

SYBASE®

Monitor Server User's Guide

Adaptive Server® Enterprise

15.0

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Sybase, Inc., One Sybase Drive, Dublin, CA 94568.

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About This Book

Adaptive Server Enterprise Monitor Server User's Guide describes how to use Adaptive Server® Enterprise Monitor Server (Monitor Server). Monitor Server is an Open Server™ application that obtains performance statistics of Sybase® SQL Server™ and Adaptive Server Enterprise (Adaptive Server). Monitor Server makes these statistics available to its clients, monitors in Sybase Central, Monitor Historical, and other applications written with Monitor Client Library.

Audience

This user's guide is for individuals responsible for configuring and administering Monitor Server.

How to use this book

This book contains these chapters:

- Chapter 1, "Introduction" describes Adaptive Server Enterprise Monitor components and architecture.
- Chapter 2, "Configuring Monitor Server" describes how to configure Monitor Server on both UNIX and Microsoft Windows NT platforms.
- Chapter 3, "Starting, Verifying, and Stopping Monitor Server" describes how to start and stop Monitor Server on both UNIX and Windows NT platforms.
- Chapter 4, "Monitor Server isql commands" describes administrative commands for Monitor Server.
- Appendix A, "Troubleshooting Monitor Server" describes Monitor Server error messages and resolutions.

Related documents

The Sybase® Adaptive Server® Enterprise documentation set consists of the following:

- 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.
 - *What's New in Adaptive Server Enterprise?* – describes the new features in Adaptive Server version 15.0, the system changes added to support those features, and changes that may affect your existing applications.
 - *ASE Replicator User's Guide* – describes how to use the Adaptive Server Replicator feature of Adaptive Server to implement basic replication from a primary server to one or more remote Adaptive Servers.
 - *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.
 - The *Configuration Guide* for your platform – provides instructions for performing specific configuration tasks for Adaptive Server.
 - *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.
 - *Glossary* – defines technical terms used in the Adaptive Server documentation.
 - *Historical Server User's Guide* – describes how to use Historical Server to obtain performance information for SQL Server[®] and Adaptive Server.
 - *Java in Adaptive Server Enterprise* – describes how to install and use Java classes as data types, functions, and stored procedures in the Adaptive Server database.
 - *Job Scheduler User's Guide* – provides instructions on how to install and configure, and create and schedule jobs on a local or remote Adaptive Server using the command line or a graphical user interface (GUI).
 - *Messaging Service User's Guide* – describes how to use Real Time Messaging Services to integrate TIBCO Java Message Service and IBM WebSphere MQ messaging services with all Adaptive Server database applications.
 - *Monitor Client Library Programmer's Guide* – describes how to write Monitor Client Library applications that access Adaptive Server performance data.
 - *Monitor Server User's Guide* – describes how to use Monitor Server to obtain performance statistics from SQL Server and Adaptive Server.

- *Performance and Tuning Guide* – is a series of four books that explains how to tune Adaptive Server for maximum performance:
 - *Basics* – the basics for understanding and investigating performance questions in Adaptive Server.
 - *Locking* – describes how the various locking schemas can be used for improving performance in Adaptive Server.
 - *Optimizer and Abstract Plans* – describes how the optimizer processes queries and how abstract plans can be used to change some of the optimizer plans.
 - *Monitoring and Analyzing* – explains how statistics are obtained and used for monitoring and optimizing performance.
- *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.
- *Reference Manual* – is a series of four books that contains the following detailed Transact-SQL[®] information:
 - *Building Blocks* – Transact-SQL datatypes, functions, global variables, expressions, identifiers and wildcards, and reserved words.
 - *Commands* – Transact-SQL commands.
 - *Procedures* – Transact-SQL system procedures, catalog stored procedures, system extended stored procedures, and dbcc stored procedures.
 - *Tables* – Transact-SQL system tables and dbcc tables.
- *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.
- *System Tables Diagram* – illustrates system tables and their entity relationships in a poster format. Available only in print version.
- *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.

-
- *Using Adaptive Server Distributed Transaction Management Features* – explains how to configure, use, and troubleshoot Adaptive Server DTM features in distributed transaction processing environments.
 - *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.
 - *Unified Agent and Agent Management Console* – Describes the Unified Agent, which provides runtime services to manage, monitor and control distributed Sybase resources.
 - *Utility Guide* – documents the Adaptive Server utility programs, such as isql and bcp, which are executed at the operating system level.
 - *Web Services User’s Guide* – explains how to configure, use, and troubleshoot Web Services for Adaptive Server.
 - *XA Interface Integration Guide for CICS, Encina, and TUXEDO* – provides instructions for using the Sybase DTM XA interface with X/Open XA transaction managers.
 - *XML Services in Adaptive Server Enterprise* – describes the Sybase native XML processor and the Sybase Java-based XML support, introduces XML in the database, and documents the query and mapping functions that comprise XML Services.

Other sources of information

Use the Sybase Getting Started CD, the SyBooks CD, and the Sybase Product Manuals Web site to learn more about your product:

- The Getting Started CD contains release bulletins and installation guides in PDF format, and may also contain other documents or updated information not included on the SyBooks CD. It is included with your software. To read or print documents on the Getting Started CD, you need Adobe Acrobat Reader, which you can download at no charge from the Adobe Web site using a link provided on the CD.
- The SyBooks CD contains product manuals and is included with your software. The Eclipse-based SyBooks browser allows you to access the manuals in an easy-to-use, HTML-based format.

Some documentation may be provided in PDF format, which you can access through the PDF directory on the SyBooks CD. To read or print the PDF files, you need Adobe Acrobat Reader.

