SYBASE®

Utility Guide

Adaptive Server® Enterprise

12.5

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Contents

About This Book

Adaptive Server Enterprise Utility Guide is a guide to the Sybase® Adaptive Server® Enterprise utility programs available for UNIX platforms and Windows NT. Utility programs are commands that you invoke directly from the operating system.

Audience

This manual is for anyone using Transact-SQL® and Adaptive Server Enterprise version 12.5. It assumes that you have the basic knowledge to use Adaptive Server and your operating system.

How to use this book

This manual includes the following:

- Chapter 1, "Building Servers Using dataserver" – discusses how to use the dataserver utility to build new servers.
- Chapter 2, "Using the isql Utility" – discusses how to use the interactive SQL (isql) utility that allows access to SQL from your operating system.
- Chapter 3, "Using bcp to Transfer Data to and from Adaptive Server" – discusses, in detail, the bulk copy (bcp) utility which you use to move data between Adaptive Server and an operating system file.
- Chapter 4, "Using dsedit" – explains how to use the directory services editor (dsedit) utility to modify the interfaces (*sql.ini*) file in Windows NT, and in X-Windows to view and edit server entries in the interfaces file in UNIX platforms.
- Chapter 5, "Using dscp" – explains how to use the dscp utility to view and edit server entries in the interfaces file in UNIX platforms.
- Chapter 6, "Utility Commands Reference" – lists and describes the utility commands that you use to manage and maintain your databases and Adaptive Server Enterprise.

The examples in this manual are based on the pubs2 sample database. Ask your System Administrator how to access a clean copy of pubs2.

Related documents

The following documents comprise the Sybase Adaptive Server Enterprise documentation:

- The release bulletin for your platform – contains last-minute information that was too late to be included in the books.

  A more recent version of the release bulletin may be available on the World Wide Web. To check for critical product or document information that was added after the release of the product CD, use the Sybase Technical Library.

- The *Installation Guide* for your platform – describes installation, upgrade, and configuration procedures for all Adaptive Server and related Sybase products.

- *Configuring Adaptive Server Enterprise* for your platform – provides instructions for performing specific configuration tasks for Adaptive Server.

- *What's New in Adaptive Server Enterprise?* – describes the new features in Adaptive Server version 12.5, the system changes added to support those features, and the changes that may affect your existing applications.

- *Transact-SQL User's Guide* – documents Transact-SQL, Sybase's enhanced version of the relational database language. This manual serves as a textbook for beginning users of the database management system. This manual also contains descriptions of the pubs2 and pubs3 sample databases.

- *System Administration Guide* – provides in-depth information about administering servers and databases. This manual includes instructions and guidelines for managing physical resources, security, user and system databases, and specifying character conversion, international language, and sort order settings.

- *Reference Manual* – contains detailed information about all Transact-SQL commands, functions, procedures, and datatypes. This manual also contains a list of the Transact-SQL reserved words and definitions of system tables.

- *Performance and Tuning Guide* – explains how to tune Adaptive Server for maximum performance. This manual includes information about database design issues that affect performance, query optimization, how to tune Adaptive Server for very large databases, disk and cache issues, and the effects of locking and cursors on performance.

- The *Utility Guide* – documents the Adaptive Server utility programs, such as isql and bcp, which are executed at the operating system level.

- The *Quick Reference Guide* – provides a comprehensive listing of the names and syntax for commands, functions, system procedures, extended system procedures, datatypes, and utilities in a pocket-sized book. Available only in print version.
- The *System Tables Diagram* – illustrates system tables and their entity relationships in a poster format. Available only in print version.
- *Error Messages and Troubleshooting Guide* – explains how to resolve frequently occurring error messages and describes solutions to system problems frequently encountered by users.
- *Component Integration Services User's Guide* – explains how to use the Adaptive Server Component Integration Services feature to connect remote Sybase and non-Sybase databases.
- *Java in Adaptive Server Enterprise* – describes how to install and use Java classes as datatypes, functions, and stored procedures in the Adaptive Server database.
- *Using Sybase Failover in a High Availability System* – provides instructions for using Sybase's Failover to configure an Adaptive Server as a companion server in a high availability system.
- *Using Adaptive Server Distributed Transaction Management Features* – explains how to configure, use, and troubleshoot Adaptive Server DTM features in distributed transaction processing environments.
- *EJB Server User's Guide* – explains how to use EJB Server to deploy and execute Enterprise JavaBeans in Adaptive Server.
- *XA Interface Integration Guide for CICS, Encina, and TUXEDO* – provides instructions for using Sybase's DTM XA interface with X/Open XA transaction managers.
- *Glossary* – defines technical terms used in the Adaptive Server documentation.
- *Sybase jConnect for JDBC Programmer's Reference* – describes the jConnect for JDBC product and explains how to use it to access data stored in relational database management systems.
- *Full-Text Search Specialty Data Store User's Guide* – describes how to use the Full-Text Search feature with Verity to search Adaptive Server Enterprise data.
- *Historical Server User's Guide* –describes how to use Historical Server to obtain performance information for SQL Server and Adaptive Server.

- *Monitor Server User's Guide* – describes how to use Monitor Server to obtain performance statistics from SQL Server and Adaptive Server.
- *Monitor Client Library Programmer's Guide* – describes how to write Monitor Client Library applications that access Adaptive Server performance data.

Other sources of information

Use the Sybase Technical Library CD and the Technical Library Product Manuals Web site to learn more about your product:

- Technical Library CD contains product manuals and technical documents and is included with your software. The DynaText browser (included on the Technical Library CD) allows you to access technical information about your product in an easy-to-use format.

  Refer to the *Technical Library Installation Guide* in your documentation package for instructions on installing and starting the Technical Library.

- Technical Library Product Manuals Web site is an HTML version of the Technical Library CD that you can access using a standard Web browser. In addition to product manuals, you'll find links to the Technical Documents Web site (formerly known as Tech Info Library), the Solved Cases page, and Sybase/Powersoft newsgroups.

  To access the Technical Library Product Manuals Web site, go to Product Manuals at http://www.sybase.com/support/manuals/.

Sybase certifications on the Web

Technical documentation at the Sybase Web site is updated frequently.

❖ **For the latest information on product certifications**

1. Point your Web browser to Technical Documents at http://www.sybase.com/support/techdocs/.
2. Select a product from the product pick list and click Go.
3. Select the Certification Report filter, specify a time frame, and click Go.
4. Click a Certification Report title to display the report.

❖ **For the latest information on EBFs and Updates**

1. Point your Web browser to Technical Documents at http://www.sybase.com/support/techdocs/.
2. Select EBFs/Updates. Enter user name and password information, if prompted (for existing web accounts) or create a new account (a free service).
3. Specify a time frame and click Go.

4 Select a product.

5 Click an EBF/Update title to display the report.

❖ **To create a personalized view of the Sybase Web site (including support pages)**

Set up a MySybase profile. MySybase is a free service that allows you to create a personalized view of Sybase Web pages.

1 Point your Web browser to Technical Documents at http://www.sybase.com/support/techdocs/

2 Click MySybase and create a MySybase profile.

Conventions

In the regular text of this document, the names of files and directories appear in *italics*, for example:

- In Windows NT: *%SYBASE%\bin*
- In UNIX platforms: *$SYBASE*

Note Substitute your Sybase installation drive and directory for *$SYBASE* in UNIX, and *%SYBASE%* in Windows NT.

Table 1 details the typographic (font and syntax) conventions as used in this document.

Table 1: Font and syntax conventions for this document

Element	Example
Command names, command option names, database names, datatypes, utility names, utility flags, and other keywords are Helvetica.	dsedit
Variables, or words that stand for values that you fill in, are in *italics*.	`select` *column_name* `from` *table_name* `where` *search_conditions*
Parentheses must be typed as part of the command.	`compute row_aggregate (column_name)`
Curly braces indicate that at least one of the enclosed options is required by the command (see comma). **Note** Do not type the curly braces.	`{cheese, sauce}`
Brackets mean that choosing one or more of the enclosed options is optional.	`[anchovies, pineapple, bell_peppers]` **Note** Do not type the brackets.

Element	Example
The *vertical bar* means you may select only one of the options shown.	`{cash | check | credit}`
The *comma* means you may choose as many of the options shown as you like; be sure to separate multiple choices in a command with commas.	`[extra_cheese, avocados, sour_cream]`
An *ellipsis* (...) means that you can *repeat* the unit that the ellipsis follows as many times as you like.	`buy` *thing* `= price [cash | check | credit] [,` *thing* `= price [cash | check | credit] ]...` • You must buy at least one *thing* (item) and give its price. • You may choose a method of payment: one of the options enclosed in square brackets. • You may choose also to buy additional items: as many of them as you like. For each item you buy, provide its name, its price, and (optionally) a method of payment.
Syntax statements, which display the utility's syntax including all its options, appear as shown here, either in san serif font for flags and options (-v), or italics for user-supplied values (*username*).	charset [-P*password*] [-S*server*] [-I*interface*] *sort_order* | *charset*

Examples that illustrate computer output appear in `Courier`, as shown:	`pub_id pub_name city state`
	`------ --------- ------- -----`
	`0736 New Age Books Boston MA`
	`0877 Binnet & Hardley Washington DC`
	`(2 rows affected)`

If you need help

Each Sybase installation that has purchased a support contract has one or more designated people who are authorized to contact Sybase Technical Support. If you cannot resolve a problem using the manuals or online help, please have the designated person contact Sybase Technical Support or the Sybase subsidiary in your area.

CHAPTER 1

Building Servers Using dataserver

Adaptive Server version 12.5 no longer uses the buildmaster binary to build the master device. Instead, Sybase has incorporated the buildmaster functionality in the dataserver binary . This chapter discusses how to use dataserver to build your server.

Note The dataserver binary in Windows NT is called sqlsrvr.exe. If you are using the Windows NT platform, substitute all reference to dataserver in this chapter with sqlsrvr.

For a detailed description of dataserver syntax, see dataserver on page 125. For a detailed description of sqlsrvr syntax, see sqlsrvr on page 183.

Introduction

The dataserver command allows you to create master devices and databases with logical pages of size 2K, 4K, 8K, or 16K. Larger logical pages allow you to create larger rows, which can improve your performance because Adaptive Server accesses more data each time it reads a page. For example, a 16K page can hold eight times the amount of data as a 2K page, an 8K page holds four times as much data as a 2K page, and so on, for all the sizes for logical pages.

The logical page size is a server-wide setting; you cannot have databases with varying size logical pages within the same server. All tables are appropriately sized so that the row size does not exceed the current page size of the server. That is, rows cannot span multiple pages.

Building a new master device

This section describes the process for creating a new master device using the dataserver utility. The master device is built using the *build* mode in dataserver. After the master device is built, the server shuts down. You must then manually start the server in the *start* mode. After this you can start, stop, and restart Adaptive Server whenever necessary without having to rebuild the master device

Adaptive Server uses three types of page sizes:

- Logical page size – these are the pages that the database objects are built with. A databases and any of its related objects must use the same logical page size. Logical page sizes come in sizes of 2K, 4K, 8K, and 16K.
- Virtual page size – this is the physical page allocation at the disk level, and is always done in 2K pages. All disk I/O is done in multiples of virtual page size.
- Memory page size – the memory allocated and managed within Adaptive Server. The memory page size is always in units of 2K pages.

The following syntax creates a new master device with dataserver:

```
dataserver -ddevice_name
. . .
    -b [master_device_size [k|K|m|M|g|G]
    [-z logical_page_size [k|K]
-h
```

Where:

-d *device_name* – is the full path name of the device for the master database. The master database device must be writable by the user who starts Adaptive Server. The default master database device name is d_master.

-b – indicates that dataserver is in build mode and creating a new master device, and indicates the size of the master device. If you do not provide a unit specifier (k, m, g) for the size of the device, dataserver assumes a size in virtual pages. The size of a virtual page is always 2K. For example:

- -b 51204 – specifies a device of 51,204 virtual pages (100.0078125MB).
- -b 100M – specifies a device of 100Mb

-z – specifies the logical page size, which is always 2K, 4K, 8K, or 16K. That is, one logical page = *N* virtual pages. This parameter is optional during the build phase and is ignored during the start mode. If you do not include the -z parameter during the build mode, the master device is built with 2K logical pages.

-h – prints the syntax for the dataserver command.

See dataserver on page 125 for a full list of dataserver parameters and their definitions.

Environments when using dataserver

When you start an Adaptive Server with the dataserver program, Adaptive Server derives its running environment from:

- The configuration file you specify in -c *configuration_file*
- The default configuration file, *servername.cfg*, if you did not specify the -c parameter
- Default values if you did not specify either -c *configuration_file* or *servername.cfg*

  For more information on these configuration parameters, see Chapter 17, "Setting Configuration Parameters," in the *Sybase Adaptive Server Enterprise System Administration Guide*.

build mode

To create a new Adaptive Server, issue dataserver using the -b and -z options.

For example, to:

- Build a 100MB master device using the default logical page size (2K) and start the server:

```
dataserver -d /var/sybase/masterdb.dat -b100M -sMASTER2K
```

- Build a 100MB master device with a logical page size of size 4K:

```
dataserver -d /var/sybase/masterdb.dat -b100M -z4K -sMASTER4K
```

- Build a master device of 102,400 virtual pages of size 2K, create databases using a logical page size of 8K, and boot the server:

```
dataserver -d /var/sybase/masterdb.dat -b102400 -z8K -sMASTER8K
```

If the total requested space (102,400 x 2K = 200 MB) is insufficient to build all the required system databases using the specified logical page size, then an error message is reported, and the process fails.

Example

The following is a sample output of dataserver building a 200MB device with a 2K logical page size, called personnel2k:

```
dataserver -d /var/sybase/personnel2k.dat -b200M -z2k -sPERSONNEL2K
```

dataserver uses a default configuration file if you do not specify one:

```
00:00000:00000:2001/04/16 10:24:31.73 kernel  Warning: Using default file
'/var/sybase/PERSONNEL2K.cfg' since a configuration file was not specified.
Specify a configuration file name in the RUNSERVER file to avoid this
message.
```

To specify your own configuration file, use dataserver's -c parameter. See Chapter 11, "Setting Configuration Parameters" in the *Adaptive Server Enterprise System Administration Guide* for more information.

Adaptive Server version 12.5 treats all installations as an upgrade, regardless of whether you have an existing version of Adaptive Server or not. For this reason, you see the following output when running dataserver:

```
00:00000:00001:2001/04/16 10:24:32.63 server  Database 'master' appears to
be at an older revision than the present installation; SQL Server will assess
it, and upgrade it as required.

00:00000:00001:2001/04/16 10:24:32.66 server  Database 'master': beginning
upgrade step [ID     1]: Initialize disk and create empty allocation units
on master device.

00:00000:00001:2001/04/16 10:24:34.74 server  Database 'master': beginning
upgrade step [ID     2]: Bootstrap basic system catalogs in database.
```

dataserver continues creating the master database, including all of its tables such as systypes, sysobjects and sysusages:

```
00:00000:00001:2001/04/16 10:24:35.21 server  Database 'master': beginning
upgrade step [ID     3]: creating index (table systypes, index ncsystypes)

00:00000:00001:2001/04/16 10:24:35.36 server  Database 'master': beginning
upgrade step [ID     4]: creating index (table sysobjects, index
ncsysobjects)

00:00000:00001:2001/04/16 10:24:35.44 server  Database 'master': beginning
upgrade step [ID    20]: creating table (table sysusages)

[...]
```

When dataserver has created the master database, it creates the model database:

```
[...]
00:00000:00001:2001/04/16 10:24:43.14 server  Database 'model' appears to
be at an older revision than the present installation; SQL Server will assess
it, and upgrade it as required.

00:00000:00001:2001/04/16 10:24:43.14 server  Database 'model': beginning
upgrade step [ID     1]: Initialize disk and create empty allocation units
on master device.

00:00000:00001:2001/04/16 10:24:43.83 server  Database 'model': beginning
upgrade step [ID     2]: Bootstrap basic system catalogs in database.

00:00000:00001:2001/04/16 10:24:43.89 server  Database 'model': beginning
upgrade step [ID     3]: creating index (table systypes, index ncsystypes)

00:00000:00001:2001/04/16 10:24:43.91 server  Database 'model': beginning
upgrade step [ID     4]: creating index (table sysobjects, index
ncsysobjects)

[...]
```

When dataserver has created the model database, it creates the tempdb and sybsystemdb databases:

```
[...]
00:00000:00001:2001/04/16 10:24:45.23 server  CREATE DATABASE: allocating
1024 logical pages (2.0 megabytes) on disk 'master'.
00:00000:00001:2001/04/16 10:24:46.79 server  Database sybsystemdb
successfully created.
[...]
```

dataserver is successful when the server changes the default sort order and shuts down:

```
[...]
00:00000:00001:2001/04/16 10:24:47.23 server  Now loading SQL Server's new
default sort order and character set
[...]
00:00000:00001:2001/04/16 10:24:47.31 server  Default Sort Order
successfully changed.

00:00000:00001:2001/04/16 10:24:47.37 server  SQL Server shutdown after
verifying System Indexes.

00:00000:00001:2001/04/16 10:24:47.37 kernel  ueshutdown: exiting
```

Error messages

If dataserver is not successful, you are unable to boot the server on that master device, and you see the following error message:

```
00:00000:00001:2001/04/16 19:02:39.53 kernel  Use license file
/var/sybase/SYSAM-1_0/licenses/license.dat.

00:00000:00001:2001/04/16 19:02:39.54 kernel  The master device's
configuration area appears to be corrupt. The server needs this data to boot,
and so cannot continue. The server will shut down.
```

If you run dataserver with a user-specified configuration file that includes options that make it impossible to allocate a shared segment and start up a server, dataserver fails with an error message, and you are unable to boot the server on that master device:

```
00:00000:00001:2001/04/16 19:04:01.11 kernel  Use license file
/var/sybase/SYSAM-1_0/licenses/license.dat.

00:00000:00000:2001/02/09 19:04:01.25 kernel  Using config area from primary
master device.

00:00000:00001:2001/04/16 19:04:01.36 server  The value of the 'max
total_memory' parameter (33792) defined in the configuration file is not
high enough to set the other parameter values specified in the configuration
file. 'max total_memory' should be greater than the logical memory '34343'.
```

start mode

To start an existing Adaptive Server, issue dataserver without the -b and -z options.

```
dataserver -d /sybase/masterdb.dat
```

Upgrading to a server with larger page sizes

Adaptive Servers earlier than version 12.5 used 2K logical page sizes. You cannot change an installation's page size by upgrading. That is, if your current Adaptive Server uses 2K logical pages, you can upgrade only to an Adaptive Server that uses 2K logical pages.

However, you can migrate databases with 2K logical pages from earlier versions of Adaptive Server. For information on how to use the dataxtr data migration tool, see the Adaptive Server Enterprise release bulletin for your platform.

Viewing the current server limits

To display information about Adaptive Server's limits:

- dbcc serverlimits includes the size of your server's logical page size in its output. For example, enter:

```
dbcc serverlimits
```

- Search for the string "logical page size" in the error log.
- The global variable *@@maxpagesize* displays the server's logical page size. At the isql prompt, issue:

```
select @@maxpage size
-----------
   8192
```

CHAPTER 2

Using the isql Utility

This chapter describes the interactive SQL utility, isql.

For a detailed description of isql syntax, see isql on page 153.

Before you begin

If you are running Open Client version 11.1 or later and are using an external Sybase configuration file, you must add the following in your configuration file to enable isql:

```
[CTISQL]
```

Starting and stopping isql

To start isql, enter this command at the operating-system prompt:

```
isql
```

When the prompt appears, enter your password.

The password does not appear on the screen as you type. The isql prompt appears:

```
1>
```

You can now issue Transact-SQL commands.

To exit isql enter either of these commands on a line by itself:

```
quit
exit
```

How to use Transact-SQL in isql

isql sends Transact-SQL commands to Adaptive Server, formatting the results and printing them to standard output. There is no maximum size for an isql statement. For more information about using Transact-SQL, see the *Transact-SQL User's Guide*.

Note To use Transact-SQL directly from the operating system with the isql utility program, you must have an account, or login, on Adaptive Server.

To execute a Transact-SQL command, type the default command terminator "go" on a new line.

For example:

```
isql
Password:

1> use pubs2
2> go
1> select *
2> from authors
3> where city = "Oakland"
4> go
```

Formatting isql output

Table 2-1 describes the options that change the format of isql output:

Table 2-1: Format options for isql

Option	Default	Meaning
-h *headers*	1	Number of rows to print between column headings
-s *colseparator*	Single space	Changes the column separator character

Option	Default	Meaning
-w *columnwidth*	80 characters	Changes the line width
-e		Includes each command issued to isql in the output
-n		Removes numbering and prompt symbols.

In this example, the query's results are placed in a file called *output*:

```
isql -Uuser_name -Ppassword -Sserver -e -n -o output
```

```
use pubs2
go
select *
from authors
where city = "Oakland"
go
 quit
```

To view the contents of *output*, enter:

- In Windows NT:

```
type output
```

- In UNIX platforms:

```
cat output
```

```
select *
from authors
where city = "Oakland"
au_id         au_lname         au_fname
phone         address
city          state country    postalcode
----------- ---------------------------------------- -----------
--------
---------- ----------------------------------------
------------------ ---- ----------- -----------
213-46-8915 Green                          Marjorie
                415 986-7020 309 63rd St. #411
                 Oakland   CA   USA    94618
274-80-9391 Straight                       Dick
                415 834-2919 5420 College Av.
                Oakland    CA    USA   94609
724-08-9931 Stringer                       Dirk
                415 843-2991 5420 Telegraph Av.
                Oakland    CA    USA   94609
724-80-9391 MacFeather                     Stearns
                415 354-7128 44 Upland Hts.
                Oakland    CA    USA   94612
```

```
756-30-7391 Karsen                          Livia
                415 534-9219 5720 McAuley St.
                 Oakland     CA     USA   94609
```

Note The *output* file does not include the command terminator.

Correcting input

If you make an error when typing a Transact-SQL command, you can:

- Press Ctrl-c or type the word “reset” on a line by itself – this clears the query buffer and returns the isql prompt.
- Type the name of your text editor on a line by itself – this opens a text file where you can edit the query. When you write and save the file, you are returned to isql and the corrected query appears. Type “go” to execute it.

set options that affect output

Table 2-2 lists the set options that affect Transact-SQL output. For more information, see set in the *Adaptive Server Enterprise Reference Manual*.

Table 2-2: set options that affect Transact-SQL output

set Option	Default	Meaning
char_convert	Off	Turns character-set conversion off and on between Adaptive Server and a client; also starts a conversion between the server character set and a different client character set.
fipsflagger	Off	Warns when any Transact-SQL extensions to entry-level SQL92 are used.This option does not disable the SQL extensions. Processing completes when you issue the non-ANSI SQL command.
flushmessage	Off	Sends messages as they are generated.
language	us_english	Sets the language for system messages.
nocount	Off	Turns off report of number of rows affected.
noexec	Off	Compiles each query but does not execute it; often used with showplan.
parseonly	Off	Checks the syntax of queries and returns error messages without compiling or executing the queries.
showplan	Off	Generates a description of the processing plan for a query; does not print results when used inside a stored procedure or trigger.
statistics io statistics time	Off	Displays performance statistics after each execution.

set Option	Default	Meaning
statistics subquerycache	Off	Displays the number of cache hits, misses, and rows in the subquery cache for each subquery.
textsize	32K	Controls the number of bytes of text or image data returned.

Changing the command terminator

If you include the command terminator argument (-c), you can choose your own terminator symbol; go is the default value for this option. Always enter the command terminator without blanks or tabs in front of it.

For example, to use a period as the command terminator, invoke isql as follows:

```
isql -c.
```

A sample isql session with this command terminator looks like this:

```
1> select name from sysusers
2> .
name
-----------
sandy
kim
leslie
(3 rows affected)
```

Using the isql command terminator option with scripts requires advance planning:

- Adaptive Server-supplied scripts, such as installmaster, use “go”. Do not change the command terminator for any session that uses these scripts.
- Your own scripts may already have “go” in them. Remember to update your scripts to include the terminator you plan to use.

Performance statistics interaction with command terminator values

isql provides a performance statistics option (-p).

For example, this syntax returns the following statistics:

```
isql -p
1> select * from sysobjects
2> go

Execution Time (ms.): 1000   Clock Time (ms.): 1000
1 xact:
```

This means that a single transaction took 100 ms. The clock time value reflects the entire transaction, which starts when Client-Library™ builds the query and ends when Client-Library returns the information from Adaptive Server.

You can gather performance statistics based on the execution of one or more transactions. To gather statistics on more than one transaction, specify a number after the command terminator.

For example, the following command instructs Adaptive Server to execute three select * transactions and report the performance statistics:

```
isql -p

1> select * from sysobjects
2> go 3

Execution Time (ms.): 1000   Clock Time (ms.): 1000
Execution Time (ms.): 1000   Clock Time (ms.): 2000
Execution Time (ms.): 1000   Clock Time (ms.): 1000

Execution Time (ms.): 1000   Clock Time (ms.): 4000
3xact:
```

Setting the network packet size

Setting the correct network packet size can greatly increase the performance of Adaptive Server.

The -A size option specifies the network packet size to use for an isql session. For example, to set the packet size to 2048 bytes for the current isql session, enter:

- In UNIX platforms:

  ```
  isql -A 2048
  ```

- In Windows NT:

  ```
  load isql -A 2048
  ```

To check your network packet size, type:

```
select * from sysprocesses
```

The value for this isql session appears under the network_pktsz heading in the sysprocesses table.

See the *System Administration Guide* for more information about setting the network packet size.

Input and output files

You can specify input and output files on the command line with the -i and -o options.

isql does not provide formatting options for the output. However, you can use the -n option to eliminate the isql prompts and other tools to reformat the output.

If you use the -e option, isql echoes the input to output. The resulting output file contains both the queries and their results.

UNIX command-line redirection

The UNIX redirection symbols, " <" and ">", provide a similar mechanism to the -i and -o options, as follows:

```
isql -Usa < input > output
```

You can direct isql to take input from the terminal, as shown in this example:

```
isql -Usa -Ppassword -Sserver_name << EOF > output
use pubs2
go
select * from table
go
EOF
```

"<<EOF" instructs isql to take input from the terminal up to the string "EOF." You can replace "EOF" with any character string. Similarly, the following example signals the end of input with Ctrl-d:

```
isql -Usa << > output
```

CHAPTER 3

Using bcp to Transfer Data to and from Adaptive Server

This chapter explains how to use the bulk copy utility, bcp, to move data between Adaptive Server and an operating system file.

bcp provides a convenient, high-speed method for transferring data between a database table or view and an operating system file. bcp can read or write files in a wide variety of formats. When copying in from a file, bcp inserts data into an existing database table; when copying out to a file, bcp overwrites any previous contents of the file.

For a detailed description of bcp syntax, see bcp on page 99.

Methods for moving data

You can use the following methods to move data to and from your Adaptive Server databases:

- bcp as a standalone program from the operating system. This chapter provides instructions for this method.
- Client-Library, which calls bulk library routines. For more information about the Client-Library, see the *Open Client and Open Server Common Libraries Reference Manual*.

Importing and exporting data with bcp

Transact-SQL commands cannot transfer data in bulk. For this reason, you must use bcp for any large transfers. You can use bcp to:

- Import data that was previously associated with another program, such as the records from another database management system. This is the most common use for bcp.

  Before using bcp, you must create a file of the records you want to import. The general steps are:

  a Put the data to transfer into an operating system file.

  b Run bcp from the operating system command line.
- Move tables between Adaptive Servers or between Adaptive Server and other data sources that can produce an operating-system file.
- Copy out data from a view. See bcp on page 99 for a description of the syntax for using bcp to copy out from a view.

  Note You cannot use bcp to copy *in* data to a view.

- Transfer data for use with other programs, for example, with a spreadsheet program. The general steps to transfer data are:

  a Use bcp to move the data from Adaptive Server into an operating-system file from which the other program imports the data.

  b When you finish using your data with the other program, copy it into an operating-system file, and then use bcp to copy it into Adaptive Server.

Adaptive Server can accept data in any character or binary format, as long as the data file describes either the length of the fields or the **terminators**, the characters that separate columns.

The structures in the tables involved in the transfer need not be identical, because when bcp:

- Imports *from* a file, it appends data to an existing database table.
- Exports *to* a file, it overwrites the previous contents of the file.

When the transfer is complete, bcp informs you of the number of rows of data successfully copied, the number of rows (if any) that it could not copy, the total time the copy took, the average amount of time, in milliseconds, that it took to copy one row and the number of rows copied per second.

bcp requirements

Before using bcp, you need to provide it with basic data information and prepare both the data for transfer and the command to access the data.

Basic requirements

You must supply the following information to transfer data successfully to and from Adaptive Server:

- Name of the database and table or view
- Name of the operating system file
- Direction of the transfer (in or out)

You can also use bcp to modify the storage type, storage length, and terminator for each column if you want to do so.

Permissions

You must have an Adaptive Server account and the appropriate permissions on the database tables or views, as well as the operating system files to use in the transfer to use bcp.

- To copy data into a table, you must have insert and select permission on the table.
- To copy a table to an operating system file, you must have select permission on the following tables:
  - the table to copy
  - sysobjects

- syscolumns
- sysindexes

Pre-transfer tasks

Before you can use bcp in, you must prepare the command and the data for transfer:

- To use either fast or slow bcp, set select into/bulkcopy/pllsort to true. For example, to turn on this option for the pubs2 database, you would enter:

```
sp_dboption pubs2, "select into/bulkcopy/pllsort", true
```

  For more information, see "bcp modes" on page 20.

- To use fast bcp, remove indexes and triggers on the target table. For more information about this requirement, see "bcp performance" on page 21.

In addition:

- If you are running Open Client version 11.1 or later and are using an external Sybase configuration file, you must addthe following to enable bcp:

  ```
  [BCP]
  ```

- You must set the SYBASE environment variable to the location of the current version of Adaptive Server before you can use bcp.
- To use a previous version of bcp, you must set the CS_BEHAVIOR property in the [bcp] section of the *ocs.cfg* file:

  ```
  [bcp]
  CS_BEHAVIOR = CS_BEHAVIOR_100
  ```

  If CS_BEHAVIOR is not set to CS_BEHAVIOR_100, you can use functionality for bcp 11.1 and later.

bcp modes

bcp in works in one of two modes:

- Fast bcp – logs each row insert that it makes, used for tables that have one or more indexes or triggers.
- Slow bcp – logs only page allocations, copying data into tables without indexes or triggers at the fastest speed possible.

To determine the bcp mode that is best for your copying task, consider the:

- Size of the table into which you are copying data
- Amount of data that you are copying in
- Number of indexes on the table
- Amount of spare database device space that you have for re-creating indexes

Note Fast bcp might enhance performance; however, slow bcp gives you greater data recoverability.

bcp performance

Keeping indexes and triggers on a table causes the bulk copy utility to use slow bcp automatically. However, slow bcp can fill the transaction log very quickly.

- When you are copying a large number of rows, the performance penalty and log space requirements for using slow bcp can be severe.
- For extremely large tables, using slow bcp is not an option because its detailed log makes it much too slow.

To improve the performance of bcp:

- Use partitioned tables. Several bcp sessions with a partitioned table can reduce dramatically the time required to copy the data. However, such performance improvements are more noticeable in fast bcp than in slow bcp.
- Use bcp in parallel to increase performance dramatically. Parallel bulk copy can provide balanced data distribution across partitions. For more information, see "Using parallel bulk copy to copy data into a specific partition" on page 27.

