache.

text only

unbinds text or image objects from a cache.

Examples

Example 1

Unbinds the titles bound:

```
sp_unbindcache pubs2, titles
```

Example 2

Unbinds the titleidind

```
sp_unbindcache pubs2, titles, titleidind
```

Example 3

Unbinds the text or image object for the au_pix table from the cache to which it is bound:

```
sp_unbindcache pubs2, au_pix, "text only"
```

Example 4

Unbinds the transaction log, syslogs, from its cache:

```
sp_unbindcache pubs2, syslogs
```

Usage

There are additional considerations when using sp_unbindcache:

- When you unbind a database or database object from a cache, all subsequent I/O for the cache is performed in the default data cache. All dirty pages in the cache being unbound are written to disk, and all clean pages are cleared from the cache.
- The SAP ASE server issues error number 857 if you attempt to use sp_unbindcache to unbind a database that is in use.
- Cache unbindings take effect immediately and do not require a restart of the server, except with the system index from the from the cache to which it is bound:tempdb.
- Although you can still use sp_unbindcache index from the from the cache to which it is on a system tempdb, the binding of the system tempdb is now non-dynamic. Until you restart the server:
  - The changes do not take effect
  - sp_helpcache reports a status of "P" for pending, unless you have explicitly bound the system tempdb to the default data cache, in which case the status as "V" for valid, because by default the system tempdb is already bound to the default datacache.
- When you drop a database, table, or index, its cache bindings are automatically dropped.
- To unbind a database, you must be using the master database. For tables, indexes, text objects, or image objects, you must be using the database where the objects are stored.
- To unbind any system tables in a database, you must be using the database, and the database must be in single-user mode. Use the command:

```
sp_dboption <db_name>, "single user", true
```

See `sp_dboption` for more information.
- These procedures provide information about the bindings for their respective objects: `sp_helpdb` for databases, `sp_help` for tables, and `sp_helpindex` for indexes.
- `sp_helpcache` prints the names of objects bound to caches.
- `sp_unbindcache` needs to acquire an exclusive table lock when you are unbinding a table or its indexes to a cache. No pages can be read while the unbinding takes place. If a user holds locks on a table, and you issue `sp_unbindcache` on that object, the `sp_unbindcache` task sleeps until the locks are released.
- When you change the cache binding for an object with `sp_bindcache` or `sp_unbindcache`, the stored procedures that reference the object are recompiled the next time they are executed. When you change the binding for a database, the stored procedures that reference objects in the database are recompiled the next time they are executed.
- To unbind all objects from a cache, use the system procedure `sp_unbindcache_all`.

See also *Performance and Tuning Guide*.

Permissions

The permission checks for `sp_unbindcache` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `manage data cache` privilege.
Disabled	With granular permissions disabled, you must be a user with sa_role

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_bindcache [page 103]
sp_dboption [page 228]
sp_help [page 396]
sp_helpdb [page 438]
sp_helpcache [page 420]
sp_helpdb [page 438]
sp_helpindex [page 454]
sp_unbindcache_all [page 820]

1.262 sp_unbindcache_all

Unbinds all objects that are bound to a cache.

Syntax

```
sp_unbindcache_all <cache_name>
```

Parameters

<cache_name>

is the name of the data cache from which objects are to be unbound.

Examples

Example 1

Unbinds all databases, tables, indexes, `text` objects and `image` objects that are bound to `pub_cache`:

```
sp_unbindcache_all pub_cache
```

Usage

There are additional considerations when using `sp_unbindcache_all`:

- When you unbind entities from a cache, all subsequent I/O for the cache is performed in the default cache.
- To unbind individual objects from a cache, use the system procedure `sp_unbindcache`.
- You cannot use `sp_unbindcache_all` if the system `tempdb` is bound to `pub_cache`. If you do, you get an error message, and `sp_unbindcache_all` rejects the unbind for all objects.
  Use `sp_unbindcache` to unbind the system `tempdb` first.
- See `sp_unbindcache` for more information about unbinding caches.

Permissions

The permission checks for `sp_unbindcache_all` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `manage data cache` privilege.
Disabled	With granular permissions disabled, you must be a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_bindcache [page 103]
sp_helpcache [page 420]
sp_unbindcache [page 817]

1.263 sp_unbindefault

Unbinds a created default value from a column or from a user-defined datatype.

Syntax

```
sp_unbindefault <objname>[, futureonly]
```

Parameters

`<objname>`

is the name of either the table and column or the user-defined datatype from which to unbind the default. If the parameter is not of the form "`<table>.<column>`", then `<objname>` is assumed to be a user-defined datatype. When unbinding a default from a user-defined datatype, any columns of that type that have the same default as the user-defined datatype are also unbound. Columns of that type, with a default that has already been changed, are unaffected.prevents existing columns of the specified user-defined datatype from losing their defaults. It is ignored when unbinding a default from a column.

`futureonly`

Examples

Example 1

Unbinds the default from the `startdate`prevents existing columns of the specified user-defined datatype from losing their column of the `employees` table:

```
sp_unbindefault "employees.startdate"
```

Example 2

Unbinds the default from the user-defined datatype named `ssn` and all columns of that type:

```
sp_unbindefault ssn
```

Example 3

Unbinds defaults from the user-defined datatype `ssn`, but does not affect existing columns of that type:

```
sp_unbindefault ssn, futureonly
```

Usage

There are additional considerations when using `sp_unbindefault`:

- Use `sp_unbindefault` to remove defaults created with `sp_bindefault`. Use `alter table` to drop defaults declared using the `create table` or `alter table` statements.
- Columns of a user-defined datatype lose their current default unless the default has been changed or the value of the optional second parameter is `futureonly`.
- To display the text of a default, execute `sp_helptext` with the default name as the parameter.

See also `create default`, `drop default` in *Reference Manual: Commands*.

Permissions

The permission checks for `sp_unbindefault` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be the object owner or the user datatype owner.

Setting	Description
Disabled	With granular permissions disabled, you must be the object owner.

Auditing

You can enable unbind auditing option to audit this procedure. Values in event and extrainfo columns from the sysaudits table are:

Information	Value
Audit option	unbind
Event	67
Command or access audited	sp_unbindefault
Information in **extrainfo**	• **Roles** – Current active roles • **Keywords or options** – NULL • **Previous value** – NULL • **Current value** – NULL • **Other information** – NULL • **Proxy information** – Original login name, if set proxy in effect

Example of extrainfo after executing sp_unbindefault:

```
sa_role sso_role oper_role sybase_ts_role mon_role; ; ; ; ; ; s
     a/ase;
```

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_bindefault [page 107]
sp_helptext [page 485]

1.264 sp_unbindexeclass

Removes the execution class attribute previously associated with an client application, login, stored procedure, or default execution class for the specified scope.

Syntax

```
sp_unbindexeclass <object_name>, <object_type>, <scope>
```

Parameters

<object_name>

is the name of the application, login, or stored procedure for which you remove the association to the execution class. If the `<object_type>` is `DF`, `<object_name>` should be null.

<object_type>

identifies the type of `<object_name>` as `AP`, `LG`, `PR` , or `DF` for application, login, stored procedure, or default execution class.

<scope>

is the application name or login name for which the unbinding applies for an application or login. It is the stored procedure owner name (user name) for stored procedures. It is null for object type `DF`.

Examples

Example 1

Removes the association between "sa" login scoped to application `isql` and an execution class. "sa" automatically binds itself to another execution class, depending on other binding specifications, precedence, and scoping rules. If no other binding is applicable, the object binds to the default execution class, `EC2`:

```
sp_unbindexeclass 'sa', 'lg', 'isql'
```

Usage

There are additional considerations when using `sp_unbindexeclass`:

- The parameters must match an existing entry in the `sysattributes` system table.
- If you specify a null value for scope, the SAP ASE server unbinds the object for which the scope is null, if there is one.
- A null value for scope does not indicate that unbinding should apply to all bound objects.
- When unbinding a stored procedure from an execution class, you must use the name of the stored procedure owner (user name) for the `scope` parameter.
- When unbinding a stored procedure from a user-defined default execution class, all tasks running with user-defined default execution class attributions run with attributes of system-defined default execution class `EC2`.
- Stored procedures can be dropped before or after unbinding.
- A user cannot be dropped from a database if the user owns a stored procedure that is bound to an execution class in that database.
- Unbind objects of type `PR` before dropping them from the database.
- Unbinding fails if the associated engine group has no online engines and active processes are bound to the associated execution class.
- Due to precedence and scoping rules, the execution class being unbound may or may not have been in effect for the `<object_name>`. The object automatically binds itself to another execution class, depending on other binding specifications and precedence and scoping rules. If no other binding is applicable, the object binds to the default execution class. If there is no use-defined default execution class, the object binds to class `EC2`.

See also `isql` in the *Utility Guide*.

Permissions

The permission checks for `sp_unbindexeclass` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with `manage any execution class` privilege.
Disabled	With granular permissions disabled, you must be a user with sa_role.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide > Auditing*.

Related Information

sp_addexeclass [page 35]

sp_bindexeclass [page 110]
sp_dropexeclass [page 296]
sp_showexeclass [page 743]

1.265 sp_unbindmsg

Unbinds a user-defined message from a constraint.

Syntax

```
sp_unbindmsg <constrname>
```

Parameters

<constrname>
is the name of the constraint from which a message is to be unbound.

Examples

Example 1

Unbinds a user-defined message from the constraint `positive_balance`:

```
sp_unbindmsg positive_balance
```

Usage

You can bind only one message to a constraint. To change the message bound to a constraint, use `sp_bindmsg`; the new message number replaces any existing bound message. It is not necessary to use `sp_unbindmsg` first.

To retrieve message text from the `sysusermessages` table, execute `sp_getmessage`.

Permissions

You must be the constraint owner to execute sp_unbindmsg. Permission checks do not differ based on the granular permissions settings.

Auditing

You can enable unbind auditing option to audit this procedure. Values in event and extrainfo columns from the sysaudits table are:

Information	Value
Audit option	unbind
Event	69
Command or access audited	sp_unbindmsg
Information in **extrainfo**	● **Roles** – Current active roles ● **Keywords or options** – NULL ● **Previous value** – NULL ● **Current value** – NULL ● **Other information** – NULL ● **Proxy information** – Original login name, if set proxy in effect

Example of extrainfo after executing sp_unbindmsg:

```
sa_role sso_role oper_role sybase_ts_role mon_role; ; ; ; ; ; s
     a/ase;
```

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_addmessage [page 47]
sp_bindmsg [page 113]
sp_getmessage [page 390]

1.266 sp_unbindrule

Unbinds a rule from a column or from a user-defined datatype.

Syntax

```
sp_unbindrule <objname>[, futureonly[, "accessrule" | "all"]]
```

Parameters

<objname>

is the name of the table and column or of the user-defined datatype from which the rule is to be unbound. If the parameter is not of the form "<table>.<column>", then <objname> is assumed to be a user-defined datatype. Unbinding a rule from a user-defined datatype also unbinds it from columns of the same type. Columns that are already bound to a different rule are unaffected.

futureonly

prevents columns of the specified user-defined datatype from losing their rules. It is ignored when unbinding a rule from a column.

accessrule

indicates that you are unbinding the access rule bound to <objname>.

all

specifies that you are unbinding all rules bound to <objname>.

Examples

Example 1

Unbinds the rule from the startdate column of the employees table:

```
sp_unbindrule "employees.startdate"
```

Example 2

Unbinds the rule from the user-defined datatype named def_ssn and all columns of that type:

```
sp_unbindrule def_ssn
```

Example 3

The user-defined datatype ssn no longer has a rule, but existing ssn columns are unaffected:

```
sp_unbindrule ssn, futureonly
```

Example 4

You can use the all parameter to unbind both accesss rules and domain rules. For example, to unbind all the access rules and domain rules on the publishers table:

```
sp_unbindrule publishers, null, "all"
```

To unbind the access rule from a user-defined datatype for subsequent uses of this datatype, issue:

```
sp_unbindrule def_ssn, futureonly, "accessrule"
```

To unbind both access rules and domain rules for subsequent uses of this datatype, issue:

```
sp_unbindrule def_ssn, futureonly, "all"
```

Example 5

This access rule is bound to the publishers table:

```
sp_bindrule empl_access, "publishers.pub_id"
```

To unbind this rule, issue:

```
sp_unbindrule "empl_access", NULL, "accessrule"
```

Usage

There are additional considerations when using sp_unbindrule:

- Executing sp_unbindrule removes a rule from a column or from a user-defined datatype in the current database. If you do not want to unbind the rule from existing objname columns, use futureonly
- You cannot use sp_unbindrule to unbind a check constraint. Use as the second parameter.alter table to drop the constraint.
- To unbind a rule from a table column, specify the <objname> as the argument in the form "<table>.<column>".
- The rule is unbound from all existing columns of the user-defined datatype unless the rule has been changed or the value of the optional second parameter is futureonly.
- To display the text of a rule, execute sp_helptext with the rule name as the parameter.

See also create rule, drop rule in *Reference Manual: Commands*.

Permissions

You must be the table owner or datatype owner to execute sp_unbindrule. Permission checks do not differ based on the granular permissions settings.

Auditing

You can enable unbind auditing option to audit this procedure. Values in event and extrainfo columns from the sysaudits table are:

Information	Value
Audit option	unbind
Event	68
Command or access audited	sp_unbindrule
Information in **extrainfo**	- **Roles** – Current active roles - **Keywords or options** – NULL - **Previous value** – NULL - **Current value** – NULL - **Other information** – NULL - **Proxy information** – Original login name, if set proxy in effect

Example of extrainfo after executing sp_unbindrule:

```
sa_role sso_role oper_role sybase_ts_role mon_role; ; ; ; ; ; s
     a/ase;
```

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

Related Information

sp_bindrule [page 115]
sp_helptext [page 485]

1.267 sp_version

Returns the version information of the installation scripts (installmaster, installdbccdb, and so on) that was last run and whether it was successful.

Syntax

```
sp_version [<script_file>, [all]]
```

Parameters

<script_file>

is the name of the installation script (the default value is NULL).

all

reports details about the installation scripts, such as the date it was run and the time it took to run.

Examples

Example 1

Returns the script name, version, and status of all installation scripts that have been run:

```
sp_version
```

```
Script          Version
Status
-----------
      ------------------------------------------------------------------------
installmaster    15.0/EBF XXXXX/B/Sun_svr4/OS 5.8/asemain/1/32-bit/OPT/Thu
Sep 23 22:12:12 2004
Complete
installmaster    15.0/EBF XXXXX/B/Sun_svr4/OS 5.8/asemain/1/32-bit/OPT/Thu
Sep 23 22:12:12 2004
Complete
installmodel     15.0/EBF XXXXX/B/Sun_svr4/OS 5.8/asemain/1861/32-
bit/OPT/Mon Sep 27 23:40:02 2004
Complete
```

Example 2

Returns information about the installmaster installation script:

```
sp_version        installmaster
```

```
-----------      ---------------------------------------------------------
installmaster    15.0/EBF XXXXX/B/Sun_svr4/OS 5.8/asemain/1/32-bit/OPT/Thu
Sep 23 22:12:12 2004
Complete
```

Example 3

Returns script file name, date, time, version, and status for all the installation scripts run:

```
sp_version  null, 'all'
```

```
Script
Version           Status
Start/End Date
---------------------------------------------------------------------
installdbccdb     15.0/EBF XXXXX/B/Sun_svr4/OS 5.8/asemain/1861/32-
bit/OPT/Mon Sep 27 23:40:02 2004
Complete [Started=Sep 29 2004  4:41PM]-[Completed=Sep 29 2004  4:42PM]
installmaster
15.0/EBF XXXXX/B/Sun_svr4/OS 5.8/asemain/1/32-bit/OPT/Thu Sep 23 22:12:
12 2004
Complete [Started=Sep 29 2004  3:49PM]-[Completed=Sep 29 2004  3:58PM]
installmodel
15.0/EBF XXXXX/B/Sun_svr4/OS 5.8/asemain/1861/32-bit/OPT/Mon Sep 27 23:
40:02 2004
Complete [Started=Sep 29 2004  4:51PM]-[Completed=Sep 29 2004  4:51PM]
```

Example 4

Returns script file name, version, and status of installation of all the install scripts having names like <install%>:

```
sp_version 'install%'
```

```
Script
Version           Status
----------        -------------------------------------------------------
installdbccdb
15.0/EBF XXXXX/B/Sun_svr4/OS 5.8/asemain/1861/32-bit/OPT/Mon Sep 27
23:40:02 2004     Complete
installmaster
15.0/EBF XXXXX/B/Sun_svr4/OS 5.8/asemain/1/32-bit/OPT/Thu Sep 23 22:12:
12 2004           Complete
installmodel
15.0/EBF XXXXX/B/Sun_svr4/OS 5.8/asemain/1861/32-bit/OPT/Mon Sep 27 23:
40:02 2004         Complete
```

Example 5

Returns all detailed information about installation scripts matching the wildcard “install%”:

```
sp_version 'install%', 'all'
```

```
Script
Version           Status
Start/End Date
---------------------------------------------------------------------
installmaster
15.0/EBF XXXXX/B/Sun_svr4/OS 5.8/asemain/1/32-bit/OPT/Thu Sep 23 22:12:
12 2004
Complete [Started=Sep 29 2004  3:49PM]-[Completed=Sep 29 2004  3:58PM]
```

Example 6

Returns all detailed information about the `installmaster` installation script:

```
sp_version 'installmaster', 'all'
```

```
Script
Version           Status
Start/End Date
---------------------------------------------------------------------
installmaster
15.0/EBF XXXXX/B/Sun_svr4/OS 5.8/asemain/1/32-bit/OPT/Thu Sep 23 22:12:
12 2004
Complete [Started=Sep 29 2004  3:49PM]-[Completed=Sep 29 2004  3:58PM]
```

Usage

`sp_version` allows you to determine the current version of the scripts (`installmaster`, `installdbccdb`, and so on) installed on the SAP ASE server, and whether they ran successfully or not, and the time they took to complete

Permissions

Any user can execute `sp_version`. Permission checks do not differ based on the granular permissions settings.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

1.268 sp_volchanged

Notifies the Backup Server that the operator performed the requested volume handling during a dump or load.

Syntax

```
sp_volchanged <session_id>, <devname>, <action>
```

```
    [, <fname>[, <vname>]]
```

Parameters

<session_id>

identifies the Backup Server session that requested the volume change. Use the `@session_id` parameter specified in the Backup Server's volume change request.

<devname>

is the device on which a new volume was mounted. Use the `@devname` parameter specified in the Backup Server's volume change request. If the Backup Server is not located on the same machine as the SAP ASE server, use the form:

```
<device> at <backup_server_name>
```

<action>

indicates whether the Backup Server should `abort`, `proceed` with, or `retry` the dump or load.

<fname>

is the file to be loaded. If you do not specify a file name with `sp_volchanged`, the Backup Server loads the `file = <filename>` parameter of the load command. If neither `sp_volchanged` nor the load command specifies which file to load, the Backup Server loads the first file on the tape.