Refer to the *SyBooks Installation Guide* on the Getting Started CD, or the *README.txt* file on the SyBooks CD for instructions on installing and starting SyBooks.

- The Sybase Product Manuals Web site is an online version of the SyBooks CD that you can access using a standard Web browser. In addition to product manuals, you will find links to EBFs/Maintenance, Technical Documents, Case Management, Solved Cases, newsgroups, and the Sybase Developer Network.

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

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Technical documentation at the Sybase Web site is updated frequently.

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- 1 Point your Web browser to Technical Documents at <http://www.sybase.com/support/techdocs/>.
- 2 Select Products from the navigation bar on the left.
- 3 Select a product name from the product list and click Go.
- 4 Select the Certification Report filter, specify a time frame, and click Go.
- 5 Click a Certification Report title to display the report.

❖ **Finding the latest information on component certifications**

- 1 Point your Web browser to Availability and Certification Reports at <http://certification.sybase.com/>.
- 2 Either select the product family and product under Search by Product; or select the platform and product under Search by Platform.
- 3 Select Search to display the availability and certification report for the selection.

❖ **Creating 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.

Sybase EBFs and software maintenance

❖ Finding the latest information on EBFs and software maintenance

- 1 Point your Web browser to the Sybase Support Page at <http://www.sybase.com/support>.
- 2 Select EBFs/Maintenance. If prompted, enter your MySybase user name and password.
- 3 Select a product.
- 4 Specify a time frame and click Go. A list of EBFs/Maintenance releases is displayed.

Padlock icons indicate that you do not have download authorization for certain EBFs/Maintenance releases because you are not registered as a Technical Support Contact. If you have not registered, but have valid information provided by your Sybase representative or through your support contract, click Edit Roles to add the “Technical Support Contact” role to your MySybase profile.

- 5 Click the Info icon to display the EBFs/Maintenance report, or click the product description to download the software.

Conventions

The following sections describe conventions used in this manual.

SQL is a free-form language. There are no rules about the number of words you can put on a line or where you must break a line. However, for readability, all examples and most syntax statements in this manual are formatted so that each clause of a statement begins on a new line. Clauses that have more than one part extend to additional lines, which are indented. Complex commands are formatted using modified Backus Naur Form (BNF) notation.

Table 1 shows the conventions for syntax statements that appear in this manual:

Table 1: Font and syntax conventions for this manual

Element	Example
Command names, procedure names, utility names, and other keywords display in sans serif font.	select sp_configure
Database names and datatypes are in sans serif font.	master database
Book names, file names, variables, and path names are in italics.	<i>System Administration Guide</i> <i>sql.ini</i> file <i>column_name</i> \$SYBASE/ASE directory

Element	Example
Variables—or words that stand for values that you fill in—when they are part of a query or statement, are in italics in Courier font.	<pre>select <i>column_name</i> from <i>table_name</i> where <i>search_conditions</i></pre>
Type parentheses as part of the command.	<pre>compute <i>row_aggregate</i> (<i>column_name</i>)</pre>
Double colon, equals sign indicates that the syntax is written in BNF notation. Do not type this symbol. Indicates “is defined as”.	<pre>::=</pre>
Curly braces mean that you must choose at least one of the enclosed options. Do not type the braces.	<pre>{<i>cash</i>, <i>check</i>, <i>credit</i>}</pre>
Brackets mean that to choose one or more of the enclosed options is optional. Do not type the brackets.	<pre>[<i>cash</i> <i>check</i> <i>credit</i>]</pre>
The comma means you may choose as many of the options shown as you want. Separate your choices with commas as part of the command.	<pre><i>cash</i>, <i>check</i>, <i>credit</i></pre>
The pipe or vertical bar () means you may select only one of the options shown.	<pre><i>cash</i> <i>check</i> <i>credit</i></pre>
An ellipsis (...) means that you can <i>repeat</i> the last unit as many times as you like.	<pre>buy thing = price [<i>cash</i> <i>check</i> <i>credit</i>] [, thing = price [<i>cash</i> <i>check</i> <i>credit</i>]]...</pre> <p>You must buy at least one thing and give its price. You may choose a method of payment: one of the items enclosed in square brackets. You may also choose to buy additional things: as many of them as you like. For each thing you buy, give its name, its price, and (optionally) a method of payment.</p>

- Syntax statements (displaying the syntax and all options for a command) appear as follows:

```
sp_dropdevice [device_name]
```

For a command with more options:

```
select column_name
      from table_name
      where search_conditions
```

In syntax statements, keywords (commands) are in normal font and identifiers are in lowercase. Italic font shows user-supplied words.

- Examples showing the use of Transact-SQL commands are printed like this:

```
select * from publishers
```

- Examples of output from the computer appear as follows:

pub_id	pub_name	city	state
0736	New Age Books	Boston	MA
0877	Binnet & Hardley	Washington	DC
1389	Algodata Infosystems	Berkeley	CA

(3 rows affected)

In this manual, most of the examples are in lowercase. However, you can disregard case when typing Transact-SQL keywords. For example, **SELECT**, **Select**, and **select** are the same.

Adaptive Server's sensitivity to the case of database objects, such as table names, depends on the sort order installed on Adaptive Server. You can change case sensitivity for single-byte character sets by reconfiguring the Adaptive Server sort order. For more information, see the *System Administration Guide*.

Accessibility features

This document is available in an HTML version that is specialized for accessibility. You can navigate the HTML with an adaptive technology such as a screen reader, or view it with a screen enlarger.