Using fast or slow bcp

The existence of indexes and triggers on tables affects transfer speed. When you use bcp on such tables, bcp automatically uses its slow mode, which logs data inserts in the transaction log. These logged inserts can cause the transaction log to become very large.

To control this data excess and ensure that the database is fully recoverable in the event of a failure, you can back up the log with dump transaction.

Note bcp does not fire any trigger that exists on the target table.

Fast bcp logs only the page allocations. For copying data in, bcp is fastest if your database table has no indexes or triggers.

However, if you used fast bcp to make data inserts, which fast bcp does not log, you cannot back up (dump) the transaction log to a device. The changes are not in the log, and a restore cannot recover nonexistent backup data. The requested backup (dump transaction) produces an error message that instructs you to use dump database instead. This restriction remains in force until a dump database successfully completes.

For more information about dump database and dump transaction, see the *Adaptive Server Enterprise System Administration Guide*, and the *Adaptive Server Enteprise Reference Manual*.

Copying tables with indexes or triggers

The bcp program is optimized to load data into tables that do not have indexes or triggers associated with them. It loads data into tables without indexes or triggers at the fastest possible speed, with a minimum of logging. Page allocations are logged, but the insertion of rows is not.

When you copy data into a table that has one or more indexes or triggers, a slower version of bcp is automatically used, which logs row inserts. This includes indexes implicitly created using the unique integrity constraint of a create table statement. However, bcp does not enforce the other integrity constraints defined for a table.

By default, the select into/bulkcopy/pllsort option is false (off) in newly created databases. To change the default situation, turn this option on in the model database.

Note The log can grow very large during slow bcp because bcp logs inserts into a table that has indexes or triggers. After the bulk copy completes, back up your database with dump database, then truncate the log with dump transaction after the bulk copy completes and after you have backed up your database with dump database.

While the select into/bulkcopy/pllsort option is on, you cannot dump the transaction log. Issuing dump transaction produces an error message instructing you to use dump database instead.

Warning! Be certain that you dump your database before you turn off the select into/bulkcopy/pllsort flag. If you have inserted unlogged data into your database, and you then perform a dump transaction before performing a dump database, you will not be able to recover your data.

Fast bcp runs more slowly while a dump database is taking place.

Table 3-1 shows which version bcp uses when copying in, the necessary settings for the select into/bulkcopy/pllsort option, and whether the transaction log is kept and can be dumped.

Table 3-1: Comparing fast and slow bcp

select into/bulkcopy/pllsort	on	off
fast bcp (no indexes or triggers on target table)	OK dump transaction prohibited	bcp prohibited dump transaction
slow bcp (one or more indexes or triggers)	OK dump transaction prohibited	OK dump transaction OK

Note The performance penalty for copying data into a table that has indexes or triggers in place can be severe. If you are copying in a very large number of rows, it may be faster to drop all the indexes and triggers beforehand with drop index (or alter table, for indexes created as a unique constraint) and drop trigger; set the database option; copy the data into the table; re-create the indexes and triggers; and then dump the database. Remember to allocate disk space for the construction of indexes and triggers: about 2.2 times the amount of space needed for the data.

Configuring databases for fast bcp

To allow a user to copy in data using fast bcp, either a System Administrator or the Database Owner first must use sp_dboption to set select into/bulkcopy/pllsort to true on the database that contains the target table or tables. If the option is set to false when a user tries to use fast bcp to copy data into a table without indexes or triggers, Adaptive Server generates an error message.

Note You do not need to set the select into/bulkcopy/pllsort option to true to copy out data from, or to copy in data to a table that has indexes or triggers. Slow bcp always copies tables with indexes or triggers and logs all inserts.

By default, the select into/bulkcopy/pllsort option is set to false (off) in newly created databases. To change the default setting for future databases, turn this option on (set to true) in the model database.

Dropping indexes and triggers

If you are copying a very large number of rows, you must have 1.2 times the amount of space needed for the data and enough space for the server to reconstruct a clustered index.

- If space is available, you can use drop index and drop trigger to drop all the indexes and triggers beforehand.
- If you do not have enough space for the server to sort the data and build the index or indexes, use slow bcp.

Copying in data with fast bcp

Table 3-2 summarizes the steps for copying in data to Adaptive Server using fast bcp.

Table 3-2: Steps for copying in data using fast bcp

Step	Who can do it
Use sp_dboption to set select into/bulkcopy/pllsort to true. Run checkpoint in the database that was changed.	System Administrator or Database Owner
Have enough space to re-create any indexes and triggers on the table. Drop the indexes and triggers on the table.	Table owner
Have insert permission on the table.	Granted by the table owner
Perform the copy with bcp.	Any user with *insert* permission
Re-create the indexes and triggers.	Table owner
Reset sp_dboption, if desired, and run checkpoint in the database that was changed.	System Administrator or Database Owner

Step	Who can do it
Use dump database to back up the newly inserted data.	System Administrator, Operator, or Database Owner
Run stored procedures or queries to determine whether any of the newly loaded data violates rules.	Table owner or stored procedure owner

Bulk copying data into partitioned tables

In certain circumstances, you can improve bcp performance dramatically by executing several bcp sessions with a partitioned table.

Partitioned tables improve insert performance by reducing lock contention and by distributing I/O over multiple devices. bcp performance with partitioned tables is improved primarily because of this distributed I/O.

When you execute a bcp session on a partitioned table, consider:

- A partitioned table improves performance only when you are bulk copying *in* to the table.
- The performance of slow bcp does not improve as much with partitioned tables. Instead, drop all indexes and triggers and use fast bcp, as described in Table 3-2 on page 24, to increase performance.
- Network traffic can quickly become a bottleneck when multiple bcp sessions are being executed. If possible, use a local connection to the Adaptive Server to avoid this bottleneck.

To copy data into a partitioned heap table, you can either:

- Copy the data randomly without regard to the partition to which data is copied, or
- Copy the data into a specific partition

  If the table has a clustered index, bcp runs in slow mode and allows the index to control the placement of rows.

❖ To copy data randomly into partitions

To copy data randomly into partitioned tables when using multiple bcp sessions, you must:

1 Configure the table with as many partitions and physical devices as you require for your system.

For more information, see the *Performance and Tuning Guide*, and "Using parallel bulk copy to copy data into a specific partition" on page 27 of this manual.

2 Make sure Adaptive Server is configured with enough locks to support multiple bcp sessions. For information on configuring locks, see the *System Administration Guide*.

3 Remove the triggers and indexes on the table and enable fast bcp. See "Using fast or slow bcp" on page 22 for instructions.

Note If you use slow bcp, performance may not improve significantly after you remove the triggers and indexes. Also, if the table contains indexes, you may experience deadlocks on the index pages.

---

4 Divide the bcp input file into as many files of equal size as the number of planned simultaneous bcp sessions.

You also can use the -F *first_row* and -L *last_row* options to specify the start and end of each "input file."

5 Execute the bcp sessions with separate files in parallel on the local Adaptive Server machine.

For example, on UNIX platforms, you can execute different sessions in different shell windows or start individual bcp sessions in the background.

Read the *Performance and Tuning Guide* for a detailed description of copying data into partitioned tables.

Monitoring bcp sessions with dbcc checktable and sp_helpsegment

If you do not specify which partition the bcp sessions should use, Adaptive Server randomly assigns the multiple bcp sessions to the table's available partitions. If this random assignment occurs, be sure to monitor the partitions to ensure that the process has evenly distributed the inserts by using either of the following:

- dbcc checktable – to periodically to check the total page counts for each partition
- sp_helpsegment or sp_helpartition – to perform a similar check, but without locking the database objects

For more information about dbcc checktable, see the *System Administration Guide*. For more information about sp_helpsegment and sp_helpartition, see the *Reference Manual*.

For more information about table partitions, see the *Performance and Tuning Guide*.

Reducing logging by increasing page allocations

If you are using fast bcp, consider that each bcp in batch requires the page manager to allocate one or more extents. Each such allocation generates a single log record.

Use the number of preallocated extents configuration parameter to specify how many extents Adaptive Server is to allocate through the page manager.

- Valid values for the number of preallocated extents configuration parameter are from 0 to 31; the default value is 2.
- You must restart Adaptive Server to change the value.
- When performing large bcp operations, increase this number to prevent the page allocations from filling the log.
- Set this value to 0 to prevent large extent allocations, so that the page manager performs only single-page allocations.

Adaptive Server may allocate more pages than are actually needed, so keep the value small when space is limited. These pages are deallocated at the end of the batch.

For more information, see the *System Administration Guide*.

Using parallel bulk copy to copy data into a specific partition

Use parallel bulk copy to copy data in parallel to a specific partition. Parallel bulk copy substantially increases performance during bcp sessions because it can split large bulk copy jobs into multiple sessions and run the sessions concurrently.

To use parallel bulk copy:

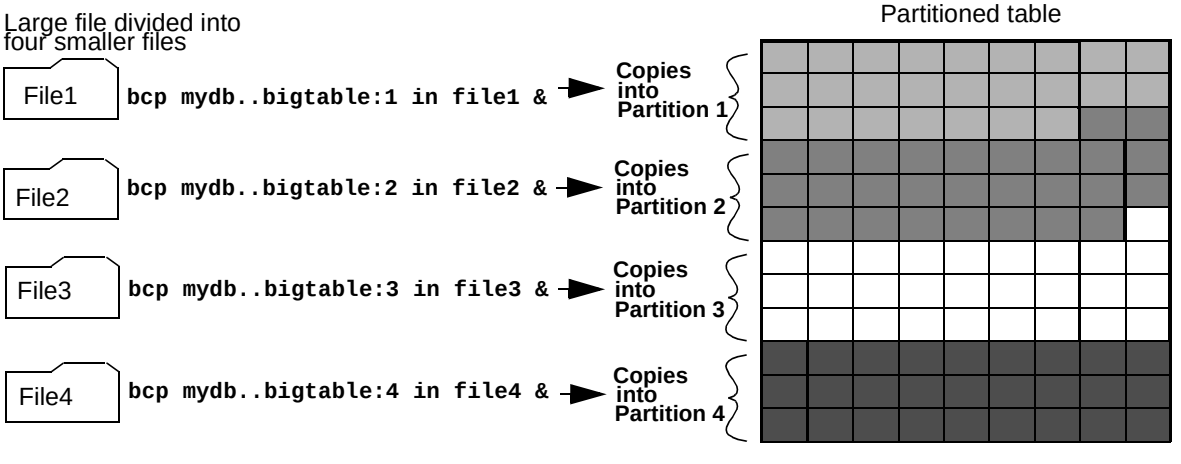
- The destination table must be partitioned.
    - Use sp_helpartition to see the number of partitions on the table.

    - Use alter table ... partition to partition the table, if the table is not already partitioned.
- The destination table should not contain indexes because:
    - If the table has a clustered index, this index determines the physical placement of the data, causing the partition specification in the bcp command to be ignored.
    - If any indexes exist, bcp automatically uses its slow bulk copy instead of its fast bulk copy mode.
- If nonclustered indexes exist on the tables, parallel bulk copy is likely to lead to deadlocks on index pages.
- Each partition should reside on a separate physical disk for the best performance.
- Before you copy data into your database, you must partition the table destined to contain the data.
- Parallel bulk copy can copy in to a table from multiple operating system files. To do so, use:

```
bcp tablename :partition_number in file_name
```

Figure 3-1 illustrates the parallel bulk copy process.

Figure 3-1: Copying data into a partitioned table using parallel bulk copy



See the *Adaptive Server Enterprise Performance and Tuning Guide* for information about partitioning a table.

Note When using parallel bulk copy to copy data out, you cannot specify which partitions bcp should use.

bcp in and locks

When you copy in to a table using bcp, and particularly when you copy in to a table using parallel bcp, the copy process acquires the following locks:

- An exclusive intent lock on the table
- An exclusive page lock on each data page or data row
- An exclusive lock on index pages, if any indexes exist

If you are copying in very large tables, and especially if you are using simultaneous copies into a partitioned table, this can involve a very large number of locks.

To avoid running out of locks:

- Increase the number of locks.
  - To estimate the number of locks needed, use:

```
# of simultaneous batches * (rows_per_batch / (2016/row_length))
```

  - To see the row length for a table, use:

```
1> select maxlen
2> from sysindexes
3> where id = object_id("tablename") and (indid = 0 or indid = 1)
```

    See the *System Administration Guide* for more information about setting the number of locks.

- Use the -b *batchsize* flag to copy smaller batches; the default batch size is 1000 rows.
- Run fewer batches concurrently.

Parallel bulk copy methods

Use one of the following methods to copy in data using parallel bulk copy:

- Start multiple bcp sessions in the background, being sure to:

- Specify the password at the command line.
- Use native mode, character mode, or a format file.

You can start bcp as many times as the table is partitioned.

- Create and use a format file:
  a. Start bcp in interactive mode.
  b. Answer the prompts.
  c. Create a format file that stores your responses.
  d. Put the process in the background when the copy begins.
  e. Issue the next bcp command, and specify the format file created with the first bcp command.
- Start bcp sessions in multiple windows.

Parallel bulk copy syntax

The syntax for parallel bulk copy is:

```
bcp table_name[:partition_number] in file_name -Pmypassword
```

where:

- *table_name* is the name of the table into which you are copying the data
- *partition_number* is the number of the partition into which you are copying
- *file_name* is the host file that contains the data
- *mypassword* is your password

Using parallel bulk copy on partitioned tables

To copy sorted data in parallel into a specific partition:

- Specify the partition by appending a colon (:) plus the partition number to the table name. For example:

```
publishers:10
```

Note The partition you specify must exist before you issue the bcp command.

- Split the sorted data into separate files, or delineate the "files" by specifying the first row (-F *first_row*) and the last row (-L *last_row*) of the host file.
- Note the number of partitions in the table. This number limits the number of parallel bulk copy sessions that you can start.

  For example, if a table has four partitions, and you start five parallel bulk copy jobs, only the first four jobs can run in parallel; the fifth job does not start until one of the first four jobs finish.

bcp copies each file or set of line numbers to a separate partition. For example, to use parallel bulk copy to copy in sorted data to mydb..bigtable from four files into four partitions, enter:

```
bcp mydb..bigtable:1 in file1 -Pmypassword -c &
bcp mydb..bigtable:2 in file2 -Pmypassword -c &
bcp mydb..bigtable:3 in file3 -Pmypassword -c &
bcp mydb..bigtable:4 in file4 -Pmypassword -c &
```

Parallel bulk copy and IDENTITY columns

When you are using parallel bulk copy, IDENTITY columns can cause a bottleneck. As bcp reads in the data, the utility both generates the values of the IDENTITY column and updates the IDENTITY column's maximum value for each row. This extra work may adversely affect the performance improvement that you expected to receive from using parallel bulk copy.

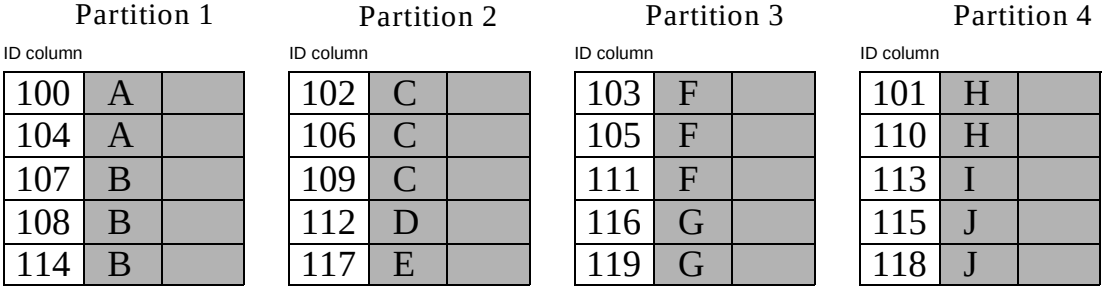
To avoid this bottleneck, you can explicitly specify the IDENTITY starting point for each session.

Retaining sort order

If you copy sorted data into the table without explicitly specifying the IDENTITY starting point, bcp might not generate the IDENTITY column values in sorted order. Parallel bulk copy reads the information into all the partitions simultaneously and updates the values of the IDENTITY column as it reads in the data.

A bcp statement with no explicit starting point would produce IDENTITY column numbers similar to those shown in Figure 3-2:

Figure 3-2: Producing IDENTITY columns in sorted order



The table has a maximum IDENTITY column number of 119, but the order is no longer meaningful.

If you want Adaptive Server to enforce unique IDENTITY column values, you must run bcp with either the -g or -E parameter.

Specifying the starting point from the command line

Use the -g *id_start_value* flag to specify an IDENTITY starting point for a session in the command line.

The -g parameter instructs Adaptive Server to generate a sequence of IDENTITY column values for the bcp session without checking and updating the maximum value of the table's IDENTITY column for each row. Instead of checking, Adaptive Server updates the maximum value at the end of each batch.

Warning! Be cautious about creating duplicate identity values inadvertently when you specify identity value ranges that overlap.

To specify a starting IDENTITY value, enter:

```
bcp [-gid_start_value]
```

For example, to copy in four files, each of which has 100 rows, enter:

```
bcp mydb..bigtable in file1 -g100
bcp mydb..bigtable in file2 -g200
bcp mydb..bigtable in file3 -g300
bcp mydb..bigtable in file4 -g400
```

Using the -g parameter does not guarantee that the IDENTITY column values are unique. To ensure uniqueness, you must:

- Know how many rows are in the input files and what the highest existing value is. Use this information to set the starting values with the -g parameter and generate ranges that do not overlap.

  In the example above, if any file contains more than 100 rows, the identity values overlap into the next 100 rows of data, creating duplicate identity values.

- Make sure that no one else is inserting data that can produce conflicting IDENTITY values.

Specifying the starting point using the data file

Use the -E parameter to set the IDENTITY starting point explicitly from the data file.

The -E parameter instructs bcp to prompt you to enter an explicit IDENTITY column value for each row. If the number of inserted rows exceeds the maximum possible IDENTITY column value, Adaptive Server returns an error.

Using the bcp options

The information in this section clarifies some of the more complex options of the bcp syntax. For a complete description of the syntax, see bcp on page 99.

Using the default formats

bcp provides two command-line options that create files with frequently used default formats. These options provide the easiest way to copy data in and out from Adaptive Server.

- The -n option uses “native” (operating system) formats.
- The -c option uses “character” (char datatype) for all columns. This datatype supplies tabs between fields on a row and a newline terminator, such as a carriage return, at the end of each row.

When you use the native or character options, bcp operates noninteractively and only asks you for your Adaptive Server password.

Native format

The -n option creates files using **native** (operating system-specific) formats. Native formats usually create a more compact operating system file. For example, the following command copies the publishers table to the file called *pub_out*, using native data format:

```
bcp pubs2..publishers out pub_out -n
```

Here are the contents of *pub_out*:

```
0736^MNew Age Books^FBoston^BMA0877^PBinnet  & Hardley^J
Washington^BDC1389^TAlgodata Infosystems^HBerkeley^BCA
```

bcp prefixed each field, except the pub_id, which is a char(4) datatype, with an ASCII character equivalent to the length of the data in the field. For example, "New Age Books" is 13 characters long, and ^M (Ctrl-m) is ASCII 13.

All the table data stored in the *pub_out* file is char or varchar data, so it is human-readable. In a table with numeric data, bcp writes the information to the file in the operating system's data representation format, which may not be human-readable.

bcp can copy data out to a file either as its native (database) datatype or as any datatype for which implicit conversion is supported for the datatype in question. bcp copies user-defined datatypes as their base datatype or as any datatype for which implicit conversion is supported. For more information on datatype conversions, see dbconvert in the *Open Client DB-Library/C Reference Manual* or the *Sybase Adaptive Server Enterprise Reference Manual*.

Note The bcp utility does not support copying data in native format from different operating systems; for example, copying from NT to UNIX. Use the -c flag if you need to use bcp to copy files from one operating system to another.

Warning! Do not use row terminator (-t) or field terminator (-r) parameters with bcp in native format. Results are unpredictable and data may be corrupted.

Character format

Character format (-c) uses the char datatype for all columns. It inserts tabs between fields in each row and a newline terminator at the end of each row.

For example, the following command copies out the data from the publishers table in character format to the file *pub_out*:

```
bcp pubs2..publishers out pub_out -c
```

The command produces the following bcp output:

```
0736   New Age Books          Boston       MA
0877   Binnet  & Hardley      Washington   DC
1389   Algodata Infosystems   Berkeley     CA
```

Changing terminators from the command line

Terminators are the characters that separate data fields (field terminators). The row terminator is the field terminator of the last field in the table or file. Use the -t*field_terminator* and -r*row_terminator* command line options with the character format option (-c) to change the terminators from the command line.

The following example uses the comma (,) as the field terminator and return (\r) as the row terminator. *In UNIX platforms*:

```
bcp pubs2..publishers out pub_out -c -t , -r \\r
```

Remember to "escape" the backslash, if necessary, for your operating system command shell.

In Windows NT:

```
bcp pubs2..publishers out pub_out -c -t , -r \r
```

This bcp command line produces the following information:

```
0736,New Age Books,Boston,MA
0877,Binnet  & Hardley,Washington,DC
1389,Algodata Infosystems,Berkeley,CA
```

Note You can use the -t and -r options to change the default terminators without including the character option (-c).

Changing the defaults: interactive bcp

If you do not specify native (-n) or character (-c) format, bcp prompts you interactively for:

- The file storage type
- The prefix length
- The terminator for each column of data to be copied
- A field length for fields that are to be stored as char or binary

The default values for these prompts produce the same results as using the native format and provide a simple means for copying data out of a database for later reloading into Adaptive Server.

If you are copying data to or from Adaptive Server for use with other programs, base your answers to the prompts on the format required by the other software.

These four prompts provide an extremely flexible system that allows you either to read a file from other software or to create a file that requires little or no editing to conform to many other data formats.

The following sections discuss these prompts and the way they interact to affect the data.

Responding to bcp prompts

When you copy data in or out using the -n (native format) or -c (character format) parameters, bcp prompts you only for your password, unless you supplied it with the -P parameter. If you do not supply either the -n, -c or -f *formatfile* parameter, bcp prompts you for information for each field in the table or view.

- Each prompt displays a default value, in brackets, which you can accept by pressing Return. The prompts include:
  - The file storage type, which can be character or any valid Adaptive Server datatype
  - The prefix length, which is an integer indicating the length in bytes of the following data
  - The storage length of the data in the file for non-NULL fields
  - The field terminator, which can be any character string

- (Windows NT) Scale and precision for numeric and decimal data types

The row terminator is the field terminator of the last field in the table, view, or file.

- The bracketed defaults represent reasonable values for the datatypes of the field in question. For the most efficient use of space when copying out to a file:
  - Use the default prompts
  - Copy all data in the datatypes defined by their table
  - Use prefixes as indicated
  - Do not use terminators
  - Accept the default lengths

  Table 3-3 shows the bcp prompts, defaults, and the possible alternate user responses:

Table 3-3: Defaults and user responses for bcp prompts

Prompt	Default provided	Possible user response
File Storage Type	Use database storage type for most fields except: • char for varchar • binary for varbinary	char to create or read a human-readable file; any Adaptive Server datatype where implicit conversion is supported.
Prefix Length	• 0 for fields defined with char datatype (not storage type) and all fixed-length datatypes • 1 for most other datatypes • 2 for binary and varbinary saved as char • 4 for text and image	0 if no prefix is desired; otherwise, defaults are recommended.
Storage Length	• For char and varchar, use defined length. • For binary and varbinary saved as char, use double the defined length. • For all other datatypes, use maximum length needed to avoid truncation or data overflow.	Default values, or greater, are recommended.
Field or Row Terminator	None	Up to 30 characters, or one of the following: • \t – tab • \n – newline • \r – carriage return • \0 – null terminator • \ – backslash

File storage type

The file storage type prompt offers you choices about how to store the data in the file. You can copy data into a file as:

- Its database table type,
- A character string, or
- Any datatype for which implicit conversion is supported.

Note bcp copies user-defined datatypes as their base types.

Table 3-4 shows the default storage type for each Adaptive Server datatype and the abbreviations that are acceptable to bcp.

- For the most compact storage, use the default value.
- For character files, use char.
- Keep in mind that the date storage type is the Adaptive Server internal storage format of datetime, not the host operating system format of the date.
- timestamp data is treated as binary(8).

In Table 3-4, brackets [ ] indicate that you can use the initial character or the beginning characters of the word. For example, for “bit” you can use “b,” “bi,” or “bit.”

Table 3-4: File storage datatypes for bcp

Table datatype	Storage type
char, varchar	c[har]
text	T[ext]
int	i[nt]
smallint	s[mallint]
tinyint	t[inyint]
float	f[loat]
money	m[oney]
bit	b[it]
datetime	d[atetime]
binary, varbinary, timestamp	x
image	I[mage]
smalldatetime	D
real	r
smallmoney	M
numeric	n
decimal	e

To display this list while using bcp interactively, type a question mark (?) in response to the prompt "Enter the file storage type".

The suggested values that appear in the prompts are the defaults. Remember that your response determines how the data is stored in the output file; you need not indicate the column's type in the database table.

bcp fails if you enter a type that is not either implicitly convertible or char. For example, you may not be able to use smallint for int data (you may get overflow errors), but you can use int for smallint.

When storing noncharacter datatypes as their database types, bcp writes the data to the file in Adaptive Server's internal data representation format for the host operating system, rather than in human-readable form.

Before copying data that is in character format from a file into a database table, check the datatype entry rules in the *Sybase Adaptive Server Enterprise Reference Manual*. Character data copied into the database with bcp must conform to those rules. Note especially that dates in the undelimited *(yy)yymmdd* format may result in overflow errors if the year is not specified first.

When you send host data files to sites that use terminals different from your own, inform them of the *datafile_charset* that you used to create the files.

Prefix length

By default, bcp precedes each field that has a variable storage length with a string of one or more bytes indicating the length of the field. This prefix enables the most compact file storage.

The default values in the prompts indicate the most efficient prefix length:

- For fixed-length fields, the prefix length should be 0.
- For fields of 255 bytes or less, the default prefix length is 1.
- For text or image datatypes, the default prefix length is 4.
- For binary and varbinary datatypes that are being converted to char storage types, the default prefix length is 2, since each byte of table data requires 2 bytes of file storage.
- For binary, varbinary, and image data, use even numbers for the prefix and length. This requirement maintains consistency with Adaptive Server, which stores data as an even number of hexadecimal digits.
- For any data column that permits null values, use a prefix length, other than 0, or a terminator to denote the length of each row's data. bcp considers such columns, including columns with integer datatypes that might ordinarily be considered fixed-length columns, to be of variable length.
- For data with no prefix before its column, use a prefix length of 0.

A prefix length is a 1-, 2-, or 4-byte integer that represents the length of each data value in bytes. It immediately precedes the data value in the host file.

Unless you supply a terminator, bcp pads each stored field with spaces to the full length specified at the next prompt, "length."

Because prefix lengths consist of *native* format integers, the resulting host file contains nonprintable characters. The nature of these characters could prevent you from printing the host file or from transmitting it through a communications program that cannot handle non-human-readable characters.

For more information about prefix lengths, see Table 3-9 on page 49.

Field length

In almost all cases, use the bcp default value for the storage length while copying data out.

Note The terms “length” and “storage length” in this section refer to the operating system file, not to Adaptive Server field lengths.

- If you are creating a file to reload into Adaptive Server, the default prefixes and length keep the storage space needed to a minimum.
- If you are creating a human-readable file, the default length prevents the truncation of data or the creation of overflow errors that cause bcp to fail.

Because you can change the default length by supplying another value, you must be familiar with the data to transfer. If you are copying character data in from other software, examine the source file carefully before choosing length values.

Note If the storage type is noncharacter, bcp stores the data in the operating system’s native data representation and does not prompt for a length.

When bcp converts noncharacter data to character storage, it suggests a default field length that is large enough to store the data without truncating datetime data or causing an overflow of numeric data.

- The default lengths are the number of bytes needed to display the longest value for the Adaptive Server datatype. Table 3-5 lists the default field lengths for data conversion to character storage.

Table 3-5: Default field lengths for noncharacter to character datatypes

Datatype	Default size
int	12 bytes
smallint	6 bytes
tinyint	3 bytes
float	25 bytes
money	24 bytes
bit	1 byte
datetime	26 bytes
smalldatetime	26 bytes
real	25 bytes
smallmoney	24 bytes

- If you specify a field length that is too short for numeric data when copying data out, bcp prints an overflow message and does not copy the data.
- The default length for binary and varbinary fields is twice the length defined for the column, since each byte of the field requires 2 bytes of file storage.
- If you accept the default storage length, the actual amount of storage space allocated depends on whether or not you specify a prefix length and terminators.
    - If you specify a prefix length of 1, 2, or 4, bcp uses a storage space of the actual length of the data, plus the length of the prefix, plus any terminators.
    - If you specify a prefix length of 0 and no terminator, bcp allocates the maximum amount of space shown in the prompt, which is the maximum space that may be needed for the datatype in question. In other words, bcp treats the field as if it were fixed length to determine where one field ends and the next begins.

      For example, if the field is defined as varchar(30), bcp uses 30 bytes for each value, even if some of the values are only 1 character long.
- Fields defined in the database as char, nchar, and binary, and those that do not permit null values, are always padded with spaces (null bytes for binary) to the full length defined in the database. timestamp data is treated as binary(8).
- If data in the varchar and varbinary fields is longer than the length specified for copy out, bcp silently truncates the data in the file at the specified length.
- bcp does not know how large any one data value will be before copying all the data, so it always pads char datatypes to their full specified length.
- The file storage type and length of a column do not have to be the same as the type and length of the column in the database table. If the types and formats copied in are incompatible with the structure of the database table, the copy fails.
- File storage length generally indicates the maximum amount of data that can be transferred for the column, excluding terminators and/or prefixes.
- When copying data into a table, bcp observes any defaults defined for columns and user-defined datatypes. However, bcp ignores rules in order to load data at the fastest possible speed.

- bcp considers any data column that can contain a null value to be variable length, so use either a length prefix or a terminator to denote the length of each row of data.
- The file storage type and length of a column need not be the same as the type and length of the column in the database table. (If types and formats copied in are incompatible with the structure of the database table, the copy fails.)

Field and row terminators

You can use a terminator to mark the end of a column or row, separating one from the next. The default is no terminator.

- Field terminators separate table columns.
- A row terminator is a field terminator for the last field in the row of the table or file.

Terminators are very useful for dealing with character data because you can choose human-readable terminators. The bcp character option, which uses tabs between each column with a newline terminator at the end of each row, is an example of using terminators that enhance the readability of a data file.

When you prepare data for use with other programs, and when you want to use bcp to prepare tabular data, supply your own terminators. The available terminators are:

- Tabs, indicated by `\t`
- New lines, indicated by `\n`
- Carriage returns, indicated by `\r`
- Backslash, indicated by `\`
- Null terminators (no visible terminator), indicated by `\0`
- Any printable character, for example, *, A, t, |
- Strings of up to 10 printable characters, including some or all of the terminators listed above (for example, **\t**, end, !!!!!!!!!!, and \t--\n)

Note Control characters (ASCII 0–25) cannot be printed.

Choosing Terminators

Choose terminators with patterns that do not appear in any of the data.

For example, using a tab terminator with a string of data that also contains a tab creates an ambiguity: which tab represents the end of the string? bcp always looks for the first possible terminator, which in this case would be incorrect, since the first tab it would encounter would be the one that is part of the data string.