<vname>

is the volume name that appears in the ANSI tape label. The Backup Server writes the volume name in the ANSI tape label when overwriting an existing dump, dumping to a brand new tape, or dumping to a tape with contents that are not recognizable. If you do not specify a `<vname>` with `sp_volchanged`, the Backup Server uses the `dumpvolumesp_volchanged` nor the dump command specifies a volume name, the Backup Server leaves the name field of the ANSI tape label blank. value specified in the dump command. If neither

During loads, the Backup Server uses the `<vname>` to confirm that the correct tape has been mounted. If you do not specify a `<vname>` with `sp_volchanged`, the Backup Server uses the `dumpvolume` specified in the load command. If neither `sp_volchanged` nor the load command specifies a volume name, the Backup Server does not check the name field of the ANSI tape label before loading the dump.

Examples

Example 1

The operator changes the tape, then issues:

```
sp_volchanged 8, "/dev/nrmt4", RETRY
```

This message from Backup Server indicates that a mounted tape's expiration date has not been reached:

```
Backup Server: 4.49.1.1: OPERATOR: Volume to be overwritten on
'/dev/rmt4' has not expired: creation date on this volume is Sunday, Nov.
15, 1992, expiration date is Wednesday, Nov. 25, 1992.
Backup Server: 4.78.1.1: EXECUTE sp_volchanged
        @session_id = 8,
        @devname = '/auto/remote/pubs3/SERV/Masters/testdump',
        @action = { 'PROCEED' | 'RETRY' | 'ABORT' }
```

Permissions

Any user can execute `sp_volchanged`. Permission checks do not differ based on the granular permissions settings.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide > Auditing*.

1.268.1 When Backup Server Detects a Problem

There are additional considerations when using `sp_volchanged`.

If the Backup Server detects a problem with the currently mounted volume, it requests a volume change:

- (UNIX) The Backup Server sends messages to the client that initiated the dump or load request. Use the `with notify = operator_console` option of the dump or load command to route messages to the terminal where the Backup Server was started.
- After mounting another volume, the operator executes `sp_volchanged` from any SAP ASE server that can communicate with the Backup Server performing the dump or load. The operator does not have to log into the SAP ASE server on which the dump or load originated.

See also:

- `dump database`, `dump transaction`, `load database`, `load transaction` in *Reference Manual: Commands*
- `isql` in the *Utility Guide*

1.268.2 Changing Tape Volumes on UNIX

The Backup Server requests a volume change when the tape capacity has been reached. The operator mounts another tape and executes `sp_volchanged`.

The following table illustrates this process.

Table 18: Changing Tape Volumes on a UNIX System

Sequence	Operator, Using `isql`	SAP ASE Server	Backup Server
1	Issues the `dump database` command		
2		Sends dump request to Backup Server	
3			1. Receives dump request message from the SAP ASE server 2. Sends message for tape mounting to operator 3. Waits for operator's reply
4	1. Receives volume change request from Backup Server 2. Mounts tapes 3. Executes `sp_volchanged`		
5			1. Checks tapes 2. If tapes are okay, begins dump 3. When tape is full, sends volume change request to operator
6	1. Receives volume change request from Backup Server 2. Mounts tapes 3. Executes `sp_volchanged`		
7			1. Continues dump 2. When dump is complete, sends messages to operator and the SAP ASE server
8	1. Receives message that dump is complete 2. Removes and labels tapes	1. Receives message that dump is complete 2. Releases locks 3. Completes the `dump database` command	

1.269 sp_w

Queries the `master..sysprocesses` and returns information about all current SAP Adaptive Server Enterprise (ASE) users and processes. `sp_w` is a simplified version of `sp_who`.

Syntax

```
sp_w
```

Examples

Example 1

Returns information about the running processes:

```
exec sp_w
go
```

```
fid    spid
command
execution_time       physical_io blocked
 ------ ------
--------------------------------------------------------------
-------------------- ----------- -------
      0     16
SELECT
6823                  7152       0
      0     19 UPDATE
STATISTICS
104267                155382     0
(2 rows affected)
(return status = 0)
```

Usage

- The columns returned by `sp_w` are:

`fid` Identifies the parallel family id.

`spid` Identifies the process id.

`command` Identifies the command or process currently being executed.

`execution_time` Identifies the duration of the current command.

`physical_io`	Identifies the number of physical I/Os executed by the spid.
`blocked`	Identifies the spid of the blocked connection.

- `sp_w` does not return:
  - The calling spid
  - spids that are in the `AWAITING COMMAND`
  - spids whose `execution_time` is 0 (unless `fid` > 0)

Permissions

Any user can execute `sp_w`.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

1.270 sp_webservices

Creates and manages the proxy tables used in the SAP ASE Web Services Engine.

Syntax

To create a proxy table:

```
sp_webservices 'add', '<wsdl_uri>' [, <sds_name>]
    [, '<method_name>=<proxy_table>
     [,<method_name>=<proxy_table> ]* ' ]
```

To display usage information for `sp_webservices`:

```
sp_webservices help[, ’<option>’]
```

To list the proxy tables mapped to a WSDL file:

```
sp_webservices 'list'[, '<wsdl_uri>'][, <sds_name>]
```

To modify timeout setting:

```
sp_webservices 'modify', '<wsdl_uri', >'timeout=<time>'
```

To remove proxy tables mapped to a WSDL file:

```
sp_webservices 'remove', '<wsdl_uri>'[, <sds_name>]
```

Options for User-Defined Web Services:

- To create a database alias for user-defined Web services:

  ```
  sp_webservices 'addalias' <alias_name> , <database_name>
  ```
- To deploy a user-defined Web service:

  ```
  sp_webservices 'deploy', ['all' | '<service_name>']
  ```
- To drop a database alias in user-defined Web services:

  ```
  sp_webservices 'dropalias' <alias_name>
  ```
- To list the proxy tables mapped to a WSDL file in user-defined Web services:

  ```
  sp_webservices 'listudws' [, '<service_name>']
  ```
- To list a database alias or aliases for a user-defined Web service.

  ```
  sp_webservices 'listalias'
  ```
- To undeploy a user-defined Web service:

  ```
  sp_webservices 'undeploy', ['all' | '<service_name>']
  ```

Parameters

'add', '<wsdl_uri>' [, <sds_name>] [, '<method_name>=<proxy_table>[, <method_name>=<proxy_table>]* ']

is used to create a proxy table for a Web method specified by a WSDL file. When the `add` option is used successfully, the `list` option is invoked automatically to describe the schema of the new proxy table:

- `<wsdl_uri>` – is the location for the WSDL file to be mapped to the new proxy table. If this parameter is specified, Web Services ensures that the URI exists in the `syswsdl` table.
- `<sds_name>` – is the name specified for the ASE Web Services Engine in the `interfaces` or `sql.ini` file. The default value is `ws`. If no entry exists in the `sysattributes` table, an error results.
- `<method_name>` – is the name of the Web method to be mapped to a proxy table. The `<method_name>` specified must be the name of a Web method specified in the associated WSDL file.
- `<proxy_table>` – is the name of proxy table to which the Web method specified in `<method_name>` is mapped.

'addalias' <alias_name> , <database_name>

is used to create an alias representing a database name in user-defined Web services, where:

- `<alias_name>` – (required) is the alias for the specified database.
- `<database_name>` – (required) is the name of the database for which the alias is specified.

An alias provides greater control in specifying the portion of the URL representing the database name. Used with the `userpath` option of the `create service` command, an alias provides complete control over the URL used to access a user-defined Web service.

'deploy', ['all' | '<service_name>']

is used to deploy a user-defined Web service, making it accessible to the ASE Web Services Engine through HTTP or HTTPS, where:

- `all` – specifies that all user-defined Web services are to be deployed for the current database.
- `<service_name>` – is the name of the user-defined Web service to be deployed.

The `deploy` and `undeploy` options are used to control when user-defined Web services are available. The system role `webservices_role` privilege is required for this option.

If the `all` parameter is specified, the ASE Web Services Engine deletes its internal cache of user-defined Web services and rereads all metadata about user-defined Web services from SAP ASE.

You cannot drop or rename a user-defined Web service that is currently deployed.

'dropalias' <alias_name>

is used to drop an alias representing a database name, where `<alias_name>` is the alias to be dropped.

You cannot drop an alias if it is being referenced by a deployed user-defined Web service. To drop the alias, undeploy the user-defined Web service that references the alias first.

help[, '<option>']

provides instructions and examples illustrating how to use the `sp_webservices` stored procedure. The valid values for `'<option>'` are `add`, `list`, `remove`, and `modify`.

If you do not specify a value for `<option>`, the `help` option prints a brief syntax description for the `add`, `addalias`, `deploy`, `dropalias`, `list`, `listalias`, `listudws`, `modify`, `remove`, and `undeploy` options.

'list' [, '<wsdl_uri>'] [, <sds_name>]

lists Web methods described in a WSDL file, where:

- `<wsdl_uri>` – is the URI for the mapped WSDL file. If you do not specify a value for `<wsdl_uri>`, the `list` option displays information about all Web methods that have been mapped to proxy tables.

- <sds_name> – is the name of the SDS server specified for the ASE Web Services Engine in the interfaces or sql.ini file. The default value is ws. If no entry exists in the sysattributes table, an error results.

If you specify neither the <wsdl_uri> nor the <sds_name> parameter, all entries in the sysattributes table are listed, ordered by wsdlid.

If the Web methods described in the WSDL file:

- Have already been mapped to proxy tables – the list option prints information about each proxy table.
- Have **not** already been mapped to proxy tables – the list option prints SQL that can be used to create proxy tables.

'listalias'

is used to list all aliases in user-defined Web services.

'listudws' [, '<service_name>']

is used to list user-defined Web services for the current database, where <service_name> is the name of the user-defined Web service to be listed.

If you do not specify the <service_name> parameter, all user-defined Web services are listed.

'modify', '<wsdl_uri', >'timeout=<time>'

is used to modify the attribute information for a WSDL file, where:

- <wsdl_uri> – is the URI of the WSDL file for which attribute information is to be changed.
- <time> – is the interval in seconds during which a Web method must respond before the operation is aborted.

'remove', '<wsdl_uri>' [, <sds_name>]

is used to remove a proxy table mapping for a Web method, where:

- <wsdl_uri> – is the URI of the WSDL file for which the proxy table is to be removed.
- <sds_name> – is the name of the SDS server specified for the ASE Web Services Engine in the interfaces or sql.ini file. The default value is ws.

> i Note
>
> An error results if no entry exists in the sysattributes table.

'undeploy', ['all' | '<service_name>']

is used to make a user-defined Web service inaccessible to the SAP ASE Web Services Engine through HTTP or HTTPS, where:

- all – specifies that all user-defined Web services are to be undeployed for the current database.
- <service_name> – is the name of the user-defined Web service to be undeployed.

Use the deploy and undeploy options to control when user-defined Web services are available. The system role webservices_role privilege is required for this option.

Examples

Example 1

Invokes an RPC/encoded Web method to display the exchange rate between two currencies.

1. Use the add option of sp_webservices to map Web methods to proxy tables:

   ```
   1> sp_webservices 'add', 'http://www.xmethods.net/sd/2001/
   CurrencyExchangeService.wsdl'
   2> go
   ```

   The getRate Web method is mapped to a proxy table of the same name.
2. Invoke the Web method by selecting from the proxy table:

   ```
   1> select * from getRate where _country1 ='usa' and _country2 = 'india'
   2> go
   ```

   The results returned for the previous select show the exchange rate for the specified parameters:

   ```
   Result          _country1       _country2
   43.000000       usa             india
   (1 row affected)
   ```

Example 2

Invokes a Web method to display stock information within an XML document.

1. Use the add option of sp_webservices to map Web methods to proxy tables:

   ```
   1> sp_webservices "add" , "http://www.webservicex.net/stockquote.asmx?WSDL"
   2> go
   ```

   The GetQuote Web method is mapped to a proxy table of the same name.
2. Invoke the Web method by selecting the outxml column of the GetQuote proxy table:

   ```
   1> select outxml from GetQuote where _inxml = '<?xml version="1.0"
   encoding="utf-8"?>
   2>     <GetQuote xmlns="http://www.webserviceX.NET/">
   3>       <symbol>SY</symbol>
   4>     </GetQuote>'
   5> go
   ```

   The results for the previous select display quote information within an XML document:

   ```
    outxml
   <?xml version="1.0" encoding="UTF-8" ?><GetQuoteResponse
   xmlns="http://www.webserviceX.NET/"><GetQuoteResult><StockQuotes><Stock>
   <Symbol>SY</Symbol><Last>21.48</Last><Date>7/21/2005</Date><Time>4:01pm
   </Time><Change>+1.72</Change><Open>20.00</Open><High>21.60</High>
   <Low>19.91</Low><Volume>2420100</Volume><MktCap>1.927B</MktCap>
   <PreviousClose>19.76</PreviousClose><PercentageChange>+8.70%
   </PercentageChange><AnnRange>12.75 - 20.44</AnnRange><Earns>0.706</Earns>
   <P-E>27.99</P-E><Name>SYBASE INC</Name></Stock></StockQuotes>
   </GetQuoteResult></GetQuoteResponse>
   (1 row affected)
   ```

Example 3

Invokes the GetQuote Web method, mapped to a proxy table in the previous example, through a view to display stock information.

1. Create a table to hold symbols representing stocks to use this Web service:

```
1> create table stocksymbol(symbol varchar(100))
2> go
```

2. Insert data into the `stocksymbol` table:

```
1> insert stocksymbol values("SY")
2> insert stocksymbol values("ORCL")
3> go
```

3. Create a view that invokes the `GetQuote` Web method:

```
1> CREATE VIEW getstockvw as
2> select Symbol = xmlextract('//Stock/Symbol/text()',outxml returns
varchar(5)),
3>   Name = xmlextract('//Stock/Name/text()',outxml returns varchar(20)),
4>   Time = xmlextract('//Stock/Time/text()',outxml returns varchar(10)),
5>   Date = xmlextract('//Stock/Date/text()',outxml returns date),
6>   High = xmlextract('//Stock/High/text()',outxml returns decimal(15,2)),
7>   Low = xmlextract('//Stock/Low/text()',outxml returns decimal(15,2))
8> FROM GetQuote ,stocksymbol
9> WHERE _inxml = '<GetQuote xmlns="http://
www.webserviceX.NET/"><symbol>'+symbol+'</symbol></GetQuote>'
10> go
```

4. Select from the `getstockvw` view to view output from the `GetQuotes` method:

```
1> select * from getstockvw
2> go
```

The results for the previous `select` display quote information for the parameters specified by the view definition:

```
Symbol   Name             Time     Date           High     Low
-------  -------------    -------  ------------   ------   ------
SY       SYBASE INC       4:01pm   Jul 21 2005    21.60    19.91
ORCL     ORACLE CORP      4:00pm   Jul 21 2005    14.05    13.54
MSFT     MICROSOFT CP     4:00pm   Jul 21 2005    26.48    26.19
(3 rows affected)
```

Example 4

Shows an audit table entry for the following command entered in the `pubs2` database by the user "bob":

```
sp_webservices 'deploy', 'all'
```

The corresponding audit table entry lists `110`, `bob`, and `pubs2` as values in the `event`, `loginname`, and `dbname` columns, respectively. The `extrainfo` column contains the following:

```
webservices_role; deploy_all; ; ; ; ; bob/ase;
```

Example 5

Shows an audit table entry for the following command entered in the `pubs2` database by the user "bob":

```
sp_webservices 'deploy', 'rawservice'
```

The corresponding audit table entry lists 110, bob, and pubs2 as values in the event, loginname, and dbname columns, respectively. The extrainfo column contains the following:

```
webservices_role; deploy; ; ; ; ; bob/ase;
```

Example 6

Shows an audit table entry for the following command entered in the pubs2 database by the user "bob":

```
sp_webservices 'undeploy', 'all'
```

The corresponding audit table entry lists 111, bob, and pubs2 as values in the event, loginname, and dbname columns, respectively. The extrainfo column contains the following:

```
webservices_role; undeploy_all; ; ; ; ; bob/ase;
```

Example 7

Shows an audit table entry for the following command entered in the pubs2 database by the user "bob":

```
sp_webservices 'undeploy', 'rawservice'
```

The corresponding audit table entry lists 111, bob, and pubs2 as values in the event, loginname, and dbname columns, respectively. The extrainfo column contains the following:

```
webservices_role; deploy; ; ; ; ; bob/ase;
```

For a full description of sysaudits table columns, see the *System Administration Guide*.

Usage

If you not specify <method_name> and <proxy_table> values for a Web method, the proxy table generated for the Web method is, by default, the name of the Web method specified in the WSDL file. If there is already a proxy table with the name of this Web method, a new proxy table is generated with a name like:

```
<method_nameN>
```

Where:

- <method_name> – is the default proxy table name
- <N> – is a digit from 1 to 9 denoting each successive mapping of the Web method. There can be as many as 99 duplicate proxy tables.

If you do specify <method_name> and <proxy_table> values for a Web method, the name of the proxy table must be new. If there is already a proxy table with the name specified in <proxy_table>, an error results, and none of the Web methods specified in the add option are mapped to proxy tables.

The output from the add option lists the methods that have been successfully mapped to proxy tables as well as those that have not been mapped. The name of a proxy table for an unmapped Web method is indicated as NULL in the output from the add option.

> i Note
>
> The columns used for input and output vary for proxy tables generated for RPC/encoded Web methods and document/literal Web methods. A proxy table representing an RPC/encoded Web method contains a column for each input and output parameter. A proxy table representing a document/literal Web method contains two columns, `_inxml` and `outxml`.

See also:

- `create service` in *Reference Manual: Commands*
- *Web Services User's Guide*

Permissions

You must be a user with webservices_role (for `deploy` and undeploy) to execute `sp_webservices`. Permission checks do not differ based on the granular permissions settings.

The system role webservices_role is required to use the `deploy` and `undeploy` options for `sp_webservices`. To execute a user-defined Web service, a valid login and permissions to execute the corresponding stored procedure are required.

To create, drop, and execute user-defined Web services, you need the same privileges as are necessary to create, drop, and execute stored procedures in SAP ASE. See the *System Administration Guide* for details on how to set the proper privileges using the `grant` and `revoke` commands.

Auditing

User-defined Web services are modeled as stored procedures within SAP ASE. In manipulating user-defined Web services, SAP ASE generates the following events using the existing auditing coverage for stored procedures: You can enable the following auditing options to audit this procedure. Values in `event` and `extrainfo` columns from the `sysaudits` table are:

Audit option	Event	Command or access audited
`security`	110, 111	`sp_webservices 'deploy' | 'undeploy'`
`create`	11	`create procedure`
`drop`	28	`drop procedure`

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide* > *Auditing*.

1.271 sp_who

Reports information about all current SAP ASE users and processes or about a particular user or process. Includes the thread_pool column, which describes the thread pool the SAP ASE server uses to execute a task.

Considerations for Process Mode

sp_who does not include the threadpool column.

Syntax

```
sp_who [<loginame> | "<spid>"]
```

Parameters

<loginame>

is the SAP ASE login name of the user you are requesting a report on.

<spid>

is the number of the process you are requesting a report on. Enclose process numbers in quotes (the SAP ASE server expects a char type).