Adaptive Server HTML documentation has been tested for compliance with U.S. government Section 508 Accessibility requirements. Documents that comply with Section 508 generally also meet non-U.S. accessibility guidelines, such as the World Wide Web Consortium (W3C) guidelines for Web sites.

Note You might need to configure your accessibility tool for optimal use. Some screen readers pronounce text based on its case; for example, they pronounce ALL UPPERCASE TEXT as initials, and MixedCase Text as words. You might find it helpful to configure your tool to announce syntax conventions. Consult the documentation for your tool.

For information about how Sybase supports accessibility, see Sybase Accessibility at <http://www.sybase.com/accessibility>. The Sybase Accessibility site includes links to information on Section 508 and W3C standards.

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.

This chapter introduces Adaptive Server Enterprise Monitor features and architecture.

Description of Adaptive Server Enterprise Monitor

Adaptive Server Enterprise Monitor provides a way to monitor Adaptive Server performance in real time or in a historical data-gathering mode. System administrators can use this information to identify potential resource bottlenecks, to research current problems, and to tune for better performance. Adaptive Server Enterprise Monitor provides feedback for tuning at several levels:

- Adaptive Server configuration
- Database design
- SQL statements in applications and stored procedures

Monitor components

Adaptive Server Enterprise Monitor consists of four components that gather or display Adaptive Server performance data:

- Adaptive Server Enterprise Monitor Server (Monitor Server) – this server collects Adaptive Server performance data in real time and makes the data available to the other Adaptive Server Enterprise Monitor components. Monitor Server is a Sybase Open Server application.
- Adaptive Server Enterprise Monitor Historical Server (Historical Server) – this server obtains Adaptive Server performance data from Monitor Server and saves the data in files for deferred analysis. Historical Server is a Sybase Open Server application.

- Monitors in the Adaptive Server Enterprise plug-in for Sybase Central (Monitor Viewer) – the monitors obtain Adaptive Server performance data from Monitor Server and display the data in real time in tables and graphs.
- Adaptive Server Enterprise Monitor Client Library (Monitor Client Library) – this application programming interface (API) to Monitor Server is available to users for developing monitoring applications. Historical Server and the monitors in the Adaptive Server Enterprise plug-in for Sybase Central are Monitor Client Library applications.

Monitor architecture

Adaptive Server saves performance data in a shared memory area that Monitor Server reads. Because of this shared memory technique, Monitor Server must be installed and running on the same machine as the Adaptive Server being monitored. A one-to-one relationship exists between an Adaptive Server and a Monitor Server.

Monitor Client Library applications obtain Adaptive Server performance statistics from Monitor Server. These applications are clients of Monitor Server. For performance reasons, Sybase recommends running Monitor Client Library applications on machines other than the ones where pairs of Adaptive Server and Monitor Server are running. See the *Sybase Adaptive Server Enterprise Monitor Client Library Programmer's Guide* for more information.

The Adaptive Server Enterprise plug-in for Sybase Central includes a set of monitors showing different aspects of Adaptive Server resource usage at various levels of detail. Each open monitor is a separate application, with a unique client connection to Monitor Server. In Sybase Central, each Adaptive Server installation has its own Monitors folder containing the set of monitor objects.

Historical Server collects performance information from Monitor Server and saves the information in files for deferred analysis. Historical Server interfaces let users specify the data to collect and the time period desired. They also include a historical data playback feature. The interfaces are:

- A command interface in isql. For more information, see *Sybase Adaptive Server Enterprise Monitor Historical Server User's Guide*.
- A programming interface using Monitor Client Library. For more information, see *Sybase Adaptive Server Enterprise Monitor Client Library Programmer's Guide* and *Sybase Adaptive Server Enterprise Monitor Historical Server User's Guide*.

Configuring Monitor Server

This chapter discusses how to configure Monitor Server.

Topic	Page
Initial configuration on UNIX platforms	3
Initial configuration on Windows platforms	9
Monitor Server start-up parameters	20
Adjusting Monitor Server runtime configuration	23
Adaptive Server configuration issues that affect Monitor Server	30

Follow procedures in one of the first two sections to perform an initial Monitor Server configuration. Use the other sections to learn more about configuring Monitor Server and to make adjustments to the original configuration.

Initial configuration on UNIX platforms

This section explains how to configure Monitor Server on UNIX platforms.

Assumptions on UNIX platforms

These procedures assume that:

- You are monitoring Adaptive Server 11.5 and later.
- The Adaptive Server you want to monitor is installed and configured.
- The Adaptive Server installation includes two-phase commit. (This is required only if you intend to enable non-sa_role monitoring.)
- The Monitor Server software is unloaded from the delivery media, using the InstallShield as described in installation guide for Adaptive Server on UNIX platforms.

- The Monitor Server is configured using the configuration utility, as described in installation guide for Adaptive Server on UNIX platforms.
- The Monitor Server and Adaptive Server reside on the same machine and are installed in the same Sybase directory.
- The Monitor Server and Adaptive Server are at the same release level.

Results of installation on UNIX platforms

InstallShield automaticall copies Monitor Server files from the delivery media to the Sybase installation directory.

During the installation you are asked if you want to configure new Monitor Servers. If you chosse to do so, InstallShield automatically:

- adds Monitor Server configuration information in the *interfaces* file under the Sybase installation directory.
- creates a Monitor Server start-up file in the *install* directory under the Sybase installation directory. This file contains default start-up parameters.
- executes the *installmon* script, which inserts the following Monitor Server stored procedures into Adaptive Server:
 - *mon_rpc_attach* – executes when you start Monitor Server, to attach Monitor Server to Adaptive Server shared memory. The user identified by the *-U* parameter in the Monitor Server start-up command must have execute permission on *mon_rpc_attach*.
 - *mon_rpc_connect* – executes when a client connects to Monitor Server to complete the client/server connection. Users must be granted execute permission on *mon_rpc_connect* before they can run a client of Monitor Server.
 - *mon_authorize_non_sa* – enables monitoring by clients who do not have *sa_role*.