Data in native format can also conflict with terminators. Given a column that contains a 4-byte integer in native format, if the values of these integers are not strictly limited, it will be impossible to choose a terminator that is guaranteed not to appear inside the data. Use bcp's native format option for data in native format.

Note "No terminator" is different from a "null terminator," which is an invisible, but real, character.

- A field terminator string can be up to 30 characters long. The most common terminators are a tab (entered as `\t` and used for all columns except the last one), and a newline (entered as `\n` and used for the last field in a row). Other terminators are: `\0` (the null terminator), `\` (backslash), and `\r` (Return). When choosing a terminator, be sure that its pattern does not appear in any of your character data, because bcp always looks for the first possible terminator.

  For example, if you used tab terminators with a string that contained a tab, bcp would not be able to identify which tab represents the end of the string. bcp always looks for the first possible terminator, so, in this example it would find the wrong one.

  A terminator or prefix affects the actual length of data transferred:

  When a terminator or prefix is present, it affects the length of data transferred. If the length of an entry being copied out to a file is less than the storage length, it is immediately followed by the terminator or the prefix for the next field. The entry is not padded to the full storage length (char, nchar, and binary data is returned from Adaptive Server already padded to the full length).

When bcp is copying in from a file, data is transferred until either the number of bytes indicated in the "Length" prompt has been copied or the terminator is encountered. Once the number of bytes equal to the specified length has been transferred, the rest of the data is flushed until the terminator is encountered. When no terminator is used, the table storage length is strictly observed.

- Fields stored as char (except char, nchar, and binary fields) instead of their database datatypes take less file storage space with the default length and prefix or a terminator. bcp can use either a terminator or a prefix to determine the most efficient use of storage space. bcp suggests the maximum amount of storage space required for each field as the default. For char or varchar data, bcp accepts any length.
- Table 3-6 and Table 3-7 show the interaction of prefix lengths, terminators, and field length on the information in the file. "P" indicates the prefix in the stored table; "T" indicates the terminator; and dashes, (--) show appended spaces. An ellipsis (…) indicates that the pattern repeats for each field. The field length is 8 bytes for each column; "string" represents the 6-character field each time.

Table 3-6: Adaptive Server char data

	Prefix length = 0	***Prefix length–1, 2, or 4***
No terminator	string--string--.	Pstring--Pstring--.
Terminator	string--Tstring--T.	Pstring--TPstring--T.

Table 3-7: Other datatypes converted to char storage

	Prefix length = 0	***Prefix length–1, 2, or 4***
No terminator	string--string--.	PstringPstring.
Terminator	stringTstringT.	PstringTPstringT.

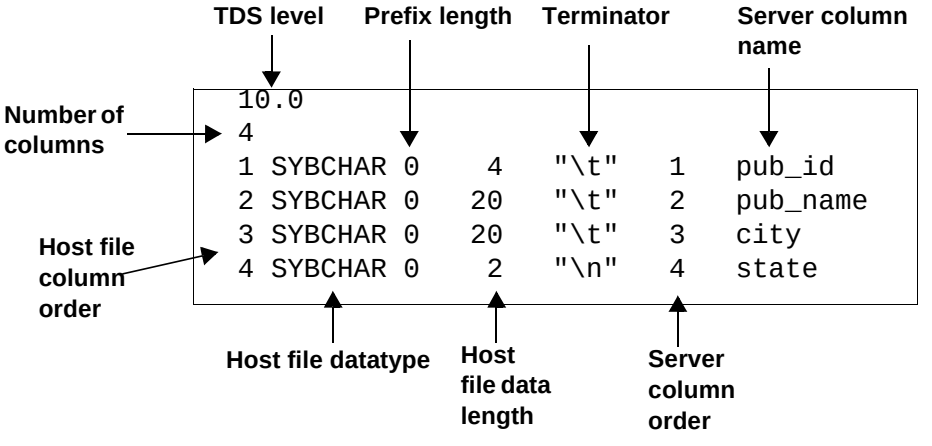
Using format files

After gathering information about each field in the table, bcp asks if you want to save the information to a **format file** and prompts for the file name.

Using a format file created for the data to be copied with the bcp utility allows you to copy data in or out noninteractively; that is, without being prompted by bcp for information. The format file supplies the information that bcp needs. You can use this newly created format file at any other time to copy the data back into Adaptive Server or to copy data out from the table.

Figure 3-3 illustrates the format of the bcp format files. It shows the publishers table from the pubs2 database, with all the host file columns in character format, with no prefix, and using the default data length, a newline terminator at the end of the final column of a row, and tabs as terminators for all other columns.

Figure 3-3: bcp format file



Elements of the bcp format file

The following list names the various elements of a bcp format file. Use Figure 3-3 on page 46 as the format file example.

- The Tabular Data Stream (TDS) version is always the first line of the file. It specifies the version of TDS that you are using, not the Adaptive Server version, and appears is a literal string without quotation marks. In Figure 3-3, the version is 10.0.
- The second line of a bcp format file is the number of columns, which refers to the number of records in the format file, not including lines 1 and 2. Each column in the host table has one line.
- One line for each column follows the first and second lines in the database table. Each line consists of elements that are usually separated by tabs, except for the host file datatype and the prefix length which are usually separated by a space. These elements are:
  - Host file column order
  - Host file datatype

- Prefix length
- Host file data length
- Terminator
- Server column order
- Server column name
- Column precision
- Column scale

The following sections describe the column elements in the format file.

Host file column order

The host file column order is the sequential number of the field in the host data file, which begins numbering at 1.

Host file datatype

The host file datatype refers to the storage format of the field in the host data file, not the datatype of the database table column.

Table 3-8 lists the valid storage formats.

Table 3-8: Host file datatype storage format

Storage format	Adaptive Server datatype
SYBCHAR	char / varchar (ASCII)
SYBTEXT	text
SYBBINARY	binary
SYBIMAGE	image
SYBINT1	tinyint
SYBINT2	smallint
SYBINT4	int
SYBFLT8	float
SYBREAL	real
SYBBIT	bit
SYBNUMERIC	numeric
SYBDECIMAL	decimal
SYBMONEY	money
SYBMONEY4	smallmoney
SYBDATETIME	datetime
SYBDATETIME4	smalldatetime

Data written to a host file in its native format preserves all of its precision. datetime and float values preserve all of their precision, even when they are converted to character format. Adaptive Server stores money values to a precision of one ten-thousandth of a monetary unit. However, when money values are converted to character format, their character format values are recorded only to the nearest two places.

See Chapter 1, “System and User-Defined Datatypes” in the *Adaptive Server Enteprrise Reference Manual* for descriptions and appropriate uses of Adaptive Server datatypes.

Prefix length

Prefix length indicates the number of bytes in the field length prefix. The prefix length is a 0-, 1-, 2-, or 4-byte unsigned integer value embedded in the host data file that specifies the actual length of data contained in the field. Some fields may have a length prefix while others do not.

Table 3-9 shows the allowable prefix length values.

Table 3-9: Allowable prefix length values

Length (in bytes)	Range
0	No prefix
1	2^8-1; 0-255
2	2^{16}-1; 0-65535
4	2^{32} -1; 0-4,294,967,295

Host file data length

Host file data length refers to the maximum number of bytes to copy for the field. To decide how much data to copy in or out, bcp uses one of:

- The maximum field length
- The prefix length, if any
- The field terminator string, if any

If more than one method of field length specification is given, bcp chooses the one that copies the least amount of data.

Terminator

The terminator can be up to 30 bytes of characters enclosed in quotation marks (" "). The terminator designates the end of data for the host data file field.

Server column order

The server column order represents the colid (column ID) of the syscolumns column into which the host data file column is to be loaded. Together with the host file column order, this element maps host data file fields to the database table columns.

Server column name

The server column name is the name of the database table column into which this field is to be loaded.

Column precision

The column precision is the precision of the database table column into which this field is to be loaded. This element is present only if the storage format is numeric or decimal.

Column scale

The column scale is the scale of the database table column into which this field is to be loaded. This element is present only if the storage format is numeric or decimal.

Examples: copying out data interactively

By changing the default values of the prompts to bcp, you can prepare data for use with other software.

To create a human-readable file, respond to the bcp prompts as follows:

- File storage type, enter `0`.
- Prefix length, enter `0`.
- Field length, accept the default.
- Terminator – the field terminator you enter depends on the software that you plan to use.
  - Choose between delimited fields or fixed-length fields. Always use `\n`, the newline terminator, to terminate the last field.

    For fixed-length fields, do not use a terminator. Each field has a fixed length, with spaces to pad the fields. Adjacent fields, where the data completely fills the first field seem to run together, since there are no field separators on each line of output. See the example below.
  - For comma-delimited output, use a comma (`,`) as the terminator for each field. To create tabular output, use the tab character (`\t`).

Copying out data with field lengths

The following example uses fixed-length fields to create output in the personal computer format called SDF (system data format). This format can be easily read or produced by other software.

Note For information about format files, see "Using format files" on page 45.

```
bcp pubs2..sales out sal_out
```

The results as stored in the *sal_out* file are as follows:

```
5023         AB-123-DEF-425-1Z3         Oct 31 1985 12:00AM
5023         AB-872-DEF-732-2Z1         Nov 6 1985 12:00AM
5023         AX-532-FED-452-2Z7         Dec 1 1990 12:00AM
5023         BS-345-DSE-860-1F2         Dec 12 1986 12:00AM
5023         GH-542-NAD-713-9F9         Mar 15 1987 12:00AM
5023         NF-123-ADS-642-9G3         Jul 18 1987 12:00AM
5023         XS-135-DER-432-8J2         Mar 21 1991 12:00AM
5023         ZA-000-ASD-324-4D1  J      Jul 27 1988 12:00AM
5023         ZD-123-DFG-752-9G8         Mar 21 1991 12:00AM
5023         ZS-645-CAT-415-1B2         Mar 21 1991 12:00AM
5023         ZZ-999-ZZZ-999-0A0         Mar 21 1991 12:00AM
6380         234518                     Sep 30 1987 12:00AM
6380         342157                     Dec 13 1985 12:00AM
6380         356921                     Feb 17 1991 12:00AM
```

```
7066        BA27618                   Oct 12 1985 12:00AM
7066        BA52498                   Oct 27 1987 12:00AM
7066        BA71224                   Aug 5 1988 12:00AM
7067        NB-1.142                  Jan 2 1987 12:00AM
7067        NB-3.142                  Jun 13 1990 12:00AM
7131        Asoap132                  Nov 16 1986 12:00AM
7131        Asoap432                  Dec 20 1990 12:00AM
7131        Fsoap867                  Sep 8 1987 12:00AM
7896        124152                    Aug 14 1986 12:00AM
7896        234518                    Feb 14 1991 12:00AM
8042        12-F-9                    Jul 13 1986 12:00AM
8042        13-E-7                    May 23 1989 12:00AM
8042        13-J-9                    Jan 13 1988 12:00AM
8042        55-V-7                    Mar 20 1991 12:00AM
8042        91-A-7                    Mar 20 1991 12:00AM
8042        91-V-7                    Mar 20 1991 12:00AM
```

The contents of the *sal_fmt* format file are as follows:

```
10.0
3
1      SYBCHAR 04  "" 1  stor_id
2      SYBCHAR 020 "" 2  ord_num
3      SYBCHAR 026 "" 3  date
```

For information about format files, see "Using format files" on page 45.

Copying out data with delimiters

In the following examples, bcp copies data interactively from the publishers table to a file.

Note For information about format files, see "Using format files" on page 45.

Comma-delimited, newline-delimited with format file

The first example creates an output file with commas between all fields in a row and a newline terminator at the end of each row. This example creates a format file (*pub_fmt*) that you can use later to copy the same or similar data back into Adaptive Server.

```
bcp pubs2..publishers out pub_out
```

The results as stored in the *pub_out* file are:

```
0736,New Age Books,Boston,MA
0877,Binnet  & Hardley,Washington,DC
1389,Algodata Infosystems,Berkeley,CA
```

The contents of the *pub_fmt* format file are:

```
10.0
4
1      SYBCHAR 0 4  ","  1  pub_id
2      SYBCHAR 0 40 ","  2  pub_name
3      SYBCHAR 0 20 ","  3  city
4      SYBCHAR 0 2  "\n" 4  state
```

Tab-delimited with format file

Similarly, the following example creates tab-delimited output from the table pubs2..publishers in the *pub_out* file.

```
bcp pubs2..publishers out pub_out
```

The results as stored in the *pub_out* file are:

```
0736   New Age Books          Boston       MA
0877   Binnet & Hardley       Washington   DC
1389   Algodata Infosystems   Berkeley     CA
```

The contents of the *pub_fmt* format file are:

```
10.0
4
1      SYBCHAR 04   "\t"  1 pub_id
2      SYBCHAR 040  "\t"  2 pub_name
3      SYBCHAR 020  "\t"  3 city
4      SYBCHAR 02   "\n"  4 state
```

Examples: copying in data interactively

To copy in data successfully to a table from a file, you must know what the terminators in the file are or what the field lengths are and specify them when you use bcp.

The following examples show how to copy data in, either with fixed field lengths or with delimiters, using bcp with or without a format file.

Copying in data with field lengths

In this example, bcp copies data from the *salesnew* file into the pubs2..sales table.

In the *salesnew* file are three fields: the first is 4 characters long, the second is 20, and the third is 26 characters long. Each row ends with a newline terminator (\n), as follows:

```
5023ZS-731-AAB-780-2B9  May 24 1993 12:00:00:000AM
5023XC-362-CFB-387-3Z5  May 24 1993 12:00:00:000AM
6380837206              May 24 1993 12:00:00:000AM
6380838441              May 24 1993 12:00:00:000AM
```

Use the following command to copy in the data interactively from *salesnew*:

```
bcp pubs2..sales in salesnew
```

The system responds to the bcp command as follows:

```
Password:
Enter the file storage type of field stor_id [char]:
Enter prefix-length of field stor_id [0]:
Enter length of field stor_id [4]:
Enter field terminator [none]:
Enter the file storage type of field ord_num [char]:
Enter prefix-length of field ord_num [1]: 0
Enter length of field ord_num [20]:
Enter field terminator [none]:
Enter the file storage type of field date [datetime]: char
Enter prefix-length of field date [1]: 0
Enter length of field date [26]:
Enter field terminator [none]: \n
Do you want to save this format information in a file? [Y/n] y
Host filename [bcp.fmt]: salesin_fmt
Starting copy...
4 rows copied.
Clock Time (ms.): total = 1 Avg = 0 (116000.00 rows per sec.)
```

When you log in to Adaptive Server and access sales, you see the following data from *salesnew* appended to the table:

```
select * from sales
stor_id   ord_num                date
------- -------------------- -------------------------
 5023     AB-123-DEF-425-1Z3     Oct 31 1985 12:00AM
 5023     AB-872-DEF-732-2Z1     Nov  6 1985 12:00AM
 5023     AX-532-FED-452-2Z7     Dec  1 1990 12:00AM
```

```
5023     BS-345-DSE-860-1F2     Dec 12 1986 12:00AM
5023     GH-542-NAD-713-9F9     Mar 15 1987 12:00AM
5023     NF-123-ADS-642-9G3     Jul 18 1987 12:00AM
5023     XS-135-DER-432-8J2     Mar 21 1991 12:00AM
5023     ZA-000-ASD-324-4D1     Jul 27 1988 12:00AM
5023     ZD-123-DFG-752-9G8     Mar 21 1991 12:00AM
5023     ZS-645-CAT-415-1B2     Mar 21 1991 12:00AM
5023     ZZ-999-ZZZ-999-0A0     Mar 21 1991 12:00AM
6380     234518                 Sep 30 1987 12:00AM
6380     342157                 Dec 13 1985 12:00AM
6380     356921                 Feb 17 1991 12:00AM
7066     BA27618                Oct 12 1985 12:00AM
7066     BA52498                Oct 27 1987 12:00AM
7066     BA71224                Aug  5 1988 12:00AM
7067     NB-1.142               Jan  2 1987 12:00AM
7067     NB-3.142               Jun 13 1990 12:00AM
7131     Asoap132               Nov 16 1986 12:00AM
7131     Asoap432               Dec 20 1990 12:00AM
7131     Fsoap867               Sep  8 1987 12:00AM
7896     124152                 Aug 14 1986 12:00AM
7896     234518                 Feb 14 1991 12:00AM
8042     12-F-9                 Jul 13 1986 12:00AM
8042     13-E-7                 May 23 1989 12:00AM
8042     13-J-9                 Jan 13 1988 12:00AM
8042     55-V-7                 Mar 20 1991 12:00AM
8042     91-A-7                 Mar 20 1991 12:00AM
8042     91-V-7                 Mar 20 1991 12:00AM
(34 rows affected)
```

Since there is a unique clustered index on the stor_id and ord_num columns of sales, the new rows were sorted in order.

A conflict or violation can affect the copy process:

- Had there been any violations of the unique index on the columns in the data being copied from the file, bcp would have discarded the entire batch in which the violating row was encountered.

  A batch size of 1 evaluates each row individually, but loads more slowly and creates a separate data page for each row during a fast bcp session.

- If the types copied in are incompatible with the database types, the entire copy fails.

Copying in data with delimiters

In the following example, bcp copies data from the file *newpubs* into the table pubs2..publishers. In the *newpubs* file, each field in a row ends with a tab character (\t) and each row ends with a newline terminator (\n), as follows:

```
1111   Stone Age Books        Boston       MA
2222   Harley  & Davidson     Washington   DC
3333   Infodata Algosystems   Berkeley     CA
```

Since *newpubs* contains all character data, you can use the character command-line flag and specify the terminators with command line options:

- In UNIX platforms:

  ```
  bcp pubs2..publishers in newpubs -c -t\\t -r\\n
  ```

- In Windows NT:

  ```
  bcp pubs2..publishers in newpubs -c -t\t -r\n
  ```

Copying in data with a format file

To copy data back into Adaptive Server using the saved *pub_fmt* format file, run the following command:

```
bcp pubs2..publishers in pub_out -fpub_fmt
```

You can use the *pub_fmt* file to copy any data with the same format into Adaptive Server. If you have a similar data file with different delimiters, you can change the delimiters in the format file.

Similarly, you can edit the format file to reflect any changes to the field lengths, as long as all fields have the same length. For example, the *moresales* file contains:

```
804213-L-9 Jan 21 1993 12:00AM
804255-N-8 Mar 12 1993 12:00AM
804291-T-4 Mar 23 1993 12:00AM
804291-W-9 Mar 23 1993 12:00AM
```

Edit the *sal_fmt* format file to read as follows:

```
10.0
3
1     SYBCHAR 0 4 "" 1 stor_id
2     SYBCHAR 0 7 "" 2 ord_num
3     SYBCHAR 0 21 "\n" 3 date
```

Then enter the following command:

- In UNIX platforms:

```
bcp pubs2..sales in moresales -fsal_fmt
```

- In Windows NT:

```
bcp pubs2..sales in moresale -fsal_fmt
```

The system responds as follows:

```
Starting copy...
4 rows copied.
 Clock Time (ms.): total = 1 Avg = 0 (116000.00 rows per sec.)
```

Using bcp with alternate languages

Adaptive Server stores data using its default character set, which is configured during installation. If your terminal does not support that default character set, it may send confusing characters to bcp when you respond to prompts either by typing or by using host file scripts.

Omitting all character-set options causes bcp to use the character set that was named as the default for the platform. This default can cause communications problems:

- The default is not necessarily the same character set that was configured for Adaptive Server.
- The default may not necessarily be the character set that the client is using.

For more information about character sets and the associated flags, see Chapter 20, “Configuring Client/Server Character Set Conversions” in the *System Administration Guide*.

Copy in and batch files

Batching applies only to bulk copying in; it has no effect when copying out. By default, Adaptive Server copies all the rows in batches of 1000 lines. To specify a different batch size, use the command-line option (-b).

bcp copies each batch in a single transaction. If Adaptive Server rejects any row in the batch, the entire transaction is rolled back. By default, bcp copies all rows in a single batch; use the -b parameter to change the default batch size. Adaptive Server considers each batch a single bcp operation, writes each batch to a separate data page, and continues to the next batch, regardless of whether the previous transaction succeeded.

When data is being copied in, it can be rejected by either Adaptive Server or bcp.

- Adaptive Server treats each batch as a separate transaction. If the server rejects any row in the batch, it rolls back the entire transaction.
- When bcp rejects a batch, it then continues to the next batch. Only fatal errors roll back the transaction.
- Adaptive Server generates error messages on a batch-by-batch basis, instead of row-by-row, and rejects each batch in which it finds an error. Error messages appear on your terminal and in the error file.

Improving recoverability

To ensure better recoverability:

- Break large input files into smaller units.

  For example, if you use bcp with a batch size of 100,000 rows to bulk copy in 300,000 rows, and a fatal error occurs after row 200,000, bcp would have successfully copied in the first two batches—200,000 rows—to Adaptive Server. If you had not used batching, bcp would not have been able to copy in any rows to Adaptive Server.

- Set the trunc log on chkpt to true (on).

  The log entry for the transaction is available for truncation after the batch completes. If you copy into a database that has the trunc log on chkpt database option set on (true), the next automatic checkpoint removes the log entries for completed batches. This log cleaning breaks up large bcp operations and keeps the log from filling.

- Set -b *batch_size* to 10.

  The batch size parameter set to 10 causes bcp to reject the batch of 10 rows, including the defective row. The error log from this setting allows you to identify exactly which row failed.

A batch size of 10 is the smallest that bcp processes. If you specify a smaller number, bcp automatically reverts the number to 10.

Note Because bcp creates 1 data page per batch, and setting b *batch_size* to 10 creates data pages with 10 rows on each page, this setting causes the data to load slowly and takes up storage space.

Batches and partitioned tables

When you bulk copy data into a partitioned table without specifying a partition number, Adaptive Server randomly assigns each batch to an available partition. Copying rows in a single batch places all those rows in a single partition, which can lead to load imbalance in the partitioned table.

To help keep partitioned tables balanced, use a small batch size when bulk copying data or specify the partition ID during the bcp session. For information about partitioning tables, see the *Performance and Tuning Guide*.

Copy out and text and image data

When you copy out text or image data, Adaptive Server, by default, copies only the first 32K of data in a text or image field. The -T *text_or_image_size* parameter allows you to specify a different value. For example, if the text field to copy out contains up to 40K of data, you can use the following command to copy out all 40K:

```
bcp pubs2..publishers out -T40960
```

Note If a text or image field is larger than the given value or the default, bcp does not copy out the remaining data.

Specifying a network packet size

To improve the performance of large bulk copy operations, you may want to use larger network packet sizes than the defaults. The -A *size* option specifies the network packet size to use for the bcp session that you are beginning.

The value of *size* must be:

- Between the values of the default network packet size and max network packet size configuration parameters, and
- A multiple of 512.

Note The new packet size remains in effect for the current bcp session only.

For example, this command specifies that Adaptive Server send 40K of text or image data using a packet size of 2048 bytes for the bcp session:

```
bcp pubs2..authors out -A 2048 -T40960
```

Copy in and error files

When you specify the -e *error_file* option with copy in, bcp stores the rows that it cannot copy in to Adaptive Server in the specified error file.

- The error file stores:
  - A line that indicates which row failed and the error that occurred, and
  - A line that is an exact copy of the row in the host file.
- If the file name specified after -e already exists, bcp overwrites the existing file.
- If bcp does not encounter any errors, it does not create the file.

bcp in detects two types of errors:

- Data conversion errors
- Errors in building the row; for example, attempts to insert a NULL into columns that do not accept null values or to use invalid data formats, such as a 3-byte integer

The copy in process displays error messages on your monitor.

The following example loads the *newpubs* file into the publishers database, storing any error rows in the *pub_err* file:

```
bcp pubs2..publishers in newpubs -epub_err
```

Keep the following in mind when working with error files generated by copy in:

- bcp stores rows in an error file only when the bcp program itself detects the error.
- bcp continues to copy rows until bcp encounters the maximum number of error rows, at which point bcp stops the copy.
- bcp sends rows to Adaptive Server in batches, so bcp cannot save copies of rows that are rejected by Adaptive Server, for example, a duplicate row for a table that has a unique index.
- Adaptive Server generates error messages on a batch-by-batch basis, instead of row-by-row, and rejects the entire batch if it finds an error.
- It is not considered an error for Adaptive Server to reject duplicate rows if either allow_dup_row or ignore_dup_key was set when a table's index was created. The copy proceeds normally, but the duplicate rows are neither stored in the table nor in the bcp error file.

Copy out and error files

During the copy out process, as with copy in, bcp overwrites any file of the same name and does not create an error file if no errors occurred.

There are two situations that cause rows to be logged in the error file during a copy out:

- A data conversion error in one of the row's columns
- An I/O error in writing to the host file

Keep the following in mind when working with error files generated by copy out:

- bcp logs rows in the error file in the default character format.
- All data values print as characters with tabs between the columns and a newline terminator at the end of each row.

Data integrity: defaults, rules, and triggers

To ensure integrity, bcp handles data to copy depending upon its element.

Defaults and datatypes

When copying data into a table, bcp observes any defaults defined for the columns and datatypes. That is, if there is a null field in the data in a file, bcp loads the default value instead of the null value during the copy.

For example, here are two rows in a file to be loaded into authors:

```
409-56-7008,Bennet,David,415 658-9932,622 Pine
St.,Berkeley,CA,USA,94705213-46-8915,Green,Marjorie,,309 63rd St.
#411,Oakland,CA,USA,94618
```

Commas separate the fields; a newline terminator separates the rows. There is no phone number for Marjorie Green. Because the phone column of the authors table has a default of "unknown," the rows in the loaded table look like this:

```
409-56-7008  Bennet  David 415 658-9932  622 Pine St.
       Berkeley  CA  USA  94705
213-46-8915  Green   Marjorie  unknown       309 63rd St. #411
       Oakland   CA  USA  94618
```

Rules and triggers

bcp, to enable its maximum speed for loading data, does not fire rules and triggers.

To find any rows that violate rules and triggers, copy the data into the table and run queries or stored procedures that test the rule or trigger conditions.

How bcp differs from other utilities

The bcp utility, which copies entire tables or portions of a single table, is distinct from the other utilities that move data from one place to another.

The following list names these other utilities and their commands and describes how you can best use them to move data.

dump database, load database, dump transaction, and load transaction

Use the SQL commands dump database, load database, dump transaction, and load transaction for backup purposes only. Unlike bcp, the dump commands create a physical image of the entire database.

You must use load database or load transaction to read data backed up with dump database or dump transaction.

For information on using the SQL dump and load commands, see the *System Administration Guide* and the *Reference Manual*.

insert, update, and delete

Use the data modification commands insert, update, and delete, respectively, to add new rows to, change existing rows in, or remove rows from a table or view.

- Use the insert command with a select statement to move data between tables.
- Use the select statement with an into clause to create a new table, based on:
  - the columns named in the select statement,
  - the tables named in the from clause, and
  - data in the rows named in the where clause.

For details on adding, changing, and deleting data, see insert, update, and delete in the *Reference Manual*.

CHAPTER 4

Using dsedit

This chapter explains how to use the dsedit utility to edit the Adaptive Server interfaces file.

Getting started with dsedit

dsedit is a graphical utility that lets you view and edit server entries in the interfaces file (*sql.ini* in Windows 98 and Windows NT). For a detailed description of dsedit syntax, see dsedit on page 145.

Note UNIX users: If your system does not have X-Windows, use dscp to configure server entries in the interfaces file. See Chapter 5, "Using dscp," for more information.

Starting dsedit

Windows NT

You can start dsedit from the command prompt, the Windows NT Explorer, or the Sybase for Windows NT program group.

❖ **To start dsedit from the command prompt**

- Enter:

```
dsedit
```

You can specify the following command-line arguments:

Argument	Description
-d*dsname*	Specifies which directory service to connect to. *dsname* is the local name of the directory service, as listed in the *libtcl.cfg* file. If you do not specify the -d*dsname* argument, dsedit presents a list of directory service options in the first dialog box.
-l*path*	Specifies the path to the *libtcl.cfg* file, if other than *SYBASE_home\INI*. Use this argument only if you want to use a *libtcl.cfg* file other than the one located in *SYBASE_home\INI*.

❖ **To start dsedit through the Windows NT Explorer**

1 Go to the *%SYBASE%\bin* directory.

2 Double-click on the *DSEDIT.exe* file.

❖ **To start dsedit from the Sybase for Windows program group**

1 Choose Sybase for Windows NT from the Start menu.

2 Choose dsedit from the Sybase for Windows NT menu. The Select Directory Service dialog box appears.

UNIX platforms

Before starting dsedit, make sure that you have write permission on the interfaces file.

If you are running dsedit from a remote machine, make sure that the DISPLAY environment variable is set so the dsedit screens will show on your machine instead of on the remote machine.

❖ **To set the DISPLAY environment variable**

1 Log in to the remote machine.

2 Enter:

```
setenv DISPLAY your_machine_name:0.0
```

❖ **To start dsedit**

- Enter:

```
$SYBASE/bin/dsedit
```

The Select a Directory Service window appears. This window lets you open editing sessions for the interfaces file. The full path name of the default interfaces file is shown in the Interfaces File to Edit box. The full path name of the configuration file is shown below it.

Opening an editing session

Windows NT

The Select Directory Service dialog box allows you to open a session with a directory service. You can open a session with:

- Any directory service that has a driver listed in the *libtcl.cfg* file
- The *sql.ini* file

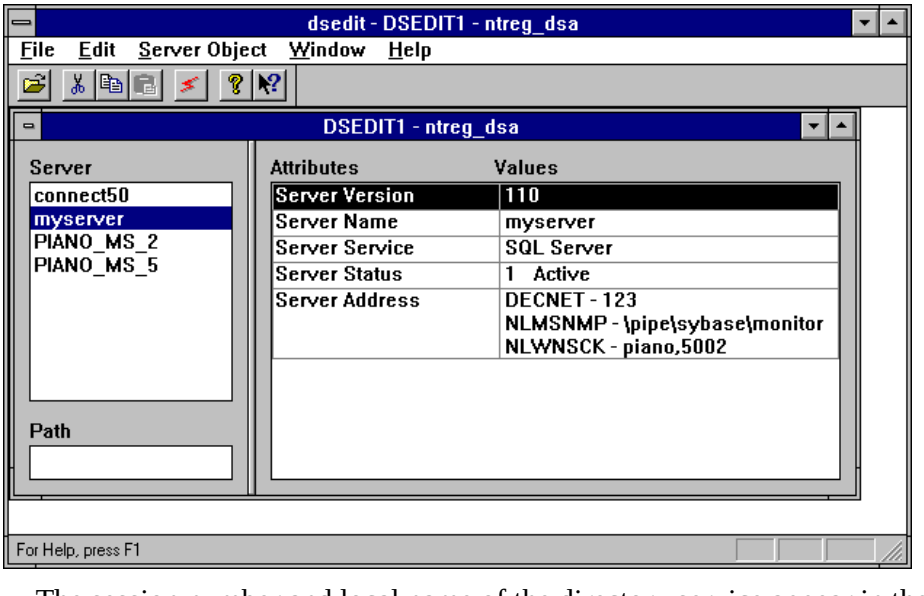
❖ **To open a session in Windows NT**

1 Double-click on the local name of the directory service you want to connect to, as listed in the DS Name box, or

2 Click on the local name of the directory service you want to connect to, as listed in the DS Name box, and click the OK button.