Examples

Example 1

Reports on the processes running on the SAP ASE server. Although no user processes other than sp_who are running, the server still shows activity. During idle cycles, the housekeeper wash task moves dirty buffers into the buffer wash region, the housekeeper chores task performs other maintenance tasks. The housekeeper garbage collection task , which cleans up data that was logically deleted and resets the rows so that tables have space again, operates at the priority level of the ordinary user.

```
sp_who
```

```
fid spid  status    loginame   origname   hostname           blk_spid  dbname
   tempdbname  cmd              block_xloid    threadpool
--- ----  --------- --------- ---------  ----------------   --------
  -----------
   ----------- ----------------- -----------    -----------------
  0    2   sleeping      NULL      NULL              NULL          0
master
         tempdb     DEADLOCK TUNE           0    syb_default_pool
  0    3   sleeping      NULL      NULL              NULL          0       mas
ter
   tempdb            ASTC HANDLER           0    syb_default_pool
  0    4   sleeping      NULL      NULL              NULL          0       mas
ter
   tempdb        CHECKPOINT SLEEP           0    syb_default_pool
  0    5   sleeping      NULL      NULL              NULL          0       mas
ter
   tempdb                 HK WASH           0    syb_default_pool
  0    6   sleeping      NULL      NULL              NULL          0       mas
ter
   tempdb                   HK GC           0    syb_default_pool
  0    7   sleeping      NULL      NULL              NULL          0       mas
ter
   tempdb               HK CHORES           0    syb_default_pool
  0    8   sleeping      NULL      NULL              NULL          0       mas
ter
   tempdb            PORT MANAGER           0    syb_default_pool
  0    9   sleeping      NULL      NULL              NULL          0       mas
ter
   tempdb         NETWORK HANDLER           0    syb_default_pool
  0   10   sleeping      NULL      NULL              NULL          0       mas
ter
   tempdb       LICENSE HEARTBEAT           0    syb_default_pool
  0   13   sleeping      NULL      NULL              NULL          0       mas
ter
   tempdb         NETWORK HANDLER           0    syb_default_pool
  0   14   sleeping      NULL      NULL              NULL          0       mas
ter
   tempdb         NETWORK HANDLER           0    syb_default_pool
  0   17   sleeping      NULL      NULL              NULL          0       mas
ter
   tempdb         NETWORK HANDLER           0    syb_default_pool
  0   20   sleeping      NULL      NULL              NULL          0       mas
ter
   tempdb         NETWORK HANDLER           0    syb_default_pool
  0   26   running         sa        sa  tiger.sybase.com          0       mas
ter
   tempdb                     INSERT            0     syb_default_pool
```

Example 2

Reports on the processes running on the SAP ASE server. Process 11 (a `select into` on a table) is blocked by process 8 (a `begin transaction` followed by an `insert` on the same table). For process 8, the current `<loginame>` is "robert", but the original `<loginame>` is "sa". Login "sa" executed a `set proxy` command to impersonate the user "robert":

```
sp_who
```

```
fid spid  status      loginame   origname   hostname         blk_spid  dbname
   tempdbname  cmd              block_xloid    threadpool
--- ----  ---------   ---------  ---------  ---------------   --------
  -----------
   ----------- ----------------- -----------    -----------------
  0    1 recv sleep        bird       bird            jazzy
         0       master
        tempdb  AWAITING COMMAND           0     syb_default_pool
  0    2   sleeping        NULL       NULL                           0       m
aster
        tempdb  NETWORK HANDLER            0     syb_default_pool
  0    3   sleeping        NULL       NULL                           0       m
aster
```

```
        tempdb  MIRROR HANDLER              0     syb_default_pool
  0    4   sleeping        NULL       NULL                          0       m
aster
        tempdb  AUDIT PROCESS               0     syb_default_pool
  0    5   sleeping        NULL       NULL                          0       m
aster
        tempdb  CHECKPOINT SLEEP            0     syb_default_pool
  0    6 recv sleep        rose                 rose
petal         0       master
        tempdb  AWAITING COMMAND            0     syb_default_pool
  0    7   sleeping        NULL       NULL             actor         0  sybsys
temdb
        tempdb  ASTC HANDLER                0     syb_default_pool
  0    8    running      robert          sa             helos        0       m
aster
        tempdb  SELECT                      0     syb_default_pool
  0    9  send
sleep      daisy      daisy            chain          0        pubs2
        tempdb  SELECT                      0     syb_default_pool
  0   10 alarm
sleep       lily       lily             pond          0       master
        tempdb  WAITFOR                     0     syb_default_pool
  0   11  lock
sleep      viola      viola            cello          8        pubs2
        tempdb  INSERT                      0     syb_default_pool
```

Example 3

Reports on the processes being run by the user "joe":

```
sp_who joe
```

```
fid spid  status   loginame   origname   hostname           blk_spid  dbname
   tempdbname   cmd              block_xloid    threadpool
--- ----  --------- --------- ---------  ----------------   --------
  -----------
   ----------- ----------------- -----------    -----------------
  0   28 recv
sleep       joe       joe  tiger.sybase.com          0        pubs2
         tempdb          SELECT           0           syb_default_pool
```

Example 4

Reports what the SAP ASE server process number 17 is doing:

```
sp_who "17"
```

```
fid spid  status   loginame   origname   hostname           blk_spid  dbname
   tempdbname   cmd              block_xloid    threadpool
--- ----  --------- --------- ---------  ----------------   --------
  -----------
   ----------- ----------------- -----------    -----------------
  0   17   sleeping      NULL      NULL              NULL          0        pu
bs2
         tempdb     NETWORK HANDLER           0       syb_default_pool
```

Example 5

Reports on a system-induced rollback, either of a transaction or a command:

```
sp_who
```

```
fid spid  status   loginame   origname   hostname           blk_spid  dbname
   tempdbname   cmd              block_xloid    threadpool
```

```
--- ----  --------- --------- ---------  ----------------   --------
  -----------
   ----------- ----------------- -----------    -----------------
  0   28    running       joe       joe  tiger.sybase.com         0        pu
bs2
         tempdb         rollback              0       syb_default_pool
```

Usage

There are additional considerations when using `sp_who`:

- `sp_who` reports information about a specified user or the SAP ASE server process.
- Without parameters, `sp_who` reports which users are running what processes in all databases.
- The columns returned by `sp_who` are:

  `fid` Identifies the family (including the coordinating process and its worker processes) to which a lock belongs. For more information, see `sp_familylock`.

  `spid` Identifies the process number. A system administrator can use this number with the Transact-SQL `kill` command to stop the process.

  `status` Indicates whether the process is running or sleeping.

  `loginame` The login or alias of the user who started the process. For all system processes, `loginame` is NULL.

  `origname` If the `loginame` is an alias, `origname` shows the real login name. If not, `origname` shows the same information as `loginame`.

  `hostname` The name of the server on which the database resides.

  `blk_spid` Contains the process IDs of the blocking process, if there is one. A blocking process (which may be infected or have an exclusive lock) is one that is holding resources needed by another process.

  `dbname` Indicates the name of the database on which the process is running.

  `tempdbname` Name of the temporary database assigned to the session.

  `cmd` Identifies the command or process currently being executed. This information is supplied from the `cmd` column of `sysprocesses`. Evaluation of a conditional statement, such as an `if` or `while` loop, returns `cond`.

  `block_xloid` Identifies the unique lock owner ID of a blocking transaction.

  `threadpool` Thread pool the task uses.

- Running `sp_who` on a single-engine server shows the `sp_who` process currently running and all other processes that are runnable or in one of the sleep states. In multiengine servers, there can be a "running" process for each engine.
- If you enable mirrored disks or remote procedure calls, the mirror handler and the site handler also appear in the report from `sp_who`.

- Issue the sp_w system stored procedure to view a subset of the information reported by sp_who. sp_w is a simplified version of sp_who. For more information, see sp_w [page 837].

See also kill in *Reference Manual: Commands*.

Permissions

Any user can execute sp_who. Permission checks do not differ based on the granular permissions settings.

Auditing

For information about auditing stored procedures with the auditing options exec_procedure, sproc_auth, and security, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide > Auditing*.

Related Information

sp_familylock [page 369]
sp_lock [page 559]

1.272 sp_wlprofiler

The external interface for the SAP ASE workload profiler utility. Use this procedure to monitor transactional work loads to determine optimal sizes for IMRS components like the IMRS-cache, sysimrslogs, and so on.

See the *In-Memory Database Users Guide*.

Syntax

```
sp_wlprofiler [ ['drop metrics' ]
    | ['finish' [, <workload_id_name> ] ]
    | ['help' [, '<action-keyword>' ] ]
    | ['monitor' {,<database_name>} [, <using-clause> ] ]]
     | [{'report' | 'report config’} [, <workload_id_name> ] ]
    | ['status' [, <workload_id_name> ] ]
    | ['uninstall' ] ]
<using_clause> = USING { <using_item> [, <using_item> ] ...}
<using_item> = { name = workload-name
    | feature = feature-name
    | metricsdb = dbname
```

```
     | interval = interval-specifier
     | sample = sample-specifier
     }
```

Parameters

drop metrics

drops all the metrics tables from the metrics databases. For example, drop all metrics tables from older profiling sessions or to gather new metrics.

finish

completes the profiling session.

`<workload_ID_name>`

identifies a workload by its workload ID or name. `<workload_ID>` is an internally-generated unique number, and is specified by a quote-enclosed number. `<name>` can be a user-specified or an internally-generated name. Internally generated workload names use `workload ID=<number>` as the name format, where `<number>` is the workload ID generated by the `monitor` parameter.

help

displays help and prints the syntax and examples.

`<action_keyword>`

one of:

- drop metrics
- finish
- help
- monitor
- report
- status
- uninstall

monitor {**`<database_name>`**} [, **`<using_clause>`**]

- Prepares the profiling activity of a running workload executing against a target database.
- Collects metrics by triggering a collection of baseline data from monitoring tables and metrics affecting active objects and the transaction log from the target database.
- Ends the profiling interval and triggers the collection of metrics for all the MDA tables that were included in the baseline metrics.

Issuing `monitor` against a new database generates a new workload ID and gathers any user-specified properties of the profiling activity that may be specified with the `using` parameter.

Issuing `monitor` against an existing profiling session collects metrics for that database with the `using` parameters provided in an earlier session.

`<using_clause>`

specifies a comma-separated list of sub-arguments. `<using_item>` is one of:

- `name =<workload_name>` – Name the workload being profiled. `<workload_name>` should have at least one alphabet character. If you do not specify `<workload_name>` with the `<using_clause>`, sp_wlprofiler uses the default name in the form `Workload ID=`.
- `feature =<feature_name>` – specifies the SAP ASE feature being evaluated by the workload profiler. The default feature-name evaluated by the workload profiler is `DRC` (data row caching).
- `metrics =<database_name>` – name of the database that stores the metrics collected by the workload profiler are stored. The default is `sybdsamdb`.
- `interval =<interval_specifier>` – specifies the time interval during which the workload profiler monitors the workload, collecting metrics for the planning phase of this utility. The format is open: you can specify the time in seconds, using a positive integer (for example, 120 for 2 minutes) or you can specify in the format `<hh:mm:ss>`. The default monitoring profiling interval is 5 minutes. `<interval_specifier>` allows for optional single quotes.
- `sample =<interval_specifier>` – specifies the time interval (in seconds) at which certain metrics are periodically sampled and archived by the profiler. The format is open: you can specify the time in seconds, using a positive integer (for example, 120 for 2 minutes) or you can specify in the format `<hh:mm:ss>`. The default sampling interval is 120 seconds (2 minutes), which means that metrics are sampled once every 120 seconds. `<interval_specifier>` allows for optional single quotes.

database_name

name of the target database.

`<workload_id_name>`

Name or ID of the plan's workload.

status [**`<workload_id_name>`**]

prints the status of the most recent workload profiled. When the profiling is complete for a database, its states and information is stored in the control tables, including information like `workload ID` and `name`, `target database`, `metrics database`, `start date`, `end data`, and so on. This information is displayed by the `status` parameter. Issuing `status` without any parameters displays the status of the latest active workload in the system. Including the `<workload_ID>` or `<name>` displays the status of that ID or name.

report

Reports the tables qualified for IMRS, the IMRS cache size, and `imrslog` size. Tables that have a score above a threshold are qualified for IMRS.

uninstall

uninstalls all procedures, control tables, and other objects installed by the `installwlprofiler` script for the workload profiler.

Examples

Example 1

Collects metrics for the `tpcc` database. Collects baseline metrics first and then periodically gathers new metrics every 50 seconds. After monitoring for 10 minutes, ends the workload profiling and collects final metrics:

```
sp_wlprofiler 'monitor', 'tpcc',
"using name = DailyWorkload,
metricsdb = tempdb,
sample = '50',
interval = '00:10:00'"
```

Example 2

Collects metrics for the `tpcc` database. Runs the workload profiling with the parameters supplied by the previous run.

```
sp_wlprofiler 'monitor', 'tpcc'
```

Example 3

Show the status of the workload profiler with an ID of 10:

```
sp_wlprofiler 'status', '10'
```

Example 4

Shows the status of the latest active workload profiled:

```
sp_wlprofiler 'status'
```

Example 11

Displays the plan for the workload for a specific ID (in this example, ID number 10):

```
sp_wlprofiler 'plan', '10'
```

Example 12

Drop all the metrics tables in all metrics databases for previously completed or active profiling sessions:

```
sp_wlprofiler 'drop metrics'
```

Example 13

Finishes the latest active workload session, and finishes the active workload session with an ID of 2:

```
sp_wlprofiler 'finish'
sp_wlprofiler 'finish', '2'
```

Example 13

Reports

```
sp_wlprofiler 'report ', '1'
```

Example 14

Reports

```
sp_wlprofiler 'report config', '1'
```

Example 15

Drops all procedures, views, and control tables installed for the workload profiler:

```
sp_wlprofiler 'uninstall'
```

Example 16

Collects metrics for an estimation of IMRS cache and version storage size required to enable on-disk MVCC for the tpcc database:

```
sp_wlprofiler 'monitor', 'tpcc', "USING interval='00:02:00', feature='ODMVCC'"
```

Usage

- The drop metrics parameter drops only the metrics tables that are recreated when the monitor parameter is issued.
- The finish parameter marks a workload profiling activity as completed, so no more metrics are collected as part of that workload after finish is run.
- The metrics table must first exist if you manually add new metrics table to the control tables and displayed with the show parameter.
- You cannot run plan concurrently for the same workload.
- uninstall drops everything from the system. You must rerun the installwlprofiler script to reinstall the workload profiler.

Permissions

The permission checks for sp_wlprofiler differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be a user with mon_role, manage any database, own any database, manage disk, and manage data cache privileges.
Disabled	With granular permissions disabled, you must be a user with sa_role and mon_role.

1.273 sp_xact_loginfo

`sp_xact_loginfo` provides the span of oldest active transaction in terms of percentage of total log space.

Syntax

```
sp_xact_loginfo <dbid>[, <vcharparam1>][, <vcharparam2>]
    [, <intparam1>][, <intparam2>]['  <span_pct>][, <startpage>]
    [, <xact_spid>][, <starttime>][, <firstlog_page>][, <stp_page>]
    [, <stp_pages>][, <stp_blocking>][, <canfree_without_abort_pct>]
    [, <dump_in_progress>][, <activexact>][, <errorcode>]
```

Parameters

dbid

is the database ID.

vcharparam1

varchar parameter indicating the mode. If `oldestactive`, the output parameter values are indicative of oldest active transaction. If `xactspanbyspid`, then output parameter values reflect values of active transaction for given spid.

vcharparam2

is reserved for future use. Provide NULL as a value.

intparam1

is integer parameter1 (SPID if `<vcharparam1>` = `xactspanbyspid`)

intparam2

is integer parameter2

span_pct

is a value from 0 to 100. Indicates the span of transaction in percentage of total log space based on value of `<vcharparam1>`(output parameter).

startpage

is the page number that is the start of the active transaction in the log based on value of vcharparam1. This page will hold the begin transaction log record of the active transaction.

xact_spid

is the server process ID of the client having the active transaction based on `<vcharparam1>`.

starttime

is the start time of active transaction based on `<vcharparam1>`.

firstlog_page

is the server process ID of the client having active transaction based on <vcharparam1>.

stp_page

is the secondary truncation point logical page number in the log. Returns -1 if replication is not active.

stp_pages

returns the total number of log pages between the secondary truncation point and the oldest active transaction. Returns 0 if:

- Replication is not active
- There is no active transaction in the log
- There is no secondary truncation point before oldest active transaction

stp_blocking

is a value of 0 or 1:

- 1 – indicates that the secondary truncation checkpoint will block some portion for truncation beyond oldest active transaction span. Meaning that secondary truncation point is in between the start of the log and the start of oldest active transaction and replication agent must catch up.
- 0 – indicates that aborting the oldest active transaction will free transaction log space without the secondary checkpoint blocking the abort.

canfree_without_abort_pct

is a value from 0 to 100. Indicates the difference between startlogpagenum and startxactpagenum in terms of percentage of total log space. This portion can be truncated with the dump transaction command without aborting the oldest active transaction.

dump_in_progress

returns 1 if the dump transaction command is in progress, returns 0 if no dump command is in progress. Values of output parameters firstlog_page and canfree_without_abort_pct are not reliable. (output parameter).

activexact

is a Boolean flag indicating that there are active transactions in the log.

errorcode

Values are:

- 0 – there are no errors.
- 1 – insufficient permission to execute.
- 2 – error in opening dbtable. This could be due to various reasons including the dbid or database name given does not exist.
- 3 – cannot start xls session for log scan.
- 4 – there are no open transaction in the log against this database.

i Note

For a Mixed Log Data (MLD) database, this procedure returns values equivalent to 0 in output parameters. This procedure is not supported or meant to be used for MLD databases.

Auditing

For information about auditing stored procedures with the auditing options `exec_procedure`, `sproc_auth`, and `security`, see Auditing Stored Procedures [page 13]. For more information about auditing, see *Security Administration Guide > Auditing*.

1.274 sp_xmlschema

Creates and maintains the `spt_xmlcatalog` user table in the SAP ASE database. `spt_xmlcatalog` stores schema definitions that the `xmlvalidate` function uses to validate XML documents

Syntax

See *XML Services* for syntax, examples, and usage information for `sp_xmlschema`.

2 Catalog Stored Procedures

Catalog stored procedures retrieve information from the system tables in tabular form. Created by `installmaster` at installation, they are located in the `sybsystemprocs` database and are owned by the system administrator.

Many of them can be run from any database. If a catalog stored procedure is executed from a database other than `sybsystemprocs`, it retrieves information from the system tables in the database from which it was executed.

All catalog stored procedures execute at isolation level 1.

All catalog stored procedures report a return status. For example, this means that the procedure executed successfully. The examples in this book do not include the return status:

```
return status = 0
```

2.1 Specifying Optional Parameters

Use single or double quotes around parameter values for catalog stored procedures that contain punctuation or embedded blanks, or are reserved words. If the parameter is an object name qualified by a database name or owner name, enclose the entire name in single or double quotes.

> Note
>
> Do not use delimited identifiers as catalog stored procedure parameters. Doing so may produce unexpected results.

In many cases, it is more convenient to supply parameters to the catalog stored procedures in this form than to supply all the parameters:

```
@<parametername> = <value>
```

The parameter names in the syntax statements match the parameter names defined by the procedures.