The next section describes the additional steps that you should perform before using Monitor Server.

Configuration procedures on UNIX platforms

To complete Monitor Server configuration on a UNIX platform:

- 1 Set the \$SYBASE environment variable to the value of the Sybase directory where you installed Adaptive Server and Monitor Server.
- 2 Log in to the UNIX machine using the “sybase” account or another account that has read, write, and search (execute) permissions on the \$SYBASE directory.
- 3 Start Adaptive Server.
- 4 Verify that a valid shared memory file exists.

When you start Adaptive Server, it creates a shared memory file that resides in the \$SYBASE directory. A valid shared memory file has a name in this format:

```
AdaptiveServerName.krg
```

Check that *AdaptiveServerName* is the entire name, and is not truncated. If *AdaptiveServerName* is truncated, Monitor Server will not start. See “Restrictions on length of Adaptive Server name” on page 30 for ways to correct this situation.

- 5 Connect to Adaptive Server using Sybase Central or isql.
- 6 Change the event buffers per engine configuration parameter using:

```
sp_configure "event buffers per engine", number
```

where *number* is the maximum number of events to be buffered per engine.

The default setting for this parameter is 100, which is not adequate for most sites running Monitor Server. The recommended value for an initial configuration is 2000.

You might need to adjust this value again later. Monitor Server reads event information from these buffers. If this number is too low, event buffer overruns can occur and events can be lost. See “Configuring event buffers” on page 30 for more information on fine-tuning this parameter.

- 7 Change the max SQL text monitored configuration parameter using:

```
sp_configure "max SQL text monitored",  
bytes_per_connection
```

where *bytes_per_connection* is the maximum number of bytes reserved for each client connection to hold the SQL text of the currently executing batch. Adaptive Server stores the text in reserved buffers in shared memory. Monitor Server obtains the text when asked to do so by one of its clients. SQL text is helpful in tuning long running statements or researching hung processes.

The default setting for this parameter is zero, which does not allow Adaptive Server to buffer any SQL text. The recommended value for an initial configuration is 1024. The theoretical limit is 2,147,483,647, but Adaptive Server immediately rejects very large values because they do not leave enough space for data and procedure cache.

You might need to adjust this value again later. If a connection's batch text is larger than *bytes_per_connection*, the text is truncated in the buffer. See "Configuring SQL text buffers" on page 34 for more information about the SQL text feature.

- 8 Stop and restart Adaptive Server, and verify that it started correctly.

This step is necessary to put into effect the new values for the configuration parameters you just changed.

- 9 (Optional.) Enable non-sa_role monitoring.

- a Execute the `mon_authorize_non_sa` stored procedure, located in the master database. If `mon_authorize_non_sa` is not in the master database or if it issues an error message indicating that two-phase commit needs to be installed, some steps were omitted during the Adaptive Server and Monitor Server installation process. See the latest release bulletin for Adaptive Server Monitor for specific instructions.
- b Add user names to the master database.

If a Monitor Server client uses an Adaptive Server login that does not have `sa_role`, the login must be associated with a user in the master database. Therefore, you probably need to add user names to master. You can either:

- Add a user to master for each login that will be a Monitor Server client, or
- Add one user to master and associate multiple logins to it through aliases.

To add a user to master, enter:

```
use master
```

```
go
sp_adduser userName
go
```

- c Give these user names permission to execute `mon_rpc_connect`:

```
use master
go
grant execute on mon_rpc_connect to userName
go
```

Note All user names who want to connect to Monitor Server must have this permission, whether they have `sa_role` or not.

- 10 Add connectivity information for Monitor Server.

Sybase client/server connection information can exist in an *interfaces* file or in a directory service. See the *Open Client/Server Configuration Guide for UNIX* for more information about any of the following procedures or the `dsedit`, `dscp`, `dsedit_dce`, and `dscp_dce` utilities.

If you are relying on *interfaces* files for making client/server connections, you do not need to do anything.

Note To verify or change the information, use either `dsedit` (if your system is running X-Windows) or `dscp` (a command line utility).

If you are relying on a directory service for making client/server connections:

- Make sure that the `$$SYBASE/SYBASE_OCS/config/libtcl.cfg` file on the machine where Monitor Server was installed points to the appropriate directory service. Use an editor to check and update *libtcl.cfg* files.
- Add Monitor Server to the directory service, using `dsedit_dce` (if your system is running X-Windows) or `dscp_dce` (a command line utility). You need to know the Monitor Server name to complete this step.

- 11 Configure Monitor Server client machines. This enables clients to connect to Monitor Server. Clients to Monitor Server are users of Historical Server, Monitor Viewer, or other Monitor Client Library applications. Each client machine must be configured appropriately.

If you are relying on *interfaces* files for making client/server connections:

- a Update *all* of the *interfaces* or *sql.ini* files used by Monitor Server clients. Use *dsedit* or *dscp*. The files must contain entries for:
 - Monitor Server
 - Adaptive Server that you want to monitor
- b To add these entries, you must know the:
 - Adaptive Server and Monitor Server names.
 - Port numbers or network addresses assigned to these servers when they were configured. If you need to research this information, use *dsedit* or *dscp* on the server machine to examine the appropriate *interfaces* file.