Note dsedit uses the SYBASE environment variable to locate the *libtcl.cfg* file. If the SYBASE environment variable is not set correctly, dsedit cannot locate the *libtcl.cfg* file.

Figure 4-1: Using dsedit to edit an interfaces file



The session number and local name of the directory service appear in the header bar. In Figure 4-1, the session number and local directory service name are “DSEDIT1 - ntreg_dsa.”

❖ **To open additional sessions**

dsedit allows you to have multiple sessions open at one time.

1 Choose Open Directory Service from the File menu.

The Select Directory Service box appears.

2 Double-click the local name of the directory service to which you want to be connected (or click on the directory service name and click OK).

Opening multiple sessions allows you to copy entries between directory services. See "Copying server entries" on page 73 for more information.

❖ **To switch between sessions**

If you have multiple sessions open at one time, you need to activate a session before you can work in it.

- Activate a session by either:
  - Clicking in the session window
  - Choosing the session from the Windows menu

  The dsedit title bar shows which session is active.

UNIX platforms

❖ **To open the default interfaces file for editing**

1 Select Sybase Interfaces File.

2 Click OK.

❖ **To open a file other than the default interfaces file**

1 Select Sybase Interfaces File.

2 Edit the displayed file name.

3 Click OK.

The Directory Service Session window appears.

You can open multiple interfaces file sessions with different files.

The Directory Service Session screen displays the full path name of the interfaces file and lists the server entries contained within it.

- Add new server entry – displays the Server Entry Editor window, where you specify the name and network addresses for a new server entry.
- Modify server entry – lets you view and modify the network addresses for a selected server entry. To view or modify a server entry, select the server in the list, then click Modify server entry to display the server's attributes in the Server Entry Editor window.

- Copy server entry – lets you copy one or more entries to another interfaces file.
- Close Session – closes the session window and writes changes to the interfaces file.

For procedures on using these buttons, see "Modifying server entries in Windows NT" on page 68.

Clicking the Add new server entry or Modify server entry button in the Session screen displays the Server Entry Editor window.

You use the Server Entry Editor window to view or edit server entries in an interfaces file:

- Server name – if you are adding a server entry, type the name of the new server. If you are editing a server entry, you can edit the name field to rename the server. The new name cannot already exist in the interfaces file.
- Available network transports – a list of the network addresses where the server accepts client connections.
    - To create a new address, click Add network transport. See "Modifying server entries in Windows NT" on page 68.
    - To edit an existing address, click Modify network transport. See "Modifying server entries in Windows NT" on page 68.
    - To remove a selected network address, click Delete network transport.
    - To rearrange the order of addresses in the list, click Move network transport up or Move network transport down.
- OK – commits your changes and closes the window. Changes to the interfaces file are not applied until you close the session using the Close Session button in the Directory Service Session screen.
- Cancel – closes the window and discards any edits.

Adding, viewing, and editing server entries

Once you are in an open session, you can add, modify, rename and delete server entries associated with that session, as well as copy server entries within a session and between sessions.

Modifying server entries in Windows NT

The server entries associated with the session appear in the Server box (see Figure 4-1 on page 65). Click on a server entry to select it.

Each server entry is made up of a set of attributes. The attributes are described in Table 4-1.

Table 4-1: Server attributes

Attribute name	Type of value	Description	Default value
Server Version	Integer	Version level of the server object definition. Sybase provides this attribute to identify future changes to the object definition.	110
Server Name	Character string	Server name.	N/A
Server Service	Character string	A description of the service provided by the server. This value can be any meaningful description.	Adaptive Server
Server Status	Integer	The operating status of the server. Values are: • Active • Stopped • Failed • Unknown	4
Security Mechanism	Character string	Object identifier strings (OID) that specify the security mechanisms supported by the server. This attribute is optional. If it is omitted, Open Server allows clients to connect with any security mechanism for which Open Server has a corresponding security driver.	N/A

Attribute name	Type of value	Description	Default value

Server Address	Character string	One or more addresses for the server.
		The format of the address varies by protocol, and some protocols allow more than one format. The options are:
		• TCP/IP (two formats):
		  • *computer name*,*port number*
		  • *ip-address*,*portnumber*
		• Named Pipe
		pipe name: "\pipe" is a required prefix to all pipe names. Server pipes can be only local.
		  • (Local) *\pipe\sql\query*
		  • (Remote) *\\computer_name\pipe\sql\query*
		• IPX/SPX (three formats)
		  • *server name*
		  • *net number*,*node number*,*socket number*
		  • *server name*, *socket number*
		• DECnet (four formats)
		  • *area number.node number,object name*
		  • *area number.node number,object number*
		  • *node name,object name*
		  • *node name,object number*
			N/A

❖ **To add a server entry**

1 Choose Server Object | Add.

2 Type a server name in the Server Name box.

3 Click OK.

The server entry appears in the Server box. To specify an address for the server, you must modify the entry.

❖ **To modify a server attribute**

You can modify any attribute of a server entry.

1 Click on a server entry in the Server box.

2 Choose Server Object | Modify Attribute.

3 Click on the attribute you want to modify in the Attributes box.

A dialog box appears that shows the current value of the attribute.

4 Type a new value for the attribute, or select a value from the drop-down list.

   See Table 4-1 on page 68 for a description of each attribute.

5 Click OK.

❖ **To rename a server entry**

1 Click on a server entry in the Server box.

2 Choose Server Object | Rename.

3 Type a new name for the server entry in the Server Name box.

4 Click OK.

❖ **To delete a server entry**

1 Click on a server entry in the Server box.

2 Choose Server Object | Delete.

❖ **To copy server entries within the current session**

1 Click on one or more server entries in the Server box.

   Use the Shift key to select multiple entries.

2 Click the Copy button (below the menu bar), or choose Edit | Copy.

3 Click the Paste button (below the menu bar), or choose Edit | Paste.

   dsedit appends the copied server entries with a version number of *_n*. You can rename the copied server entries Server Object | Rename option on. See "To rename a server entry" on page 70 for more information.

❖ **To copy server entries between sessions**

1 Open a session with the directory service or *sql.ini* file that you want the entries copied to.

2 To open a session, choose File | Open Directory Service. See "To open additional sessions" on page 65 for more information.

3 Click on one or more server entries in the Server box of the session that you want the entries copied from.

   Use the Shift key to select multiple entries.

4 To copy the server entries, click the Copy button (below the menu bar), or choose Edit | Copy.

To cut the server entries, click the Cut button (below the menu bar), or choose Edit | Cut.

5 Activate the session where you want to paste the server entries.

See "To switch between sessions" on page 66 for instructions for activating a session.

6 Click the Paste button (below the menu bar), or choose Edit | Paste.

You can rename the copied server entries using Server Object | Rename. See "To switch between sessions" on page 66 for more information.

Modifying server entries in UNIX platforms

To perform the procedures in this section, open the interfaces session window using the instructions in "Opening an editing session" on page 65.

Note After performing each procedure in this section, you must click on Close Session to apply your edits to the interfaces file. Clicking this button also closes the interfaces session window.

❖ **To add a new server entry**

1 Click on Add new server entry.

2 Specify the name and network addresses for a new server entry.

❖ **To view or modify a server entry**

1 Click on Modify server entry.

2 Modify the attributes as desired.

❖ **To copy a server entry to another interfaces file**

1 Use one of the following methods to select the entries to copy:

- To copy a single entry, click it once.
- To copy a range of consecutive entries, click the first entry in the range, press and hold down Shift, and click the last entry in the range. You can also select "backwards" by clicking the last entry, holding down Shift, and clicking the first entry.
- To select multiple, nonconsecutive entries, press and hold down the Ctrl key while you click each entry.

2 Click Copy server entry.

3 Select the Sybase interfaces file from the list.

4 Edit the displayed file name.

5 Click OK.

Adding or editing network transport addresses

The Network Transport Editor window allows you to view, edit, or create the transport addresses at which a server accepts client connections. This window displays the name of the server entry for the address and allows you to configure the following items:

- Transport type – specifies the protocol and interface for the address. For all platforms except Digital UNIX, values are tcp, tli tcp, tli spx, and spx. For Digital UNIX, values are decnet, tcp, and tli tcp.
- Address information – depending on the transport type, different address components are required. The following sections discuss address formats in detail.

TCP/IP addresses

The address information for a TCP/IP entry consists of a host name (or IP address) and a port number (entered as a decimal number). For tli tcp-formatted interfaces entries, the host's IP address and the port number are converted to the 16-byte hexadecimal representation required for tli tcp-formatted interfaces entries.

In interfaces entries, use tli tcp for:

- All pre-10.0 clients on platforms that use tli-formatted interfaces entries
- Adaptive Server or Replication Server version 11.0.x or earlier on platforms that use tli-formatted interfaces entries

Use tcp for other clients and servers.

To indicate a TCP/IP address, choose tcp or tli tcp from the Transport Type menu.

SPX/IPX addresses

SPX/IPX addresses allow Adaptive Server to listen for connections from client applications running on a Novell network. SPX/IPX addresses consist of the following information:

- Host address – an eight-digit hexadecimal value representing the IP address of the computer on which the server runs. Each component of the dot-separated decimal IP address format maps to one byte in the hex address format. For example, if your host's IP address is 128.15.15.14, enter "800F0F0E" as the SPX/IPX host address value.
- Port number – the port number, expressed as a four-digit hexadecimal number.
- Endpoint – the path for the device file that points to the SPX device driver. Defaults to */dev/mspx* on Solaris and */dev/nspx* on any other platform. If necessary, adjust the path so that it is correct for the machine on which the server runs. The default path is based on the platform on which you are running dsedit.

To indicate an SPX/IPX address, choose tli spx or spx from the Transport Type menu.

Copying server entries

dsedit allows you to copy server entries within a session and between sessions. This includes copying entries from a *sql.ini* file to a directory service.

Windows NT

❖ **To copy server entries within the current session**

1 Click on one or more server entries in the Server box.

Use the Shift key to select multiple entries.

2 Click the Copy button (below the menu bar), or choose Edit | Copy.

3 Click the Paste button (below the menu bar), or choose Edit | Paste.

dsedit appends the copied server entries with a version number of *_n*. You can rename the copied server entries using Server Object | Rename. See "To rename a server entry" on page 70 for more information.

❖ **To copy server entries between sessions**

1 Open a session with the directory service or *sql.ini* file that you want the entries copied to.

2 To open a session, choose File | Open Directory Service. See "To open additional sessions" on page 65 for more information.

3 Click on one or more server entries in the Server box of the session that you want the entries copied from.

   Use the Shift key to select multiple entries.

4 To copy the server entries, click the Copy button (below the menu bar), or choose Edit | Copy.

   To cut the server entries, click the Cut button (below the menu bar), or choose Edit | Cut.

5 Activate the session where you want to paste the server entries.

   See "To switch to another open session" on page 78 for instructions for activating a session.

6 Click the Paste button (below the menu bar), or choose Edit | Paste.

You can rename the copied server entries using the Rename command in the Server Object menu. See "To rename a server entry" on page 70 for more information.

UNIX platforms

❖ **To copy a server entry to another interfaces file**

1 Use one of the following methods to select the entries to copy:

   - To copy a single entry – click it once.
   - To copy a range of consecutive entries – click the first entry in the range, press and hold down Shift, and click the last entry in the range. You can also select "backwards" by clicking the last entry, holding down Shift, and clicking the first entry.
   - To select multiple, nonconsecutive entries – press and hold down the Ctrl key while you click each entry.

2 Click Copy server entry.

3 Select the Sybase interfaces file from the list.

4 Edit the displayed file name.

5 Click OK.

Troubleshooting dsedit

This section lists some common dsedit problems and describes how to correct them.

The dsedit utility does not start

Check for the following:

- The SYBASE environment variable is not set or points to the wrong directory.
- (UNIX platforms) X-Windows is not configured correctly. If you are running dsedit on a remote host, make sure that X-Windows clients on the remote host can connect to the X-Windows server on your own machine. See your X-Windows documentation for more troubleshooting information. If X-Windows is not available, use dscp instead of dsedit.

Error message: “Unable to open X display”

(UNIX platforms) dsedit might not work if the display machine is set up to reject X-Windows connections from remote hosts. If this is the problem, you see a message similar to the following:

```
Unable to open X display. Check the value of your
$DISPLAY variable. If it is set correctly, use the
'xhost +' command on the display machine to authorize
use of the X display. If no X display is available, run
dscp instead of dsedit.
```

This error may be caused by either of the following situations:

- The value for the DISPLAY environment variable is not entered correctly or is not set.

  Solution: Enter the DISPLAY environment variable correctly.

- You are not authorized to open windows on the machine to which DISPLAY refers.

  Solution: Run the command ‘xhost +’ on the display machine.

Cannot add, modify, or delete server entries

Check for permissions problems with the interfaces file. To edit interfaces entries, you must have write permission on both the interfaces file and the Sybase installation directory.

CHAPTER 5

Using dscp

dscp is a UNIX utility program that you use to view and edit server entries in the interfaces file.

Note dscp is not available for Windows NT.

For a detailed description of dscp syntax, see dscp on page 144.

Getting started with dscp

❖ **To start dscp**

- Enter:

  ```
  $SYBASE/bin/dscp
  ```

  The dscp prompt, >>, appears.

❖ **To get help with dscp**

- To view the dscp help screen, enter one of the following commands:

  ```
  help
  h
  ?
  ```

Using a dscp session

Before you can view, add, or modify server entries, you must open a session so that you can interact with the interfaces file.

You can have multiple sessions open at one time.

❖ **To open a session with the interfaces file**

- Enter:

```
open InterfacesDriver
```

When you open a session, dscp provides the session's number. For example, if you open a session using the open InterfacesDriver command, dscp displays the following message:

```
ok
Session 1 InterfacesDriver>>
```

❖ **To list all open sessions**

- Enter:

```
sess
```

❖ **To switch to another open session**

- Enter the following, where *sess* is the session number:

```
switch sess
```

For example, you are switched to session 3 if you enter:

```
switch 3
```

The switch keyword is optional. For example, entering "3" also switches you to session 3.

❖ **To close a session**

- Enter the following, where *sess* is the session number:

```
close sess
```

For example, session 3 closes if you enter:

```
close 3
```

If you do not specify a session number, dscp closes the current session.

Working with server entries

Use dscp to add or modify server entries.

Adding and modifying server entries

After you open a session, you can add or modify server entries associated with that session.

Note When you add or modify a server entry, dscp automatically creates or modifies both master and query lines. The master line and the query line of an interfaces file entry contain identical information.

Each server entry is made up of a set of attributes. When you add or modify a server entry, dscp prompts you for information about each attribute. Table 5-2 describes each attribute.

Table 5-1: Server attributes

Attributes	Type of value	Default value and valid values	Can be edited when adding or modifying a server entry
Server Object Version	Integer	110	Adding: No Modifying: No
Server Name	Character string	n/a	Adding: n/a Modifying: No
Server Service	Character string	SQL SERVER	Adding: Yes Modifying: No
Server Status	Integer	4 Valid values are: 1 Active 2 Stopped 3 Failed 4 Unknown	Adding: No Modifying: No
Transport Type	Character string	tcp. Valid values are: decnet, spx, tcp, tli, spx, tli tcp	Adding: Yes Modifying: Yes
Transport Address	Character string	None. Valid values are character strings recognized by the specified transport type	Adding: Yes Modifying: Yes

Attributes	Type of value	Default value and valid values	Can be edited when adding or modifying a server entry
Security Mechanism	Character string **Note** You can add up to 20 security mechanism strings for each server entry	None Valid values are character strings associated with object identifiers defined in the user's *objectid.dat*.	Adding: Yes Modifying: Yes

❖ **To add a server entry**

1 Enter:

```
add servername
```

You are now in add mode. You can continue to add server entries, but you cannot execute any other dscp commands until you exit this mode. While in add mode, dscp prompts you for information about *servername*.

2 Do one of the following:

- Enter a value for each attribute, or
- Press Return to accept the default value, which is shown in brackets [ ].

For example, dscp prompts for the following information when you enter:

```
add myserver
```

```
Service: [SQL Server]
Transport Type: [tcp] tcp
Transport Address: victory 8001
Security Mechanism []:
```

A server entry can have up to 20 transport type/address combinations associated with it.

For a description of the server attributes, see Table 5-1 on page 79.

3 To exit add mode, enter:

```
#done
```

❖ **To modify a server entry**

You cannot use dscp to modify the Version, Service, and Status entries in the *interfaces* file.

1 Enter:

```
mod servername
```

You are now in modify mode. You can continue to modify server entries, but you cannot execute any other dscp commands until you exit this mode. In modify mode, dscp prompts you for information about *servername*.

2 Do one of the following:

- Enter a value for each attribute, or
- Press Return to accept the default value, which is shown in brackets [ ].

For example, dscp prompts for the following information when you enter:

```
mod myserver
```

```
Version: [1]
Service: [SQL Server] Open Server
Status: [4]
Address:
Transport Type: [tcp]
Transport Address: [victory 1824] victory 1826
Transport Type: [tcp]
Transport Address: [victory 1828]
Transport Type: []
Security Mechanism []:
```

For a description of the server attributes, see Table 5-1 on page 79.

3 To delete an address, enter:

```
#del
```

4 To exit modify mode, enter:

```
#done
```

Copying server entries

dscp allows you to copy server entries within a session and between two sessions. You have four options when copying a server entry.

You can copy:

- A server entry to a new name in the current session
- A server entry to a different session
- A server entry to a new name in a different session

- All entries in the current session to a different session

❖ **To create a new server entry within a session by copying**

- Enter:

  ```
  copy name1 to name2
  ```

  For example, if you enter:

  ```
  copy myserver to my_server
  ```

  dscp creates a new entry, “my_server,” that is identical to “myserver.” You can then modify the new entry and leave the original intact.

❖ **To copy a server entry without changing the name**

- Enter:

  ```
  copy name1 to sess
  ```

  For example, dscp copies the “myserver” entry in the current session to session 2 when you enter:

  ```
  copy myserver to 2
  ```

❖ **To copy a server entry and rename it**

- Enter:

  ```
  copy name1 to sess name2
  ```

  For example, dscp copies the “myserver” entry in the current session to session 2 and renames it “my_server” when you enter:

  ```
  copy myserver to 2 my_server
  ```

❖ **To copy all entries in the current session to a different session**

- Enter:

  ```
  copyall sess
  ```

  For example, dscp copies all entries in the current session to session 2 when you enter:

  ```
  copyall 2
  ```

Listing and viewing contents of server entries

You can list names and attributes associated with a session.

❖ **To list names of server entries**

- Enter:

```
list
```

❖ **To list the attributes of server entries**

- Enter:

```
list all
```

For a description of server attributes, see Table 5-1 on page 79.

❖ **To view the contents of a server entry**

- Enter:

```
read servername
```

For example, the following information is displayed when you enter:

```
read myserver
```

```
DIT base for object: interfaces
Distinguish name: myserver
Server Version: 1
Server Name: myserver
Server Service: SQL Server
Server Status: 4 (Unknown)
Server Address:
Transport Type: tcp
Transport Addr: victory 1824
Transport Type: tcp
Transport Addr: victory 1828
```

For a description of the server attributes, see Table 5-1 on page 79.

Deleting server entries

You can delete one entry or all entries associated with a session.

❖ **To delete entries associated with a session**

- Enter:

```
del servername
```

For example, dscp deletes the entry for “myserver” when you enter:

```
del myserver
```

❖ **To delete all entries associated with a session**

- Enter:

```
delete-all
```

Exiting dscp

To exit dscp, enter one of the following commands:

```
exit
quit
```

Quick reference for dscp utility commands

dscp allows you to perform functions by entering commands at the dscp prompt. Table 5-2 provides a quick reference to these commands.

Table 5-2: dscp commands

Command	Description
add *servername*	Adds server entry *servername* in the current session. dscp prompts you for information about *servername*. Press Return to accept the default value, which is shown in square brackets [ ]. Enter "#done" to exit add mode.
addattr *servername*	Adds an attribute to the server entry *servername* in the current session.
close [*sess*]	Closes a session identified by the *sess* number. If you do not specify *sess*, closes the current session.
config	Displays configuration information related to your Sybase environment.
copy *name1* to {*name2* | *sess* | *sess name2*}	Copies server entry *name1* in the current session to: • Server entry *name2* in the current session, • Session *sess*, or • Server entry *name2 in session sess*.
copyall to *sess*	Copies all server entries in the current session to session *sess*.
del *servername*	Deletes server entry *servername* in the current session.
delete-all	Deletes all server entries in the current session.
exit	Exits dscp.
help, ?, h	Displays the online help.

Command	Description
list [all]	Lists the server entries for the current session. To list the names of the entries, use the list command. To list the attributes for each entry, use the list all command.
mod *servername*	Modifies server entry *servername* in the current session. dscp prompts you for information about *servername*. Press Return to accept the default value, which is shown in square brackets [ ]. Enter "#done" to exit modify mode.
open [*dsname*]	Opens a session for the specified directory service, where dsname is the directory service name. If you do not specify a value for *dsname*, this command opens a session for the default directory service. To open a session, specify the value "InterfacesDriver" for *dsname*.
quit	Exits dscp.
read *servername*	Displays the contents of server entry *servername*.
sess	Lists all open sessions.
[switch] *sess*	Makes session number *sess* the current session.

CHAPTER 6

Utility Commands Reference

This chapter contains reference pages for the Adaptive Server utility program commands.

Getting started

In UNIX, you enter a utility program command at the system prompt in a UNIX shell.

In Windows NT:

- If a utility has an icon in the Sybase for Windows or Sybase for Windows NT program group, double-click the icon to launch the utility program.
- If a utility does not have an icon in the program group, enter the utility program command at the Windows or Windows NT command prompt to launch the utility program.

Place characters with special meaning to the shell (the command prompt in Windows NT), such as the backslash (\), asterisk (*), slash (/), and spaces, in quotes. You can precede some special characters with the backslash (\) to "escape" them. This prevents the shell (command prompt) from interpreting the special characters.

Table 6-1 describes the utility programs available with Adaptive Server.

Note The utility programs described in Table 6-1 may allow you to use a -P parameter to enter your password. If security is an issue, do not use this parameter to specify your password. Another user may have an opportunity to see it. Instead, log in as usual without the -P parameter, and let Adaptive Server prompt you for your password.

Table 6-1: Utility programs

Utility	Description
backupserver	Executable form of the Backup Server™ program.
bcp	Copies rows in a database table to or from an operating system file in a user-specified format.
certauth	Converts a server-certificate request into a certificate authority-signed certificate.
certpk12	Export or import a PKCS#12 file.
certreq	Creates a server certificate request and corresponding private key in two ways:

Utility	Description
charset	Loads the character sets and sort order files.
cobpre	Precompiler for COBOL.
cpre	Precompiler for C.
dataserver	Executable form of the Adaptive Server program.
dataxtr	Data migration tool.
ddlgen	Generates data definition language for server- and database-level objects in ASE.
defncopy	Copies definitions for specified views, rules, defaults, triggers, procedures, or reports from a database to an operating system file or from an operating system file to a database.
dscp	Allows you to view and edit server entries in the interfaces file in command-line mode.
dsedit	Allows you to view and edit server entries in the interfaces file using a graphical user interface based on X11/Motif.
extractjava	Copies a retained JAR from an Adaptive Server to a client file.
installjava	Installs a JAR from a client file into an Adaptive Server.
isql	Interactive SQL parser to Adaptive Server.
langinstall	Installs a new language on the Adaptive Server.
optdiag	Displays optimizer statistics or loads updated statistics into system tables.
pwdcrypt	Creates and prints an encrypted LDAP password in the *libtcl.cfg* file.
showserver	Shows Adaptive Servers and Backup Servers that are currently running on the local machine.
sqldbgr	Debugs stored procedures and triggers.
sqlloc	Installs and modifies languages, character sets, and sort order defaults for Adaptive Server in GUI mode.
sqllocres	Installs and modifies languages, character sets, and sort order defaults for Adaptive Server in command-line mode.
sqlsrvr	Executable form of the Adaptive Server program.
sqlupgrade	Upgrades your currently installed release of Adaptive Server to the newest release in GUI mode.
sqlupgraderes	Upgrades your currently installed release of Adaptive Server to the newest release in command-line mode.
srvbuild	Creates a new Adaptive Server, Backup Server, Monitor Server, or XP Server in GUI mode with default or user-specified values for key configuration attributes.
srvbuildres	Creates a new Adaptive Server, Backup Server, Monitor Server, or XP Server in command-line mode with default or user-specified values for key configuration attributes.
sqlsrvr	Executable form of the Adaptive Server program.
startserver	Starts an Adaptive Server or a Backup Server.
srvmgr	Starts Adaptive Server and Backup Server as Windows NT services.
sybload	Uploads Sybase products from the distribution media and builds the Sybase installation directory from the command line.
sybsetup	Installs and configures Adaptive Server from a single location using a GUI interface.
xpserver	Starts XP Server manually.

*_dce and *_r utilities

Sybase provides you with _dce versions of some of the utilities, indicated in the "Usage" portion of each utility section. You must use the _dce versions of the utilities if you use Distributed Computing Environment (DCE) directory or security services for Sybase client applications for the IBM RS/6000 platform.

Sybase also provides you with the _r versions of some of the utilities for use with threaded drivers.

The utilities in this manual that have _dce and _r versions are:

- bcp
- cobpre
- cpre
- defncopy
- dscp
- isql

Utilities quick reference

This section provides a quick reference for the utilities, divided into the following categories:

Installation or configuration utilities

Use the following to install or configure databases:

dataserver	Allows you to build a new Adaptive Server.

dscp	Allows you to view and edit server entries in the interfaces file from the command line.
dsedit	Allows you to view and edit server entries in the interfaces file using a GUI based on X11/Motif in UNIX platforms. In Windows NT, allows you to create and modify network connection information in the interfaces file.
sqlupgrade	Upgrades your currently installed release of Adaptive Server to the newest release using a GUI based on X11/Motif in UNIX platforms.
sqlupgraderes	Upgrades your currently installed release of Adaptive Server to the newest release using resource files in UNIX platforms.
srvbuild	Creates a new Adaptive Server, Backup Server, Monitor Server, or XP Server with default or user-specified values for key configuration attributes using a graphical user interface based on X11/Motif in UNIX platforms.
srvbuildres	Creates a new Adaptive Server, Backup Server, Monitor Server, or XP Server, using resource files to specify values for key configuration attributes in UNIX platforms.

Utilities for languages, character sets, and sort orders

Use the following utilities to set languages, character sets and sort orders:

charset	Loads the character sets and sort order files in Windows NT.
langinstall	Installs a new language on an Adaptive Server.
sqlloc	Installs and modifies languages, character sets, and sort order defaults for Adaptive Server, using a GUI based on X11/Motif in UNIX platforms.
sqllocres	Installs and modifies languages, character sets, and sort order defaults for Adaptive Server, using a resource file in UNIX platforms.

Utilities to start servers

Use the following utilities to start servers manually:

backupserver	Starts the Backup Server executable. Use the startserver command instead of this utility to start Backup Server manually. In NT, you can use the srvmgr utility instead to start Backup Server manually.

dataserver	Starts the Adaptive Server executable. Use the startserver command instead of this utility to start Adaptive Server manually.
histserver	Starts the Historical Server executable. Use the histserver command instead of this utility to start Historical Server manually.
monserver	Starts the Monitor Server executable. Use the monserver command instead of this utility to start Monitor Server manually.
sqlsrvr	Starts the Adaptive Server executable in Windows NT. Use the services manager utility instead of this utility to start Adaptive Server manually.
srvmgr	Starts, pauses, and stops Adaptive Server, Backup Server, and Adaptive Server Monitor™ as Windows NT services.
startserver	Starts an Adaptive Server and a Backup Server in UNIX platforms.

Database creation and manipulation utilities

Use the following utilities to create and manipulate databases:

bcp	Copies a database table to or from an operating system file in a user-specified format.
defncopy	Copies definitions for specified views, rules, defaults, triggers, or procedures from a database to an operating system file or from an operating system file to a database.
extractjava	Copies a retained JAR and the classes it contains from an Adaptive Server to a client file.
installjava	Installs a JAR from a client file into an Adaptive Server database.
isql	Interactive SQL parser to Adaptive Server.
optdiag	Displays optimizer statistics or loads updated statistics into system table.

Utilities to gather information

Use the following utilities to gather information:

showserver	Shows the Adaptive Servers and Backup Servers that are currently running on the local machine in UNIX platforms.
wdllvers	Provides information about the Sybase DLLs (dynamic link libraries) that are loaded into memory in Windows NT.

backupserver

Description

The executable form of the Backup Server program, located in *$SYBASE/ASE-12_5/bin*.

Note In Windows NT, the utility is bcksrvr.exe, located in *%SYBASE%\ASE-12_5\bin*.

Syntax

```
backupserver
        [-C server_connections]
        [-S b_servername]
        [-I interfaces_file]
        [-e error_log_file]
        [-M sybmultbuf_binary]
        [-N network_connections]
        [-T trace_value]
        [-L Sybase_language_name]
        [-J Sybase_character_set_name]
        [-c tape_config_file]
        [-D n]
        [-A pathname]
        [-P active_service_threads]
        [-V level_number]
        [-p n]
        [-m max_shared_memory]
```

Or

```
backupserver -v
```

Parameters

-C server_connections

specifies the number of server connections for the Backup Server. The Backup Server requires:

- Two connections for each dump session
- One connection for each load session
- One connection for volume change messages

Allow a maximum of three times the number of expected concurrent dump and load sessions. The default value is 30 server connections.

-S b_servername

specifies the name of the Backup Server to start. The default is SYB_BACKUP. This entry must specify the name of a Backup Server in the interfaces file.

-I *interfaces_file*
specifies the name and location of the interfaces file to search when connecting to Backup Server. If -I is omitted, backupserver looks for a file named *interfaces* in the directory pointed to by your SYBASE environment variable.

-v
prints the version number and copyright message of the backupserver software and then exits.

-e *error_log_file*
specifies the name and location of the Backup Server error log file used to report Open Server internal errors, sybmultbuf errors, errors that halt the Backup Server, and errors for disconnected sessions. All other errors are sent to the notify destination specified in the dump database, dump transaction, load database, and load transaction commands.

-M *sybmultbuf_binary*
specifies the full path name of the sybmultbuf executable. Use this parameter only when starting Backup Server from a directory other than the *bin* directory of the Sybase installation directory, or when using a diagnostic version of sybmultbuf.

-N *network_connections*
specifies the number of total network connections (DBPROCESSes) that the master Backup Server can originate. The default value is 25.

-T *trace_value*
interprets *trace_value* as a bitmask (base-2 number). The 1 bits in *trace_value* correspond to Open Server Trace flags to turn on. If you specify more than one -T parameter on the command line, the final -T value overrides the values from earlier -T parameters. The *trace_value* must be a positive integer.

-L *Sybase_language_name*
specifies the default language for Backup Server. If not specified, Backup Server uses the locale specified by the LC_ALL or LANG environment variables. If these variables are not set, Backup Server searches for the "default" entry in *locales.dat*.

Note The -L parameter does not override the value set in the LANG environment variable.

-J *Sybase_character_set_name*
specifies the default character set for Backup Server.

-c *tape_config_file*

specifies the name and location of the tape configuration file to search for tape device configuration information before doing a dump database or a dump transaction. If you do not specify -c, the default path name for the tape configuration file is *$SYBASE/backup_tape.cfg*.

-D *n*

specifies the bitmap (base 10 number) of the diagnostic flags used within Backup Server.

-A *pathname*

specifies the pathname to the directory of the Archive API dynamically loadable library.