For example, the syntax for `sp_columns` is:

```
sp_columns <table_name>[, <table_owner>]
    [, <table_qualifier>][, <column_name>]
```

You can use `sp_column` to find information about a particular column, such as:

```
sp_columns publishers, @column_name = "pub_id"
```

This provides the same information as the command with all of the parameters specified:

```
sp_columns publishers, "dbo", "pubs2", "pub_id"
```

You can also use "null" as a placeholder:

```
sp_columns publishers, null, null, "pub_id"
```

If you specify more parameters then the number of parameters expected by the system procedure, the SAP ASE server ignores the extra parameters.

2.2 Pattern Matching

SAP ASE supports wildcards _, %, [], and [^]. For maximum interoperability, use only the % and _ wildcard characters as defined by ANSI SQL Standards.

2.3 System Procedure Tables

The catalog stored procedures sp_columns, sp_datatype_info, sp_special_columns, and sp_sproc_columns use the catalog stored procedure tables spt_datatype_info, spt_datatype_info_ext, and spt_server_info in the sybsystemprocs database to convert internal system values such as status bits into human-readable format.

The catalog stored procedures sp_column_privileges and sp_table_privileges create and then drop temporary tables.

2.4 ODBC Datatypes

These two tables list the datatype code numbers and matching datatype names returned by sp_columns and sp_column_privileges in the data_type column. The source for the description is the Open Database Connectivity (ODBC) Application Programming Interface (API).

Table 19: Code Numbers for ODBC Datatypes

Datatype	Code #
char	1
decimal	3
double precision	8
float	6
integer	4

Datatype	Code #
`numeric`	2
`real`	7
`smallint`	5
`varchar`	12
`wchar`	-8
`wvarchar`	-9
`wlongvarchar`	-10

Table 20: Code Numbers for Extended Datatypes

Datatype	Code #
`bigint`	-5
`binary` (bit datatype)	-2
`bit`	-7
`date`	9
`java.lang.Object`	1111
`long univarchar`	-10
`long varbinary`	-4
`long varchar`	-1
`time`	10
`timestamp`	11
`tinyint`	-6
`unichar`	-8
`univarchar`	-9
`varbinary` (bit-varying datatype)	-3

2.5 sp_column_privileges

Returns permissions information for one or more columns in a table or view.

Syntax

```
sp_column_privileges <table_name>[, <table_owner>
    [, <table_qualifier>[, <column_name>]]]
```

Parameters

<table_name>

is the name of the table. The use of wildcard characters in pattern matching is not supported.

<table_owner>

is the name of the table owner. The use of wildcard characters in pattern matching is not supported. If you do not specify the table's owner, sp_column_privileges looks for a table owned by the current user and then for a table owned by the Database Owner.

<table_qualifier>

is the name of the database. Values are the name of the current database and null.

<column_name>

is the name of the column with permissions that you want to display. Use wildcard characters to request information for more than one column. If you do not specify a column name, permissions information for all columns in the specified table is returned.

Examples

Example 1

This example displays information about the discounts table:

```
sp_column_privileges discounts, null, null, discounttype
```

```
table_qualifier     table_owner    table_name          column_name
     grantor   grantee     privilege     is_grantable
------------------- -------------- ------------------- ----------------
     --------- ----------- ------------- ------------
pubs2               dbo            discounts           discounttype
     dbo       dbo            SELECT       YES
```

```
pubs2               dbo            discounts            discounttype
     dbo       dbo          UPDATE       YES
pubs2               dbo            discounts            discounttype
     dbo       dbo          REFERENCE   YES
pubs2               dbo            discounts            discounttype
     dbo       guest       SELECT        NO
pubs2               dbo            discounts            discounttype
     dbo       guest       UPDATE        NO
pubs2               dbo            discounts            discounttype
     dbo       guest       REFERENCE     NO
```

Usage

The results set for `sp_column_privileges` is:

Column	Datatype	Description
`table_qualifier`	`varchar(32)`	The name of the database in which the table specified for the `<table_name>` parameter is stored.
`table_owner`	`varchar(32)`	The table owner. If no value was specified for the `<table_owner>` parameter, this value is the current owner or the Database Owner.
`table_name`	`varchar(32)`	The name specified for the `<table_name>` parameter. This value cannot be NULL.
`column_name`	`varchar(32)`	The specified column name. If no column name was specified in the statement, the results include all columns in the specified table.
`grantor`	`varchar(32)`	The name of the database user who has granted permissions on `column_name` to `grantee`. This value cannot be NULL.
`grantee`	`varchar(32)`	The name of the database user who was granted permissions on `column_name` by `grantor`. This value cannot be NULL.
`privilege`	`varchar(32)`	Identifies the column privilege. May be one of the following: • `SELECT` – The grantee is permitted to retrieve data for the column. • `UPDATE` – The grantee is permitted to update data in the column. • `REFERENCE` – The grantee is permitted only for referential constraint.
`is_grantable`	`varchar(3)`	Indicates whether the grantee is permitted to grant the privilege to other users. The values are `YES`, `NO`, and `NULL`.

Permissions

Any user can execute `sp_column_privileges`.

2.6 sp_columns

Returns information about the type of data that can be stored in one or more columns.

Syntax

```
sp_columns <table_name>[, <table_owner>]
    [, <table_qualifier>][, <column_name>]
```

Parameters

<table_name>

is the name of the table or view. Use wildcard characters to request information about more than one table.

<table_owner>

is the owner of the table or view. Use wildcard characters to request information about tables owned by more than one user. If you do not specify a table owner, sp_columns looks for tables owned by the current user and then for tables owned by the Database Owner.

<table_qualifier>

is the name of the database. This can be either the current database or NULL.

<column_name>

is the name of the column for which you want information. Use wildcard characters to request information about more than one column.

Examples

Example 1

Displays information about all columns in the publishers table that begin with “p”:

```
sp_columns "publishers", null, null, "p%"
```

```
table_qualifier  table_owner  table_name  column_name data_type type_name   pr
ecision  length  scale  radix  nullable  remarks ss_data_type colid
---------------- -----------  ----------- ----------- --------- ----------
  ---------   ------  -----  -----   --------  ------- ------------ ----
pubs2            dbo         publishers   pub_id       1        char
  NULL        4       NULL   NULL    0        NULL    47           1
pubs2            dbo         publishers   pub_name     12       varchar
  NULL       40       NULL   NULL    1        NULL    39           2
```

Example 2

Displays information about all columns beginning with "st" in tables that begin with "s":

```
sp_columns "s%", null, null, "st%"
```

Usage

The results set for `sp_columns` is:

Column	Datatype	Description
`table_qualifier`	`varchar(32)`	The name of the database in which the table specified for the `<table_name>` parameter is stored.
`table_owner`	`varchar(32)`	The table owner. If no value was specified for the `<table_owner>` parameter, this value is the current owner or the Database Owner.
`table_name`	`varchar(32)`	NOT NULL.
`column_name`	`varchar(32)`	NOT NULL.
`data_type`	`smallint`	Integer code for ODBC datatype. If this is a datatype that cannot be mapped into an ODBC type, it is NULL.
`type_name`	`varchar(30)`	String representing a datatype. The underlying DBMS presents this datatype name.
`precision`	`int`	Number of significant digits.
`length`	`int`	Length in bytes of a datatype.
`scale`	`smallint`	Number of digits to the right of the decimal point.
`radix`	`smallint`	Base for numeric datatypes.
`nullable`	`smallint`	The value 1 means NULL is possible; 0 means NOT NULL.
`remarks`	`varchar(254)`	
`ss_data_type`	`smallint`	An SAP ASE datatype.
`colid`	`tinyint`	A column appended to the results set.

Column	Datatype	Description
column_def	varchar(255)	NULL.
sql_data_type	smallint	An SAP ASE datatype.
sql_datetime_sub	smallint	NULL.
char_octet_length	int	The value of char_octet_length is the same as the value for the precision column if the datatype for char_octet_length is: - binary - char - image - nchar - nvarchar - sysname - text - timestamp - varbinary - varchar Otherwise, the value of char_octet_length is 0.
ordinal_position	int	The ordinal position of the column in the table. The first column in the table is 1.
is_nullable	varchar(3)	Describes whether the column or parameter allows NULL as a value. From syscolumns.

sp_columns reports the type_name as float, and data_type as 6 for columns defined as double precision. The SAP ASE double precision datatype is a float implementation supports the range of values as specified in the ODBC specifications.

Permissions

Any user can execute sp_columns.

2.7 sp_databases

Returns a list of databases in the SAP ASE server.

Syntax

```
sp_databases
```

Examples

Example 1

Returns a list of databases in the server:

```
sp_databases
```

```
database_name       database_size    remarks
----------------    -------------    ------------
master                   5120        NULL
model                    2048        NULL
mydb                     2048        NULL
pubs2                    2048        NULL
sybsecurity              5120        NULL
sybsystemprocs          16384        NULL
tempdb                   2048        NULL
```

Usage

The results set for `sp_databases` is:

Column	Datatype	Description
`database_name`	`char(32)`	NOT NULL database name.
`database_size`	`bigint`	Size of database, in kilobytes.
`remarks`	`varchar(254)`	SAP ASE always returns NULL.

Permissions

Any user can execute `sp_databases`.

2.8 sp_datatype_info

Returns information about a particular ODBC datatype or about all ODBC datatypes.

Syntax

```
sp_datatype_info [<data_type>]
```

Parameters

<data_type>

is the code number for the specified ODBC datatype about which information is returned.

Usage

The results set for `sp_datatype_info` is:

Column	Datatype	Description
`type_name`	`varchar(30)`	A DBMS-dependent datatype name (the same as the `type_name` column in the `sp_columns` results set).
`data_type`	`smallint`	A code for the ODBC type to which all columns of this type are mapped.
`precision`	`int`	The maximum precision for the datatype on the data source. Zero is returned for datatypes where precision is not applicable.
`literal_prefix`	`varchar(32)`	Character(s) used to prefix a literal. For example, a single quotation mark (') for character types and 0x for binary.
`literal_suffix`	`varchar(32)`	Character(s) used to terminate a literal. For example, a single quotation mark (') for character types and nothing for binary.
`create_params`	`varchar(32)`	A description of the creation parameters for this datatype.
`nullable`	`smallint`	The value 1 means this datatype can be created allowing null values; 0 means it cannot.

Column	Datatype	Description
case_sensitive	smallint	The value 1 means all columns of this type are case sensitive (for collations); 0 means they are not.
searchable	smallint	The value 1 means columns of this type can be used in a where clause.
unsigned_attribute	smallint	The value 1 means the datatype is unsigned; 0 means the datatype is signed.
money	smallint	The value 1 means it is a money datatype; 0 means it is not.
auto_increment	smallint	The value 1 means the datatype is automatically incremented; 0 means it is not.
local_type_name	varchar(128)	Localized version of the data source dependent name of the datatype.

Permissions

Any user can execute sp_datatype_info.

2.9 sp_fkeys

Returns information about foreign key constraints created with the create table or alter table command in the current database.

Syntax

```
sp_fkeys <pktable_name>[, <pktable_owner>]
     [, <pktable_qualifier>][,< fktable_name>]
     [,< fktable_owner>][,< fktable_qualifier>]
```

Parameters

<pktable_name>

is the name of the primary key table. The use of wildcard characters in pattern matching is not supported. You must specify either the <pktable_name> or the <fktable_name>, or both.

<pktable_owner>

is the name of the primary key table owner. The use of wildcard characters in pattern matching is not supported. If you do not specify the table owner, sp_fkeys looks for a table owned by the current user and then for a table owned by the Database Owner.

<pktable_qualifier>

is the name of the database that contains the primary key table. This can be either the current database or NULL.

<fktable_name>

is the name of the foreign key table. The use of wildcard characters in pattern matching is not supported. Either the <fktable_name> or the <pktable_name>, or both, must be given.

<fktable_owner>

is the name of the foreign key table owner. The use of wildcard characters in pattern matching is not supported. If an <fktable_owner> is not specified, sp_fkeys looks for a table owned by the current user and then for a table owned by the database owner.

<fktable_qualifier>

is the name of the database that contains the foreign key table. This can be either the current database or null.

Usage

The results set for sp_fkeys is:

Column	Datatype	Description
pktable_qualifier	varchar(32)	The database that contains the primary key table.
pktable_owner	varchar(32)	The owner of the primary key table.
pktable_name	varchar(32)	NOT NULL.
pkcolumn_name	varchar(32)	NOT NULL.
fktable_qualifier	varchar(32)	The database that contains the foreign key table.
fktable_owner	varchar(32)	The owner of the foreign key table.

Column	Datatype	Description
fktable_name	varchar(32)	NOT NULL.
fkcolumn_name	varchar(32)	NOT NULL.
key_seq	smallint	NOT NULL. The sequence number of the column in a multicolumn primary key.
update_rule	smallint	Action to be applied to the foreign key when the SQL operation is UPDATE. Zero is returned for this column.
delete_rule	smallint	Action to be applied to the foreign key when the SQL operation is DELETE. Zero is returned for this column.

There are additional considerations when using sp_fkeys:

- sp_fkeys returns information about foreign key constraints created with the create table or alter table command in the current database. A foreign key is a key column in a table that logically depends on a primary key column in another table.
- Both the primary key and foreign key must have been declared in acreate table or alter table statement.
- If the primary key table name is supplied, but the foreign key table name is NULL, sp_fkeys returns all tables that include a foreign key to the given table. If the foreign key table name is supplied, but the primary key table name is NULL, sp_fkeys returns all tables that are related by a primary key/foreign key relationship to foreign keys in the foreign key table.
- sp_fkeys does not return information about keys declared with sp_commonkey, sp_foreignkey, or sp_primarykey.

See also alter table, create table in *Reference Manual: Commands*.

Permissions

Any user can execute sp_fkeys.

Related Information

sp_commonkey [page 191]
sp_foreignkey [page 387]
sp_primarykey [page 676]

2.10 sp_pkeys

Returns information about primary key constraints created with the `create table` or `alter table` command for a single table.

Syntax

```
sp_pkeys <table_name> [, <table_owner>] [, <table_qualifier>]
```

Parameters

`<table_name>`

is the name of the table. The use of wildcard characters in pattern matching is not supported.

`<table_owner>`

is the name of the table owner. The use of wildcard characters in pattern matching is not supported. If `<table_owner>` is not specified, `sp_pkeys` looks for a table owned by the current user and then for a table owned by the Database Owner.

`<table_qualifier>`

is the name of the database that contains the table. This can be either the current database or NULL.

Usage

The results set for `sp_pkeys` is:

Column	Datatype	Description
`table_qualifier`	`varchar(32)`	The database name. This field can be NULL.
`table_owner`	`varchar(32)`	The table owner. If no value was specified for the `<table_owner>` parameter, this value is the current owner or the Database Owner.
`table_name`	`varchar(32)`	NOT NULL.
`column_name`	`varchar(32)`	NOT NULL.
`key_seq`	`smallint`	NOT NULL. The sequence number of the column in a multicolumn primary key.

Primary keys must have been declared with the `create table` or `alter table` statement, not with `sp_primarykey`.

The term primary key refers to a logical primary key for a table. The SAP ASE server expects that every logical primary key has a unique index defined on it and that this unique index is also returned in `sp_statistics`.

See also `alter table`, `create table` in *Reference Manual: Commands*.

Permissions

Any user can execute `sp_pkeys`.

Related Information

sp_primarykey [page 676]
sp_statistics [page 880]

2.11 sp_server_info

Returns a list of SAP ASE attribute names and current values.

Syntax

```
sp_server_info [<attribute_id>]
```

Parameters

`<attribute_id>`

is the integer ID of the server attribute.

Examples

Example 1

Returns a list of server attributes for attribute ID 12:

```
sp_server_info 12
```

```
attribute_id attribute_name           attribute_value
------------ ------------------------- --------------------------
            12 MAX_OWNER_NAME_LENGTH  0
```

Example 2

Returns the list of server attributes, described by the mandatory rows, and their values:

```
sp_server_info
```

Usage

The results set for `sp_server_info` is:

Column	Datatype	Description
`attribute_id`	`int`	NOT NULL.
`attribute_name`	`varchar(60)`	NOT NULL.
`attribute_value`	`varchar(255)`	

The mandatory rows in the results set returned by `sp_server_info` are:

ID	Server Attribute Name	Description	Value
1	DBMS_NAME	Name of the DBMS.	`SQL SERVER`
2	DBMS_VER	The value used by the ODBC driver to determine version compatibility. i Note Do not change the value of `DBMS_VER`. This is not the same as `@@version`, and the value must match the value used by the ODBC driver.	Actual value
6	DBE_NAME	Unused	
10	OWNER_TERM	SAP ASE server's term for a table owner (the second part of a three-part name).	`owner`

ID	Server Attribute Name	Description	Value
11	TABLE_TERM	SAP ASE server's term for a table (the third part of a three-part name).	`table`
12	MAX_OWNER_NAME_LENGTH	Maximum length of the name for a table owner (the second part of a three-part name).	`30`
13	TABLE_LENGTH	The maximum number of characters for a table name.	`30`
14	MAX_QUAL_LENGTH	Maximum length of the name for a table qualifier (the first part of a three-part table name).	`30`
15	COLUMN_LENGTH	The maximum number of characters for a column name.	`30`
16	IDENTIFIER_CASE	The case sensitivity of user-defined names (table names, column names, and stored procedure names) in the database (the case in which these objects are presented in the system catalogs).	`MIXED`
18	COLLATION_SEQ	The assumed ordering of the character set for this server.	
19	SAVEPOINT_SUPPORT	Does the underlying DBMS support named savepoints?	`Y`
20	MULTI_RESULT_SETS	Does the underlying DBMS or the gateway itself support multiple results sets (can multiple statements be sent through the gateway, with multiple results sets returned to the client)?	`Y`
22	ACCESSIBLE_TABLES	In `sp_tables`, does the gateway return only tables, views, and so on, that are accessible by the current user (that is, the user who has at least `select` privileges for the table)?	`Y`
100	USERID_LENGTH	The maximum number of characters for a user name.	`30`
101	QUALIFIER_TERM	SAP ASE server's term for a table qualifier (the first part of a three-part name).	`database`
102	NAMED_TRANSACTIONS	Does the underlying DBMS support named transactions?	`Y`
103	SPROC_AS_LANGUAGE	Can stored procedures be executed as language events?	`Y`
103	REMOTE_SPROC	Can stored procedures be executed through the remote stored procedure APIs in DB-Library?	`Y`
104	ACCESSIBLE_SPROC	In `sp_stored_procedures`, does the gateway return only stored procedures that are executable by the current user?	`Y`

ID	Server Attribute Name	Description	Value
105	MAX_INDEX_COLS	Maximum number of columns in an index for the DBMS.	32
106	RENAME_TABLE	Can tables be renamed?	Y
107	RENAME_COLUMN	Can columns be renamed?	Y
108	DROP_COLUMN	Can columns be dropped?	Y
109	INCREASE_COLUMN_LENGTH	Can column size be increased?	N
110	DDL_IN_TRANSACTION	Can DDL statements appear in transactions?	Y
111	DESCENDING_INDEXES	Are descending indexes supported?	Y
112	SP_RENAME	Can a stored procedure be renamed?	Y
500	SYS_SPROC_VERSION	The version of the catalog stored procedures currently implemented.	01.01.2822

Permissions

Any user can execute `sp_server_info`.

2.12 sp_special_columns

Returns the optimal set of columns that uniquely identify a row in a table or view; can also return a list of `timestamp` columns, with values that are automatically generated when any value in the row is updated by a transaction.