If you are relying on a directory service for making client/server connections, then make sure that the *libtcl.cfg* file on *all* Monitor Server client machines points to the appropriate directory service. Use a text editor to check and update *libtcl.cfg* files on UNIX platforms; use *dsedit* on Windows platforms.

12 Add Monitor Server to the Sybase Central machine.

If users intend to connect to Monitor Server by using Monitor Viewer in Sybase Central, add entries for Monitor Server to the *sql.ini* file on the Sybase Central machine. Use *dsedit* on the Sybase Central machine to add this entry.

13 Review the start-up script file. Make sure the parameters are suitable for your site.

The script file contains the Monitor Server start-up command, *monserver*, and its parameters. A script file ensures that correct start-up parameters are used each time a user starts Monitor Server. The file name is *\$\$SYBASE/install/run_monServerName*, where *\$\$SYBASE* is the installation root directory and *monServerName* is the name used by InstallShield.

When editing the file:

- Do *not* include a space between an option and its argument.
- Do *not* use carriage returns within the command. Use the standard UNIX continuation character (a backslash) to continue the command on more than one line.
- See Table 2-1 on page 21 for descriptions of the Monitor Server start-up parameters.

Some parameter values must match in the Adaptive Server and Monitor Server start-up commands:

- The same shared memory file name must be specified or implied when starting Adaptive Server and Monitor Server. Therefore, the implicit or explicit values of the `-M` parameter for Adaptive Server and the `-m` parameter for Monitor Server must match.
- The same Adaptive Server name must be specified in both start-up commands. Therefore, the values of the `-s` parameter for Adaptive Server and the `-S` parameter for Monitor Server must match. In the Adaptive Server start-up command, the `-s` option names the Adaptive Server to start. In the Monitor Server start-up command, the `-S` option names the Adaptive Server to monitor.

14 Check the permissions on the start-up script file.

The same UNIX account must be used to start Adaptive Server and Monitor Server to ensure appropriate access to shared memory. If necessary, use the `chmod` command to give the appropriate account execute permission on the new file.

Configuration of the new Monitor Server is now complete. Go to Chapter 3, “Starting, Verifying, and Stopping Monitor Server,” for instructions on starting the server, verifying that it is running correctly, and connecting to it using clients.

Depending on conditions at your site, you might need to adjust the default runtime configuration of Monitor Server. See “Adjusting Monitor Server runtime configuration” on page 23 for more information.

Initial configuration on Windows platforms

This section explains how to configure Monitor Server on Windows machines for Adaptive Server version 11.5 and later.

The section contains the following topics:

- Assumptions on Windows platforms
- Results of installation on Windows
- Configuration procedures on Windows platforms
- Setting up the automatic start-up service

- Setting up the server start-up order
- Changing the default configuration
- Configuring another Monitor Server

Assumptions on Windows platforms

These procedures assume that:

- 1 The Adaptive Server you want to monitor is installed and configured.
- 2 The Adaptive Server installation includes two-phase commit. This is required only if you intend to enable non-sa_role monitoring.
- 3 The Monitor Server software is loaded from the delivery media, using the instructions provided with the delivery media.
- 4 The Monitor Server software was installed on the same machine and into the same Sybase directory used by the Adaptive Server you want to monitor.

Results of installation on Windows

On the Windows platforms, the Sybase Adaptive Server installation process performs a nearly complete configuration of a companion Monitor Server for Adaptive Server. The installation process:

- Copies Monitor Server files from the delivery media to the Sybase installation directory.
- Adds Monitor Server configuration information to the NT Registry.
- Adds Monitor Server configuration information in the *sql.ini* file in the *ini* directory under the Sybase installation directory.
- Creates a run server file (a *.bat* file) in the *install* directory under the Sybase installation directory. The *.bat* file contains default start-up parameters.
- Executes the *installmon* script, which inserts the following required Monitor Server stored procedures into Adaptive Server:

- `mon_rpc_attach` – executes when you start Monitor Server, to attach Monitor Server to Adaptive Server shared memory. The user identified by the `-U` parameter in the Monitor Server start-up command must have execute permission on `mon_rpc_attach`.
- `mon_rpc_connect` – executes this procedure when a client connects to Monitor Server to complete the client/server connection. Users must be granted execute permission on `mon_rpc_connect` before they can run a client of Monitor Server.
- `mon_authorize_non_sa` – enables monitoring by clients who do not have `sa_role`.
- Creates the “`mon_user`” account, which is used as the default Monitor Server superuser account in the Monitor Server start-up command.

The next section describes the additional steps that you should perform before using Monitor Server.

Configuration procedures on Windows platforms

To complete Monitor Server configuration on the Windows platforms:

- 1 Start Adaptive Server.
- 2 Verify that a valid shared memory file exists.

When you start Adaptive Server, it creates a shared memory file that resides in the `%SYBASE%` directory. A valid shared memory file has a name in this format:

```
AdaptiveServerName.krg
```

Check that *AdaptiveServerName* is the entire name, and is not truncated. If *AdaptiveServerName* is truncated, Monitor Server will not start. See “Restrictions on length of Adaptive Server name” on page 30 for information about correcting this situation.

- 3 Use Sybase Central or `isql` to connect to Adaptive Server.
- 4 Change the event buffers per engine configuration parameter:

```
sp_configure "event buffers per engine", number
```

where *number* is the maximum number of events to be buffered per engine.

The default setting for this parameter is 100, which is not adequate for most sites running Monitor Server. The recommended value for an initial configuration is 2000.