-P *active_service_threads*

allows you to increase the number of stripes during multiple dump/load operations (with a maximum of 32 stripes per single operation). The default system-wide limit is 48, which includes all dumps and loads.

-V *level_number*

limits the messages that are printed to the Backup Server error log. The *level_number* variable determines the degree of error verbosity (-V) for Backup Server:

-V3 – displays only completion messages from a normal dump or load command and the following types of messages:

- Error messages from Backup Server and sybmultbuf
- Other sybmultbuf messages
- Volume change messages
- Open Server™ messages
- Trace print messages
- Informational messages from the System & Tape Auto Config modules

-V2 – displays:

- All -V3 messages *plus*
- File creation and file mount messages

-V1 – displays:

- All -V2 messages *plus*
- Phase messages

-V0 (default) – displays:

- All messages, including backup progress

This limitation does not involve the messages that are sent to the client or console as determined by the NOTIFY= parameter in a dump or load command.

This option also does not affect logging for the following message types:

- Open Server messages
- Trace printing messages from bs_traceprint
- sybmultbuf messages

-p *n*

specifies the TDS packet size in bytes that the *local* Backup Server requests from the *remote* Backup Server during network dumps. The actual packet size used is limited to the -p parameter value of the remote Backup Server. If you do not specify -p, the default is 2048 bytes. The packet size should be an integer greater than, or equal to 256.

-m *max_shared_memory*

specifies the maximum amount of shared memory in megabytes that Backup Server can use for all of its dump or load sessions.

Usage

- Start Backup Server with the startserver command rather than by directly executing the backupserver program.
  - To change default values in UNIX, edit the *RUN_servername* file in your Sybase installation directory. See the startserver reference page for details.
  - To change default values in Windows NT, use Server Config to change the command-line parameters of the Backup Server. See the *Adaptive Server Enterprise Configuration Guide* for details.
- If you do not specify a Backup Server name with the -S parameter, and you have not set the environment variable DSLISTEN, backupserver uses the default Backup Server name SYB_BACKUP in UNIX.

  In Windows NT – bcksrvr uses the default Backup Server name *server_name*_BS. The value of the DSLISTEN environment variable overrides this default value, and the -S parameter overrides both the default and the value specified in DSLISTEN.
- Whenever possible, the Backup Server and any Adaptive Servers that dump or load directly through the Backup Server should share the same interfaces file (*sql.ini* in UNIX). The interfaces file that Backup Server uses must contain entries for:
  - Backup Server
  - Any other Backup Servers with which this Backup Server communicates
- Trace flags cause the Backup Server to print information regarding its operation while it is running, for debugging problems in the Backup Server. See the *Open Server Server-Library/C Reference Manual* for more details on trace flags. Backup Server does not support use of the Open Server-defined SRV_TR symbols for -T.

- If Backup Server cannot find the *locales* and *charsets* directories specified by the `-L` and `-J` parameters, or if these parameters specify an incorrect language and character set combination, Backup Server issues an error message and uses the default language and character set.

Permissions

Anyone with execute permission on the binary, and who has read/write access to all the files.

See also

Utilities – startserver

bcp

Description

Copies a database table to or from an operating system file in a user-specified format. bcp is located in *$SYBASE/OCS-12_5/bin*.

Note In Windows NT, the utility is bcp.exe, and is located in *%SYBASE%\OCS-12_5\bin*.

Syntax

```
bcp [[database_name.]owner.]table_name [:slice_number] {in | out} datafile
        [-m maxerrors]
        [-f formatfile]
        [-e errfile]
        [-F firstrow]
        [-L lastrow]
        [-b batchsize]
        [-n]
        [-c]
        [-t field_terminator]
        [-r row_terminator]
        -U username
        [-P password]
        [-I interfaces_file]
        [-S server]
        [-a display_charset]
        [-q datafile_charset]
        [-z language]
        [-A packet_size]
        [-J client_charset]
        [-T text_or_image_size]
        [-E]
        [-g id_start_value]
        [-N]
        [-X]
        [-M LabelName LabelValue]
        [-labeled]
        [-K keytab_file]
        [-R remote_server_principal]
        [-V [security_options]]
        [-Z security_mechanism]
        [-Q]
```

Or

```
bcp -v
```

Parameters

database_name

is optional if the table being copied is in your default database or in master. Otherwise, you must specify a database name.

owner
is optional if you or the Database Owner owns the table being copied. If you do not specify an owner, bcp looks first for a table of that name that you own, and then looks for one owned by the Database Owner. If another user owns the table, you must specify the owner name or the command fails.

view_name
is the name of the view you are copying out.

table_name
is the name of the database table to copy. The table name cannot be a Transact-SQL reserved word.

Partition number *partition_number* does not exist in table *table_name*.

slice_number
is the number of the slice of the database table to copy.

partition_id
is the identifier of the partition into which to copy.

in | out
is the direction of the copy. in indicates a copy from a file into the database table; out indicates a copy to a file from the database table or view.

datafile
is the full path name of an operating system file. The path name can be from 1 to 255 characters in length.

-m *maxerrors*
is the maximum number of nonfatal errors permitted before bcp aborts the copy. bcp discards each row that it cannot insert (due to a data conversion error, or an attempt to insert a null value into a column that does not allow them), counting each rejected row as one error. If you do not include this parameter, bcp uses a default value of 10.

-f *formatfile*
is the full path name of a file with stored responses from a previous use of bcp on the same table. After you answer bcp's format questions, it prompts you to save your answers in a format file. Creation of the format file is optional. The default file name is *bcp.fmt*. The bcp program can refer to a format file when you are copying data so that you do not have to duplicate your previous format responses interactively. Use the -f parameter only if you previously created a format file that you want to use now for a copy in or copy out. If you do not specify this parameter, bcp interactively queries you for format information.

-e *errfile*

is the full path name of an error file where bcp stores any rows that it was unable to transfer from the file to the database. Error messages from bcp appear on your terminal. bcp creates an error file only when you specify this parameter.

-F *firstrow*

is the number of the first row to copy from an input file (default is the first row).

Avoid using the -F option when performing heavy-duty, multi-process copying, as it causes bcp to generally spend more effort to run, and does not provide you with a faster process. Instead, use -F for single-process, ad-hoc copying.

-L *lastrow*

is the number of the last row to copy from an input file (default is the last row).

-b *batchsize*

is the number of rows per batch of data copied (the default is to copy all the rows in one batch). Batching applies only when you are bulk copying in; it has no effect on bulk copying out. The smallest number bcp accepts for *batchsize* is 10. If you specify a smaller number, bcp automatically changes the value to 10.

Note Setting the batch size to 10 causes Adaptive Server to allocate one data page to 10 rows copied in. This option only applies to fast bcp, and is only useful in locating corrupt rows of data.

-n
performs the copy operation using native (operating system) formats. Specifying the -n parameter means bcp will not prompt for each field. Files in native data format are not human-readable.

Warning! Do not use bcp in native format for data recovery or salvage or to resolve an emergency situation. Do not use bcp in native format to transport data between different hardware platforms, different operating systems, or different major releases of Adaptive Server. Do not use field terminators (-t) or row terminators (-r) with bcp in native format. Results are unpredictable and data may become corrupted. Using bcp in native format can create flat files that cannot be reloaded into Adaptive Server and it may be impossible to recover the data. If you cannot rerun bcp in character format (for example, a table was truncated or dropped, hardware damage occurred, a database was dropped, and so on) the data is unrecoverable.

-c
performs the copy operation with char datatype as the default storage type of all columns in the data file. Use this format if you are sharing data between platforms. This parameter does not prompt for each field; it uses char as the default storage type, no prefixes, \t (tab) as the default field terminator, and \n (new line) as the default row terminator.

-t *field_terminator*
specifies the default field terminator.

-r *row_terminator*
specifies the row terminator.

Warning! Do not use -t or -r parameters with bcp in native format. Results are unpredictable and data may become corrupted.

When specifying terminators from the command line with the -t or -r parameter, you must escape characters that have special significance to the UNIX operating system (or the command prompt shell for Windows NT). See the examples for bcp for more information. Either place a backslash in front of the special character or enclose it in quotes. This is not necessary when bcp prompts you (interactive mode).

-U *username*
specifies an Adaptive Server login name.

-P *password*

specifies an Adaptive Server password. If you do not specify -P*password*, bcp prompts for a password. You can leave out the -P flag if your password is NULL.

-I *interfaces_file*

specifies the name and location of the interfaces file to search when connecting to Adaptive Server. If you do not specify -I, bcp looks for an interfaces file (*sql.ini* in Windows NT) located in the directory specified by the SYBASE environment variable (*ini* directory in Windows NT).

-S *server*

specifies the name of the Adaptive Server to which to connect. If you specify -S with no argument, bcp uses the server specified by the DSQUERY environment variable.

-a *display_charset*

allows you to run bcp from a terminal where the character set differs from that of the machine on which bcp is running. Use -a in conjunction with -J to specify the character set translation file (*.xlt* file) required for the conversion. Use -a without -J only if the client character set is the same as the default character set.

The following error message appears if the character translation file(s) named with the -a parameter is missing, or you mistype the name(s):

```
Error in attempting to determine the size of a pair of
translation tables.:'stat' utility failed.
```

-q *datafile_charset*

runs bcp to copy character data to or from a file system that uses a character set different from the client character set. Use -q in conjunction with -J to specify the character set translation file (*.xlt* file) required for the conversion.

In Japanese language environments, the -q flag translates Hankaku Katakana (half-width characters) into Zenkaku Katakana (full-width characters). Use with the argument *zenkaku* and with the -J flag to indicate the client's Japanese character set (sjis or eucjis). The *zenkaku.xlt* file translates *only* from the terminal to Adaptive Server, *not* from Adaptive Server to the terminal.

The following error message appears if the character translation file(s) named with the -q parameter is missing, or you mistype the name(s):

```
Error in attempting to determine the size of a pair of
```

```
translation tables.:'stat' utility failed.
```

Note The ascii_7 character set is compatible with all character sets. If either the Adaptive Server character set or the client's character set is set to ascii_7, any 7-bit ASCII character is allowed to pass between client and server unaltered. Other characters produce conversion errors. Character set conversion issues are covered more thoroughly in the *System Administration Guide*.

-z *language*

is the official name of an alternate language the server uses to display bcp prompts and messages. Without the -z flag, bcp uses the server's default language.

You can add languages to an Adaptive Server during installation or afterwards, using either the langinstall utility (or langinst in Windows NT) or the sp_addlanguage stored procedure.

The following error message appears if an incorrect or unrecognized language is named with the -z parameter:

```
Unrecognized localization object. Using default value 'us_english'.
Starting copy...
=> warning.
```

-v

displays the version number of bcp and a copyright message and returns to the operating system.

-A *packet_size*

specifies the network packet size to use for this bcp session. For example:

```
bcp pubs2..titles out table_out -A 2048
```

sets the packet size to 2048 bytes for this bcp session. *packet_size* must be between the values of the default network packet size and maximum network packet size configuration variables, and it must be a multiple of 512.

Use network packet sizes larger than the default to improve the performance of large bulk-copy operations.

-J *client_charset*

specifies the character set to use on the client. bcp uses a filter to convert input between *client_charset* and the Adaptive Server character set.

-J *client_charset* requests that Adaptive Server convert to and from *client_charset*, the character set used on the client.

-J with no argument sets character set conversion to NULL. No conversion takes place. Use this if the client and server use the same character set.

Omitting -J sets the character set to a default for the platform, which may not necessarily be the character set that the client is using.. Table 6-2 lists platform defaults.

Table 6-2: Default character sets for different platforms

Platform	Default Character Set
Sun Solaris, Digital UNIX, NCR, RS/6000	iso_1
HP-UX	roman8
OS/2, Novell NetWare 386	cp850
Macintosh	mac

The following error message appears if an incorrect or unrecognized character set is named with the -J parameter:

```
Unrecognized localization object. Using default value 'iso_1'.
Starting copy...
=> warning.
```

For more information about character sets and associated flags, see the *System Administration Guide*.

-T *text_or_image_size*

allows you to specify, in bytes, the maximum length of text or image data that Adaptive Server sends. The default is 32K. If a text or an image field is larger than the value of -T or the default, bcp does not send the overflow.

-E
explicitly specifies the value of a table's IDENTITY column.

By default, when you bulk copy data into a table with an IDENTITY column, bcp assigns each row a temporary IDENTITY column value of 0. This is effective only when copying data into a table. bcp reads the value of the ID column from the data file, but does not send it to the server. Instead, as bcp inserts each row into the table, the server assigns the row a unique, sequential, IDENTITY column value, beginning with the value 1. If you specify the -E flag when copying data into a table, bcp reads the value from the data file and sends it to the server which inserts the value into the table. If the number of rows inserted exceeds the maximum possible IDENTITY column value, Adaptive Server returns an error.

The -E parameter has no effect when you are bulk copying data out. Adaptive Server copies the ID column to the data file, unless you use the -N parameter.

You cannot use the -E and -g flags together.

-g *id_start_value*
specifies the value of the IDENTITY column to use as a starting point for copying data in.

You cannot use the -g and -E flags together.

-N
skips the IDENTITY column. Use this parameter when copying data in if your host data file does not include a placeholder for the IDENTITY column values, or when copying data out, if you do not want to include the IDENTITY column information in the host file.

You cannot use both -N and -E parameters when copying data in.

-X
specifies that, in this connection to the server, the application initiates the login with client-side password encryption. bcp (the client) specifies to the server that password encryption is desired. The server sends back an encryption key, which bcp uses to encrypt your password, and the server uses the key to authenticate your password when it arrives.

If bcp crashes, the system creates a core file that contains your password. If you did not use the encryption option, the password appears in plain text in the file. If you used the encryption option, your password is not readable.

-M *label_name* "*label_value*"

(secure SQL server only) enables multilevel users to set the session labels for the bulk-copy. Valid values for *label_name* are:

- *curread* (current read level) is the initial level of data that you can read during this session. *curread* must dominate *curwrite*.
- *curwrite* (current write level) is the initial sensitivity level that will be applied to any data that you write during this session.
- *maxread* (maximum read level) is the maximum level at which you can read data. This is the upper bound to which you as a multilevel user can set your *curread* during the session. *maxread* must dominate *maxwrite*.
- *maxwrite* (maximum write level) is the maximum level at which you can write data. This is the upper bound to which you as a multilevel user can set your *curwrite* during a session. *maxwrite* must dominate *minwrite* and *curwrite*.
- *minwrite* (minimum write level) is the minimum level at which you can write data. This is the lower bound to which you as a multilevel user can set *curwrite* during a session. *minwrite* must be dominated by *maxwrite* and *curwrite*.

label_value is the actual value of the label, expressed in the human-readable format used on your system (for example, “Company Confidential Personnel”).

-labeled

(secure SQL server only) indicates that the data you are importing already has labels in the first field of every record.

For exporting data this option indicates that you want the sensitivity label of every row to be copied out as the first field.

-K *keytab_file*

specifies the path to the keytab file used for authentication in DCE.

-R *remote_server_principal*

specifies the principal name for the server as defined to the security mechanism. By default, a server’s principal name matches the server’s network name (which is specified with the -S parameter or the DSQUERY environment variable). Use the -R parameter when the server’s principal name and network name are not the same.

-V *security_options*

specifies network-based user authentication. With this option, the user must log in to the network's security system before running the utility. In this case, users must supply their network user name with the -U option; any password supplied with the -P option is ignored.

-V can be followed by a *security_options* string of key-letter options to enable additional security services. These key letters are:

c – Enable data confidentiality service

i – Enable data integrity service

m – Enable mutual authentication for connection establishment

o – Enable data origin stamping service

r – Enable data replay detection

q – Enable out-of-sequence detection

-Z *security_mechanism*

specifies the name of a security mechanism to use on the connection.

Security mechanism names are defined in the *$SYBASE/install/libtcl.cfg* configuration file. If no *security_mechanism* name is supplied, the default mechanism is used. For more information on security mechanism names, see the description of the *libtcl.cfg* file in the *Open Client/Server Configuration Guide*.

-Q

provides backward compatibility with bcp version 10.0.4 for copying operations involving nullable columns.

Examples

Example 1 Copies data out of the publishers table in character format (using char for all fields) using the -c parameter. The -t *field_terminator* parameter ends each field with a comma, and the -r *row_terminator* parameter ends each line with a Return. bcp prompts only for a password:

In UNIX platforms:

```
bcp pubs2..publishers out pub_out -c -t , -r \\r
```

The first backslash before the final "r" escapes the second so that only one backslash is printed.

In Windows NT:

```
bcp pubs2..publishers out pub_out -c -t , -r \r
```

Example 2 Copies data from the publishers table to a file named *pub_out* for later reloading into Adaptive Server. Press Return to accept the defaults specified by the prompts. The same prompts appear when you copy data into the publishers table:

```
bcp pubs2..publishers out pub_out
Password:
Enter the file storage type of field pub_id [char]:
Enter prefix length of field pub_id [0]:
Enter length of field pub_id [4]:
Enter field terminator [none]:
Enter the file storage type of field pub_name [char]:
Enter prefix length of field pub_name [1]:
Enter length of field pub_name [40]:
Enter field terminator [none]:
Enter the file storage type of field city [char]:
Enter prefix length of field city [1]:
Enter length of field city [20]:
Enter field terminator [none]:
Enter the file storage type of field state [char]:
Enter prefix length of field state [1]:
Enter length of field state [2]:
Enter field terminator [none]:
```

In UNIX, you are then asked:

```
Do you want to save this format information in a
   file? [Y-n] y
Host filename [bcp.fmt]: pub_form
Starting copy...
3 rows copied.
 Clock Time (ms.): total = 1 Avg = 0 (3000.00 rows per
sec.)
```

Example 3 Copies data back into Adaptive Server using the saved format file, *pub_form*:

```
bcp pubs2..publishers in pub_out -f pub_form
```

Example 4 Enter the single letter exactly as it appears below:

```
To see examples of datatypes, enter "?" at the prompt:

Enter the file storage type of field 'pub_id'
   ['char']:?
Invalid column type. Valid types are:
 <cr>: same type as Adaptive Server column.
   c : char
   T : text
```

```
i : int
s : smallint
t : tinyint
f : float
m : money
b : bit
d : datetime
x : binary
I : image
D : smalldatetime
r : real
M : smallmoney
n : numeric
e : decimal
```

Example 5 Copies a data file created with a character set used on a VT200 terminal into the pubs2..publishers table. The -q flag translates it. The -z flag displays bcp messages in French:

```
bcp pubs2..publishers in vt200_data -J iso_1 -q vt200 -z french
```

Example 6 (UNIX only) Specifies that you are using a Macintosh, running bcp on a workstation that is using roman8, with the file system on another machine that uses iso_1:

```
bcp pubs2..publishers in -a mac -J roman8 -q iso_1
```

Example 7 Specifies that Adaptive Server send 40K of text or image data using a packet size of 4096 bytes:

```
bcp pubs2..publishers out -T 40960 -A 4096
```

Usage

- Use this syntax for bcp_r if you are using threaded drivers.
- Use this syntax for bcp_dce if you are using threaded drivers in the IBM platform.
- The current version of bcp ignores the -y *sybase_directory* parameter.
- You cannot use named pipes to copy files in or out.
- Error message format is different than earlier versions of bcp. If you have scripts that perform routines based on the values of these messages you may need to rewrite them, for example:

  ```
  The display message that indicates the number of rows
  transferred has been changed. During a session, this
  version of bcp periodically reports a running total
  of rows transferred. This message replaces the "1000
  rows transferred" message displayed by the previous
  ```

bcp.

Permissions

You must have an Adaptive Server account and the appropriate permissions on the database tables or views, as well as the operating system files to use in the transfer to use bcp.

- To copy data into a table, you must have insert permission on the table.
- To copy a table to an operating system file, you must have select permission on the following tables:
  - the table to copy
  - sysobjects
  - syscolumns
  - sysindexes

Tables used

sysaudits_01 – sysaudits_08

See also

See Chapter 3, "Using bcp to Transfer Data to and from Adaptive Server" for an in-depth discussion of bcp.

See the *Performance and Tuning Guide* for more information on how changing certain parameters can affect bcp for large batches.

Commands – insert

Sytem procedures – sp_audit, sp_dboption, sp_displayaudit

buildmaster

Description

Adaptive Server version 12.5 does not use the buildmaster binary to build the master device. Instead, Sybase has incorporated the buildmaster functionality in the dataserver binary. See Chapter 1, "Building Servers Using dataserver" for more information, and dataserver on page 125 for syntax.

Syntax

None.

certauth

Description

Converts a server certificate request to a CA- (certificate authority) signed certificate. Located in *$SYBASE/ASE-12_5/bin*.

Note In Windows NT, the utility is certauth.exe, and is located in *%SYBASE%\ASE-12_5\bin*.

Syntax

certauth
[-r]
[-C *caCert_file*]
[-Q *request_filename*]
[-K *caKey_filename*]
[-O *SignedCert_filename*]
[-P *caPassword*]
[-T *valid_time*]

Or

certauth -v

Parameters

-r
when specified, creates a self-signed root certificate for the test environment.

-C *caCert_file*
specifies the name of the CA's certificate request file when -r is specified, or specifies the name of the CA's root certificate.

-Q *request_filename*
specifies the name of certificate request file.

-K *caKey_filename*
specifies the name of the CA's private key.

-O *SignedCert_filename*
specifies the name to use for the output when creating a signed certificate file. If -r is specified, *SignedCert_filename* is the self-signed root certificate. If -r option is not used, *SignedCert_filename* is the certificate signed by the *caCert_file*.

-P *caPassword*
specifies the CA's password that is used to decrypt its private key.

-T *valid_time*
specifies the valid time range for a signed certificate. The valid time range is in units of days.

-v

prints the version number and copyright message of the certauth tool, then exits.

Examples

Example 1 This example converts the CA's certificate request (*ca_req.txt)* to a certificate, using the private key (*ca_pkey.txt*). The private key is protected using *password*. This example sets the valid time range to 365 days, self-signs the certificate, and outputs it as a root certificate (*trusted.txt*):

```
certauth -r -C ca_req.txt -Q ca_req.txt
    -K ca_pkey.txt -P password -T 365 -O trusted.txt
```

The utility returns this message:

```
 -- Sybase Test Certificate Authority --
Certificate Validity:
    startDate = Tue Sep 5  10:34:43  2000
endDate = Wed Sep 5  10:34:43  2001
CA sign certificate SUCCEED (0)
```

Note You need to create a trusted root certificate for the test CA only once. After you have created the trusted root certificate, you can use it to sign many server certificates in your test environment.

Example 2 This example converts a server certificate request (*srv5_req.txt*) to a certificate, and sets the valid time range to 180 days. It signs the certificate with a CA's certificate and private key (*trusted.txt* and *ca_pkey.txt*), uses password protection, and outputs the signed certificate as *sybase_srv5.crt*:

```
certauth -C trusted.txt -Q srv5_req.txt
-K ca_pkey.txt -P password -T 180 -O sybase_srv5.crt
```

Note If you do not set valid time, the default is 365 days.

The utility returns this message:

```
 -- Sybase Test Certificate Authority --
Certificate Validity:
    startDate = Tue Sep  5 10:38:32  2000
endDate = Sun Mar  4 09:38:32  2001
CA sign certificate SUCCEED (0)
```

Below is a sample certificate. See the Usage section below for additional steps to take to create a server certificate that the server can use.

```
-----BEGIN CERTIFICATE-----
MIICSTCCAgUCAVAwCwYHKoZIzjgEAwUAMG8xCzAJBgNVBAYTAlVTMRMwEQYDVQQI
EwpDYWxpZm9ybmlhMRMwEQYDVQQHEwpFbWVyeXZpbGxlMQ8wDQYDVQQKFAZTeWh
c2UxDDAKBgNVBAsUA0RTVDEXMBUGA1UEAxQOc3liYXNlX3Rlc3RfY2EwHhcNMDAw
ODE4MTkxMzM0WhcNMDEwODE4MTkxMzM0WjBvMQswCQYDVQQGEwJVUzETMBEGAUE
CBMKQ2FsaWZvcm5pYTETMBEGA1UEBxMKRW1lcnl2aWxsZTEPMA0GA1UEChQGU3li
YXNlMQwwCgYDVQQLFANEU1QxFzAVBgNVBAMUDnN5YmFzZV90ZXN0X2NhMIHwMIo
BgcqhkjOOAQBMIGcAkEA+6xG7XCxiklxbP96nHBnQrTLTCjHlcy8QhIekwv9OlqG
EMG9AjJLxj6VCkPOD75vqVMEkaPPjoIbXEJEe/aYXQIVAPyvY1+B9phC2e2YFcf7
cReCcSNxAkBHt7rnOJZ1Dnd8iLQGt0wd1w4lo/Xx2OeZS4CJW0KVKkGId1hNGz8r
GrQTspWcwTh2rNGbXxlNXhAV5g4OCgrYA0MAAkA70uNEl90Kmhdt3RISiceCMgOf
1J8dgtWF15mcHeS8OmF9s/vqPAR5NkaVk7LJK6kk7QvXUBY+8LMOugpJf/TYMAsG
ByqGSM44BAMFAAMxADAuAhUAhM2Icn1pSavQtXFzXJUCoOmNLpkCFQDtE8RUGuo8

       ZdxnQtPu9uJDmoBiUQ==

       -----END CERTIFICATE-----
```

Usage

- To create a server certificate file that Adaptive Server understands, append the certificate requestor's private key to the end of the signed certificate file. Using example 2 above, you would cut and paste *srv5_pkey.txt* to the end of the signed certificate file, *sybase_srv5.crt*.
- To create a trusted roots file that the server can load upon start-up, rename *trusted.txt* to *sybase_srv5.txt* where *sybase_srv5.txt* is the common name of the server.
- Then copy the *sybase_srv5.txt* file into the Adaptive Server installation directory, for example, *$SYBASE/$SYBASE_ASE/certificates*.

The file, which is required for an SSL-based session, is used to start the SSL-enabled Adaptive Server.

After the CA's root certificate is created, you can use it to sign multiple server certificates.

See also

Utilities – certpk12, certreq

certpk12

Description

Export or import a PKCS #12 file into a certificates file and a private key. Located in *$SYBASE/ASE-12_5/bin*.

Note In Windows NT, the utility is certpk12.exe, and is located in *%SYBASE%\ASE-12_5\bin*.

Syntax

```
certpk12
        {-O Pkcs12_file | -I Pkcs12_file}
        [-C Cert_file]
        [-K Key_file]
        [-P key_password]
        [-E Pkcs12_password]
```

Or

```
certpk12 -v
```

Parameters

-O *Pkcs12_file*

specifies the name of a PKCS #12 file to be exported. The file can contain a certificate plus a private key, a single certificate, or a single private key. Either -O or -I needs to be on.

-I *Pkcs12_file*

specifies the name of a PKCS #12 file to be imported. The file can contain a certificate plus a private key, a single certificate, or a single private key. Either -I or -O needs to be on.

-C *Cert_file*

specifies the name of certificate file to be exported to a PKCS #12 file if -O is on; or the name of certificate file to be imported from a PKCS #12 file if -I is on.

-K *Key_file*

specifies the name of private key file to be exported to a PKCS #12 file if -O is on; or the name of private key file to be imported from a PKCS #12 file if -I is on.

-P *Key_password*

specifies the password which is used to protect the private key specified by -K. If -O is on, the password is required to export the private key to a PKCS #12 file; if -I is on, the password is required to output the private key to a text file after it is imported from a PKCS #12 file.

-E *Pkcs12_password*

specifies the password used to protect the PKCS #12 file. If -O is on, the password is used to encrypt the PKCS #12 file to be exported; if -I is on, the password is used to decrypt the PKCS #12 file to be imported. The password is also called "transport password."

-v

prints the version number and copyright message of the certpk12 tool and exits.

Examples

Example 1 Exports certificate file (*caRSA.crt*) and private key file (*caRSApkey.txt*) to a PKCS#12 file (*caRSA.p12*). *password* is the password used to decrypt *caRSApkey.txt*. *pk12password* is the password used to encrypt the final *caRSA.p12*:

```
certpk12 -O caRSA.p12 -C caRSA.crt -K caRSApkey.txt
    -P password -E pk12password

-- Sybase PKCS#12 Conversion Utility certpk12 Thu Nov 9 16:55:51 2000--
```

Example 2 Imports a PKCS #12 file (*caRSA.p12*) that contains a certificate and a private key. Output the embedded certificate to a text file (*caRSA_new.crt*) and the embedded private key to a text file (*caRSApkey_new.txt*):

```
certpk12 -I caRSA.p12 -C caRSA_new.crt -K caRSApkey_new.txt
    -P new_password -E pk12password

-- Sybase PKCS#12 Conversion Utility certpk12 Thu Nov 9 16:55:51 2000--
```

new_password is used to protect *caRSApkey_new.txt*, and *pk12password* is required to decrypt *caRSA.p12* file.

Note After you run examples 1 and 2, *caRSA.crt* and *caRSA_new.crt* are identical. *caRSApkey.txt* and *caRSApkey_new.txt* are different because they are encrypted randomly.

Example 3 Exports the certificate file (*caRSA.crt*) to a PKCS#12 file (*caRSAcert.p12*). *pkcs12password* is used to encrypt *caRSAcert.p12*.

```
certpk12 -O caRSAcert.p12 -C caRSA.crt -E pk12password

-- Sybase PKCS#12 Conversion Utility certpk12 Thu Nov 9 16:55:51 2000--
```

Example 4 Imports a PKCS#12 file (*caRSAcert.p12*) that contains a certificate. Output the embedded certificate to a text file (*caRSAcert.txt*).

```
certpk12 -I caRSAcert.p12 -C caRSAcert.txt -E pk12password
```

```
-- Sybase PKCS#12 Conversion Utility certpk12 Thu Nov 9 16:55:51 2000--
```

pk12password is required to decrypt *caRSAcert.p12* file.

Note After you run Examples 3 and 4, the *caRSA.crt* and *caRSAcert.txt*, are identical.

Usage

- certpk12 only supports triple-DES encrypted PKCS #12 file.
- Append certificate requestor's private key to the end of its signed certificate file.
- Name the file *servername.crt*, where *servername* is the name of the server. Place it in the certificates directory under *$SYBASE/$SYBASE_ASE* (*%SYBASE%\%SYBASE_ASE%* on Windows).

  This file is needed to start the SSL-enabled Adaptive Server.

See also

Utilities – certauth, certreq

certreq

Description

Creates a server certificate request and corresponding private key. This utility can be used in interactive mode, or you can provide all optional parameters on the command line. Located in *$SYBASE/ASE-12_5/bin*.

Note In Windows NT, the utility is certreq.exe, and is located in *%SYBASE%\ASE-12_5\bin*.

Syntax

certreq
[-F *input_file*]
[-R *request_filename*]
[-K *PK_filename*]
[-P *password*]

Or

certreq -v

Parameters

-F *input_file*

specifies the file name that contains attribute information to build a certificate request. If you do not specify an *input_file* name, the required information must be interactively entered by a user.

The *input_file* needs an entry for each of the following:

```
req_certtype={Server,Client}
req_keytype={RSA,DSA}
req_keylength={for RSA: 512-2048;
               for DSA: 512,768,1024}
req_country={string}
req_state={string}
req_locality={string}
req_organization={string}
req_orgunit={string}
req_commonname={string}
```

Note The common name must be the same as the server name.

See Example 2 for a sample file called *input_file*.

-R *request_filename*

specifies the name for the certificate-request file.

-K *PK_filename*

specifies the name for the private-key file.