Syntax

```
sp_special_columns <table_name> [, <table_owner>]
    [, <table_qualifier>] [, <col_type>]
```

Parameters

`<table_name>`

is the name of the table or view. The use of wildcard characters in pattern matching is not supported.

<table_owner>

is the name of the table or view owner. The use of wildcard characters in pattern matching is not supported. If you do not specify the table owner, `sp_special_columns` looks for a table owned by the current user and then for a table owned by the Database Owner.

<table_qualifier>

is the name of the database. This can be either the current database or NULL.

<col_type>

is "R" to return information about columns with values that uniquely identify any row in the table, or "V" to return information about `timestamp` columns, with values that are generated by the SAP ASE server each time a row is inserted or updated.

Examples

Example 1

Returns the optimal set of columns for `systypes`:

```
sp_special_columns systypes
```

```
scope  column_name  data_type  type_name  precision  length  scale
------ ------------ ---------- ---------- ---------- ------- ------
   0   name           12       varchar        30       30    NULL
```

Example 2

Returns the optimal set from the from the `authors` table with values that uniquely identify any row in the table:

```
sp_special_columns @table_name=authors, @col_type=R
```

```
scope  column_name  data_type  type_name  precision  length  scale
------ ------------ ---------- ---------- ---------- ------- ------
   0   au_id          12       varchar      11         11    NULL
```

Usage

The results set for `sp_special_columns` is:

Column	Datatype	Description
`scope`	`int`	NOT NULL. Actual scope of the row ID. The SAP ASE server always returns 0.

Column	Datatype	Description
column_name	varchar(30)	NOT NULL. Column identifier.
data_type	smallint	The integer code for an ODBC datatype. If this datatype cannot be mapped to an ANSI/ISO type, the value is NULL. The native datatype name is returned in the type_name column.
type_name	varchar(13)	The string representation of the datatype. This is the datatype name as presented by the underlying DBMS.
precision	int	The number of significant digits.
length	int	The length in bytes of the datatype.
scale	smallint	The number of digits to the right of the decimal point.

Permissions

Any user can execute sp_special_columns.

2.13 sp_sproc_columns

Returns information about a stored procedure's input and return parameters.

Syntax

```
sp_sproc_columns <procedure_name>[, <procedure_owner>]
    [, <procedure_qualifier>][, <column_name>]
```

Parameters

<procedure_name>

is the name of the stored procedure. The use of wildcard characters in pattern matching is not supported.

<procedure_owner>

is the owner of the stored procedure. The use of wildcard characters in pattern matching is not supported. If no owner is specified, `sp_sproc_columns` returns all columns.

`<procedure_qualifier>`

is the name of the database. This can be either the current database or NULL.

`<column_name>`

is the name of the parameter about which you want information. If you do not supply a parameter name, `sp_sproc_columns` returns information about all input and return parameters for the stored procedure.

Usage

The results set for `sp_sproc_columns` is:

Column	Datatype	Description
`procedure_qualifier`	`varchar(30)`	Procedure qualifier name. Can be NULL.
`procedure_owner`	`varchar(30)`	Procedure owner name. Always returns a value.
`procedure_name`	`varchar(41)`	Procedure name. Always returns a value.
`column_name`	`varchar(30)`	Column name for each column of the `<table_name>` returned. Always returns a value.
`column_type`	`smallint`	
`data_type`	`smallint`	The integer code for an ODBC datatype. If this datatype cannot be mapped to an ANSI/ISO type, the value is NULL. The native datatype name is returned in the `type_name` column.
`type_name`	`char(30)`	The string representation of the datatype. This is the datatype name as presented by the underlying DBMS.
`precision`	`int`	The number of significant digits.
`length`	`int`	The length in bytes of the datatype.
`scale`	`smallint`	The number of digits to the right of the decimal point.
`radix`	`smallint`	The base for numeric types.
`nullable`	`smallint`	The value 1 means this datatype can be created allowing null values; 0 means it cannot.

Column	Datatype	Description
remarks	varchar(254)	The description of the procedure column. NULL.
ss_data_type	tinyint	An SAP ASE datatype.
colid	tinyint	The column ID from syscolumns.
column_def	varchar(255)	NULL.
sql_data_type	smallint	An SAP ASE datatype.
sql_datetime_sub	smallint	NULL.
char_octet_length	int	The value of char_octet_length is the same as the value for the precision column if the datatype for char_octet_length is: - binary - char - image - nchar - nvarchar - sysname - text - timestamp - varbinary - varchar Otherwise, the value of char_octet_length is 0.
ordinal_position	int	The ordinal position of the parameter in the parameter list. The first parameter in the list is 1, and return values have an ordinal.
is_nullable	varchar(3)	Describes whether the column or parameter allows NULL as a value. From syscolumns.
mode	varchar(20)	The parameter mode information stored in syscolumns that contains: - **For SQL procedures** – in, out, or "return value". - **For SQLJ procedures (Java)** – in, out, inout, or "return value".

sp_sproc_columns reports the type_name as float, and data_type as 6 for parameters defined as double precision. The SAP ASE double precision datatype is a float implementation supports the range of values as specified in the ODBC specifications.

Permissions

Any user can execute `sp_sproc_columns`.

2.14 sp_statistics

Returns a list of indexes on a single table.

Syntax

```
sp_statistics <table_name>[, <table_owner>][, <table_qualifier>]
    [, <index_name>][, <is_unique>]
```

Parameters

`<table_name>`

is the name of the table. The use of wildcard character pattern matching is not supported.

`<table_owner>`

is the owner of the table. The use of wildcard character pattern matching is not supported. If `<table_owner>` is not specified, `sp_statistics` looks for a table owned by the current user and then for a table owned by the database owner.

`<table_qualifier>`

is the name of the database. This can be either the current database or NULL.

`<index_name>`

is the index name. The use of wildcard character pattern matching is not supported.

`<is_unique>`

is `Y` to return only unique indexes; otherwise, is `N` to return both unique and nonunique indexes.

Examples

Example 1

Shows the list of indexes for `publishers`:

```
sp_statistics publishers
```

```
table_qualifier  table_owner  table_name  non_unique
    index_qualifier                  index_name
    type   seq_in_index column_name                     collation
    cardinality pages
---------------  -----------  ----------  ----------
   -------------------------------- ---------------------------
   ------ ------------ -------------------------------- --------
   ----------- -----------
pubs2             dbo         publishers   NULL
    NULL                             NULL
        0         NULL NULL                             NULL
             3           1
pubs2                            dbo
    publishers                                0
    publishers                       pubind
         1            1 pub_id                           A
             3           1
```

Usage

The results set for `sp_statistics` is:

Column	Datatype	Description
`table_qualifier`	`varchar(32)`	The database name. This field can be NULL.
`table_owner`	`varchar(32)`	
`table_name`	`varchar(32)`	NOT NULL.
`non_unique`	`smallint`	NOT NULL. The value 0 means unique, and 1 means not unique.
`index_qualifier`	`varchar(32)`	
`index_name`	`varchar(32)`	
`type`	`smallint`	NOT NULL. The value 0 means clustered, 2 means hashed, and 3 means other.
`seq_in_index`	`smallint`	NOT NULL.
`column_name`	`varchar(32)`	NOT NULL.
`collation`	`char(1)`	The value A means ascending; D means descending; and NULL means not applicable.

Column	Datatype	Description
`cardinality`	`int`	Number of rows in the table or unique values in the index.
`pages`	`int`	Number of pages to store the index or table.

The indexes in the results set appear in ascending order, ordered by the `non-unique`, `type`, `index_name`, and `seq_in_index` columns.

The index type `hashed` accepts exact match or range searches, but searches involving pattern matching do not use the index.

Permissions

Any user can execute `sp_statistics`.

2.15 sp_stored_procedures

Returns information about one or more stored procedures.

Syntax

```
sp_stored_procedures [<sp_name>[, <sp_owner>[, <sp_qualifier>]]]
```

Parameters

`<sp_name>`

is the name of the stored procedure. Use wildcard characters to request information about more than one stored procedure.

`<sp_owner>`

is the owner of the stored procedure. Use wildcard characters to request information about procedures that are owned by more than one user.

`<sp_qualifier>`

is the name of the database. This can be the current database or NULL.

Usage

The results set for sp_stored_procedures is:

Column	Datatype	Description
procedure_qualifier	varchar(30)	The name of the database.
procedure_owner	varchar(30)	
procedure_name	varchar(41)	NOT NULL.
num_input_params	int	NOT NULL. Always returns -1.
num_output_params	int	NOT NULL. The value >= 0 shows the number of parameters; -1 means the number of parameters is indeterminate.
num_result_sets	int	NOT NULL. Always returns -1.
remarks	varchar(254)	NULL.

sp_stored_procedures returns information about stored procedures in the current database only.

sp_stored_procedures can return the name of stored procedures for which the current user does not have execute permission. However, if the server attribute accessible_sproc is "Y" in the results set for sp_server_info, only stored procedures that are executable by the current user are returned.

Permissions

Any user can execute sp_stored_procedures.

Related Information

sp_server_info [page 872]

2.16 sp_table_privileges

Returns privilege information for all columns in a table or view.

Syntax

```
sp_table_privileges <table_name>[, <table_owner>[, <table_qualifier>]]
```

Parameters

<table_name>

is the name of the table. The use of wildcard characters in pattern matching is not supported.

<table_owner>

is the name of the table owner. The use of wildcard characters in pattern matching is not supported. If you do not specify the table owner, sp_table_privileges looks for a table owned by the current user and then for a table owned by the Database Owner.

<table_qualifier>

is the name of the database. This can be either the current database or NULL.

Usage

The results set for sp_table_privileges is:

Column	Datatype	Description
table_qualifier	varchar(32)	The name of the database. This field can be NULL.
table_owner	varchar(32)	
table_name	varchar(32)	NOT NULL.
grantor	varchar(32)	NOT NULL.

Column	Datatype	Description
grantee	varchar(32)	NOT NULL.
privilege	varchar(32)	Identifies the table privilege. May be one of the following: • SELECT – The grantee is permitted to retrieve data for one or more columns of the table. • INSERT – The grantee is permitted to insert rows containing data. • UPDATE – The grantee is permitted to update the data in one or more columns of the table. • DELETE – The grantee is permitted to delete rows of data from the table. • REFERENCE – The grantee is permitted to refer to one or more columns of the table within a constraint.
is_grantable	varchar(3)	Indicates whether the grantee is permitted to grant the privilege to other users. The values are YES, NO, and NULL.

Permissions

Any user can execute `sp_table_privileges`.

2.17 sp_tables

Returns a list of objects that can appear in a `from` clause.

Syntax

```
sp_tables [<table_name>] [, <table_owner>][, <table_qualifier>][, <table_type>]
```

Parameters

<table_name>

is the name of the table. Use wildcard characters to request information about more than one table.

<table_owner>

is the table owner. Use wildcard characters to request information about more than one table.

`<table_qualifier>`

is the name of the database. Acceptable values are the name of the current database and NULL.

`<table_type>`

is a list of values, separated by commas, giving information about all tables of the table type(s) specified, including the following:

```
"'TABLE', 'SYSTEM TABLE', 'VIEW'"
```

> **Note**
>
> Enclose each table type with single quotation marks, and enclose the entire parameter with double quotation marks. Enter table types in uppercase.

Examples

Example 1

This example returns information about all tables in the current database of the type TABLE and VIEW and excludes information about system tables:

```
sp_tables @table_type = "'TABLE', 'VIEW'"
```

Usage

The results set for `sp_tables` is:

Column	Datatype	Description
`table_qualifier`	`varchar(30)`	The database name. This field can be NULL.
`table_owner`	`varchar(30)`	
`table_name`	`varchar(30)`	NOT NULL. The table name.
`table_type`	`varchar(32)`	NOT NULL. One of the following: 'TABLE', 'VIEW', 'SYSTEM TABLE'.

Column	Datatype	Description
remarks	varchar(254)	NULL

- The SAP ASE server does not necessarily check the read and write permissions on <table_name>. Access to the table is not guaranteed, even if you can display information about it.
- The results set includes tables, views, and synonyms and aliases for gateways to DBMS products.
- If the server attribute accessible_tables is “Y” in the results set for sp_server_info, only tables that are accessible by the current user are returned.

Permissions

Any user can execute sp_tables.

Tables used

master.dbo.sysattributes, master.dbo.sysloginroles, master.dbo.syssrvroles, sysroles

Related Information

sp_server_info [page 872]

3 System Extended Stored Procedures

System extended stored procedures (ESPs) are supplied by SAP.

- ESPs are created by `installmaster` during the installation process. They are located in the `sybsystemprocs` database and owned by the system administrator. They can be run from any database.
- Permissions are set in the `sybsystemprocs` database.
  Users with the `sa_role` have default execution permissions on the system ESPs. These System Administrators can grant execution permissions to other users.
- You can get the names of the DLLs associated with the system ESPs by running `sp_helpextendedproc` in the `sybsystemprocs` database.
- The system ESPs follow the same calling conventions as the regular system procedures. The only additional requirement for system ESPs is that the Open Server application, XP Server, must be running. The SAP ASE server starts XP Server the first time an ESP is invoked. XP Server continues to run until you shut down the SAP ASE server.

3.1 xp_cmdshell

Executes a native operating system command on the host system running the SAP ASE server.

Syntax

```
xp_cmdshell <command>[, no_output] [return_status | no_wait]
```

Parameters

<command>

is the operating system command string; maximum length is 8192 bytes.

no_output

if specified, suppresses any output from the command.

return_status

if specified, returns the completion status of the operating system command specified in the `command` parameter. If you do not use this parameter, the returned value is either 0 for success, or or 1 for failure, respectively.

no_wait

if specified, the xp_cmdshell operation immediately returns to the caller and the specified command executes as a background process. You see no output, and the returned result reflects only the success or failure of starting the command as a background process, not the success or failure of the process itself.

Examples

Example on Windows

Silently copies the file named log on the C drive to a file named log.0102 on the A drive:

```
xp_cmdshell 'copy C:\log A:\log.0102', no_output
```

Example on UNIX

Executes the operating system's ls command and returns the list directory contents as a row of data:

```
xp_cmdshell 'ls'
```

Usage

There are additional considerations when using xp_cmdshell:

- xp_cmdshell returns any output, including operating system errors, as rows of text in a single column.
- xp_cmdshell is run from the current directory of the XP Server.
- The width of the column of returned output is 80 characters. The output is not formatted.
- xp_cmdshell cannot perform commands that require interaction with the user, such as "login".
- The user context in which an operating system command is executed via xp_cmdshell is controlled by the value of the xp_cmdshell context configuration parameter. If this parameter is set to 1 (the default), xp_cmdshell restricts permission to users with System Administration privileges at the operating system level. If this parameter is set to 0, xp_cmdshell uses the security context of the operating system account under which the SAP ASE server is running. Therefore, using xp_cmdshell with the xp_cmdshell context configuration parameter set to 0, any user can execute operating system commands using the permissions of the account running the SAP ASE server. This account may have fewer restrictions than the user's own account.
- Regardless of the value of xp_cmdshell context, if the user who is executing xp_cmdshell is not a system administrator (does not have the sa_role), a system administrator must have granted that user explicit permission to execute xp_cmdshell. For example, the following statement grants "joe" permission to execute xp_cmdshell:

  ```
  grant execute on xp_cmdshell to joe
  ```

- To find out if xp_cmdshell was successful in spawning an external command XP Server, enter the following, where <command> is the name of the command you ran with xp_cmdshell:

  ```
  exec @ret = xp_cmdshell <command>
  ```

If xp_cmdshell was successful, exec @ret = xp_cmdshell <command> returns a value of 0. If xp_cmdshell failed, exec @ret = xp_cmdshell <command> returns a value of 1.

- To find out if the command you ran using xp_cmdshell was itself successful, enter the following, where <command> is the name of the command you ran with xp_cmdshell:

  ```
  exec @ret = xp_cmdshell <command>, return_status
  ```

  exec @ret = xp_cmdshell <command>, return_status causes xp_cmdshell to return the actual exit status code of the command. If a failure occurs and XP Server cannot run the command, xp_cmdshell returns a value of 1. If the command runs successfully, xp_cmdshell returns a value of 0. If the command was successful, exec @ret = xp_cmdshell <command> returns a value of 0. If the command failed, exec @ret = xp_cmdshell <command> returns a value of 1.

  > **i Note**
  >
  > Both exec @ret = xp_cmdshell <command> and exec @ret = xp_cmdshell <command>, return_status are backward-compatible. Old stored procedures that do not use the return_status parameter treat exec @ret = xp_cmdshell <command>, return_status as if it were exec @ret = xp_cmdshell <command>.

  Also, the no_output parameter can still be used in combination with return_status, in any order.

- You must use the cmdstr column name when you create a proxy table with the xp_cmdshell remote procedure:

  ```
  create existing table xpoutput
  (
          cmdstr varchar(255) null
  )
  external procedure at "THIS...xp_cmdshell"
  select cmdstr from xpoutput where cmdstr = "date"
  ```

  If you do not use cmdstr, you see an error message.
  See *Remote Procedures as Proxy Tables* in the *Component Integration Services User's Guide* for more information about results returned from the proxy table.

See also *System Administration Guide*.

Permissions

By default, only a system administrator can execute xp_cmdshell. A system administrator can grant execute permission to other users.

3.2 xp_enumgroups

(Windows only) Displays groups for a specified Windows domain.

Syntax

```
xp_enumgroups [<domain_name>]
```

Parameters

<domain_name>
is the Windows domain for which you are listing user groups.

Examples

Example 1

Lists all user groups on the Windows computer running XP Server:

```
xp_enumgroups
```

Example 2

Lists all user groups in the PCS domain:

```
xp_enumgroups 'PCS'
```

Usage

There are additional considerations when using `xp_enumgroups`:

- `xp_enumgroups` displays all local user groups if no parameter is passed.
- A *domain* is a named collection of computers that share a common user account database and security policy.
- A return status of 0 indicates success; 1 indicates failure.

Permissions

By default, only a system administrator can execute `xp_enumgroups`. A system administrator can grant this permission to other users.

3.3 xp_logevent

(Windows only) Provides for logging a user-defined event in the Windows Event Log from within the SAP ASE server.

Syntax

```
xp_logevent <error_number>, <message>[, <type>]
```

Parameters

`<error_number>`

is the user-assigned error number. It must be equal to or greater than 50000.

`<message>`

is the text of the message that is displayed in the description field of the event viewer. The maximum length of the message is 255 bytes. Enclose the message in quotes.

`<type>`

describes the urgency of the event. Values are `informational`, `warning`, and `error`. The default is `informational`. Enclose the value in quotes.

Examples

Example 1

An informational event, number 55555, is logged in the Windows Event Log. The text of the description in the event detail window is “Email message deleted”:

```
xp_logevent 55555, 'Email message deleted.'
```

Example 2

An error event, number 66666, is logged in the Windows Event Log. The text of the description in the event detail window is “DLL not found”:

```
xp_logevent 66666, 'DLL not found.', 'error'
```

Usage

The following table describes the default event details for events generated with `xp_logevent`:

User	N/A
Computer	Name of machine running XP Server
Event ID	12
Source	Name of the SAP ASE server
Category	User

Permissions

Only a system administrator can execute `xp_logevent`.