You might need to adjust this value again later. Monitor Server reads event information from these buffers. If this number is too low, event buffer overruns can occur and events can be lost. See “Configuring event buffers” on page 30 for more information.

- 5 Change the max SQL text monitored configuration parameter:

```
sp_configure "max SQL text monitored",  
bytes_per_connection
```

where *bytes_per_connection* is the maximum number of bytes reserved for each client connection to hold the SQL text of the currently executing batch. Adaptive Server stores the text in reserved buffers in shared memory. Monitor Server obtains the text when asked to do so by one of its clients. SQL text is helpful in tuning long running statements or researching hung processes.

The default setting for this parameter is zero, which does not allow Adaptive Server to buffer any SQL text. The recommended value for an initial configuration is 1024. The theoretical limit is 2,147,483,647, but Adaptive Server immediately rejects very large values because they do not leave enough space for data and procedure cache.

You might need to adjust this value again later. If a connection’s batch text is larger than *bytes_per_connection*, the text is truncated in the buffer. If your Monitor Server users complain of consistently truncated batch text, you might want to make this value larger. See “Configuring SQL text buffers” on page 34 for more information about SQL text.

- 6 Stop and restart Adaptive Server, and verify that it started correctly. You can use Sybase Central to stop and start Adaptive Server if Sybase Central and Adaptive Server are running on the same machine.
- 7 The Monitor Server process priority must match the process priority of the Adaptive Server being monitored. By default, the Monitor Server process runs at normal priority. If the Adaptive Server runs at a different priority, you must change the priority for Monitor Server.

To run Monitor Server at high priority, use the `-p` parameter to the Monitor Server start-up command. To change the Monitor Server priority to any other priority level, use a third-party tool. For example, you can use the Microsoft Visual C++ Process Viewer.

- 8 (Optional.) Enable `non-sa_role` monitoring.

- a Execute `mon_authorize_non_sa`, located in the master database. If the `mon_authorize_non_sa` stored procedure is not in the master database or if it issues an error message indicating that two-phase commit needs to be installed, some steps were omitted during the Adaptive Server and Monitor Server installation process. See the latest release bulletin for Adaptive Server Monitor for specific instructions.
- b Add user names to the master database.

If a Monitor Server client uses an Adaptive Server login that does not have `sa_role`, the login must be associated with a user in the master database. Therefore, you probably need to add user names to master. You can either:

- Add a user to master for each login that will be a Monitor Server client, or
- Add one user to master and associate multiple logins to it through aliases.

To add a user to master, enter:

```
use master
go
sp_adduser userName
go
```

- c Give the user names permission to execute the `mon_rpc_connect` stored procedure:

```
use master
go
grant execute on mon_rpc_connect to userName
go
```

Note *All* user names who want to connect to Monitor Server must have this permission, whether they have `sa_role` or not.

- 9 Check that the connectivity protocol has a Net-Library driver associated with it.

Start `ocscfg` from the Sybase program group. Choose the Net-Library tab. If the protocol you are using has the value `<Not Set>` for the Net-Library driver, choose a driver from the Net-Lib Drivers drop-down list. For example, associate NLWNSCK with TCP.
- 10 Add or adjust connectivity information for Monitor Server.

Assign a port or network address to Monitor Server to enable client/server connections. Add connection information either to *sql.ini* files or to a directory service.

If you are relying on *sql.ini* files for making client/server connections, then check the server listings in the *sql.ini* file. For Monitor Server to run, this file must contain entries for:

- Any Adaptive Server you want to monitor
- Monitor Server paired with each Adaptive Server

Entries for Monitor Server should exist, since the Sybase installation process adds them. Use *dsedit* to add or change entries to a *sql.ini* file. To add these entries, you must know the:

- Monitor Server and Adaptive Server names
- Port number or network address assigned to Adaptive Server when it was configured. If you need to research this information, use *dsedit*.

Note The Adaptive Server name cannot be an alias name; it must be the name that Monitor Server knows it by. For example, use the value you used in the *-S* parameter in the Monitor Server start-up command.

If you are relying on a directory service for making client/server connections:

- Make sure that the *%SYBASE%\SYBASE_OCS\ini\libtcl.cfg* file on the machine where Monitor Server was installed points to the appropriate directory service. Use *ocscfg* to check and update *libtcl.cfg* files.
- Add Monitor Server to the appropriate directory service, using *dsedit*. You need to know the Monitor Server name to complete this step. The default name created by the installation process is in the format *machineName_ms*. For example, *smith_ms*.

See the *Open Client/Server Configuration Guide for Desktop Platforms* for more information on *ocscfg* or *dsedit*. You can start these utilities from the Sybase program group created during installation.

11 Add connectivity information for clients on client machines.

This task enables clients to connect to Monitor Server. Clients to Monitor Server are users of Historical Server, Monitor Viewer, and other Monitor Client Library applications. Each client machine must be configured appropriately.

If you are relying on *sql.ini* files for making client/server connections, then update *all* of the *sql.ini* files used by Monitor Server clients. These must contain entries for both Adaptive Server and Monitor Server. Use *dsedit* to add entries to a *sql.ini* file. To add these entries, you must know the following information:

- Monitor Server and Adaptive Server names.
- Port numbers or network addresses assigned to these servers when they were configured. If you need to research this information, use *dsedit* on the server machine to examine the appropriate *sql.ini* file.

If you are relying on a directory service for making client/server connections, make sure that the *libtcl.cfg* file on *all* Monitor Server client machines points to the appropriate directory service. Use *ocscfg* to check and update *libtcl.cfg* files on Windows platforms; use any text editor to do the same on UNIX platforms.