-P *password*
specifies the password used to protect the private key.

-v
displays the version number and copyright message, then exits.

Examples

Example 1 This example does not use the -F *input_file* parameter, and is therefore in interactive mode. To create a server certificate request (*server_req.txt*) and its private key (*server_pkey.txt*), enter:

```
certreq

Choose certificate request type:
     S – Server certificate request
     C – Client certificate request (not supported)
     Q – Quit
Enter your request [Q] : s

Choose key type:

     R – RSA key pair
     D – DSA/DHE key pair
     Q – Quit
Enter your request [Q] : r

Enter key length (512, 768, 1024 for DSA; 512-2048 for
RSA) : 512

Country: US

State: california

Locality: emeryville

Organization: sybase

Organizational Unit: dst

Common Name: server
```

The utility returns the message:

```
Generating key pair (please wait) . . .
```

After the key pair is generated, the certreq utility prompts you for more information.

```
Enter password for private key : password

Enter file path to save request: server_req.txt

Enter file path to save private key : server_pkey.txt
```

Example 2 In this sample text file, the format, *tag=value*, is used for noninteractive entry for a certificate request. You can use the -F option for noninteractive mode. When you use the -F option, be sure to use valid values and follow the format described above. Failure to do so prevents the certificate from being built correctly.

```
certreq -F input_file

req_certtype=server
req_keytype=RSA
req_keylength=512
req_country=us
req_state=california
req_locality=emeryville
req_organization=sybase
req_orgunit=dst
req_commonname=server
```

After you create and save this file, enter on the command line, where *path_and_file* is the location of the text file:

```
certreq -F path_and_file -R server_req.txt -K server_pkey.txt -P password
```

This file creates a server certificate request, *server_req.txt*, and its private key, *server_pkey.txt* which is protected by *password*.

You can edit the server certificate file with any standard ASCII text editor.

Usage

- The input file uses the format of *tag=value*. *tag* is case-sensitive and should be the same as described above.
- The "=" is required. Valid *value* should start with a letter or digit, must be a single word, and there should not be any spaces within *value*.
- *value* is required for *req_certtype*, *req_keytype*, *req_keylength* and *req_commonname*.
- The space or tab around <*tag*>, = and *value* is allowed. Blank lines are also allowed.
- Each comment line should start with #.
- The certificate request file is in PKCS #10 format and used as acceptable input for the certauth tool to convert the request to a CA-signed certificate.

See also

Utilities – certauth, certpk12

charset

Description

Loads the character sets and sort order files in Adaptive Server. Located in *$SYBASE/ASE-12_5/bin*.

Note This utility is not available for Windows NT.

Syntax

```
charset
        [-Ppassword]
        [-Sserver]
        [-Iinterface]
        sort_order
        [ charset ]
```

Or

```
charset -v
```

Parameters

-P *password*
specifies your password. If you do not specify -P, charset prompts for your password.

-S *server*
specifies the name of the server on which to change the character set and sort order.

-I *interface*
specifies the network interface used by the server.

sort_order
specifies the name of the sort order file Adaptive Server will use.

charset
specifies the character set Adaptive Server will use.

-v
displays the version number and copyright message for charset.

Usage

Before using charset, you must set your SYBASE environment variable to point to the current release directory.

Permissions

You must be a System Administrator to use charset.

See also

Commands – set

Utilities – langinstall

cobpre

Description	Precompiler for COBOL, located in *$SYBASE/OCS-12_5/bin* (*%SYBASE%\OCS-12_5\bin* in Windows NT). For a full description of cpre, see Appendix A of the *Open Client/Server Programmer's Supplement*.
Syntax	See above.

cpre

Description	Precompiler for C, located in *$SYBASE/OCS-12_5/bin* (*%SYBASE%\OCS-12_5\bin* in Windows NT). For a full description of cpre, see Appendix A of the *Open Client/Server Programmer's Supplement*.
Syntax	See above.

dataserver

Description

The executable form of the Adaptive Server program, located in *$SYBASE/ASE-12_5/bin*.

Note This utility is not available for Windows NT.

Syntax

```
dataserver [-f] [-g] [-G] [-h] [-H] [-m] [-q] [-v] [-X]
        [-a path_to_CAPs_directive_file]
        -b master_device_size [k|K|m|M|g|G]
        [-c config_file_for_server]
        [-d device_name]
        [-e path_to_error_log]
        [-i interfaces_file_directory]
        [-K keytab_file]
        [-L config_file_name_for_connectivity]
        [-M shared_memory_repository_directory]
        [-p sa_login_name]
        [-r mirror_disk_name]
        [-s server_name]
        [-T trace_flag]
        [-u sa/sso_name]
        [-w master | model database]
        [-y [password] ]
        [-z page_size [ k | K ] ]
```

Or

```
dataserver -v
```

Parameters

-f

forces initialization of a device or database. -f is valid only when used with -b and/or -w. The server fails to boot if you use -f without either -b or -w. -f forces the server in different ways, depending whether -w is present. See -b and -w in the following Usage section.

-g

turns off event-logging.

-G *logserv_name*

specifies the name of the event log server.

-h

prints this help message, then exists.

-H

starts the High Availability (HA) server, if you have the HA feature installed on your Adaptive Server.

-m
starts Adaptive Server in single-user mode.

-q
treats quiesced databases as “in recovery.”

-v
prints the version number and copyright message for dataserver, then exits.

-X
starts this server as sybmon, not dataserver.

-a *path_to_CAPs_directive_file*
specifies the path to the CAPs directive file.

-b *master_device_size* [k | K | m | M | g | G]
specifies the size of the master device or database you want to build. The server calculates the sizes, so you can use “K”, “M”, and “G” instead of exact byte numbers.

-c *config_file_for_server*
specifies the full path name of an Adaptive Server configuration file. Use this parameter to start Adaptive Server with the configuration values in the specified configuration file.

If you specify a configuration file with the dataserver -c parameter, make sure all the parameters in this configuration file are compatible before you boot the server. If some of the configuration parameters are incompatible, the server may not boot. To avoid this, do not specify a configuration file when you build the master device. The build phase uses all default settings when you do not specify a configuration file.

For more information, see the *System Administration Guide*.

-d *device_name*
is the full path name of the device for the master database. The master database device must be writable by the user who starts Adaptive Server. The default master database device name is d_master.

-e *errorlogfile*
is the full path name of the error log file for Adaptive Server system-level error messages.

-i *interfaces_file_directory*
specifies the directory location of the interfaces file to search when connecting Adaptive Server. If -I is omitted, dataserver looks for a file named *interfaces* in the directory pointed to by your SYBASE environment variable.

-K *keytab_file*
specifies the path to the keytab file used for authentication in DCE.

-L *config_file_name_for_connectivity*
specifies the name the configuration file for connectivity.

-M *sharedmem_directory*
places shared memory files in the specified directory instead of in the default location, *$SYBASE*. If *sharedmem_directory* starts with "/", the directory name is assumed to be absolute. Otherwise, the directory name is interpreted relative to *$SYBASE*.

-p *sso_login_name*
specifies the login name of a System Security Officer when starting Adaptive Server, for the purposes of getting a new password for that account. Adaptive Server generates a random password, displays it, encrypts it, and saves it in master..syslogins as that account's new password.

-r *mastermirror*
starts the mirror of the master device. Use this parameter to start Adaptive Server if the master device has been damaged.

-s *servername*
specifies the name of the Adaptive Server to start. If -s is omitted, a server named SYBASE is started.

-T *trace_flag*

-u *sa/sso_name*
specifies the System Administrator or System Security Officer's name you want to unlock.

-w *master* | *model_database*
specifies whether you want to write a master or model database.

-y [*password*]
allows you to assign a password for the encrypted private key, so that the server prompts the user for a password. This password should match the password you used to encrypt the private key when it was created. You cannot use this parameter when you are running the server in the background.

Note Although you can set a password with -y, for security reasons Sybase strongly discourages you from doing so.

A private key is included with your server's digital certificate. By default, the certificate file located:

```
/usr/local/sybase/certificates/servername.crt
```

The location of the certificate file changes if you invoke the sp_ssladmin addcert command.

-z *page_size* [k | K]
specifies the page size of the server. You must use -b and -w to use this flag, and name an even power of two between 2k and 16k, or else the server does not boot.

Examples

Example 1 Creates a new installation with a 100 MB master device and a 4k page:

```
dataserver -d d_master -z 4k -b 100.02M
```

The spaces between options and their following arguments are optional and acceptable. This example specifies "100.02M" for a 100MB master device because the server requires 16KB of overhead for its configuration area.

Example 2 Rewrites a corrupt model database:

```
dataserver -d d_master -w model
```

Example 3 Rewrites a corrupt master database, specifying device size:

```
dataserver -d d_master -w master -z 4k
```

Example 4 Rewrites a corrupt master database, specifying device and page sizes, forcing the server to accept these values in preference to what it may find in the config block:

```
dataserver -d d_master -w master -z 4k -b 100.02M -f
```

Example 5 Rewrites a corrupt master database, specifying a page size that does not match what the server finds in its config block. This produces a failure:

```
dataserver -d d_master -w master -z 8k
00:00000:00000:2001/01/19 12:01:26.94 server The
configured server page size does not match that
specified on the command line. To use the configured
size, omit the command line size; to use the command
line size, specify 'force' (-f).
```

Example 6 Rewrites a corrupt master database, specifying an incorrect page size, even in a normal boot. This produces a failure:

```
dataserver -d d_master -z4000
dataserver: the 'z' flag may not be used without 'b' or
'w'. dataserver: server will ignore the 'z' flag.
dataserver: the 'z' flag contained an invalid page size.
dataserver: the page size must be an even power of two
between 2048 and 16384 bytes, inclusive.
```

Usage

- dataserver allows you to create devices and databases that are up to 32Gb in size, depending on the limitation of your operating system. For more information on size limits, see the *Installation Guide* for your platform.
- Start Adaptive Server with the startserver command rather than by directly executing the dataserver program. If you need to change any of the default values, edit the *RUN_servername* file in your Sybase installation directory. See the startserver reference page for details.
- Because Adaptive Server passwords are encrypted, you cannot recover forgotten passwords. If all System Security Officers lose their passwords, the -p parameter generates a new password for a System Security Officer account. Start Adaptive Server with -p, immediately log in to Adaptive Server with the new random password, and execute sp_password to reset your password to a more secure one.
- After you have finished running the Adaptive Server installation program, set the file permissions on the dataserver executable to limit who can execute it.
- If you do not specify an Adaptive Server name with the -s parameter, and you have not set the DSLISTEN environment variable, dataserver uses the default Adaptive Server name SYBASE. The value of the DSLISTEN environment variable overrides this default value, and the -s parameter overrides both the default and the DSLISTEN environment variable.

- Automatic login lockouts can cause a site to end up in a situation in which all accounts capable of unlocking logins (System Administrators and System Security Officers) are locked. If this occurs, use the dataserver utility with the -u parameter to check the specified login for System Administrator or System Security Officer authorization, unlock the account, and reset the value of the current failed logins counter to zero.

Dependencies and conditions of -b and -w options

The effect of -b changes depending on whether -w is present:

- -b without -w creates a new master device as named by -d (the default is d_master) and with the page size as specified by -z (the default is 2048):
  - If the named device already exists as an OS file, the attempt fails, and you see a message such as:

    ```
    File already exists. You must remove the existing
    file before attempting to create a new one using
    the server's -b option.
    Unable to create master device.
    ```

  - If the named device names an existing raw partition, the attempt fails unless you include the -f flag. This reinitializes the raw partition as a server master device.
- -b with -w master tells dataserver to use the size specified in -z for the master device when recreating the master database. It implies nothing about creating a new device.

-w may or may not require additional flags:

- If you use -w model, the -z and -b flags are accepted but ignored.
- If you use -w master for *new* installations, -z and -b are not required because the device size information is stored in the *config_block*.
- If you use -w master to *upgrade* older installations:
  - The server requires -b and/or -z if the *config_block* does not contain a valid entry for the associated size(s). The command fails if it can't get valid data for the page size or device size.
  - You may provide -b and/or -z when the *config_block* contains valid entries for the size(s) they represent. However if the sizes do not match what is in the *config_block*, you must add -f to force your new size preferences.

Permissions

Anyone with execute permission on the binary, and who has read/write access to all the files.

See also

Commands – disk mirror, disk remirror, disk unmirror

System procedures – sp_ssladmin addcert

Utilities – startserver

dataxtr

Description

The GUI data-migration tool to move data and database schema from pre-12.5 Adaptive Server databases into 12.5 databases. located in *$SYBASE/ASE-12_5/bin* (*%SYBASE%\ASE-12_5\bin* in Windows NT).

For instructions on how to use the dataxtr utility, see the Adaptive Server Enterprise version 12.5 release bulletin for your platform.

Syntax

None

ddlgen

Description

A Java-based tool that generates definitions for server- and database-level objects in Adaptive Server. ddlgen supports Adaptive Server version 11.9.2 and later.

The command-line version of ddlgen is located in *$SYBASE/sybcent32* (*%SYBASE%\Sybase Central 3.2* in Windows NT).

Syntax

```
ddlgen
        -Ulogin
        -Ppassword
        -Shost_name : port_number
        [-Tobject_type]
        [-Nobject_name]
        [-Ddatabase_name]
        [-Xextended_object_type]
        [-Ooutput_file]
        [-Eerror_file]
```

Or

```
ddlgen -v
```

Parameters

-U *login*
specifies a login name, and is case-sensitive.

-P *password*
specifies your password.

-S*host_name* : *port_number*
specifies the host name or IP address of Adaptive Server, as well as its port number. Separate *host_name* and *port_number* with a colon, without spaces before or after it.

Note You must use the -S option because ddlgen does not connect to a default server, and does not support interface files.

-T*object_type*
specifies the type of object you are creating. If you do not use -T, ddlgen creates a DDL for the default database of *login*. Table 6-3 lists object types for -T.

Table 6-3: Valid object types for the ddlgen -T option

Object type	Description
C	cache
D	default

Object type	Description
DB	database
DBD	database device
DPD	dump device
EC	execution class
EG	engine group
GRP	group
I	index
L	login
P	stored procedure
R	rule
RO	role
RS	remote server
SGM	segment
TR	trigger
U	table
UDD	user-defined datatype
USR	user
V	view
XP	extended stored procedure

-N*object_name*

specifies the fully qualified name of the object you are creating, such as -N*db_name.owner.table.index*. The -N option:

- is required if you specify any *object_type* other than DB (database) in the -T parameter.
- accepts wildcards with the use of %.

Use -N% to generate a DDL for all items of a specific object type on your server.

-D*database_name*

specifies the name of the database for the object you specify in the -N option. The default is the user's default database.

-X*extended_object_type*

differentiates user tables (OU) from proxy tables (OD) when you specify a table as your object type (-TU). If *object_type* (-T) is U (table) and -X is not specified, ddlgen generates DDL for both user tables and proxy tables. To generate a DDL only for:

- user tables – use the OU extended object type with the -X option.
- proxy tables – use the OD extended object type with the -X option.

-O*output_file*

specifies an output file for the generated DDL. If you do not specify -O, the DDL you create appears in a console window.

-E*error_file*

specifies a log file for recording errors. If you do not specify -E, the generated errors appear in a console window.

-v

displays the version and copyright message of ddlgen and returns to the operating system.

Examples

Example 1 Generates a DDL for a database called pubs2 running on a machine named HARBOR using port 1955:

```
ddlgen -Uroy -Proy123 -SHARBOR:1955 -TDB -Npubs2
```

If you do not specify a *database_name*, ddlgen generates a DDL for the default database of *login*:

```
ddlgen -Ulogin -Ppassword -Shost_name:portnumber
```

Example 2 Generates a DDL for an index called au_lname for the table authors, in the database pubs2 owned by dbo, on a machine named HARBOR using port 1955:

```
ddlgen -Uroy -Proy123 -SHARBOR:1955 -TI -Nauthors.pubs2.au_lname -Dpubs2
```

Alternatively, because ddlgen allows you to use a fully qualified name in the -N flag, you can omit the -D*database_name* and include the database name in the -N option:

```
ddlgen -Ulogin -Ppassword -Shost_name:portnumber
    -TI -Ndatabasename.tableowner.tablename.indexname
```

If you use a fully qualified name, you may omit the -D option.

Example 3 Generates a DDL for all logins on a machine named HARBOR using port 1955:

```
ddlgen -Uroy -Proy123 -SHARBOR:1955 -TL -N%
```

Note The password in the DDL generated for all logins is “password”.

Alternatively, you can specify an individual login by using -N*username* instead of -N%.

Example 4 Generates a DDL for all rules associated with authors on a machine named HARBOR using port 1955:

```
DDLGen -Uroy -Proy123 -SHARBOR:1955 -TR -Nauthors.dbo.%
```

The % symbol tells DDLGen to create DDLs for all rules that exist on the server.

Example 5 Generates a DDL for a user table called publishers:

```
ddlgen -Uroy -Proy123 -SHARBOR:1955 -TU -Ndbo.publishers -Dpubs2 -XOU
```

The -XOU option in this example specifies that the table you are referring to (-TU) is a user table (OU). To generate a DDL for a proxy table, which uses the value OD, use -XOD instead.

Example 6 Generates a DDL for a user named Smith in the pubs2 database by using a fully qualified *databasename.username* format with the -N option:

```
ddlgen -Uroy -Proy123 -SHARBOR:1955 -TUSR -Npubs2.smith
```

Alternatively, you can use both the -N and -D options instead of using a fully qualified name in -N:

```
ddlgen -Ulogin -Ppassword -Shost_name:portnumber
    -TUSR -Nusername -Ddbname
```

Usage

- ddlgen does not identify existing sequences within views, stored procedures or triggers. For this reason, you must first run ddlgen on those views, stored procedures and triggers that are independent, before running ddlgen on those with dependencies. For example, if view B depends on view A, you must first run ddlgen on view A, before running it on view B.
- The default information for ddlgen is:

Option	Parameter	Required	Default
-U	*username*	Yes	None
-P	*password*	Yes	None
-S	*host_name*:*port_number*	Yes	None
-T	*object_type* See Table 6-3 for a list of valid object types	No	Default database of *username*

Option	Parameter	Required	Default
-N	*object_name*	Yes, if *object_type* for -T is not DB (database)	Default database name of *username*, if -T*object_type* is db or if -T is not specified
-D	*database_name*	No	Default database of *username*
-X	*extended_object_type* Options are OU for user tables, and OD for proxy tables	No; use only when the *object_type* for -T is U (user table)	None
-O	*output_file_name*	No	Standard out
-E	*error_file_name*	No	Standard out
-V	*version_number* of ddlgen	No	None

- To invoke ddlgen from a command line, you must install JRE 1.1.8 or higher, and have *DDLGen.jar* in your classpath.

  At the command line, invoke ddlgen using the *DDLGen.sh* file (*DDLGen.bat* for Windows NT), included in your Adaptive Server installation. The ddlgen script that invokes ddlgen is com.sybase.ddlgen.DDLGenerator and, the main class in *DDLGen.jar*.

- To start ddlgen in Sybase Central, the Adaptive Server plug-in:

  a Right-click on the object for which you want to generate a DDL.

  b Select Generate DDL.

defncopy

Description

Copies definitions for specified views, rules, defaults, triggers, or procedures from a database to an operating-system file or from an operating-system file to a database. Located in *$SYBASE/OCS-12_5/bin*.

Note In Windows NT, the utility is defncopy.exe and is located in *%SYBASE%\OCS-12_5\bin*.

Syntax

```
defncopy
        [-X]
        [-a display_charset]
        [-I interfaces_file]
        [-J [client_charset]]
        [-K keytab_file]
        [-P password]
        [-R remote_server_principal]
        [-S [server_name]]
        [-U username]
        [-V security_options]
        [-Z security_mechanism]
        [-z language]
        { in file_name database_name |
          out file_name database_name [owner.]object_name
              [[owner.]object_name...] }
```

Or

```
defncopy -v
```

Parameters

-X

initiates the login with client-side password encryption in this connection to the server. defncopy (the client) specifies to the server that password encryption is desired. The server sends back an encryption key, which defncopy uses to encrypt your password, and the server uses to authenticate your password when it arrives.

If defncopy crashes, the system creates a core file which contains your password. If you did not use the encryption option, the password appears in plain text in the file. If you used the encryption option, your password is not readable.

-a *display_charset*

runs defncopy from a terminal whose character set differs from that of the machine on which defncopy is running. Use -a in conjunction with -J to specify the character set translation file (*.xlt* file) required for the conversion. Use -a without -J only if the client character set is the same as the default character set.

Note The ascii_7 character set is compatible with all character sets. If either the Adaptive Server character set or the client character set is set to ascii_7, any 7-bit ASCII character can pass unaltered between client and server. Other characters produce conversion errors. See the *System Administration Guide* for more information on character set conversion.

-I *interfaces_file*

specifies the name and location of the interfaces file to search when connecting to Adaptive Server. If you do not specify -I, defncopy looks for a file named *interfaces* in the directory specified by the SYBASE environment variable in UNIX platforms, and *sql.ini* in the *ini* subdirectory for your Sybase release directory in Windows NT.

-J *client_charset*

specifies the character set to use on the client. A filter converts input between *client_charset* and the Adaptive Server character set.

-J *client_charset* requests that Adaptive Server convert to and from *client_charset*, the client's character set.

-J with no argument sets character set conversion to NULL. No conversion takes place. Use this if the client and server are using the same character set.

Omitting -J sets the character set to a default for the platform. The default may not be the character set that the client is using. For more information about character sets and their associated flags, see the *System Administration Guide* and *Configuration Guide* for your platform.

-K *keytab_file*

specifies the path to the keytab file used for authentication in DCE.

-P *password*

specifies your password. If you do not specify -P, defncopy prompts for your password.

-R *remote_server_principal*
specifies the principal name for the server. By default, a server's principal name matches the server's network name (which is specified with the -S parameter or the DSQUERY environment variable). Use the -R parameter when the server's principal name and network name are not the same.

-S *server_name*
specifies the name of the Adaptive Server to which to connect. If you specify -S with no argument, defncopy looks for a server named SYBASE. If you do not specify -S, defncopy uses the server specified by your DSQUERY environment variable.

-U *username*
specifies a login name. Login names are case sensitive. If you do not specify *username*, defncopy uses the current user's operating system login name.

-V *security_options*
specifies network-based user authentication. With this option, the user must log in to the network's security system before running the utility. In this case, users must supply their network user name with the -U option; any password supplied with the -P option is ignored.

-V can be followed by a *security_options* string of key-letter options to enable additional security services. These key letters are:

c – Enable data confidentiality service

i – Enable data integrity service

m – Enable mutual authentication for connection establishment

o – Enable data origin stamping service

r – Enable data replay detection

q – Enable out-of-sequence detection

-Z *security_mechanism*
specifies the name of a security mechanism to use on the connection.

Security mechanism names are defined in the *$SYBASE/install/libtcl.cfg* configuration file. If no *security_mechanism* name is supplied, the default mechanism is used. For more information on security mechanism names, see the description of the *libtcl.cfg* file in the *Open Client/Server Configuration Guide*.

-z language
is the official name of an alternate language that the server uses to display defncopy prompts and messages. Without the -z flag, defncopy uses the server's default language.

Add languages to an Adaptive Server at installation, or afterwards with the utility langinstall (langinst in Windows NT) or the stored procedure sp_addlanguage.

in | out
specifies the direction of definition copy.

file_name
specifies the name of the operating system file destination or source for the definition copy. The copy out overwrites any existing file.

database_name
specifies the name of the database to copy the definitions from or to.

owner
is optional if you or the Database Owner own the table being copied. If you do not specify an owner, defncopy first looks for a table of that name that you own, and then looks for one owned by the Database Owner. If another user owns the table, you must specify the owner name or the command fails.

object_name
specifies name(s) of database object(s) for defncopy to copy out. Do not use *objectname* when copying definitions in.

-v
displays the version and copyright message of defncopy and returns to the operating system.

Examples

Example 1 Copies definitions from the file *new_proc* into the database stagedb on server MERCURY. The connection with MERCURY is established with a user of name "sa" and a NULL password:

```
defncopy -Usa -P -SMERCURY in new_proc stagedb
```

Example 2 Copies definitions for objects sp_calccomp and sp_vacation from the employees database on the SYBASE server to the file *dc.out*. Messages and prompts display in french. The user is prompted for a password:

```
defncopy -S -z french out dc.out employees sp_calccomp sp_vacation
```

Usage

- Use this syntax for defncopy_r if you are using threaded drivers.
- Use this syntax for defncopy_dce if you are using threaded drivers in the IBM platform.

- You must set the SYBASE environment variable to the location of the current version of Adaptive Server before you can use defncopy.
- The defncopy utility cannot copy table definitions or reports created with Report Workbench™.
- Invoke the defncopy program directly from the operating system. defncopy provides a noninteractive way to copy out definitions (create statements) for views, rules, defaults, triggers, or procedures from a database to an operating system file. Alternatively, it copies in all the definitions from a specified file.
- The in *filename* or out *filename* and the database name are required and must be stated unambiguously. For copying out, use file names that reflect both the object's name and its owner.
- defncopy ends each definition that it copies out with the comment:

  ```
  /* ### DEFNCOPY: END OF DEFINITION */
  ```

  Definitions created as text must end with this comment so that defncopy can copy them in successfully.
- Enclose values specified to defncopy in quotation marks, if they contain characters that could be significant to the shell.

Warning! Long comments of more than 100 characters that are placed before a create statement may cause defncopy to fail.

Permissions

- You must have select permission on the sysobjects and syscomments tables to copy out definitions; you do not need permission on the object itself.

- You may not have select permission on the text column of the syscomments table if the System Security Officer has reset the allow select on syscomments.text column parameter with the system procedure sp_configure. This reset restricts select permission to the object owner and the System Administrator. This restriction is required in order to run Adaptive Server in the *evaluated configuration*, as described in the installation and configuration documentation for your platform. In this case, the object owner or a System Administrator must execute defncopy to copy out definitions.

  Note If the text has been encrypted, it may be hidden from you even if you have all the required permissions. See "Verifying and Encrypting Source Text" in the *Transact-SQL User's Guide* for more information.

- You must have the appropriate create permission for the type of object you are copying in. Objects copied in belong to the copier. A System Administrator copying in definitions on behalf of a user must log in as that user to give the user proper access to the reconstructed database objects.

Tables used

syscomments, sysobjects

See also

Commands – create, select

System procedures – sp_addlanguage, sp_checkreswords, sp_configure, sp_procqmode, sp_remap

Utilities – langinstall

dscp

Description

Allows you to view and edit server entries in the interfaces file from the command line in UNIX platforms. Located in *$SYBASE/OCS-12_5/bin*.

Note This utility is not available for Windows NT.

Syntax

dscp [-p]

or

dscp -v

To exit from dscp:

quit

or

exit

Parameters

-p
suppresses command-line prompts.

-v
displays the version and copyright message of dscp and returns to the operating system.

Examples

Opens the default interfaces file for editing and suppresses the command-line prompt:

```
dscp -p
```

Usage

- Use this syntax for dscp_r if you are using threaded drivers.
- Use this syntax for dscp_dce if you are using threaded drivers in the IBM platform.
- You must set the SYBASE environment variable to the location of the current version of Adaptive Server before you can use dscp.
- The dscp utility program is a text-based utility.
- See Chapter 5, "Using dscp" for more information about the dscp utility program.

See also

Utilities – dsedit

dsedit

Description

In UNIX platforms, dsedit allows you to view and edit server entries in the interfaces file using a GUI based on X11/Motif in UNIX platforms. The utility is located in *$SYBASE/OCS-12_5/bin*.

In Windows NT, dsedit.exe creates and modifies network connection information in the interfaces file. The utility is located in *%SYBASE%\OCS-12_5\bin*.

Syntax

dsedit

or

```
dsedit -v
```

Parameters

-v
displays the version and copyright message of dsedit.

Usage

- Use this syntax for dsedit_r if you are using threaded drivers.
- Use this syntax for dsedit_dce if you are using threaded drivers in the IBM platform.
- You must set the SYBASE environment variable to the location of the current version of Adaptive Server before you can use dsedit.
- You must set the DISPLAY environment variable before invoking dsedit, unless you are only using the -v parameter to display the version number.
- For more information about the dsedit utility program, see Chapter 4, "Using dsedit." Also see the *Installation Guide*, and the *Configuration Guide* for your platform.

See also

Utilities – dscp

extractjava

Description

Copies a retained JAR and the classes it contains from an Adaptive Server into a client file. Located in *$SYBASE/OCS-12_5/bin*.

Note In Windows NT, the utility is extrjava.exe, and is located in *%SYBASE%\OCS-12_5\bin*.

Syntax

extractjava (extrjava in Windows NT)
-j *jar_name*
-f *file_name*
[-S *server_name*]
[-U *user_name*]
[-P *password*]
[-D *database_name*]
[-I *interfaces_file*]
[-a *display_charset*]
[-J *client_charset*]
[-z *language*]
[-t *timeout*]
[-v]

Or

extractjava -v

Parameters

-j *jar_name*
the name assigned to the retained JAR in the database that is the source of the transfer.

-f *file_name*
the name of the client file that is the target of the transfer.

-S *server_name*
the name of the server.

-U *user_name*
an Adaptive Server login name. If you omit the -U flag and parameter, or if you specify the -U flag with no parameter, Adaptive Server uses the current user's operating system login name.

-P *password*
an Adaptive Server password. If you omit the -P flag and parameter, extractjava prompts for a password. If you specify the -P flag with no password, the null password is used.

-D *database_name*

the name of the database in which to install the JAR. If you omit the -D flag, or if you specify the -D flag with no parameter, the user's default database is used.

-I *interfaces_file*

the name and location of the interfaces file to search when connecting to Adaptive Server. If you omit the -I flag and parameter, or if you specify the -I flag with no parameter, the interfaces file in the directory designated by your SYBASE environment variable is used.

-a *display_charset*

allows you to use extractjava from a machine where the character set differs that of the server. Use -a in conjunction with -J to specify the character set translation file (*.xlt* file) required for the conversion. Use -a without -J only if the client character set is the same as the default character set.

-J *client_charset*

specifies the character set to use on the client. extractjava uses a filter to convert input between *client_charset* and the Adaptive Server character set.

-J *client_charset* requests that Adaptive Server convert to and from *client_charset*, the character set used on the client.

-J with no argument disables character set conversion. Use this if the client and server use the same character set.

Omitting -J sets the character set to a default for the platform, which may not necessarily be the character set that the client is using. See the *System Administration Guide* for more information about character sets and associated flags.

-z *language*

the name of an alternate language for displaying extractjava prompts and messages. Without the -z flag, extractjava uses the server's default language. You can add languages to an Adaptive Server during installation or afterward, using the langinstall utility or the sp_addlanguage stored procedure.

-t *timeout*

specifies the number of seconds before a SQL command times out. If you do not specify a timeout, the command runs indefinitely. This affects commands issued from within extractjava, not the connection time. The default timeout for logging into extractjava is 60 seconds.

-v
prints the version number and copyright message for extractjava and then exits.

Examples

Downloads the classes associated with the employees JAR to the client file *newaddr.jar*.