4 dbcc Stored Procedures

dbcc stored procedures access the tables only in the dbccdb database or in the alternate database, dbccalt.

See the *System Administration Guide* for details on setting up dbccdb or dbccalt. See *dbccdb Tables* in *Reference Manual: Tables* for information on the tables used in these databases.

For details on the dbcc system procedure sp_plan_dbccdb, see sp_plan_dbccdb. See the *System Administration Guide* for more information on this system procedure and the dbcc stored procedures.

The permission checks for dbcc stored procedures differ based on your granular permissions settings. See the *Security Administration Guide* for more information on granular permissions.

4.1 Specifying the Object Name and Date

Several dbcc stored procedures use parameters for the object name and date. This section provides important information on specifying the object name and date.

4.1.1 Specifying the Object Name

The object name specifies only the name of the table or index for which to generate a report. When you specify an object name, you must also specify a database name (<dbname>). You cannot specify an owner for the object. If the specified object name is not unique in the target database, the system procedure generates a report on all objects with the specified name.

4.1.2 Specifying the Date

Use the following syntax to specify the date and time (optional):

```
mm/dd/yy[:hh:mm:ss]
```

A 24-hour clock is assumed.

When you specify the date, the system procedures interpret it as follows:

- If both the date and the time are specified, the dbcc operation that completed at the specified date and time is selected for the report.
- If the specified date is the current date, and no time is specified, the time is automatically set to the current time. The dbcc operation that completed within the previous 24 hours with a finish time closest to the current time is selected for the report.

- If the specified date is not the current date, and no time is specified, the time is automatically set to "23:59:59". The `dbcc checkstorage` operation that completed with a finish date and time closest to the specified date and system-supplied time is selected for the report.

For example, suppose the most recent `dbcc checkstorage` operation completed on March 4, 1997 at 10:20:45.

If you specify the date as "03/04/97", the system procedure interprets the date as 03/04/97:23:59:59. This date and time are compared to the actual finish date and time of 03/04/97:10:20:45.

If you specify the date as "03/04/97:10:00:00", the operation that completes at 10:20:45 is not selected for the report because only the operations that complete on or before the specified time meet the criteria.

If you specify the date as "03/06/97", no report is generated because the most recent operation completed more than 24 hours earlier.

4.2 sp_dbcc_alterws

Changes the size of the specified workspace to a specified value, and initializes the workspace.

Syntax

```
sp_dbcc_alterws <dbname>, <wsname>, "<wssize>[K|M]"
```

Parameters

`<dbname>`

is the name of the database in which the workspace resides. Specify either `dbccdb` and `dbccalt`.

`<wsname>`

specifies the name of the workspace to alter.

`<wssize>`

is the new size of the workspace, specified by `K` (kilobytes) or `M` (megabytes). If you do not specify `K` or `M`, `<wssize>` specifies the number of pages. Page size is platform-dependent. The minimum size for a workspace is 24 pages.

Examples

Example 1

Changes the size of the `scan_ws_000001` workspace on `dbccdb` to 30 MB:

```
sp_dbcc_alterws dbccdb, scan_ws_000001, "30M"
```

```
Workspace scan_ws_000001 has been altered successfully to size 30MB
```

Usage

There are additional considerations when using `sp_dbcc_alterws`:

- `sp_dbcc_alterws` changes the size of the specified workspace to the specified value and initializes the workspace.
- To achieve maximum performance, make sure you have configured a buffer pool of at least 16K before you alter a workspace.
- Use `sp_plan_dbccdb` to determine size estimates before altering the workspace.
- The workspace must exist before it can be altered. For information on creating workspaces, see `sp_dbcc_createws`.
- To delete a workspace, in `dbccdb` issue:

  ```
  drop table <workspace_name>
  ```

See also:

- `dbcc` in *Reference Manual: Commands*
- See the *System Administration Guide* for more information on the `scan` and `text` workspaces, and the `dbccalt` database.

Permissions

The permission checks for `sp_dbcc_alterws` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be the database owner of `dbccdb` (or `dbccalt`).
Disabled	

Related Information

sp_dbcc_createws [page 898]

sp_dbcc_evaluatedb [page 906]
sp_plan_dbccdb [page 666]
sp_helpdb [page 438]

4.3 sp_dbcc_configreport

Generates a report that describes the configuration information used by the dbcc checkstorage operation for the specified database.

Syntax

```
sp_dbcc_configreport [<dbname>]
```

Parameters

<dbname>

specifies the name of the database. If <dbname> is not specified, the report contains information on all databases in dbccdb..dbcc_operation_log.

Examples

Example 1

Generates a report on the configuration information related to dbcc for the sybsystemprocs database. The Value column lists the object name, where applicable, and the size:

```
sp_dbcc_configreport
```

```
Reporting configuration information of database sybsystemprocs.
Parameter Name                Value                          Size
database name                 sybsystemprocs                 51200K
dbcc named cache              default data cache             1024K
text workspace                textws_001 (id = 544004969)    128K
scan workspace                scanws_001 (id = 512004855)    1024K
max worker processes          1
operation sequence number      2
```

Usage

There are additional considerations when using `sp_dbcc_configreport`:

- `sp_dbcc_configreport` generates a report that describes the configuration information used by `dbcc` operations for the specified database. This information is stored in the `dbcc_config` table.
- To evaluate the most current configuration parameters, run `sp_dbcc_updateconfig` before running `sp_dbcc_configreport`.
- To change the configuration values for a workspace, use `sp_dbcc_alterws`.

See also `dbcc` in *Reference Manual: Commands*.

Permissions

The permission checks for `sp_dbcc_configreport` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be the database owner of `dbccdb` (or `dbccalt`), or have the `report checkstorage` privilege on the specified database.
Disabled	With granular permissions disabled, any valid user for the database name specified can run `sp_dbcc_configreport`.

Related Information

sp_dbcc_alterws [page 895]
sp_dbcc_fullreport [page 915]
sp_dbcc_statisticsreport [page 924]
sp_dbcc_summaryreport [page 927]
sp_dbcc_updateconfig [page 930]

4.4 sp_dbcc_createws

Creates a workspace of the specified type and size on the specified segment and database.

Syntax

```
sp_dbcc_createws <dbname>, <segname>, [<wsname>], <wstype>, "wssize[K|M]"
```

Parameters

`<dbname>`

is the name of the database in which the workspace is to be created. Values are `dbccdb` and `dbccalt`.

`<segname>`

is the name of the segment for the workspace.

`<wsname>`

is the name of the workspace. If the value is null, `sp_dbcc_createws` generates the name `scan_wsnnnnnn` for the `scan` workspace and `text_wsnnnnnn` for the `text` workspace, where `<nnnnnn>` is a unique 6-digit number.

`<wstype>`

specifies the type of workspace to be create. Values are `scan` and `text`.

`<wssize>`

is the workspace size, specified with K (kilobytes) or M (megabytes). If you do not specify K or M, `<wssize>` specifies the number of pages. The minimum size for a workspace is 24 pages.

Examples

Example 1

Creates a 10MB `scan` workspace named `scan_wspubs2` on the `scanseg` segment in `dbccdb`:

```
sp_dbcc_createws dbccdb, scanseg, scan_wspubs2, scan, "10M"
```

Example 2

Creates a 14MB `scan` workspace named `text_ws000001` on the `textseg` segment in `dbccdb`:

```
sp_dbcc_createws dbccdb, textseg, text, "14M"
```

Usage

There are additional considerations when using `sp_dbcc_createws`:

- `sp_dbcc_createws` creates a workspace with the specified name and size and initializes it.
- Before you create a workspace, create the segment with `sp_addsegment`.
- Before you create a workspace, make sure you have configured a buffer pool of at least 16K, to achieve maximum performance.
- When you create a workspace, make sure to add a 5 percent overhead on the space needed on the device because of large page allocation scheme used when creating the workspace.
- Use `sp_plan_dbccdb` to determine size estimates.

- After creating a workspace, run sp_dbcc_updateconfig to record the new configuration information in dbcc_config.
- Each workspace must have a unique name.
- To delete a workspace, in dbccdb issue:

```
drop table <workspace_name>
```

See also:

- dbcc in *Reference Manual: Commands*
- See the *System Administration Guide* for more information on the scan and text workspaces, and the dbccalt database.

Permissions

The permission checks for sp_dbcc_createws differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be the database owner of dbccdb (or dbccalt).
Disabled	With granular permissions disabled, you must be the database owner of dbccdb (or dbccalt), or have sa_role to run sp_dbcc_createws.

Related Information

sp_addsegment [page 56]

sp_dbcc_alterws [page 895]

sp_dbcc_evaluatedb [page 906]

sp_dbcc_updateconfig [page 930]

sp_plan_dbccdb [page 666]

sp_helpsegment [page 478]

4.5 sp_dbcc_deletedb

Deletes from dbccdb all the information related to the specified target database.

Syntax

```
sp_dbcc_deletedb [<dbname> | <dbid>]
```

Parameters

`<dbname>`

specifies the name of the target database for which you want the configuration information deleted. If you do not specify a value for `<dbname>`, the server deletes data from all databases in `dbccdb..dbcc_config`. If the target database is `dbccdb`, and `dbccalt` exists, the SAP ASE server deletes the data from `dbccalt`.

`<dbid>`

specifies the database ID number of the target database for which you want the configuration information deleted.

Examples

Example 1

Deletes all information for the database named `engdb` from `dbccdb`:

```
sp_dbcc_deletedb "engdb"
```

Usage

There are additional considerations when using `sp_dbcc_deletedb`:

- `sp_dbcc_deletedb` deletes from `dbccdb` all the information related to the specified target database, including configuration information and the results of previous `dbcc checkstorage` operations.
- If the deleted database is `dbccdb,` and the `dbccalt` database exists, `sp_dbcc_deletedb` deletes the configuration information and results of `dbccdb` from `dbccalt`.
- To remove the results of `dbcc checkstorage` operations created before a specific date, use `sp_dbcc_deletehistory`.
- Using the `<dbid>` option is the only way to delete the contents of the `dbccdb` database for a database that has already been dropped.

See also:

- `dbcc` in *Reference Manual: Commands*
- *System Administration Guide* for information about the `dbccalt` database.

Permissions

The permission checks for `sp_dbcc_deletedb` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be the database owner of dbccdb (or dbccalt), or have the , themanage checkstorage privilege on the specified database.
Disabled	With granular permissions disabled, you must be the database owner of the specified database or have sa_role to run sp_dbcc_deletedb.

Related Information

sp_dbcc_deletehistory [page 902]
sp_dbcc_evaluatedb [page 906]
sp_plan_dbccdb [page 666]

4.6 sp_dbcc_deletehistory

Deletes the results of dbcc checkstorage operations performed on the target database before the specified date and time.

> i Note
>
> sp_dbcc_deletehistory does not free any space associated with the deleted historical data, as workspaces are pre-allocated and of a fixed size.

Syntax

```
sp_dbcc_deletehistory [<cutoffdate>[, <dbname> | <dbid>]]
```

Parameters

<cutoffdate>

deletes all entries made on or before this date. This parameter is of type datetime. If a date is not specified, only the results of the last operation are retained.

<dbname>

specifies the name of the database for which the data must be deleted. If not specified, sp_dbcc_deletehistory deletes the history information for all databases in dbccdb..dbcc_config.

<dbid>

specifies the database ID number of the target database for which you want the history information deleted.

Examples

Example 1

Deletes results of all operations performed on the database pubs2 on or before March 4, 1997:

```
sp_dbcc_deletehistory "03/04/1997", "pubs2"
```

Usage

There are additional considerations when using sp_dbcc_deletehistory:

- sp_dbcc_deletehistory deletes the results of dbcc checkstorage operations performed on the target database before the specified date and time.
- If the target database is dbccdb, and the dbccalt database exists, sp_dbcc_deletehistory deletes historical data for dbccdb from dbccalt.
- The value specified for <cutoffdate> is compared to the finish time of each dbcc operation.
- Use the <dbid> option to delete the historical data of the dbccdb database for a database that has already been dropped.
- Using the <dbid> option is the only way to delete the historical data of the dbccdb database for a database that has already been dropped.
- To see the dates when dbcc checkstorage was run so that you can choose the value for <cutoffdate>, run sp_dbcc_summaryreport.

See also:

- dbcc in *Reference Manual: Commands*
- *System Administration Guide* for information on the dbccalt database.

Permissions

The permission checks for sp_dbcc_deletehistory differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be the database owner of dbccdb (or dbccalt), or have the manage checkstorage privilege on the specified database.
Disabled	With granular permissions disabled, you must be the database owner of the specified database or a user with sa_role to run sp_dbcc_deletehistory on a specific database. Only a user with sa_role can run sp_dbcc_deletehistory without specifying a database name.

Related Information

Specifying the Date [page 894]
sp_dbcc_deletedb [page 900]
sp_dbcc_evaluatedb [page 906]
sp_dbcc_summaryreport [page 927]
sp_plan_dbccdb [page 666]

4.7 sp_dbcc_differentialreport

Generates a report that highlights the changes in I/O statistics and faults that took place between two dbcc operations.

Syntax

```
sp_dbcc_differentialreport [<dbname> [, <objectname>]],
    [<db_op>] [, "<date1>" [, "<date2>"]]
```

Parameters

<dbname>

specifies the name of the database. If you do not specify a <dbname>, the report contains information on all databases in dbccdb..dbcc_operation_log.

<objectname>

specifies the name of the table or index for which you want the report generated. If <object_name> is not specified, statistics on all objects in the target database are reported.

<db_op>

specifies the source of the data to be used for the report. The only value is checkstorage. The report is generated on the data specified by <db_op> on <date1> and <date2> for the specified object in the target database. If dates are not specified, the last two operations of the type <db_op> are compared.

<date1>

specifies the first date of a dbcc checkstorage operation to be compared.

<date2>

specifies the last date of a dbcc checkstorage operation to be compared.

Examples

Example 1

Generates a report that shows the changes in I/O statistics and faults that occurred in the sysprocedures table between May 1, 1997 and May 4, 1997:

```
sp_dbcc_differentialreport master, sysprocedures,
    checkstorage, "05/01/97", "05/04/97"
```

Usage

There are additional considerations when using sp_dbcc_differentialreport:

- sp_dbcc_differentialreport generates a report that highlights the changes in I/O statistics and faults that occurred between two dbcc operations. It compares counter values reported from two instances of dbcc checkstorage. Only the values that have been changed are reported.
- If only one date is specified, the results of the dbcc checkstorage operation selected by the specified date are compared to the results of the dbcc checkstorage operation immediately preceding the selected operation.
- If no dates are specified, the results of last two dbcc checkstorage operations are compared.
- If sp_dbcc_differentialreport returns a number for <object_name>, it means the object was dropped after the dbcc checkstorage operation completed.
- If no changes occurred between the specified operations, sp_dbcc_differentialreport does not generate a report.

See also dbcc in *Reference Manual: Commands*.

Permissions

The permission checks for sp_dbcc_differentialreport differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be the database owner of dbccdb (or dbccalt), or have the report checkstorage privilege on the specified database.
Disabled	With granular permissions disabled, any valid user for the specified database can run sp_dbcc_differentialreport.

Related Information

sp_dbcc_fullreport [page 915]
sp_dbcc_statisticsreport [page 924]
sp_dbcc_summaryreport [page 927]
sp_dbcc_updateconfig [page 930]

4.8 sp_dbcc_evaluatedb

Recomputes configuration information for the target database and compares it to the current configuration information.

Syntax

```
sp_dbcc_evaluatedb [<dbname>]
```

Parameters

<dbname>

specifies the name of the target database. If you do not specify <dbname>, sp_dbcc_evaluatedb compares all databases listed in the dbcc_config table.

Examples

Example 1

Recomputes configuration information for the current database, sybsystemprocs, and suggests new values for some parameters:

```
1> sp_dbcc_evaluatedb
2> go
```

```
Recommended values for workspace size, cache size and process count are:

Database name : one_G
                                      current         suggested
scan workspace size :                   750M               16M
text workspace size :                     2K               48K
cache size          :                 10240K             1280K
process count       :                      3                 2
```

```
compression mem size:                    2048K              12M

Each of the reported quantities is reported in a scaled unit according to
G if size > 10G
M if 10M < size <=10 G
K otherwise
```

Usage

There are additional considerations when using `sp_dbcc_evaluatedb`:

- When there is an archive database with a compressed data or log device, the output includes a line with the recommendation of the compression memory size.
- `sp_dbcc_evaluatedbdbcc_counters` table.
- The cache size is the size of the 16K buffer pool in the cache. For a 2K buffer pool, the minimum size of this cache must be the recommended value, plus 512. recomputes configuration information for the target database and compares the data to the current configuration information. It uses counter values recorded for the target database in the
- When the size and data distribution pattern of the target database changes, run `sp_dbcc_evaluatedb` to optimize the configuration information.
- To gather configuration information for the target database the first time, use `sp_plan_dbccdb`.
- To make sure you are evaluating the most current configuration parameters, run `sp_dbcc_updateconfig` recomputes configuration before running `sp_dbcc_evaluatedb`.

See also `dbcc` in *Reference Manual: Commands*.

Permissions

The permission checks for `sp_dbcc_evaluatedb` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be the database owner of `dbccdb` (or `dbccalt`), or have the `manage checkstorage` privilege on the specified database.
Disabled	With granular permissions disabled, you must be the database owner of the specified database, a user with sa_role. Only a system administrator can run `sp_dbcc_evaluatedb` without specifying a database name.

Related Information

sp_dbcc_updateconfig [page 930]

sp_plan_dbccdb [page 666]

4.9 sp_dbcc_exclusions

Allows the user to create and manage persistent exclusion lists for use by `checkverify` and `sp_dbcc_faultreport`.

Syntax

```
sp_dbcc_exclusions <dbname>, <op>, <type>, <exclusion_list>
```

Parameters

`<dbname>`

is the name of the database for which the exclusions apply, or `null` if it applies to all databases.

`<op>`

is the operation you want to perform. Valid values are:

- `add` – registers new exclusions (duplicates are ignored).
- `drop` – drops the specified exclusions if they were previously registered
- `listall` – lists the recorded exclusions for all databases.

`<type>`

is the type of item to be excluded. Accepted values are `faults`, `tables`, `<combo>`, or null (when `<op>` is either null or `listall`). Type, `varchar`.

`<exclusion_list>`

is a comma-separated list of faults, tables, table and fault entries, or nulls. Type, `varchar`.

Examples

Example 1

Excludes the tables `syslogs` and `syscomments` from `sp_dbcc_faultreport` processing on all databases:

```
sp_dbcc_exclusions null, 'add', 'tables', 'syslogs, syscomments'
```

Example 2

Excludes fault type 100036 from processing of the database `my_db`:

```
sp_dbcc_exclusions my_db, 'add', 'faults', '100036'
```

Example 3

Adds the following to the exclusion list corresponding to `my_db`: fault type 100002 pertaining to table `mytable` and fault type 100035 pertaining to `syslogs`:

```
sp_dbcc_exclusions my_db, 'add', 'combo', 'mytable:100002, syslogs:100035'
```

Example 4

Removes fault type 100036 from the exclusion list corresponding to `my_db`:

```
sp_dbcc_exclusions my_db, 'drop', 'faults', '100036'
```

Example 5

Displays the exclusion list corresponding to `my_db`:

```
sp_dbcc_exclusions my_db
```

Example 6

Displays the recorded exclusions for all databases:

```
sp_dbcc_exclusions null, 'listall'
```

Usage

There are additional considerations when using `sp_dbcc_exclusions`:

- `<dbname>` must be null when `<listall>` is specified. If `<op>` is null, `sp_dbcc_exclusions` lists the recorded exclusions for the specified database.
- Only a system administrator or the Database Owner can run `sp_dbcc_exclusions` with a `<dbname>` parameter that is not null.
- If the `<dbname>` and `<op>` parameters are null, the user must either be a system administrator or own at least one of the databases for which exclusions have been recorded.
- If the `<dbname>` parameter is null and the `<op>` parameter is `<listall>`, the user must either be a system administrator or own at least one of the databases for which exclusions have been recorded. If the user is not a system administrator, only the recorded exclusions for databases owned by the user are reported.

Permissions

The permission checks for `sp_dbcc_exclusions` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be the database owner of `dbccdb` (or `dbccalt`), or have the `manage checkstorage` privilege on the specified database.
Disabled	With granular permissions disabled, you must be a user with sa_role.

4.10 sp_dbcc_faultreport

Generates a report covering fault statistics for the `dbcc checkstorage` operations performed for the specified object in the target database on the specified date.The report lists the tables and indexes in order.

Syntax

```
sp_dbcc_faultreport [<report_type> [, <dbname> [, <objectname>
    [, <date> [, <hard_only> [, <exclusion_mode>[, <exclusion_faults>
    [, <exclusion_tables> [, <exclusion_combo>
    [, <display_recommendations> [, <opid> [,<fault_type_in>]]]]]]]]]]]
```

Parameters

`<report_type>`

specifies the type of fault report. Valid values are `short` and `long`. The default is `short`.

`<dbname>`

specifies the name of the target database; for example, `master..sysdatabases`. If `<dbname>` is not specified, the report contains information on all databases in `dbccdb..dbcc_operation_log`.

`<object_name>`

specifies the name of the table or index for which you want the report generated. If `<object_name>` is not specified, statistics on all objects in the target database are reported.

`<date>`

specifies exact date and time that the `dbcc checkstorage` operation finished. You can find this value in `dbcc_operation_log.finish`. You can create the value by combining the date from `start time` and the hours and minutes from `end time` in the `sp_dbcc_summaryreport` output. If you do not specify `<date>`, the SAP ASE server uses the date of the most recent operation.

When you specify the `<date>` parameter, be certain that the time you enter is later than the date of the operation. `sp_dbcc_faultreport` cannot report faults that occur later than the time you enter in this parameter.

> ℹ Note
>
> To focus on the `<date>` parameter, use "null" for all other parameters. If you omit a parameter entirely, `sp_dbc_faultreport` cannot generate a correct report.

`<hard_only>`

enables the reporting of hard faults when you specify 1. Valid values are 0 or 1, and the default is 0.

`<display_recommendations>`

enables reporting the recommendations generated by `sp_dbcc_recommendations`, and the parameters `<exclusion_mode>`, `<exclusion_faults>`, `<exclusion_tables>`, `<display_recommendations>`, and `<exclusion_combo>` refer to exclusion support and are optional.

`<exclusion_mode>`

is a `varchar` and is on by default. To disable this, you must provide an “ignore” each time the `sp_dbcc_faultreport` is run. Use either of the following:

- `ignore` – ignores the persistent exclusion list and uses the temporary exclusion list, if one is provided (type, `varchar`).
- `extend` – applies the temporary exclusion list as well as the persistent exclusion list (type, `varchar`).

`<exclusion_faults>`

is a comma-separated list of fault types to be excluded from reporting (type, `varchar`).

`<exclusion_tables>`

is a comma-separated list of tables to be excluded from reporting (type is `varchar`).

`<exclusion_combo>`

is a comma-separated list of fault/table combinations to be excluded from reporting (type is `varchar`).

`<opid>`

enables fault reporting for a specific—instead of latest—operation ID for a specific date. No operation ID is specified by default.

`<fault_type_in>`

enables fault reporting for a specific fault type. The default is NULL.

Examples

Example 1

Generates a short report of the faults found in tables in the `sybsystemprocs` database. The report includes the table name, the index number in which the fault occurred, the type code of the fault, a brief description of the fault, and the page number on which the fault occurred:

```
sp_dbcc_faultreport "short"
```

```
Database Name : sybsystemprocs

 Table Name     Index  Type Code Description         Page Number
 -------------- ------ --------- ------------------- -----------
 sysprocedures       0    100031 page not allocated         5702
 sysprocedures       1    100031 page not allocated        14151
 syslogs             0    100022 chain start error         24315
 syslogs             0    100031 page not allocated        24315
```

Example 2

Generates a long report of the faults found in tables in the `sybsystemprocs` database. This example shows the first part of the output of a long report. The complete report repeats the information for each object in the target database in which `dbcc checkstorage` found a fault. The data following the long string of numbers shown under the "page header" field (“Header for 14151, next 14216, previous 14150 ...”) describes the components of the "page header" string:

```
sp_dbcc_faultreport "long"
```

```
Generating 'Fault Report' for object sysprocedures in database sybsystemprocs.
Type Code: 100031; Soft fault, possibly spurious
Page reached by the chain is not allocated.
page id: 14151
page header:
0x00003747000037880000374600000005000648B803EF0001000103FE0080000F
Header for 14151, next 14216, previous 14150, id = 5:1
 time stamp = 0x0001000648B8, next row = 1007, level = 0
 free offset = 1022, minlen = 15, status = 128(0x0080)
.
.
.
```

Example 3

Generates a short report of faults from all tables on all databases, for an operation finished at a date and time found as an End Time, from the output of `sp_dbcc_summaryreport`. It is important that you use accurate end times in the `<date>` parameter; for instance, if you enter:

```
7/25/2000 9:58
```

instead of

```
7/25/2000 9:58:0:190
```

the report generates faults only up to 9:58, not after it. You could use 9:59 if you do not want to enter the exact time the operation ends:

```
sp_dbcc_faultreport "short", NULL, NULL,
    "07/25/00 9:59"
```

In this case, the report generates faults up to 9:59.

Example 4

Generates a short form report only for hard faults reported by the latest `checkstorage` run for a database called `mydb`:

```
sp_dbcc_faultreport short, mydb, @hard_only = 1
```

Example 5

Adds recommended fixes to the fault report of database `my_db`:

```
sp_dbcc_faultreport @dbname = my_db,
    @display_recommendations = 1
```

Example 6

Generates a fault report that does not contain fix recommendations:

```
sp_dbcc_faultreport @dbname = my_db
```

Example 7

Runs `sp_dbcc_faultreport` on database `my_db` with the persistent exclusion list disabled:

```
sp_dbcc_faultreport @dbname = 'my_db', @exclusion_mode = 'ignore'
```

Example 8

Runs `sp_dbcc_faultreport` on database `my_db` with the persistent exclusion list enabled and extended to exclude from processing fault type 100036:

```
sp_dbcc_faultreport @dbname = 'my_db', @exclusion_mode = 'extend',
    @exclusion_faults = '100036'
```

Example 9

Runs `sp_dbcc_faultreport` on database `my_db` with the persistent exclusion list enabled and extended to exclude from processing and the table `tab`:

```
sp_dbcc_faultreport @dbname = 'my_db', @exclusion_mode = 'extend',
    @exclusion_tables = 'tab'
```

Example 10

Runs `sp_dbcc_faultreport` on database `my_db` with the persistent exclusion list disabled and an enabled temporary exclusion list that excludes from processing the table `tab` and fault type 100036:

```
sp_dbcc_faultreport @dbname = 'my_db', @exclusion_mode = 'ignore',
    @exclusion_faults = '100036', @exclusion_tables = 'tab'
```

Example 11

Runs `sp_dbcc_faultreport` on database `my_db` with the persistent exclusion list disabled and an enabled temporary exclusion list that excludes from processing fault type '100002' pertaining to the table `mytable` and fault type 100035 pertaining to the table `tab`:

```
sp_dbcc_faultreport @dbname = 'my_db', @exclusion_mode = 'ignore',
    @exclusion_combo ='mytable:100002, tab:100035'
```

Example 12

Generates a long form report for the 100029 faults reported by the latest `checkstorage` run for the `mydb` database (100029 is the fault type for page header errors):

```
sp_dbcc_faultreport long, mydb, @fault_type_in = 100029
```

Example 13

Generates a short form report for faults reported by the `checkstorage` run with operation ID 5 for the `mydb` database:

```
sp_dbcc_faultreport short, mydb, @opid = 5
```

Usage

There are additional considerations when using sp_dbcc_faultreport:

- sp_dbcc_faultreport generates a report that shows all faults for the specified object in the target database.
- sp_dbcc_faultreport issues numerous error message number 10028 If you use:
    - sp_placeobject to make an object that has existing allocations put new allocations on a new segment.
    - sp_dropsegment to remove a segment from a fragment that contains allocations of an object assigned to that segment.
      Error message number 100028 is an informational message rather than an indication of a serious error. If you prefer not to receive such messages, you can create your own reporting procedure that does not report this (or any other) error. One way to do this is to add the following to the very beginning of the standard sp_dbcc_faultreport stored procedure in the installdbccdb script:

      ```
      print "removing 100028 errors from dbcc_faults table"
      delete dbcc_faults where type_code = 100028
      ```
- If sp_dbcc_faultreport returns a number for <object_name>, it means the object was dropped after the dbcc checkstorage operation completed.

See also:

- dbcc in *Reference Manual: Commands*
- type_code in the *System Administration Guide* for information on the fault ID and on the fault status.

Permissions

The permission checks for sp_dbcc_faultreport differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be the database owner of dbccdb (or dbccalt), or have the report checkstorage privilege on the specified database.
Disabled	With granular permissions disabled, any valid user for the database name specified can run sp_dbcc_faultreport.

Related Information

sp_dbcc_fullreport [page 915]

sp_dbcc_statisticsreport [page 924]

sp_dbcc_summaryreport [page 927]

sp_dbcc_updateconfig [page 930]

4.11 sp_dbcc_fullreport

Runs sp_dbcc_summaryreport, sp_dbcc_configreport, sp_dbcc_statisticsreport, and sp_dbcc_faultreport short for <database>..<object_name> on or before the specified <date>.

Syntax

```
sp_dbcc_fullreport [<dbname> [, <objectname> [, <date>]]]
```

Parameters

<dbname>

specifies the name of the database. For example, master..sysdatabases. If you do not specify <dbname>, the report contains information on all databases in dbccdb..dbcc_operation_log.

<object_name>

specifies the name of the table or index for which you want the report generated. If you do not specify <object_name>, statistics on all objects in the target database are reported.

<date>

specifies the date on which the dbcc checkstorage operation was performed. If you do not specify a <date>, the date of the last operation is used.

Examples

Example 1

Runs sp_dbcc_summaryreport, sp_dbcc_configreport, sp_dbcc_statisticsreport, and sp_dbcc_faultreport short for the most recent dbcc checkstorage operation run on the sysprocedures table in the master database:

```
sp_dbcc_fullreport master, sysprocedures
```

Usage

sp_dbcc_fullreport runs sp_dbcc_summaryreport, sp_dbcc_configreport, sp_dbcc_statisticsreport, and sp_dbcc_faultreport short for database..object_name on or before the specified date

See also dbcc in *Reference Manual: Commands*.

Permissions

The permission checks for sp_dbcc_fullreport differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be the database owner of dbccdb (or dbccalt), or have the report checkstorage privilege on the specified database.
Disabled	With granular permissions disabled, any valid user for the database name specified can run sp_dbcc_fullreport.

Related Information

sp_dbcc_configreport [page 897]

sp_dbcc_faultreport [page 910]

sp_dbcc_statisticsreport [page 924]

sp_dbcc_summaryreport [page 927]

sp_dbcc_updateconfig [page 930]

4.12 sp_dbcc_help_fault

Provides a description of the specified fault type and the recommended fix.

Syntax

```
sp_dbcc_help_fault [<fault_type>]
```

Parameters

<fault_type>

is the fault type for which a description and recommended fix should be reported. This parameter is type int. If <fault_type> is not provided, sp_dbcc_help_fault reports on all fault types.

Examples

Example 1

To view a description of fault type 100038, and its recommended fix, enter:

```
sp_dbcc_help_fault 100038
```

Example 2

To view a description of all fault types and their recommended fixes, enter:

```
sp_dbcc_help_fault
```

Usage

sp_dbcc_help_fault provides a description of the specified fault type and the recommended fix.

Permissions

The permission checks for sp_dbcc_help_fault differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be the database owner of dbccdb (or dbccalt).
Disabled	With granular permissions disabled, any user can run sp_dbcc_help_fault.

4.13 sp_dbcc_patch_finishtime

Facilitates reporting on aborted checkverify and checkstorage operations.

Syntax

```
sp_dbcc_patch_finishtime <dbname>, <opid> [,<optype> [,<seq> [,<finishtime>]]]
```

Parameters

<dbname>

is the name of the database checkstoragecheckverify was operating on when it aborted. This parameter's type is or varchar.

<opid>

is the operation ID corresponding to the aborted operation. This parameter's type is smallint.

<optype>

oris the type of operation you are investigating. Accepted values are either ‘checkstorage' or ‘checkverify'. This parameter's type is varchar.

<seq>

is the checkverify sequence number (not used for checkstorage but required for checkverify). This parameter's type is smallint.

<finishtime>

is a datetime value representing the time the checkstorage or checkverify operation aborted. The default value is the current time.

Examples

Example 1

Enables reporting on checkstorage and checkverify for database my_db when the following errors occur:

```
dbcc checkstorage (my_db)

                Checking my_db: Logical pagesize is 2048 bytes
                00:00000:00014:2003/01/20 11:50:05.01 server  Error: 9960,
Severity: 20, State: 1
                A non-recoverable error has occurred in the CHECKSTORAGE
operation. The
```

```
                operation has been aborted.

                Msg 9970, Level 20, State 1:
                Line 2:
                DBCC cannot update the finish time in dbcc_operation_log
table for this
                operation(opid = '1') of database 'my_db'. This can be
patched by executing
                sp_dbcc_patch_finishtime.
```

Example 2

Enables reporting on `checkstorage` and `checkverify` for database `my_db` when the following errors occur:

```
dbcc checkstorage (my_db)

                Checking my_db: Logical pagesize is 2048 bytes
                00:00000:00014:2003/01/20 11:50:05.01 server  Error: 9960,
Severity: 20, State: 1
                A non-recoverable error has occurred in the CHECKSTORAGE
operation. The
                operation has been aborted.

                Msg 9970, Level 20, State 1:
                Line 2:
                DBCC cannot update the finish time in dbcc_operation_log
table for this
                operation(opid = '1') of database 'my_db'. This can be
patched by executing
                sp_dbcc_patch_finishtime.
```

Execute `sp_dbcc_patch_finishtime` with the information included in the error message:

```
sp_dbcc_patch_finishtime my_db, 1
```

Usage

When a `checkstorage` or `checkverify` operation aborts, it prints a message that contains the operation's ID and the name of the database that was being examined when the operation aborted. An aborted `checkverify` operation also provides a sequence number in the message. The message instructs the user to run `sp_dbcc_patch_finishtime`, and provides the `<dbname>`, `<opid>`, and if it was a `checkverify` operation, the sequence number, `<seq>`. After executing `sp_dbcc_patch_finishtime`, you can create fault reports on the aborted operation.

Permissions

The permission checks for `sp_dbcc_patch_finishtime` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be the database owner of `dbccdb` (or `dbccalt`), or have the `manage checkstorage` privilege on the specified database.

Setting	Description
Disabled	With granular permissions disabled, you must be the database owner of the specified database or a user with sa_role.

4.14 sp_dbcc_recommendations

Analyzes faults reported by the checkstorage operation corresponding to the specified operation ID, or date, and generates a list of recommended corrective actions for the specified object in the target database.

Syntax

```
sp_dbcc_recommendations dbname [,"<date>"[, <opid>[, "<objectname>"]]]
```

Parameters

<dbname>

is the name of the database for which recommendations are generated. Type is varchar, and this parameter is required.

<date>

is a datetime value representing the date and time the dbcc checkstorage operation (for which the reported faults are analyzed) finished. If you do not specify <date> or <opid>, the SAP ASE server uses the date of the most recent operation. If you specify both <date> and <opid>, the SAP ASE server ignores the date. <date> is optional.

<opid>

is the operation ID of the checkstorage operation, for which the reported faults are analyzed. If an <opid> or <date> is not specified, the SAP ASE server uses the date of the most recent operation. If both <date> and <opid> are specified, the SAP ASE server ignores the <date>. The type for this parameter is int.

<objectname>

is the name of the object for which sp_dbcc_recommendations generates the recommendations. If an <objectname> is not specified, recommendations for all objects in the database are generated. The type for this parameter is varchar.

Examples

Example 1

Generates a list of recommended fixes for the object t1, in database my_db, based on the faults reported by the checkstorage operation corresponding to operation id 2:

```
sp_dbcc_recommendations my_db, null, 2, 't1'
```

Example 2

Generates a list of recommended fixes for all objects in database my_db, based on the faults reported by the checkstorage operation that finished on September 15, 2002 at 7:10:18:463PM:

```
sp_dbcc_recommendations my_db, 'Sep 15 2002 7:10:18:463PM'
```

Example 3

Generates a list of recommended fixes for all objects in database my_db, based on the most recent checkstorage operation:

```
sp_dbcc_recommendations my_db
```

Usage

sp_dbcc_recomendations analyzes faults reported by the checkstorage operation corresponding to the specified operation ID, or date, and generates a list of recommended corrective actions for the specified object in the target database

Permissions

The permission checks for sp_dbcc_recommendations differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be the database owner of dbccdb (or dbccalt), or report checkstorage privilege on the specified database.
Disabled	With granular permissions disabled, any valid user of the specified database can run sp_dbcc_recommendations.

4.15 sp_dbcc_runcheck

Runs dbcc checkstorage on the specified database, then runs sp_dbcc_summaryreport or a report you specify.

Syntax

```
sp_dbcc_runcheck <dbname>[, <user_proc>]
```

Parameters

<dbname>

specifies the name of the database on which the check is to be performed.

<user_proc>

specifies the name of the dbccsp_dbcc_sunmmaryreport.

Examples

Example 1

Checks the database engdb and generates a summary report on the information found: stored procedure or a user-created stored procedure that is to be run instead of

```
sp_dbcc_runcheck "engdb"
```

Example 2

Checks the database pubs2 and runs the sp_dbcc_fullreport stored procedure and generates a full report:

```
sp_dbcc_runcheck "pubs2", sp_dbcc_fullreport
```

Example 3

Checks the database pubs2 and runs the sp_dbcc_recommendations stored procedure:

```
sp_dbcc_runcheck "pubs2", sp_dbcc_recommendations
```

Usage

There are additional considerations when using `sp_dbcc_runcheck`:

- `sp_dbcc_runcheck` runs `dbcc checkstorage` on the specified database.
- When you include the `sp_dbcc_recommendations` as the `<user_proc>`, `sp_dbcc_runcheck` also runs `dbcc checkstorage` and `dbcc checkverify` against the specified database.
- If `sp_dbcc_runcheck` discovers any errors while running , it then automatically runs `dbcc checkverify` in order to confirm or dismiss soft faults from `checkstorage` before running `sp_dbcc_summaryreport`.
- After the `dbcc checkstorage` operation is complete, `sp_dbcc_runcheck` runs `sp_dbcc_summaryreport` to generate a summary report. If you specify one of the other report-generating `dbcc` stored procedures for `<dbcc_report>`, `sp_dbcc_runcheck` runs that procedure instead of `sp_dbcc_summaryreport`. See the *System Administration Guide* for a brief description and examples of all the report-generating stored procedures provided with `dbccdb`.
- You can write your own report-generating stored procedure and specify its name for `user_proc`. The stored procedure must be self-contained. `sp_dbcc_runcheck` cannot pass any parameters to the SAP ASE server.