In UNIX:

```
extractjava -j employees -f '/home/usera/jars/addr.jar' -new
```

In Windows NT:

```
extrjava -j employees -f '\home\usera\jars\addr.jar' -new
```

Usage

- You must set the SYBASE environment variable to the location of the current version of Adaptive Server before you can use extractjava.
- If the target client file already exists, extractjava overwrites its contents.
- The parameter flags -f, -j, -S, -U, -P, -D, and -I can be written with or without a space between the flag letter and the following parameter.
- When you execute extractjava, an exclusive lock is placed on sysxtypes.
- If -jar is specified, an exclusive table lock is placed on sysjars.
- See *Java in Adaptive Server Enterprise* for more information about how this utility is used when Java is enabled in the database.

Permissions

You need to be a System Administrator or Database Owner to use extractjava.

Tables used

sysjars, sysxtypes

See also

Commands – remove java

System procedures – sp_helpjava

Utilities – installjava

installjava

Description

Installs a JAR from a client file into an Adaptive Server. The utility is located in *$SYBASE/OCS-12_5/bin*.

Note In Windows NT, the utility is instjava.exe, located in *%SYBASE%\OCS-12_5\bin*.

Syntax

```
installjava
        -f file_name
        [ -new | -update ]
        [ -j jar_name ]
        [ -S server_name ]
        [ -U user_name ]
        [ -P password ]
        [ -D database_name ]
        [ -I interfaces_file ]
        [ -a display_charset ]
        [ -J client_charset ]
        [ -z language ]
        [ -t timeout ]
        [-v]
```

Or

```
installjava -v
```

Parameters

-f *file_name*

the name of the source file containing the classes to be installed in the database.

-new | -update

specifies whether the classes in the file already exist in the database.

If you specify the new parameter, you cannot install a class with the same name as an existing class.

If you specify the update parameter, you can install a class with the same name as an existing class, and the newly installed class replaces the existing class.

-j *jar_name*

the name of the JAR containing the classes to be installed in the database. Indicates that the JAR file should be saved in the database and associated with the classes it contains.

-S *server_name*

the name of the server.

-U *user_name*

an Adaptive Server login name. If you omit the -U flag and parameter, or if you specify the -U flag with no parameter, Adaptive Server uses the current user's operating system login name.

-P *password*

an Adaptive Server password. If you omit the -P flag and parameter, installjava prompts for a password. If you specify the -P flag with no password, the null password is used.

-D *database_name*

the name of the database in which to install the JAR. If you omit the -D flag, or if you specify the -D flag with no parameter, the user's default database is used.

-I *interfaces_file*

the name and location of the interfaces file to search when connecting to Adaptive Server. If you omit the -I flag and parameter, or if you specify the -I flag with no parameter, the interfaces file in the directory designated by your SYBASE environment variable is used.

-a *display_charset*

allows you to use installjava from a machine where the character set differs that of the server. Use -a in conjunction with -J to specify the character set translation file (*.xlt* file) required for the conversion. Use -a without -J only if the client character set is the same as the default character set.

-J *client_charset*

specifies the character set to use on the client. installjava uses a filter to convert input between *client_charset* and the Adaptive Server character set.

-J *client_charset* requests that Adaptive Server convert to and from *client_charset*, the character set used on the client.

-J with no argument disables character set conversion. Use this if the client and server use the same character set.

Omitting -J sets the character set to a default for the platform, which may not necessarily be the character set that the client is using. See the *System Administration Guide* for more information about character sets and associated flags.

-z *language*

the name of an alternate language for displaying installjava prompts and messages. Without the -z flag, installjava uses the server's default language. You can add languages to an Adaptive Server during installation or afterward, using the langinstall utility or the sp_addlanguage stored procedure.

-t *timeout*

specifies the number of seconds before a SQL command times out. If you do not specify a timeout, the command runs indefinitely. This affects commands issued from within installjava, not the connection time. The default timeout for logging into installjava is 60 seconds.

-v

prints the version number and copyright message for installjava and then exits.

Examples

Example 1 Installs *addr.jar* and its classes, but does not retain the association between the JAR and classes:

```
installjava -f '/home/usera/jars/addr.jar' -new
```

In Windows NT:

```
instjava -f '\home\usera\jars\addr.jar' -new
```

Example 2 Reinstalls *addr.jar* and associates its classes with the employees JAR name:

```
installjava -f '/home/usera/jars/addr.jar' -update -j employees
```

In Windows NT:

```
instjava -f '\home\usera\jars\addr.jar' -update -j employees
```

Usage

- You must set the SYBASE environment variable to the location of the current version of Adaptive Server before you can use installjava.
- Refer to *Java in Adaptive Server Enterprise* for more information about how this utility is used when Java is enabled in the database.
- Any user can reference installed classes.
- The parameter flags -f, -j, -S, -U, -P, -D, and -I can be written with or without a space between the flag letter and the following parameter.

Adding new JARs

- If you use new with the -jar option and a JAR of that name already exists in the database, an exception is raised.

- If any classes of the same name as those in the source JAR already exist in the database, an exception is raised.

Updating JARs and classes

Warning! If you alter a class used as a column datatype by reinstalling a modified version of the class, you must make sure that the modified class can read and use existing objects (rows) in tables using that class as a datatype. Otherwise, you may be unable to access those objects without reinstalling the class.

- If you use -update with the -jar option:
  - All classes in the database associated with the target JAR are deleted from the database and the classes in the source JAR file installed in their place.
  - If a class in the source JAR file is already installed in the database but is not attached to a JAR, the class in the source JAR is installed in the database and the unattached class is deleted.
- If you use -update without the -jar option:
  - Classes in the source JAR file replace unattached classes of the same name.
  - Classes in the source JAR that do not correspond to an installed class are installed as unattached classes in the database.
- If you install a new JAR with a replacement for an installed class that is referenced by a SQLJ procedure or function, make sure that the newly installed class has a valid signature for the SQLJ routine. If the signature is invalid, an exception is raised when the SQLJ routine is invoked.

Locks

- When you execute installjava, an exclusive lock is placed on sysxtypes.
- If -jar is specified, an exclusive table lock is placed on sysjars.

Permissions

You need to be a System Administrator or Database Owner to use installjava.

Tables used

sysjars, sysxtypes

See also

Commands – remove java

System procedures – sp_helpjava

Utilities – extractjava

isql

Description

Interactive SQL parser to Adaptive Server. Located in *$SYBASE/ASE-12_5/bin*.

Note In Windows NT, the utility is isql.exe, located in *%SYBASE%\ASE-12_5\bin*.

Syntax

```
isql [-b] [-e] [-F] [-p] [-n] [-v] [-X] [-Y] [-Q]
        [-a display_charset]
        [-A packet_size]
        [-c cmdend]
        [-D database]
        [-E editor]
        [-h headers]
        [-H hostname]
        [-i inputfile]
        [-I interfaces_file]
        [-J client_charset]
        [-K keytab_file]
        [-l login_timeout]
        [-m errorlevel]
        [-o outputfile]
        [-P password]
        [-R remote_server_principal]
        [-s colseparator]
        [-S server_name]
        [-t timeout]
        -U username
        [-V [security_options]]
        [-w columnwidth]
        [-z locale_name]
        [-Z security_mechanism]
```

- To terminate a command:

  ```
  go
  ```

- To clear the query buffer:

  ```
  reset
  ```

- To call the default editor:

  ```
  vi
  ```

- To execute an operating system command:

  ```
  !! command
  ```

- To exit from isql:

quit

or

exit

Parameters

-b

disables the display of the table headers output.

-e

echoes input.

-F

enables the FIPS flagger. When you specify the -F parameter, the server returns a message when it encounters a non-standard SQL command. This option does not disable SQL extensions. Processing completes when you issue the non-ANSI SQL command.

-p

prints performance statistics.

-n

removes numbering and the prompt symbol (>) from the echoed input lines in the output file when used in conjunction with -e.

-v

prints the version number and copyright message for isql and then exits.

-X

initiates the login connection to the server with client-side password encryption. isql (the client) specifies to the server that password encryption is desired. The server sends back an encryption key, which isql uses to encrypt your password, and the server uses the key to authenticate your password when it arrives.

If isql crashes, the system creates a core file that contains your password. If you did not use the encryption option, the password appears in plain text in the file. If you used the encryption option, your password is not readable.

-Y

tells the Adaptive Server to use chained transactions.

-Q

provides clients with failover property. See *Using Sybase Failover in a High Availability System* for more information.

-a *display_charset*

runs isql from a terminal whose character set differs from that of the machine on which isql is running. Use -a in conjunction with -J to specify the character set translation file (*.xlt* file) required for the conversion. Use -a without -J only if the client character set is the same as the default character set.

Note The ascii_7 character set is compatible with all character sets. If either the Adaptive Server character set or the client character set is set to ascii_7, any 7-bit ASCII character can pass unaltered between client and server. Other characters produce conversion errors. For more information on character set conversion, see the *System Administration Guide*.

-A *packet_size*

specifies the network packet size to use for this isql session. For example, the following sets the packet size to 2048 bytes for this isql session:

```
isql -A 2048
```

- To check your network packet size, enter:

  ```
  select * from sysprocesses
  ```

- The value is displayed under the *network_pktsz* heading.
- *size* must be between the values of the default network packet size and maximum network packet size configuration parameters, and must be a multiple of 512.
- Use larger-than-default packet sizes to perform I/O-intensive operations, such as readtext or writetext operations.
- Setting or changing Adaptive Server's packet size does not affect the packet size of remote procedure calls.

-c *cmdend*

changes the command terminator. By default, you terminate commands and send them to by typing "go" on a line by itself. When you change the command terminator, do not use SQL reserved words or control characters.

-D *database*

selects the database in which the isql session begins.

-E *editor*

specifies an editor other than the default editor vi.

-h *headers*

specifies the number of rows to print between column headings. The default prints headings only once for each set of query results.

-H *hostname*

sets the client host name.

-i *inputfile*

specifies the name of the operating system file to use for input to isql. The file must contain command terminators ("go" is the default).

- Specifying the parameter as follows is equivalent to < *inputfile*:

  ```
  -i inputfile
  ```

- If you use -i and do not specify your password on the command line, isql prompts you for it.
- If you use < *inputfile* and do not specify your password on the command line, you must specify your password as the first line of the input file.

-I *interfaces_file*

specifies the name and location of the interfaces file to search when connecting to Adaptive Server. If you do not specify -I, isql looks for a file named *interfaces* in the directory specified by your SYBASE environment variable.

-J *client_charset*

specifies the character set to use on the client. -J *client_charset* requests that Adaptive Server convert to and from *client_charset*, the character set used on the client. A filter converts input between *client_charset* and the Adaptive Server character set.

-J with no argument sets character set conversion to NULL. No conversion takes place. Use this if the client and server use the same character set.

Omitting -J sets the character set to a default for the platform. The default may not necessarily be the character set that the client is using. F or more information about character sets and the associated flags, see Chapter 20, "Configuring Client/Server Character Set Conversions," in the *System Administration Guide*. The default character sets for different platforms are:

Platform	Default character set
Sun Solaris, Digital UNIX, Pyramid, NCR, RS/6000	iso_1
HP-UX	roman8
OS/2, Novell NetWare 386	cp850
Macintosh	mac

-K *keytab_file*
specifies the path to the keytab file used for authentication in DCE.

-l *login_timeout*
specifies the maximum timeout value allowed when connecting to Adaptive Server. The default is 60 seconds. This value affects only the time that isql waits for the server to respond to a login attempt. To specify a timeout period for command processing, use the -t *timeout* parameter.

-m *errorlevel*
customizes the error message display. For errors of the severity level specified or higher, only the message number, state, and error level are displayed; no error text appears. For error levels lower than the specified level, nothing appears.

-o *outputfile*
specifies the name of an operating system file to store the output from isql. Specifying the parameter as -o *outputfile* is similar to > *outputfile*

-P *password*
specifies your Adaptive Server password. If you do not specify the -P flag, isql prompts for a password. If your password is NULL, use the -P flag without any password.

-R *remote_server_principal*
specifies the principal name for the server as defined to the security mechanism. By default, a server's principal name matches the server's network name (which is specified with the -S parameter or the DSQUERY environment variable). Use the -R parameter when the server's principal name and network name are not the same.

-s *colseparator*
resets the column separator character, which is blank by default. To use characters that have special meaning to the operating system (for example, "|", ";", "&", "<", ">"), enclose them in quotes or precede them with a backslash.

-S *server_name*
specifies the name of the Adaptive Server to which to connect. isql looks this name up in the interfaces file. If you specify -S with no argument, isql looks for a server named SYBASE. If you do not specify -S, isql looks for the server specified by your DSQUERY environment variable.

-t *timeout*
specifies the number of seconds before a SQL command times out. If you do not specify a timeout, the command runs indefinitely. This affects commands issued from within isql, not the connection time. The default timeout for logging into isql is 60 seconds.

-U *username*
specifies a login name. Login names are case sensitive.

-V *security_options*
specifies network-based user authentication. With this option, the user must log in to the network's security system before running the utility. In this case, users must supply their network user name with the -U option; any password supplied with the -P option is ignored.

-V can be followed by a *security_options* string of key-letter options to enable additional security services. These key letters are:

c – Enable data confidentiality service

i – Enable data integrity service

m – Enable mutual authentication for connection establishment

o – Enable data origin stamping service

q – Enable out-of-sequence detection

r – Enable data replay detection

-w *columnwidth*
sets the screen width for output. The default is 80 characters. When an output line reaches its maximum screen width, it breaks into multiple lines.

-z *locale_name*
is the official name of an alternate language to display isql prompts and messages. Without -z, isql uses the server's default language. You can add languages to an Adaptive Server during installation or afterward, using the langinstall utility or the sp_addlanguage stored procedure.

-Z *security_mechanism*
specifies the name of a security mechanism to use on the connection.

Security mechanism names are defined in the *libtcl.cfg* configuration file located in the *ini* subdirectory below the Sybase installation directory. If no *security_mechanism* name is supplied, the default mechanism is used. For more information on security mechanism names, see the description of the *libtcl.cfg* file in the *Open Client/Server Configuration Guide*.

Examples

Example 1 This example puts you in a text file where you can edit the query. When you write and save the file, you are returned to isql. The query appears; type "go" on a line by itself to execute it:

```
isql -Ujoe -Pabracadabra
1> select *
2> from authors
3> where city = "Oakland"
4> vi
```

Example 2 reset clears the query buffer. quit returns you to the operating system:

```
isql -Ualma
Password:
1> select *
2> from authors
3> where city = "Oakland"
4> reset
1> quit
```

Example 3 Specifies that you are running isql from a Macintosh against a server that is using the roman8 character set:

```
isql -a mac -J roman8
```

Usage

- Use this syntax for isql_r if you are using threaded drivers.
- Use this syntax for isql_dce if you are using threaded drivers in the IBM platform.
- You must set the SYBASE environment variable to the location of the current version of Adaptive Server before you can use isql.
- The 5701 ("changed database") server message is no longer displayed after login or issuing a use database command.
- Error message format differs from earlier versions of isql. If you have scripts that perform routines based on the values of these messages you may need to rewrite them.
- To use isql interactively, give the command isql (and any of the optional parameters) at your operating system prompt. The isql program accepts SQL commands and sends them to Adaptive Server. The results are formatted and printed on standard output. Exit isql with quit or exit.

- Terminate a command by typing a line beginning with the default command terminator go or another command terminator, if the -c parameter is used. You can follow the command terminator with an integer to specify how many times to run the command. For example, to execute this command 100 times, type:

  ```
  select x = 1
  go 100
  ```

  The results display once at the end of execution.

- If you enter an option more than once on the command line, isql uses the last value. For example, if you enter the following command, "send", the second value for -c, overrides ".", the first value:

  ```
  isql -c"." -csend
  ```

  This enables you to override any aliases you set up.

- To call an editor on the current query buffer, enter its name as the first word on a line. Define your preferred callable editor by specifying it with the EDITOR environment variable. If EDITOR is not defined, the default is vi.

  Execute operating system commands by starting a line with "!!" followed by the command. Call alternate editors this way, without defining EDITOR.

- To clear the existing query buffer, type reset on a line by itself. isql discards any pending input. You can also press Ctrl-c anywhere on a line to cancel the current query and return to the isql prompt.

- Read in an operating system file containing a query for execution by isql as follows:

  ```
  isql -U alma -Ppassword < input_file
  ```

  The file must include a command terminator. The results appear on your terminal. Read in an operating system file containing a query and direct the results to another file as follows:

  ```
  isql -U alma -Ppassword < input_file > output_file
  ```

- Case is significant for the isql flags.

- isql displays only 6 digits of float or real data after the decimal point, rounding off the remainder.

- When you are using isql interactively, read an operating system file into the command buffer with the command:

  ```
  :r filename
  ```

Do not include the command terminator in the file; once you have finished editing, enter the terminator interactively on a line by itself.

- You can include comments in a Transact-SQL statement submitted to Adaptive Server by isql. Open a comment with "/*". Close it with "*/", as shown in the following example:

```
select au_lname, au_fname
/*retrieve authors' last and first names*/
from authors, titles, titleauthor
where authors.au_id = titleauthor.au_id
and titles.title_id = titleauthor.title_id
/*this is a three-way join that links authors
**to the books they have written.*/
```

If you want to comment out a go command, it should not be at the beginning of a line. For example, use the following to comment out the go command:

```
/*
**go
*/
```

Do not use the following:

```
/*
go
*/
```

See also

See Chapter 2, "Using the isql Utility" for details on isql.

See the *Reference Manual* for more information regarding default network packet size and maximum network packet size configuration parameters.

Commands – create schema, set

Datatype – exact numeric datatypes

System ESP – xp_sendmail

System procedures – sp_addlanguage, sp_addlogin, sp_addremotelogin, sp_add_resource_limit, sp_bindexeclass, sp_configure, sp_defaultlanguage, sp_droplanguage, sp_helplanguage, sp_processmail, sp_remoteoption, sp_serveroption, sp_showcontrolinfo, sp_unbindexeclass, sp_volchanged

langinstall

Description

Installs a new language in an Adaptive Server. Located in *$SYBASE/ASE-12_5/bin*.

Note In Windows NT, the utility is langinst.exe, located in *%SYBASE%\ASE-12_5\bin*.

Syntax

```
langinstall
        [-S server]
        [-U user]
        [-I interfaces_file]
        [-P password]
        [-R release_number]
        [-I path_to_interfaces_file]
        language
        character_set
```

Or

```
langinstall -v
```

Parameters

-S *server*

specifies the name of the Adaptive Server to which to connect. If you do not specify -S, langinstall uses the server specified by your DSQUERY environment variable. If DSQUERY is not set, langinstall attempts to connect to a server named SYBASE.

-U *user*

specifies a login name. Login names are case sensitive.

-I *interfaces_file*

specifies the name and location of the interfaces file (*sql.ini* file in Windows NT) that langinstall searches when connecting to Adaptive Server. If you do not specify -I, langinstall uses the interfaces file in the directory specified by the SYBASE environment variable. If SYBASE is not set, langinstall looks for the default *SYBASE* directory.

-P *password*

specifies the System Administrator's ("sa" account) password. If you omit -P, langinstall prompts for the "sa" account password.

-R *release_number*

specifies the release number, in the format *n.n.n*, to use to upgrade messages in master..sysmessages. Use -R only in failure conditions, such as if langinstall (langinst in Windows NT) fails, in case of user error, or when you think that messages in sysmessages are out of date.

The -R parameter forces langinstall to collect messages from a release previous to the current one. langinstall compares the existing messages with the ones to be installed and replaces any that have changed.

For example, if the current version is 12.5, and the previous version was 12.0, and you think sysmessages may not be correct, include the messages from the earlier version in the syslanguages.upgrade column (12.0 in this case) by specifying -R 12.0. langinstall then installs all messages from Adaptive Server 12.0.

-I *path_to_interfaces_file*

specifies the path to the interfaces file.

language

is the official name of the language to be installed. You must specify a language.

character_set

is the name of Adaptive Server's default character set. *character_set* indicates the directory name of the localization files for the language. The *common.loc* and *server.loc* localization files for an official language reside in the character set directory *$SYBASE/locales/language/character_set* in UNIX platforms, or *%sybase%\locales\language\character_set* in Windows NT. You must specify a character set.

-v

prints the version number and copyright message for langinstall and then exits.

Usage

- The Adaptive Server installation program runs langinstall automatically for a new installation as well as for customers who are upgrading from an earlier version.
- langinstall does the following:
  - Adds the specified language-specific information to master..syslanguages using sp_addlanguage. If the language already exists, langinstall updates the appropriate row in syslanguages.
  - Adds to, updates, and deletes error messages as necessary from master..sysmessages.

    - Updates syslanguages.update, inserting the new release number.
- langinstall validates the entries in the localization file sections that it uses. If anything is missing, langinstall prints an error message and does not add the language to syslanguages.
- langinstall compares the version numbers of each localization file it uses, *common.loc* and *server.loc*. If they are not the same, it prints a warning message. syslanguages.upgrade is always set according to the version number in *server.loc*.

Permissions	Only a System Administrator using the "sa" account can run langinstall.
Tables used	master.dbo.syslanguages, master.dbo.sysmessages
See also	*System procedures* – sp_addlanguage, sp_addlogin, sp_configure, sp_defaultlanguage, sp_droplanguage, sp_helplanguage *Utilities* – defncopy, srvbuild

optdiag

Description

Displays optimizer statistics or loads updated statistics into system tables. optdiag is located in *$SYBASE/ASE-12_5/bin*.

Note In Windows NT, the utility is optdiag.exe, located in *%SYBASE%\ASE-12_5\bin*.

Syntax

```
optdiag [binary] [simulate] statistics
        { -i input_file |
            database[.owner[.[table[.column] ] ] ] [-o output_file] }
        [-U user_name]
        [-P password]
        [-T trace_value]
        [-I interfaces_file]
        [-S server]
        [-v]
        [-h]
        [-s]
        [-z language]
        [-J client_character_set]
        [-a display_charset]
```

Parameters

binary

extracts statistics in human-readable form and in binary form. When used with an input file (-i *input_file*), loads binary statistics into system tables.

simulate

specifies that optdiag display or load simulated statistics. See the *Performance and Tuning Guide*.

-i *input_file*

specifies the name of the operating system file to use for optdiag input. Specifying an input file causes optdiag to update optimizer statistics for the table or column by using the values in the specified file (also called “input mode”).

database

is the name of the database whose statistics you want displayed. In input mode, optdiag uses the database name as specified in the file, and does not accept a database name from the command line.

owner
is the name of a table owner.

- In display mode, if you do not specify an owner, but do specify a table name, optdiag displays output for all of the owners of a table.
- In input mode, optdiag ignores the table owner specified on the command line and uses the value in the input file.

table
is the name of the table to survey for statistics.

- If the command does not include an owner name or a table name, optdiag displays statistics for all tables in the database.
- If the command includes an owner name, but no table name, optdiag displays all of the tables that belong to the specified owner.
- In input mode, optdiag ignores the table name specified on the command line and uses the value from the input file.

column
is the name of the colum to survey.

- If the command does not include a column name, optdiag displays all statistics for a table.
- In input mode, optdiag ignores the column name on the command line and uses the values from the input file.

-o *output_file*
specifies the name of an operating system file to store the output from optdiag. If a file with the same name already exists, optdiag overwrites that file without warning.

-U *user_name*
specifies an Adaptive Server login name.

-P *password*
specifies your Adaptive Server password. If you do not specify the -P flag, optdiag prompts for a password.

-T *trace_value*
sets trace flags for the optdiag session. The optdiag trace flags are:

Flag value	Meaning
1	Do not stop with a warning if the optdiag version of Adaptive Server in use does not match the Adaptive Server version in the input file.
2	Display status message “Next table is *table_name*” when in input mode.

Flag value	Meaning
4	Skip consistency checking for step numbers while loading histograms in input mode.
6	Display lines of input file during input mode. This flag has no effect in display mode.

Note optdiag works only with single-byte character sets. If your server is using a multibyte character set, optdiag displays a warning message and exits.

-I *interfaces_file*

specifies the name and location of the interfaces file to use when connecting to Adaptive Server.

If you do not use -I and specify an interfaces file name, optdiag looks for the interfaces file (*interfaces* in UNIX), in the directory specified by the SYBASE environment variable. In Windows NT, optdiag looks for a file named *sql.ini* in the *ini* subdirectory in the Sybase installation directory (*d:\sybase*). Then, if SYBASE is not set, optdiag looks for the file in the default *$SYBASE* directory (*%SYBASE%* in Windows NT).

-S *server*

specifies the name of the Adaptive Server to which to connect. optdiag looks for this name in the *interfaces* file (*sql.ini* in Windows NT).

- If you use -S without specifying a server name, optdiag looks for a server named SYBASE.
- When you do not use -S, optdiag looks for the server that your DSQUERY environment variable specifies.

-v

displays the version number of and a copyright message for optdiag and exits.

-h

displays the optdiag syntax help.

-s

includes system tables in optdiag output. By default, only user tables are included.

-v

displays the version number of and a copyright message for optdiag and exits.

-h

displays the optdiag syntax help.

-s
includes system tables in optdiag output. By default, only user tables are included.

-z *language*
is the official name of an alternate language that the server uses both for date formats and to display optdiag prompts and messages. Without the -z flag, optdiag uses the server's default language.

You can add languages to Adaptive Server either during or after installation, After Adaptive Server installation, use either the langinstall utility or the sp_addlanguage stored procedure to add a language.

-J *client_charset*
specifies the character set to use on the client. A filter converts input between *client_charset* and the Adaptive Server character set.

By using -J *client_charset*, you request that Adaptive Server convert data to and from *client_charset*, the client's character set.

By using -J without a character set name, you specify character set conversion as NULL; no conversion takes place. Use this -J alone when the client and server are using the same character set.

By omitting -J, you set the character set to the default set for the platform. A filter converts input between the default set and the Adaptive Server character set. Keep in mind that the default may not necessarily be the character set that the client is using.

For more information about character sets and their associated flags, see the *System Administration Guide*.

-a *display_charset*

runs optdiag from a terminal with a character set that differs from that of the machine on which optdiag is running.

- Use -a in conjunction with -J to specify the character set translation (*.xlt*) file required for the conversion.
- Use -a without -J only if the client character set is the same as the default character set.

Note The ascii_7 character set is compatible with all character sets. If either the Adaptive Server character set or the client character set is set to ascii_7, any 7-bit ASCII character can pass unaltered between client and server. Any other characters produce conversion errors. For more information on character-set conversion, see the *System Administration Guide*.

Examples

Example 1 Displays statistics for all user tables in the pubs2 database and places the output in the *pubs2.opt* file:

```
optdiag statistics pubs2 -Usa -Ppasswd -o pubs2.opt
```

Example 2 Displays statistics for the titles table:

```
optdiag statistics pubs2..titles -Usa -Ppasswd -o titles.opt
```

Example 3 Displays statistics using the roman8 character set and row labels and error messages in French:

```
optdiag statistics pubs2..titles -Usa -Ppasswd -o titles.opt -J roman8 -z
french
```

Example 4 Displays binary statistics for the price column in the titles table:

```
optdiag binary statistics pubs2..titles.price -Usa -Ppasswd -o price.opt
```

Example 5 Loads edited statistics from the *price.opt* file:

```
optdiag statistics -i price.opt -Usa -Ppasswd
```

Usage

- You must set the SYBASE environment variable to the location of the current version of Adaptive Server before you can use optdiag.
- By default, optdiag does not include the system tables when you display statistics for a database. To include the system tables in the output, use the -s flag.
- When you use binary mode, optdiag displays the human-readable values with comment marks (#s) at the beginning of the lines, as shown in this example:

```
Statistics for column:              "price"
Last update of column statistics: Jan 20 1998  7:16PM
Statistics loaded from Optdiag.
   Range cell density:           0x3f8b9cfefece26bf
#  Range cell density:           0.0134830400000000
   Total density:                0x3f8b9cfefece26bf
#  Total density:                0.0134830400000000
   Range selectivity:            default used (0.33)
#  Range selectivity:            default used (0.33)
   In between selectivity:       default used (0.25)
#  In between selectivity:       default used (0.25)
```

- When you use optdiag with an input file to change statistics, it ignores all characters after the "#" in a line.
- Converting floating-point values may lead to rounding errors when you use files for input.

  When you are loading statistics on the same hardware platform, edit the statistics using the binary values to provide greater precision.

Byte ordering and binary optdiag files

- Do not use the binary mode option to move statistics between Adaptive Servers on machines that use different byte ordering.
  - On an incompatible architecture server, always comment out binary statistics and load the human-readable statistics.
  - On a compatible architecture server, you can load either binary statistics or human-readable statistics.

Input mode

- When you use the -i *input_file* syntax, optdiag reads the file as named and updates statistics in sysstatistics.
- optdiag input mode changes the allow update to system tables configuration parameter by setting the parameter to 1 at the beginning of the session, and then to 0 at the end of the session.
- During histogram input, the process checks the following rules and displays error messages for any violated rules:
  - The step numbers must increase monotonically, unless the command includes the -T4 trace flag.
  - The column values for the steps must increase monotonically.
  - The weight for each cell must be between 0.0 and 1.0.

- The total of weights for a column must be close to 1.0.
- The first cell represents null values, and it must be present, even in columns that do not allow null values. There must be only one cell to represent the null value.
- Two adjacent cells must not both use the < (less than) operator.

See also

For more information about the optdiag command and an explanation of the optdiag output, see the *Performance and Tuning Guide*.

For more information on changing statistics using optdiag, see the *Performance and Tuning Guide*.

Commands – create index, delete statistics, set, update statistics

System procedures – sp_addlogin, sp_configure, sp_defaultlanguage, sp_droplanguage, sp_flushstats, sp_helplanguage

pwdcrypt

Description

Creates and prints an encrypted LDAP password in the *libtcl.cfg* file. pwdcrypt is located in *$SYBASE/OCS-12_5/bin* (*%SYBASE%\OCS-12_5\bin* in Windows NT).

Syntax

pwdcrypt

Parameters

None

Examples

Typing pwdcrypt at the prompt returns a request to enter your password twice, after which pwdcrypt returns the LDAP password:

```
pwdcrypt

Enter password please: password
Enter password again : password

The encrypted password:
0x01312a775ab9d5c71f99f05f7712d2cded288d0ae1ce79268d0e8669313d1bc4c706
```

Replace the last part of the LDAP URL in *libtcl.cfg* with this encrypted password:

```
ldap=libdldap.so
ldap://dolly:389/dc=sybase,dc=com????bindname=cn=Manager,dc=sybase,dc=com?
0x01312a775ab9d5c71f99f05f7712d2cded288d0ae1ce79268d0e8669313d1bc4c706
```

An unencrypted password looks like this:

```
ldap=libdldap.so
ldap://dolly:389/dc=sybase,dc=com????bindname=cn=Manager,dc=sybase,dc=com?
secret
```

Usage

You must set the SYBASE environment variable to the location of the current version of Adaptive Server before you can use pwdcrypt.

Permissions

You must use file system permissions to prevent unauthorized access to this encrypted password in your *libtcl.cfg* file.

showserver

Description

Shows the Adaptive Servers and Backup Servers that are currently running on the local machine, available only in UNIX platforms. showserver is located in *$SYBASE/ASE-12_5/install*.

Note This utility is not available for Windows NT.

Syntax

showserver

Parameters

None

Examples

```
showserver
```

```
USER       PID %CPU %MEM   SZ  RSS TT STAT START  TIME COMMAND
user114276  0.0  1.7  712 1000 ?  S    Apr  5514:05 dataserver
-d greensrv.dat -sgreensrv -einstall/greensrv+_errorlog
sybase    1071  0.0  1.4  408  820 ?  S    Mar 28895:38
/usr/local/sybase/bin/dataserver -d/dev/rsd1f -e/install/errorlog
user128493  0.0  0.0 3692    0 ?  IW   Apr  1  0:10 backupserver -SSYB_BACKUP
-e/install/backup.log -Iinterfaces -Mbin/sybmultbuf -Lus_english -Jiso_1
```

Usage

showserver displays process information about Adaptive Server or Backup Server. If no servers are running, only the header appears.