See also `dbcc` in *Reference Manual: Commands*.

Permissions

The permission checks for `sp_dbcc_runcheck` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must have the `dbcc checkstorage` and `dbcc checkvverify` privileges on the specified database.
Disabled	With granular permissions disabled, you must be the database owner of the specified database or a user with sa_role.

Related Information

sp_dbcc_summaryreport [page 927]

4.16 sp_dbcc_statisticsreport

Generates an allocation statistics report on the specified object in the target database.

Syntax

```
sp_dbcc_statisticsreport [<dbname> [, <objectname> [, <date>]]]
```

Parameters

<dbname>

specifies the target database. If <dbname> is not specified, the report contains information on all databases in dbccdb..dbcc_operation_log.

<objectname>

specifies the name of the table or index for which you want the report generated. If you do not specify <objectname>, the SAP ASE server reports statistics on all objects in the target database.

<date>

specifies the date on which the dbcc checkstorage operation was performed. If you do not specify <date>, the SAP ASE server uses the date of the most recent operation.

Examples

Example 1

Generates a statistics report on the sysobjects table in the sybsystemprocs database:

```
sp_dbcc_statisticsreport 'sybsystemprocs',
    'sysobjects'
```

```
Statistics Report on object sysobjects in database
sybsystemprocs
 Parameter Name            Index Id Value
 ------------------------- -------- ------------
 count                     0        241.0
 max size                  0        99.0
 max count                 0        22.0
 bytes data                0        19180.0
 bytes used                0        22113.0
 count                     1        14.0
 max size                  1        9.0
 max level                 1        0.0
 max count                 1        14.0
```

```
  bytes data                1        56.0
  bytes used                1        158.0
  count                     2        245.0
  max level                 2        1.0
  max size                  2        39.0
  max count                 2        71.0
  bytes data                2        4377.0
  bytes used                2        6995.0

 Parameter Name  Index Id  Partition  Value   Dev_name
  ---------------  --------  ---------  ------  -------------
  page gaps               0          1    13.0  master
  pages used              0          1    15.0  master
  extents used            0          1     3.0  master
  overflow pages          0          1     0.0  master
  pages overhead          0          1     1.0  master
  pages reserved          0          1     7.0  master
  page extent gaps        0          1    11.0  master
  ws buffer crosses       0          1     2.0  master
  page extent crosses     0          1    11.0  master
  pages used              1          1     2.0  master
  extents used            1          1     1.0  master
  overflow pages          1          1     0.0  master
  pages overhead          1          1     1.0  master
  pages reserved          1          1     6.0  master
  page extent gaps        1          1     0.0  master
  ws buffer crosses       1          1     0.0  master
  page extent crosses     1          1     0.0  master
  page gaps               2          1     4.0  master
  pages used              2          1     6.0  master
  extents used            2          1     1.0  master
  overflow pages          2          1     0.0  master
  pages overhead          2          1     1.0  master
  pages reserved          2          1     2.0  master
  page extent gaps        2          1     0.0  master
  ws buffer crosses       2          1     0.0  master
  page extent crosses      2         1     0.0  master
```

Usage

There are additional considerations when using `sp_dbcc_statisticsreport`:

- `sp_dbcc_statisticsreport` generates an allocation statistics report on the specified object in the target database. It uses data from the `dbcc_counters` table, which stores information about page utilization and error statistics for every object in the target database.
- If `sp_dbcc_statisticsreport` returns a number for `<object_name>`, it means the object was dropped after the `dbcc checkstorage` operation completed.
- `sp_dbcc_statisticsreport` reports values recorded in the `dbcc_counters` table for the datatypes 5000–5024.
  For `bytes data`, `bytes used`, and `overflow pages`, `sp_dbcc_statisticsreport` reports the sum of the values reported for all partitions and devices.
  For `count`, `max count`, `max size` and `max level`, `sp_dbcc_statisticsreport` reports the largest of the values reported for all partitions and devices.
  `sp_dbcc_statisticsreport` reports information for each device and partition used by objects in the target database for the following rows:
    - `extents used`

    - io errors
    - page gaps
    - page extent crosses
    - page extent gaps
    - page format errors
    - pages reserved
    - pages overhead
    - pages misallocated
    - pages not allocated
    - pages not referenced
    - pages used

  The page gaps, page extent crosses, and page extent gaps indicate how the data pages for the objects are distributed on the database devices. Large values indicate less effectiveness in using larger buffer sizes and in data prefetch.
- If multiple dbcc checkstorage operations were run on a target database on the same day, sp_dbcc_statisticsreport generates a report based on the results of the last dbcc checkstorage operation that finished before the specified time.

See also:

- dbcc in *Reference Manual: Commands*
- dbcc_counters in *Reference Manual: Tables*

Permissions

The permission checks for sp_dbcc_statisticsreport differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be the database owner of dbccdb (or dbccalt), or have the report checkstorage privilege on the specified database.
Disabled	With granular permissions disabled, any valid user for the database name specified can run sp_dbcc_statisticsreport

Related Information

sp_dbcc_fullreport [page 915]
sp_dbcc_summaryreport [page 927]
sp_dbcc_updateconfig [page 930]

4.17 sp_dbcc_summaryreport

Generates a summary report on the specified database.

Syntax

```
sp_dbcc_summaryreport [dbname[, date[, op_name[,<display_recommendations>]]]]
```

Parameters

<dbname>

specifies the name of the database for which you want the report generated. If you do not specify <dbname>, sp_dbcc_summaryreport generates reports on all databases in dbccdb..dbcc_operation_log for which the date is on or before the date and time specified by the <date> option.

<date>

specifies the date on which dbcc checkstorage was performed. If you do not specify a date, sp_dbcc_summaryreport uses the date of last dbcc checkstorage operation performed on the target database. This parameter is of the datatype datetime. If both the date and the time are specified for <date>, summary results of all the operations performed on or before the specified time are reported. If no date is specified, all operations are reported.

<opname>

specifies the operation. <opname> may be either checkstorage, which is the default, or checkverify, or both. If <opname> is not specified, reports are generated for all operations.

<display_recommendations>

enables reporting the recommendations generated by sp_dbcc_recommendations

Examples

Example 1

Generates a summary report on the sybsystemprocs database, providing information on all dbcc checkstorage and operations performed:dbcc checkverify

```
sp_dbcc_summaryreport
```

Example 2

Generates a summary report on the user database testdb, providing information on all DBCC Operation : checkstorage Database Name Start time End Time Operation ID Hard Faults Soft Faults Text Columns Abort Count User Name ----------------- ------------------- ---------- ----------- ----------- ----------- ----------- ----------- ----------------- sybsystemprocs 05/11/1999 14:53:11 14:53:32:163 1 0 0 0 0 sa sybsystemprocs 05/11/1999 14:55:06 14:55:29:200 2 0 0 0 0 sa sybsystemprocs 05/11/1999 14:56:10 14:56:27:750 3 0 0 0 0 sa DBCC Operation : checkverify Database Name Start time End Time Operation ID Hard Faults Soft Faults User Name ----------------- ------------------- ----------- ----------- ------------- -------------- -------------------- sybsystemprocs 05/11/1999 14:55:29 14:55:29:310 2 0 0 sadbcc checkstorage operations performed. dbcc checkstorage was the only operation run on this database, so no dbcc checkverify information appears on the report:

```
sp_dbcc_summaryreport "testdb"
```

```
DBCC Operation : checkstorage
Database Name   Start time           End Time    Operation ID
    Hard Faults Soft Faults Text Columns Abort Count  User Name
--------------- -------------------- ------------ ------------
    ----------- ----------- ------------ -----------  ----------------
testdb         05/11/1999 14:55:29  14:55:49:903  1
     0           0            0           0           sa
testdb         05/11/1999 14:55:50  14:56:9:546   2
     0           0            0           0           sa
 testdb         05/11/1999 14:56:28  14:56:40:666  3
     0           0            0           0           sa
```

Example 3

Generates a summary report on the sybsystemprocs database, providing information on all dbcc checkverify operations performed. Because dbcc checkverify was the specified operation, no dbcc checkstorage information appears on the report:

```
1> sp_dbcc_summaryreport null, null, "checkverify"
2> go
```

```
dbccDBCC Operation : checkverify
 Database Name  Start time            End Time      Operation ID  Run Srl
    Table Name   Table Id    Hard Faults   Soft Faults  User Name
 -------------- -------------------- ------------- ------------ -------
    ------------ ----------- -----------    ------------ ----------------
testdb         08/31/2004 11:06:11  11:6:11:370             3         1
    NULL          NULL                  0            0  sa
(1 row affected)
```

Example 4

Generates a summary report on the sybsystemprocsDBCC Operation : checkstorage database, providing information on all dbcc checkstorage operations performed. Because dbcc checkstorage was the specified operation, no dbcc checkverify information appears on the report:

```
sp_dbcc_summaryreport sybsystemprocs, null, "checkstorage"
```

```
DBCC Operation : checkstorage
Database Name   Start time           End Time    Operation ID
    Hard Faults Soft Faults Text Columns Abort Count  User Name
```

```
--------------- -------------------- ------------ ------------
    ----------- ----------- ------------ -----------  ---------
sybsystemprocs   05/11/1999 14:53:11  14:53:32:163  1
    0           0            0           0            sa
sybsystemprocs   05/11/1999 14:55:06  14:55:29:200  2
    0           0            0           0            sa
sybsystemprocs   05/11/1999 14:56:10  14:56:27:750  3
    0           0            0           0            sa
```

Example 5

Adds recommended fixes to the summary report of database `my_db`:

```
sp_dbcc_summaryreport @dbname = my_db, @display_recommendations = 1
```

Usage

There are additional considerations when using `sp_dbcc_summaryreport`:

- `sp_dbcc_summaryreport` generates a summary report of `checkstorage` or `checkverify` operations, or both, on the specified database.
- The report indicates the name of the database that was checked, the start and end time of the `dbcc checkstorage` run and the number of soft and hard faults found.
- The "Operation ID" column contains a number that identifies the results of each `dbcc checkstorage` operation on a given database at a specific time. The number provided in the report comes from the `opid` column of the `dbcc_operation_log` table. See the *System Administration Guide* for more information.
- The "Text Columns" column shows the number of non-null text columns found by `dbcc checkstorage` during the run.
- The "Abort Count" column shows the number of tables that contained errors, which caused `dbcc checkstorage` to abort the check on the table. For details on the errors, run `sp_dbcc_faultreport`.

See also `dbcc` in *Reference Manual: Commands*.

Permissions

The permission checks for `sp_dbcc_summaryreport` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be the database owner of `dbccdb` (or `dbccalt)`, or have the `report checkstorage` privilege on the specified database.
Disabled	With granular permissions disabled, any valid user for the database name specified can run `sp_dbcc_summaryreport`.

Related Information

sp_dbcc_fullreport [page 915]
sp_dbcc_statisticsreport [page 924]
sp_dbcc_updateconfig [page 930]

4.18 sp_dbcc_updateconfig

Updates the dbcc_config table in dbccdb with the configuration information of the target database.

Syntax

```
sp_dbcc_updateconfig <dbname>, <type>, "<str1>" [, "<str2>"]
```

Parameters

<dbname>

is the name of the target database for which configuration information is being updated. To configure the default values, enter a null <dbname> parameter.

<type>

specifies the type name from the dbcc_types table.

<str1>

specifies the first configuration value for the specified <type> to be updated in the dbcc_config table.

<str2>

specifies the second configuration value for the specified <type> that you want to update in the dbcc_config table.

Examples

Example 1

Updates dbcc_config with the maximum number of worker processes for dbcc checkstorage to use when checking the pubs2 database. The new maximum number of worker processes is 4:

```
sp_dbcc_updateconfig pubs2, "max worker processes", "4"
```

Example 2

This sets the `max worker processes` to 2:

```
sp_dbcc_updateconfig null, 'max worker processes', '2'
```

Example 3

Updates `dbcc_config` with the size of the `dbcc` named cache "pubs2_cache". The new size is 10K:

```
sp_dbcc_updateconfig pubs2, "dbcc named cache", pubs2_cache, "10K"
```

Example 4

Updates `dbcc_config` with the new name of the `scan` workspace for the `pubs2` database. The new name is `scan_pubs2`. This update is made after using `sp_dbcc_alterws` to change the name of the `scan` workspace:

```
sp_dbcc_updateconfig pubs2, "scan workspace", scan_pubs2
```

Example 5

Updates `dbcc_config` with the new name of the `text` workspace for the `pubs2` database. The new name is `text_pubs2`. This update is made after using `sp_dbcc_alterws` to change the name of the `text` workspace:

```
sp_dbcc_updateconfig pubs2, "text workspace", text_pubs2
```

Example 6

Updates `dbcc_config` with the OAM count threshold value for the `pubs2` database. The new value is 5:

```
sp_dbcc_updateconfig pubs2, "OAM count threshold", "5"
```

Example 7

Updates `dbcc_config` with the I/O error abort value for the `pubs2` database. The new value is 3:

```
sp_dbcc_updateconfig pubs2, "IO error abort", "3"
```

Example 8

Updates `dbcc_config` with the linkage error abort value for the `pubs2` database. The new value is 8:

```
sp_dbcc_updateconfig pubs2, "linkage error abort", "8"
```

Example 9

Enables `automatic workspace expansion` for the database `my_db`:

```
sp_dbcc_updateconfig my_db, "enable automatic workspace expansion", "1"
```

Usage

There are additional considerations when using `sp_dbcc_updateconfig`:

- `sp_dbcc_updateconfig` updates the `dbcc_config` table for the target database.

- If the name of the target database is `dbccdb`, and the database `dbccalt` exists, `sp_dbcc_updateconfig` updates the `dbcc_config` table in `dbccalt`.
- If the target database name is not found in `dbcc_config`, `sp_dbcc_updateconfig` adds it and sets the operation sequence number to 0 before updating other configuration information.
- If the expected value for the specified `<type>` is a number, `sp_dbcc_updateconfig` converts the values you provide for `<str1>` and `<str2>` to numbers.
- The `OAM count threshold` parameter represents the percentage by which the actual row count can vary from the row count (as reported by the OAM pages) before `dbcc checkstorage` raises error 100025, `row count error`. Generally, you can leave `OAM count threshold` at the default value of 2%.
- The valid type names to use for `<type>` and the expected value for `<str1>` or `<str2>` are:

  `dbcc named cache` The name of the cache, specified by `<str1>`, and the new size (in kilobytes or megabytes) or the number of 2K pages, specified by `<str2>`.

  `IO error abort` The new error count, specified by `<str1>`. The value must be a number greater than 0. `<str2>` is not used with this type.

  `linkage error abort` The new linkage error count value specified in `<str1>`. The value must be a number greater than 0. `<str2>` is not used with this type.

  `max worker processes` The new number of worker processes, specified by `<str1>`. The value must be a number greater than 0. `<str2>` is not used with this type.

  `OAM count threshold` The new threshold count, specified by `<str1>`. The value must be a number greater than 0. `<str2>` is not used with this type.

  `scan workspace` The new name for the `scan` workspace, specified by `<str1>`. `<str2>` is not used with this type.

  `text workspace` The new name of the `text` workspace, specified by `<str1>`. `<str2>` is not used with this type.

  `automatic workspace expansion` Allows `checkstorage` to automatically expands the workspace if adequate space is available on the respective segments. The default value of 1 enables automatic workspace expansion, and the value of 0 disables it.

  `enable excluded faults inserts` determines if excluded faults are inserted in the `dbcc_faults` and `dbcc_fault_params` tables during `dbcc checkstorage`. Excluded faults are defined using `sp_dbcc_exclusions`. When set to 1 (the default), all rows are inserted in `dbcc_faults` and `dbcc_fault_params` tables. A value of 0 means they are not.

  `enable dbcc_counter inserts` determines if rows are inserted in the `dbcc_counters` table when `dbcc checkstorage` finishes. When set to 1, rows are inserted in `dbcc_counters` table. A value of 0 (the default) means they are not.

See also:

- `dbcc` in *Reference Manual: Commands*
- *System Administration Guide: Volume 2 > Checking Database Consistency* for more information on the `<type>` names and values.

Permissions

The permission checks for `sp_dbcc_updateconfig` differ based on your granular permissions settings.

Setting	Description
Enabled	With granular permissions enabled, you must be the database owner of `dbccdb` (or `dbccalt`), or have the `manage checkstorage` privilege on the specified database.
Disabled	With granular permissions disabled, you must be the database owner of the specified database or a user with sa_role.

Related Information

sp_dbcc_alterws [page 895]
sp_dbcc_evaluatedb [page 906]
sp_plan_dbccdb [page 666]

Important Disclaimers and Legal Information

Hyperlinks

Some links are classified by an icon and/or a mouseover text. These links provide additional information.
About the icons:

- Links with the icon ➦ : You are entering a Web site that is not hosted by SAP. By using such links, you agree (unless expressly stated otherwise in your agreements with SAP) to this:
    - The content of the linked-to site is not SAP documentation. You may not infer any product claims against SAP based on this information.
    - SAP does not agree or disagree with the content on the linked-to site, nor does SAP warrant the availability and correctness. SAP shall not be liable for any damages caused by the use of such content unless damages have been caused by SAP's gross negligence or willful misconduct.
- Links with the icon ➦: You are leaving the documentation for that particular SAP product or service and are entering a SAP-hosted Web site. By using such links, you agree that (unless expressly stated otherwise in your agreements with SAP) you may not infer any product claims against SAP based on this information.

Beta and Other Experimental Features

Experimental features are not part of the officially delivered scope that SAP guarantees for future releases. This means that experimental features may be changed by SAP at any time for any reason without notice. Experimental features are not for productive use. You may not demonstrate, test, examine, evaluate or otherwise use the experimental features in a live operating environment or with data that has not been sufficiently backed up.
The purpose of experimental features is to get feedback early on, allowing customers and partners to influence the future product accordingly. By providing your feedback (e.g. in the SAP Community), you accept that intellectual property rights of the contributions or derivative works shall remain the exclusive property of SAP.

Example Code

Any software coding and/or code snippets are examples. They are not for productive use. The example code is only intended to better explain and visualize the syntax and phrasing rules. SAP does not warrant the correctness and completeness of the example code. SAP shall not be liable for errors or damages caused by the use of example code unless damages have been caused by SAP's gross negligence or willful misconduct.

Gender-Related Language

We try not to use gender-specific word forms and formulations. As appropriate for context and readability, SAP may use masculine word forms to refer to all genders.

www.sap.com/contactsap

THE BEST RUN SAP