See also

Commands – dataserver, startserver

Function – host_name

Utilities – langinstall

sqldbgr

Description

sqldbgr is a command-line utility that debugs stored procedures and triggers. As with many source-level debuggers, you can:

- attach sqldbgr to a task
- set, enable, and disable breakpoints
- step through a task one line at a time
- step into and out of procedures
- detach sqldbgr from stored procedures or triggers once the debugging is complete.

sqldbgr is located in *$SYBASE/ASE-12_5/bin* (*%SYBASE%\ASE-12_5\bin* in Windows NT).

Syntax

sqldbgr
-U*username*
-P*password*
-S*hostname* : *port_number*

Parameters

-U*username*
specifies the user name.

-P*password*
specifies the user password.

-S*hostname*:*portnum*
specifies the machine name and the port number.

Examples

Example 1 This example shows sqldbgr debugging stored procedures and triggers on host MERCURY:

```
$SYBASE/ASE-12_5/bin/sqldbgr -Usa -P -SMERCURY:16896

(sqldbg) stop in sp_who
Breakpoint moved to line 20
(sqldbg) run sp_who
(sp_who::20)if @@trancount = 0
(sqldbg) next
(sp_who::22)    set chained off
(sqldbg) cont
fid spid status loginame origname hostname blk_spid dbname cmd block_xloid
0   2    sleeping NULL   NULL     0        master   NETWORK HANDLER      0
0   3    sleeping NULL   NULL     0        master   NETWORK HANDLER      0
0   4    sleeping NULL   NULL     0        master   DEADLOCK TUNE        0
0   5    sleeping NULL   NULL     0        master   MIRROR HANDLER       0
0   6    sleeping NULL   NULL     0        master   ASTC HANDLER         0
```

```
0   7    sleeping NULL   NULL     0        master   ASTC HANDLER         0
0   8    sleeping NULL   NULL     0        master   CHECKPOINT SLEEP     0
0   9    sleeping NULL   NULL     0        master   HOUSEKEEPER          0
0   10   running  sa     sa       0       master    SELECT               0
0   11   sleeping sa     sa
(sqldbg) show breakpoints
1 stop in sp_who
(sqldbg)
```

Example 2 In this example, the System Administrator first logs in to Adaptive Server using isql, then starts sqldbgr from the command line to debug a stored procedure that is running in another task:

```
$SYBASE/OCS-12_5/bin/isql -U sa -P
1> select @@spid
2> go
------
12
1>
```

```
$SYBASE/ASE-12_5/bin/sqldbgr -U sa -P -SMERCURY:16896
```

```
(sqldbg) attach 13
The spid  is invalid
(sqldbg) attach 12
(sqldbg) show breakpoints
(sqldbg) stop in sp_who
Breakpoint moved to line 20
(sqldbg) /* at this point run the sp_who procedure from spid 12 */
(sqldbg) where
(sp_who::20::@loginname = <NULL>)
(ADHOC::1::null)
(sqldbg) next
(sp_who::22)    set chained off
(sqldbg) next
(sp_who::25)set transaction isolation level 1
(sqldbg) cont
(sqldbg) /* at this point the sp_who result will show up in the isql screen */
(sqldbg) detach 12
(sqldbg)
```

Usage

When you invoke sqldbgr at the command prompt, the utility starts and the prompt changes to a sqldbgr prompt:

```
(sqldbgr)
```

Once you see the `(sqldbgr)` prompt, you can enter the following sqldbgr commands to perform your tasks:

Table 6-4: sqldbgr commands and their descriptions

Command	Description
attach *spid*	Attaches a task to sqldbgr when you are already logged in to Adaptive Server. **Note** Do not use attach *spid* to attach to a procedure that is not running. sqldbgr cannot debug multiple tasks in the same session. If you try to attach the utility to multiple tasks, the first *spid* continues to be marked as attached. Since you cannot attach to a *spid* that is already attached, you must use the detach command, and then attach to another *spid*.
run *procname*	Debugs stored procedures and triggers without attaching sqldbgr to an existing task. If you attempt to use run procname while you are already debugging an existing task with attach spid, run procname fails and you see the following: `Cannot run a procedure while debugging another task`
stop in *procname* [at line #]	Sets a breakpoint to stop the stored procedure or trigger being debugged at the beginning of the specified procedure name. stop in *procname* at line # sets a breakpoint to stop the stored procedure or trigger being debugged at a designated line within the specified procedure. If you enter an invalid line number, sqldbgr moves the breakpoint to the next valid line number, and displays: `Invalid line number` You can also use this command to set multiple breakpoints.
show breakpoints	Displays the breakpoint handle in the form of a unique number, as well as the breakpoint statements given by the user during the sqldbgr session. If you specify a breakpoint line number that does not contain a valid SQL statement, Adaptive Server moves the breakpoint to the next valid line number. However, Adaptive Server does not change the command you entered. This is why show breakpoints can return a breakpoint handle and a breakpoint statement given during the sqldbgr session that can be different. An asterisk (*) in the breakpoint line indicates that the breakpoint is set, but currently disabled.
use *dbname*	Tells sqldbgr what database to use in order to debug that database's stored procedures or triggers.

Command	Description
show variables [at level #] show *@varname* [at level #]	show variables displays all the variables and their values in the current SQL stored procedure or trigger. show variables at level # displays the variables and their values in the current SQL stored procedure or trigger at the specified level. show *@varname* displays the indicated variable and its value in the current SQL stored procedure or trigger. show *@varname* at level # displays the indicated variable and its value in the current SQL stored procedure or trigger at the specified level. **Note** sqldbgr does not support Java variables.
show where	Displays the call stack of the stored procedures and triggers that exist in the task being debugged.
step or next	step or next instructs sqldbgr to move to the next statement in the current stored procedure or trigger.
step into	Instructs sqldbgr to move into a procedure if the current statement is an execute statement. If the current statement is an update, delete, or insert statement, and if there are triggers in it, step into instructs sqldbgr to move into the update, delete, or insert triggers.
step out	Instructs sqldbgr to move out of the current stored procedure or trigger, and to stop at the next line in the calling procedure.
set *@varname* = VALUE	Sets the value of the indicated variable to the variable value declared in the command in the current stored procedure or trigger. The values for the variables set using set *@varname* = VALUE are valid only for the current session sqldbgr.
cont[inue]	Instructs sqldbgr to continue debugging, and to stop at the next breakpoint (if any).
delete #	Deletes the indicated breakpoint set in the current instance of sqldbgr.
enable # and disable #	Enables the indicated breakpoints. disable # does the opposite.
mysql *any_sql_statement*	Executes ad hoc SQL statements. You can use this command to select and analyze data from temp tables created by the task being debugged. mysql *any_sql_statement* returns a result set and any errors that occurred.
detach *spid*	Detaches sqldbgr from the indicated *spid*, and releases the task being debugged. It deletes the breakpoints that were set for the task being debugged during the current sqldbgr session.
help [all]	Display sqldbgr commands.

Table 6-5 lists all of sqldbgr's error messages:

Table 6-5: sqldbgr error messages and their meaning

Error message	Description
`Cannot allocate resource in ASE`	Indicates that Adaptive Server does not have sufficient memory resources to execute sqldbgr. Increase procedure cache size and restart sqldbgr.

Error message	Description
`Cannot create Debugger handle in ASE`	Indicates that Adaptive Server does not have sufficient memory resources to create a debugger handle. Increase procedure cache size and restart sqldbgr.
`The spid is invalid`	Displays when you attempt to attach sqldbgr to an invalid *spid*. Double check the *spid* and try again.
`You cannot debug a task that is not owned by you`	Displays when you try to debug a task that you do not own. You must log in to the server as the owner of the task to be debugged.
`Spid is already being debugged`	Displays when you execute attach *spid* and attempt to attach to a *spid* that is already being debugged.
`Spid is not debugged currently`	Displays when you execute detach *spid* and attempt to detach from a *spid* that is not attached to sqldbgr.
`Invalid command`	Displays when you enter an invalid command.
`Invalid procedure name`	Displays when you enter an invalid procedure name in stop in *procname*.
`Invalid line number`	Displays when you enter an invalid line number in stop in *procname* at line #.
`Variable not found`	Displays when you enter an invalid variable in show *@varname*, show *@varname* at level #, or set *@varname* = VALUE.
`Illegal conversion attempted`	Displays when you execute set @varname = VALUE and attempt to convert the variable to an invalid value.
`Conversion from text to datatype failed`	Displays when set *@varname* = VALUE is unsuccessful.
`Cannot run a procedure while debugging another task`	Displays if you use run *procname* while already debugging an existing task with attach *spid*.

sqlloc

Description

Installs and modifies languages, character sets, and sort order defaults for Adaptive Server using a GUI based on X11/Motif. sqlloc is located in *$SYBASE/ASE-12_5/bin*.

Note This utility is not available for Windows NT.

Syntax

```
sqlloc
        [-S Server]
        [-U User]
        [-P Password]
        [-s Sybase Dir]
        [-I Interfaces file]
        [-r Resource file]
```

Or

```
sqlloc -v
```

Parameters

-S *Server*
specifies the name of the Adaptive Server to which to connect.

-U *User*
specifies a login name. Logins are case sensitive.

-P *Password*
specifies the “sa” account password.

-s *Sybase Dir*
specifies the value to use for the SYBASE environment variable.

-I *Interfaces file*
specifies the name and location of the interfaces file to search when connecting to Adaptive Server.

-r *Resource file*
executes the specified resource file.

-v
prints the version number and copyright message for sqlloc and then exits.

Usage

- You must set the SYBASE environment variable to the location of the current version of Adaptive Server before you can use sqlloc.
- You must set the DISPLAY environment variable before invoking sqlloc, unless you are only using the -v parameter to display the version number.

Permissions

You must be a Sybase System Administrator to use sqlloc.

See also

See the *Installation Guide for UNIX Platforms* for more information about the sqlloc utility program.

Utilities – langinstall, sqllocres

sqllocres

Description

Installs and modifies languages, character sets, and sort order defaults for Adaptive Server, using a resource file. sqllocres is located in *$SYBASE/CS-12_5/bin*.

Note This utility is not available for Windows NT.

Syntax

```
sqllocres
        [-S Server]
        [-U User]
        [-P Password]
        [-s Sybase Dir]
        [-I Interfaces file]
        [-r Resource file]
```

Or

```
sqllocres -v
```

Parameters

-S *Server*
specifies the name of the Adaptive Server to which to connect.

-U *User*
specifies a login name.

-P *Password*
specifies the “sa” account password.

-s *Sybase Dir*
specifies the value to use for the SYBASE environment variable.

-I *Interfaces file*
specifies the name and location of the interfaces file to search when connecting to Adaptive Server.

-r *Resource file*
executes the specified resource file.

-v
prints the version number and copyright message for sqllocres, then exits.

Usage

You must set the SYBASE environment variable to the location of the current version of Adaptive Server before you can use sqllocres.

Permissions

You must be a Sybase System Administrator to use the sqllocres utility.

See also

For more information about the sqllocres utility program, see the *Installation Guide for UNIX Platforms*.

Utilities – langinstall, sqlloc

sqlsrvr

Description

The executable form of the Adaptive Server program, this utility is located in *%SYBASE%\ASE-12_5\bin*.

Note This utility is not available for UNIX platforms.

Syntax

dataserver [-f] [-g] [-G] [-h] [-H] [-m] [-P] [-q] [-v] [-X]
[-a *path_to_CAPs_directive_file*]
[-b *master_device_size*]
[-c *config_file_for_server*]
[-d *device_name*]
[-e *path_to_error_log*]
[-i *interfaces_file_directory*]
[-K *keytab_file*]
[-L *config_file_name_for_connectivity*]
[-M *shared_memory_repository_directory*]
[-p *sa_login_name*]
[-r *mirror_disk_name*]
[-s *server_name*]
[-T *trace_flag*]
[-u *sa/sso_name*]
[-w *master* | *model database*]
[-y [*password*]]
[-z *page_size* [k | K]]

Parameters

-f
forces initialization of a device or database. You must use both -b and -w to use -f.

-g
turns off event-logging.

-G
specifies the name of the event log server.

-h
prints this help message, then exists.

-H
starts the High Availability (HA) server, if you have the HA feature installed on your Adaptive Server.

-m
starts Adaptive Server in single-user mode.

-q
treats quiesced databases as “in recovery.”

-v
prints the version number and copyright message for sqlsrvr and then exits.

-X
starts this server as sybmon, not dataserver.

-a *path_to_CAPs_directive_file*
specifies the path to the CAPs directive file.

-b *master_device_size*
specifies the size of the master device.

-c *config_file_for_server*
specifies the full path name of an Adaptive Server configuration file. Use this parameter to start Adaptive Server with the configuration values in the specified configuration file.

If you specify a configuration file with the sqlsrvr -c parameter, make sure all the parameters in this configuration file are compatible before you boot the server. If some of the configuration parameters are incompatible, the server may not boot. To avoid this, do not specify a configuration file when you build the master device. The build phase uses all default settings when you do not specify a configuration file.

For more information, see the *System Administration Guide*.

-d *device_name*
is the full path name of the device for the master database. The master database device must be writable by the user who starts Adaptive Server. The default master database device name is d_master.

-e *errorlogfile*
is the full path name of the error log file for Adaptive Server system-level error messages.

-i *interfaces_file_directory*
specifies the directory location of the interfaces file to search when connecting Adaptive Server. If -I is omitted, sqlsrvr looks for a file named *interfaces* in the directory pointed to by your SYBASE environment variable.

-K *keytab_file*
specifies the path to the keytab file used for authentication in DCE.

-L *config_file_name_for_connectivity*
specifies the name the configuration file for connectivity.

-M *sharedmem_directory*

places shared memory files in the specified directory instead of in the default location, *%SYBASE%*. If *sharedmem_directory* starts with "\", the directory name is assumed to be absolute. Otherwise, the directory name is interpreted relative to *%SYBASE%*.

-p *sso_login_name*

specifies the login name of a System Security Officer when starting Adaptive Server, for the purposes of getting a new password for that account. Adaptive Server generates a random password, displays it, encrypts it, and saves it in master..syslogins as that account's new password.

-r *mastermirror*

starts the mirror of the master device. Use this parameter to start Adaptive Server if the master device has been damaged.

-s *servername*

specifies the name of the Adaptive Server to start. If -s is omitted, a server named SYBASE is started.

-T *trace_flag*

-u *sa/sso_name*

specifies the System Administrator or System Security Officer's name you want to unlock.

-w *master* | *model_database*

specifies whether you want to write a master or model database.

-y [*password*]

allows you to assign a password for the encrypted private key, so that the server prompt the user for a password. This password should match the password you used to encrypt the private key when it was created. You cannot use this parameter when you are running the server in the background.

Note Although you can a password with -y, for security reasons Sybase strongly discourages you from doing so.

A private key is included with your server's digital certificate. By default, the certificate file located:

```
%SYBASE%\%SYBASE_ASE%\certificates\servername.crt
```

The location of the certificate file changes if you invoke the sp_ssladmin addcert command.

-z page_size

specifies the page size of the server. You must use -b and -w to use this flag, and name an even power of two between 2k and 16k, or else the server does not boot.

Examples

Example 1 Creates a new installation with a 100 MB master device and a 4k page:

```
sqlsrvr -d d_master -z 4k -b 100.02M
```

The spaces between options and their following arguments are optional and acceptable. This example specifies “100.02M” for a 100MB master device because the server requires 16KB of overhead for its configuration area.

Example 2 Rewrites a corrupt model database:

```
sqlsrvr -d d_master -w model
```

Example 3 Rewrites a corrupt master database, specifying device size:

```
sqlsrvr -d d_master -w master -z 4k
```

Example 4 Rewrites a corrupt master database, specifying device and page sizes, forcing the server to accept these values in preference to what it may find in the config block:

```
sqlsrvr -d d_master -w master -z 4k -b 100.02M -f
```

Example 5 Rewrites a corrupt master database, specifying a page size that does not match what the server finds in its config block. This produces a failure:

```
sqlsrvr -d d_master -w master -z 8k
00:00000:00000:2001/01/19 12:01:26.94 server The
configured server page size does not match that
specified on the command line. To use the configured
size, omit the command line size; to use the command
line size, specify 'force' (-f).
```

Example 6 Rewrites a corrupt master database, specifying an incorrect page size, even in a normal boot. This produces a failure:

```
sqlsrvr -d d_master -z4000
sqlsrvr: the 'z' flag may not be used without 'b' or
'w'. sqlsrvr: server will ignore the 'z' flag. sqlsrvr:
the 'z' flag contained an invalid page size. sqlsrvr:
```

```
the page size must be an even power of two between 2048
and 16384 bytes, inclusive.
```

Usage

- The sqlsrvr utility is referred to as dataserver in other Sybase documents.
- Start Adaptive Server using the services manager utility rather than by executing the sqlsrvr program directly. If you need to change any of the default parameters, edit the Adaptive Server's Registry keys. See the configuration guide for your platform for details.
- Adaptive Server derives its running environment from values in the sysconfigures system table. Run sp_configure to see the configuration values; use sp_configure and reconfigure to change the configuration.
- Because Adaptive Server passwords are encrypted, you cannot recover forgotten passwords. If all System Security Officers lose their passwords, the -p parameter generates a new password for a System Security Officer's account. Start Adaptive Server with -p, immediately log in to Adaptive Server with the new random password, and execute sp_password to reset your password to a more secure one.
- By default, Adaptive Server logs error messages in both the local error log file and the local Windows NT event log. You can disable Windows NT event logging by including the -g parameter and specifying a different event-logging machine with -G *machine_name*. Use standard Windows NT conventions when entering the *machine_name*. For example, to designate a PC named "LOGSITE", substitute "\\LOGSITE" for the *machine_name*. See the configuration guide for your platform for details on logging error messages.
- After you have finished running the installer, set the file permissions on the sqlsrvr executable to limit who can execute it.
- If you do not specify an Adaptive Server name with the -s parameter, and you have not set the DSLISTEN environment variable, sqlsrvr uses the default Adaptive Server name SYBASE. The value of the DSLISTEN environment variable overrides this default value, and the -s parameter overrides both the default and the DSLISTEN environment variable.
- Automatic login lockouts can cause a site to end up in a situation in which all accounts capable of unlocking logins (System Administrators and System Security Officers) are locked. If this occurs, use the sqlsrvr utility with the -u parameter to check the specified login for System Administrator or System Security Officer authorization, unlock the account, and reset the value of the current failed logins counter to zero.

- -f is only valid when used with -b and/or -w. The server fails to boot if you use -f without either -b or -w. -f forces the server in different ways, depending whether -w is present. See -b and -w below.

Starting Adaptive Server

Use either of the following methods to start Adaptive Server with a specified configuration file:

- Use Server Config to configure the server to have the -c parameter. In the Configure Adaptive Server window, select the Command Line option, and in the Command Line Parameters window, enter:

  ```
  -Cconfiguration_file_pathname
  ```

  For example, entering "-chaze.cfg " starts the server using the *haze.cfg* configuration file.

- Start Adaptive Server from the command line and provide the -c parameter.

Dependencies and conditions with -b and -w

The effect of -b changes depending on whether -w is present:

- -b without -w creates a new master device as named by -d (the default is d_master) and with the page size as specified by -z (the default is 2048):
  - If the named device already exists as an OS file, the attempt fails, and you must remove the existing file and try again.
  - If the named device names an existing raw partition, the attempt fails unless you include the -f flag. This reinitializes the raw partition as a server master device.
- -b with -w master tells dataserver to use the size specified in -z for the master device when recreating the master database. It implies nothing about creating a new device.

-w may or may not require additional flags:

- If you use -w model, the -z and -b flags are accepted but ignored.
- If you use -w master for *new* installations, -z and -b are not required because the device size information is stored in the *config_block*.
- If you use -w master to *upgrade* older installations:
  - The server requires -b and/or -z if the *config_block* does not contain a valid entry for the associated size(s). The command fails if it can't get valid data for the page size or device size.

- You may provide -b and/or -z when the *config_block* contains valid entries for the size(s) they represent. However if the sizes do not match what is in the *config_block*, you must add -f to force your new size preferences.
- -f may appear without either -b or -z, because -f also instructs the server to accept damaged allocation pages as belonging to the master database. This is useful for restoring badly corrupted databases. If you specify -w master -f, the server assigns to the master database every allocation page on the named master device that does not belong to some other database than master.

Permissions

Anyone with execute permission on the binary, and who has read/write access to all the files.

Tables used

sysconfigures

See also

Commands – disk mirror, disk remirror, reconfigure

System procedures – sp_configure, sp_password

Utilities – startserver

sqlupgrade

Description

Upgrades your currently installed version of Adaptive Server to the newest release using a GUI based on X11/Motif sqlupgrade is located in *$SYBASE/ASE-12_5/bin*.

Note This utility is not available for Windows NT.

Syntax

```
sqlupgrade
        [-s Sybase Dir]
        [-r Resource File]
```

Or

```
sqlupgrade -v
```

Parameters

-s *Sybase Dir*
specifies the value to use for the SYBASE environment variable.

-r *Resource File*
executes the specified resource file.

-v
prints the version number and copyright message for sqlupgrade and then exits.

Usage

- You must set the SYBASE environment variable to the location of the current version of Adaptive Server before you can use sqlupgrade.
- You must set the DISPLAY environment variable before invoking sqlupgrade, unless you are only using the -v parameter to display the version number.

Permissions

You must be a Sybase System Administrator to use sqlupgrade.

See also

For more information about the sqlupgrade utility program, see the *Installation Guide for UNIX Platforms*.

Utilities – sqlupgraderes

sqlupgraderes

Description

Upgrades your currently installed release of Adaptive Server to the newest release using resource files. sqlupgraderes is located in *$SYBASE/OCS-12_5/bin*.

Note This utility is not available for Windows NT.

Syntax

```
sqlupgraderes
        [-s Sybase Dir]
        [-r Resource File]
```

Or

```
sqlupgraderes -v
```

Parameters

-s *Sybase Dir*
specifies the value to use for the SYBASE environment variable.

-r *Resource File*
executes the specified resource file.

-v
prints the version number and copyright message for sqlupgraderes and then exits.

Usage

You must set the SYBASE environment variable to the location of the current version of Adaptive Server before you can use sqlupgraderes.

Permissions

You must be a Sybase System Administrator to use sqlupgraderes.

See also

See the *Installation Guide for UNIX Platforms* for more information about the sqlupgraderes utility program.

Utilities – sqlupgrade

srvbuild

Description

Creates a new Adaptive Server, Backup Server, Monitor Server, or XP Server with default or user-specified values for key configuration attributes using a GUI based on X11/Motif. srvbuild is located in *$SYBASE/ASE-12_5/bin*.

Note This utility is not available for Windows NT.

Syntax

```
srvbuild
        [-s sybase_dir]
        [-I interfaces_file]
        [-r resource_file]
```

Or

```
srvbuild -v
```

Parameters

-s *sybase_dir*
specifies the value to use for the SYBASE environment variable.

-I *interfaces_file*
specifies the name and location of the interfaces file to search when connecting to Adaptive Server.

-r *resource_file*
executes the specified resource file.

-v
prints the version number and copyright message for srvbuild and then exits.

Usage

You must set the SYBASE environment variable:

- To the location of the current version of Adaptive Server before you can use srvbuild.
- Before invoking srvbuild, unless you are only using the -v parameter to display the version number.

Permissions

You must be a Sybase System Administrator to use srvbuild.

See also

For more information about the srvbuild utility program, see the *Sybase Adaptive Server Enterprise Installation Guide for UNIX Platforms*.

Utilities – srvbuildres

srvbuildres

Description

Creates, using resource files, a new Adaptive Server, Backup Server, Monitor Server, or XP Server with default or user-specified values for key configuration attributes. srvbuildres is located in *$SYBASE/ASE-12_5/bin*.

Note This utility is not available on Windows NT.

Syntax

```
srvbuildres
        [-ssybase_dir]
        [-linterfaces_file]
        [-rresource_file]
```

Or

```
srvbuildres -v
```

Parameters

-s *sybase_dir*

specifies the value to use for the SYBASE environment variable.

-I *interfaces_file*

specifies the name and location of the interfaces file to search when connecting to Adaptive Server.

-r *resource_file*

executes the specified resource file.

-v

prints the version number and copyright message for srvbuildres and then exits.

Usage

You must set the SYBASE environment variable to the location of the current version of Adaptive Server before you can use srvbuildres.

Permissions

You must be a Sybase System Administrator to use srvbuildres.

See also

See the *Installation Guide for UNIX Platforms* for more information about the srvbuildres utility program.

Utilities – srvbuild

startserver

Description

Starts an Adaptive Server or a Backup Server. startserver is located in *$SYBASE/ASE-12_5/bin*.

Note This utility is not available for Windows NT.

Syntax

startserver [[-f *runserverfile*] [-m]] ...

Parameters

-f *runserverfile*

specifies the relative path name of a runserver file, which is used as a reference each time you start an Adaptive Server or Backup Server. By default, the runserver file is in the current directory and is named *RUN_servername*. If you start a second Adaptive Server on the same machine, startserver creates a new runserver file named *RUN_servername*.

-m

starts Adaptive Server in single-user mode, allowing only one System Administrator to log in, and turns the allow updates to system tables configuration parameter on. Use this mode to restore the master database. The System Administrator can use the dbo use only parameter of sp_dboption for system administration activities that require more than one process, such as bulk copying or using the data dictionary. startserver normally starts up only one server per node.

The -m parameter creates an *m_RUNSERVER* file and overwrites any existing *m_RUNSERVER* file.

Examples

Example 1 Starts an Adaptive Server named SYBASE from the runserver file named *RUN_servername* in the current directory:

```
startserver
```

Example 2 Starts an Adaptive Server named MYSERVER and a Backup Server named SYB_BACKUP:

```
startserver -f RUN_MYSERVER -f RUN_SYB_BACKUP
```

Example 3 Starts only the Backup Server SYB_BACKUP:

```
startserver -f RUN_SYB_BACKUP
```

Usage

- startserver uses the information in the runserver file to start an Adaptive Server or Backup Server. The master device must be writable by the user who starts Adaptive Server.

The startserver command creates the Adaptive Server error log file (named *errorlog*) in the directory where the server is started, and adds this information as part of the -e parameter in the Adaptive Server executable line in the runserver file. If a second Adaptive Server is started on the same machine, a new error log named *errorlog_servername* is created; this information is added to that server's runserver file. The user must have execute permission on the specified runserver file.

- You can start multiple servers by specifying more than one runserver file, as shown in example 2. You can specify -m after each -f *runserverfile*.
- Adaptive Server derives its running environment from values in the config file. Run sp_configure or edit the *config* file to see or change configuration parameters.
- To ensure the integrity of your Adaptive Server, it is important that you apply appropriate operating-system protections to the startserver executable and the runserver file.

The runserver file

- The runserver file, which is created by srvbuild during installation, contains the dataserver command to start Adaptive Server or the backupserver command to start Backup Server. By default, the runserver file is in the current directory and is named *RUN_servername*. You can edit the runserver file to correct the options and parameters for the commands. The following example shows two sample runserver files.

  Runserver file for server MYSERVER:

```
#!/bin/sh
#
# Adaptive Server Information:
#  name:                         /MYSERVER
#  master device:                /remote/Masters/myserver_dat
#  master device size:           10752
#  errorlog:                     /remote/serverdev/install/errorlog
#  interfaces:                   /remote/serverdev/interfaces
#
#
/remote/serverdev/bin/dataserver -d/remote/Masters/myserver_dat \
-sMYSERVER -e/remote/serverdev/install/MYSERVER_errorlog \
-i/remote/serverdev &
```

  Runserver file for backup server SYB_BACKUP:

```
#!/bin/sh
#
```

```
# Backup Server Information:
#  name:                          SYB_BACKUP
#  errorlog:                      /remote/serverdev/install/backup.log
#  interfaces:                    /remote/serverdev/interfaces
#  location of multibuf:          /remote/serverdev/bin/sybmultbuf
#  language:                      us_english
#  character set:                 iso_1
#  tape configuration file:       /remote/serverdev/backup_tape.cfg
#
#
/remote/serverdev/bin/backupserver -SSYB_BACKUP \
-e/remote/serverdev/install/backup.log \
-I/remote/serverdev/interfaces \
-M/remote/serverdev/bin/sybmultbuf -Lus_english -Jiso_1 \
-c/remote/serverdev/backup_tape.cfg
```

See also

Commands – disk mirror, disk remirror, disk unmirror

Utilities – backupserver, dataserver

xpserver

Description

Starts XP Server manually.

Syntax

xpserver -S *XP_Server*

xpserver
-S*XP_Server*
[-I*interfaces_file*]
[-p*priority*]
[-s*stack_size*]
[-u]
[-v]
[-x]

Parameters

-S *XP_Server*

specifies the name of the XP Server to start. The format of the XP server name is *SQLSERVERNAME_XP*, where *SQLSERVERNAME* is the name of the Adaptive Server to which the XP Server is dedicated. For example, the XP Server for an Adaptive Server named SMOKE would be named SMOKE_XP. The XP Server name must be in uppercase.

-I *interfaces_file*

specifies the name and location of the directory containing the interfaces file (*sql.ini*) that Adaptive Server searches when connecting to XP Server. If you do not specify -I, xpserver uses the *ini* subdirectory of the %SYBASE% release directory.

-p *priority*

specifies the priority of the Open Server process. Values between 0 (lowest) and 15 (highest) are valid. Overrides the esp execution priority configuration parameter. The default is 8.

-s *stack_size*

specifies (in bytes) the stack size of the process used to execute an extended stored procedure (ESP). Overrides the esp execution stacksize configuration parameter if it is set. The default is 34816 bytes.

-u

specifies that the functions be automatically unloaded from XP Server memory after the ESP request terminates. Overrides the esp unload dll configuration parameter if it is set. The default is not to unload the function.

-v

prints the version number and copyright message for XP Server and then exits.

-x

specifies that the client security context be used to execute operating system commands using the system ESP, xp_cmdshell. Overrides the xp_cmdshell context configuration parameter if it is set. The default is to use the security context of the operating system account of the Adaptive Server session.

Usage

- XP Server is normally started automatically by Adaptive Server. Use the manual command to start XP Server *only* when instructed to do so in an "XP Server Failed to Start" error message.
- There can be only one XP Server per Adaptive Server. An Adaptive Server running ESPs communicates with a single XP Server, and the ESPs execute synchronously.
- The -p parameter affects the priority used by the Open Server scheduler. If -p is set to a high number, the scheduler can run XP Server before running the other threads *inl* its run queue. If -p is set to a low number, the scheduler can run XP Server only when there are no other Open Server threads in its run queue. This parameter is unrelated to the application queue priorities within Adaptive Server, which are set by sp_bindexeclass.

  See the discussion of multithread programming in the *Open Server Server Library/C Reference Manual* for information about scheduling Open Server threads.
- If automatic unloading of ESP functions is not set by the -u parameter or by the esp unload dll configuration parameter, you can unload them at runtime using sp_freedll.
- Unlike Adaptive Server and Backup Server, XP Server does not have a *runserver* file.

Permissions

No special permissions are required to run xpserver.

See also

System ESP – xp_cmdshell

System procedures – sp_configure, sp_freedll

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