12 Add Monitor Server to the Sybase Central machine.

If users intend to connect to Monitor Server by opening monitors in Sybase Central, add entries for Monitor Server to the *sql.ini* file on the Sybase Central machine. Use *dsedit* on the Sybase Central machine to add this entry.

13 Review the Monitor Server start-up parameters inserted into the NT Registry and the start-up *.bat* file at installation time. Make sure the parameters are suitable for your site.

See “Changing the default configuration” on page 17 for instructions on changing the parameters. See “Monitor Server start-up parameters” on page 20 for a description of the parameters. Some parameters are marked “required.” The ones with default values can be omitted if the default values are acceptable.

14 (Optional.) Set up the automatic start-up service so that Monitor Server starts automatically each time you log in or reboot. The next section describes procedures for setting up the automatic start-up service.

Setting up the automatic start-up service

To add Monitor Server to the Windows automatic start-up service:

- 1 From the Control Panel, select Services. The Services window opens.

The Services window lists available servers. If the server is running, the status designation is Started. The Startup column indicates if the start-up is manual or automatic. If the Startup is Manual, you must manually start the server each time you reboot the machine.

- 2 Select the service that corresponds to Monitor Server. For example, if the name of the Monitor Server is TESTSRV_MS, the service name may be called Sybase MONServer_TESTSRV_MS.
- 3 Double-click the service name or choose Startup to open the Service dialog box.
- 4 In the Startup Type box, select Automatic.
- 5 Choose OK.

The automatic start-up takes effect the next time you restart or log in. Before you restart Adaptive Server, set up the Adaptive Server and Monitor Server start-up order. Adaptive Server must start before Monitor Server can successfully start.

Setting up the server start-up order

To make sure Adaptive Server starts before Monitor Server:

- 1 Start the NT Registry Editor (*regedt32.exe*).
- 2 Select:

```
\\HKEY_LOCAL_MACHINE
```
- 3 Save or print the existing settings before proceeding. From the registry menu, select the Save Subtree As command or the Print command.
- 4 In the tree view, highlight the following entry (double-click top-level entries to expand them):

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\  
Services
```
- 5 From the list of available services that appears, select the name of the service that corresponds to the Monitor Server. For example, if the name of the Monitor Server is TESTSRV_MS, the registry key may be SYBMON_TESTSRV_MS.

The current configuration values appear.

- 6 From the title bar, select Edit.

- 7 From the drop-down list, choose Add Value. The Add Value dialog box appears.

In the Value Name box, enter:

```
DependOnService
```

In the Data Type box, accept the default if it is correct or use the scroll bar to select the following datatype:

```
REC_MULTI_SZ
```

Choose OK.

- 8 In the String Editor Data box, enter:

```
SYBSQL_AdaptiveServer
```

where *AdaptiveServer* is the name of the Adaptive Server to be monitored and select OK.

- 9 From the Registry Editor menu bar, select Edit.
- 10 From the drop-down list select Add Value. The Add Value dialog box opens. In the Value Name box, enter:

```
DependOnGroup
```

In the Data Type box, select:

```
REC_MULTI_SZ
```

Select OK.

- 11 Leave the String Editor Data box empty, select OK, and exit the Registry Editor.

When you restart or log in again, Adaptive Server and Monitor Server automatically start in the correct order: Adaptive Server first, Monitor Server second.

Changing the default configuration

This section describes how to change the default configuration performed by the installation process and includes:

- “Changing start-up information in the NT Registry” on page 18
- “Changing the .bat file” on page 19

Changing start-up information in the NT Registry

To change start-up parameters in the NT Registry:

- 1 Start the NT Registry Editor (*regedt32.exe*).
- 2 Select:

```
\\HKEY_LOCAL_MACHINE
```
- 3 Save or print the existing settings before proceeding. From the registry menu, select the Save Subtree As command or the Print command.
- 4 In the tree view, highlight the following entry (double-click top-level entries to expand them):

```
HKEY_LOCAL_MACHINE\SOFTWARE\SYBASE\Server\  
svrName\Parameters
```

where *svrName* is the name of the server whose start-up parameters you want to change.

On the right side of the window, review the list of existing start-up parameters. They appear in the following format:

```
Argx, dataType, parameter
```

where:

- *x* is an integer in sequential order.
- *dataType* defines the type of data in the parameter value.
- *parameter* is a start-up option, preceded by a dash and followed by the parameter value.

An example containing the Monitor Server -M start-up parameter is:

```
Arg0:REG_SZ:-MTESTSRV_MS
```

- 5 To add a new start-up parameter:
 - From the Edit menu, choose Add Value.
 - In the resulting dialog box, in the Value Name box, enter:

```
Argx
```

where *x* is the next integer not currently assigned.

- From the Data Type drop-down list, choose:

```
REG_SZ
```

- In the String dialog box, enter the parameter and value.

- 6 To modify existing parameters:
 - Double-click the parameter line you want to change.
 - In the String dialog box, correct the entry.
- 7 From the registry menu, choose Exit.

Configuration of the new Monitor Server is now complete. Go to Chapter 3, “Starting, Verifying, and Stopping Monitor Server,” for instructions on starting the server, verifying that it is running correctly, and connecting to it using clients.

Depending on conditions at your site, you might need to adjust the default runtime configuration of Monitor Server. See “Adjusting Monitor Server runtime configuration” on page 23 for more information.

Changing the *.bat* file

The *.bat* file created by the Sybase installation process is located in *%SYBASE%\install*. To change the start-up parameters specified in the *.bat* file, edit the file with a text editor. Do not add carriage returns within the command. The entire file must be one physical line.

Configuring another Monitor Server

You can use the Server Configuration utility to configure a new Monitor Server on your machine. To start the utility, choose Server Config from the Sybase folder or execute *syconfig.exe* from the *bin* directory under the Sybase installation directory.

Although the Configure Sybase Servers dialog box lets you provide an Adaptive Server name when you configure a new Monitor Server, the name that you provide is not used. Instead, the system uses the value of the DSQUERY environment variable as the Adaptive Server name.

To work around this problem, you can change the value of DSQUERY *before* configuring the new Monitor Server, or you can edit the NT Registry and the Monitor Server start-up *.bat* file *after* configuring the new Monitor Server.

To change the DSQUERY environment variable:

- 1 From the Control Panel, open the System icon.
- 2 In the dialog box, highlight DSQUERY in the list of system environment variables.

- 3 In the Value box, change the value.
- 4 Click Set.

Monitor Server start-up parameters

This section describes the Monitor Server start-up command and parameters. The section applies to Monitor Server running on both UNIX and Windows platforms.

Function

Starts Monitor Server. The Adaptive Server to be monitored must be running before you start Monitor Server.

Syntax

```
{monserver|monsvr}  
-MmonServerName -SAdaptiveServerName [-UuserName]  
[-Ppassword] [-E] [-iinterfacesFile] [-llogFile]  
[-LconfigFile] [-mkrDirectory] [-nmaxConnections]  
[-O] [-p] [-Tflag] [-v]
```

The executable name is monserver on UNIX platforms and monsvr on Windows platforms.

Parameters

Table 2-1 describes the parameters to the Monitor Server start-up command.

Table 2-1: Monitor Server start-up command parameters

Parameter	Description
-E	<p>Specifies that a new instance of Monitor Server should <i>not</i> start if a <i>AdaptiveServerName.mrg</i> file already exists (where <i>AdaptiveServerName</i> is the name specified in the -S parameter). Monitor Server creates the <i>.mrg</i> file at start-up, and it deletes the <i>.mrg</i> file during a graceful shutdown. If an <i>.mrg</i> file exists, it could mean either of the following:</p> <ul style="list-style-type: none"> • An instance of Monitor Server for the Adaptive Server named in the -S parameter is already running. • An instance of Monitor Server for the Adaptive Server named in the -S parameter terminated ungracefully and could not delete its <i>.mrg</i> file. <p>The -E and -O options specify opposite behavior:</p> <ul style="list-style-type: none"> • -E specifies that the new Monitor Server instance will not start if an <i>.mrg</i> file exists. You must manually delete the <i>.mrg</i> file. It is located in the same directory as the <i>.krg</i> file. See the -m option for details. • -O specifies that the new Monitor Server will start by <i>overwriting</i> the existing <i>.mrg</i> file. <p>The -O behavior is the default if neither -E nor -O are specified. Use the -E option to ensure exclusive access to Adaptive Server by only one Monitor Server. Sites that give Monitor Server start-up permission to more than one user might prefer this option to prevent inadvertent duplicate start-ups.</p> <p>Use the -O option to ensure that restarting Adaptive Server and Monitor Server is successful after an ungraceful shutdown. Sites that depend on automatic start-ups using script files without operator intervention might prefer this option to prevent start-up script failures during a restart.</p>
-iinterfacesFile	Specifies the path name of the connectivity file. This is the <i>interfaces</i> file on UNIX platforms and the <i>sql.ini</i> file on Windows platforms. If this parameter is omitted, Monitor Server searches using Open Client / Server configuration.
-alogFile	Specifies the path name of the log file in which information and error messages are logged. The default is <i>ms.log</i> in the current directory.
-LconfigFile	Specifies the name of the Monitor Server configuration file. The configuration file is optional. If specified, the values in the file override default runtime parameters otherwise used by Monitor Server. For more information about the configuration file and Monitor Server runtime parameters, see “Adjusting Monitor Server runtime configuration” on page 23.
-MmonServerName	<i>Required.</i> Specifies the name of the Monitor Server to start.
-mkrgDirectory	<p>Specifies the name of the directory where the Adaptive Server shared memory file (<i>AdaptiveServername.krg</i>) is located. If this parameter is omitted, Monitor Server looks for the shared memory file in the <i>SYBASE</i> directory.</p> <p>The same shared memory file name must be specified or implied when starting Adaptive Server and Monitor Server. Therefore, the implicit or explicit values of the -M option for Adaptive Server and the -m option for Monitor Server must match.</p>

Parameter	Description
- <i>nmaxConnections</i>	<p>Specifies the maximum number of concurrent Open Client connections allowed to Monitor Server. Valid values are 1 through 20. The default is 5.</p> <p>An Open Client connection to Monitor Server is any of the following:</p> <ul style="list-style-type: none"> • A monitor in Sybase Central. • An active Historical Server recording session currently collecting data, regardless of when or how it was initiated. • A Historical Server recording session that has been defined but has not yet reached its start time. • A connection to Monitor Server from a Monitor Client Library application. <p>For example, if a Sybase Central user opens the Performance Summary Monitor and the Cache Statistics Monitor, that user has two Open Client connections to Monitor Server. If the default configuration of five connections is in effect, three additional connections to Monitor Server are available for that user or other users.</p>
-O	<p>Specifies that a new instance of Monitor Server should start by <i>overwriting</i> an existing <i>AdaptiveServerName.mrg</i> file (where <i>AdaptiveServerName</i> is the name specified in the -S parameter). Monitor Server creates the <i>.mrg</i> file at start-up, and it deletes the <i>.mrg</i> file during a graceful shutdown. If the <i>.mrg</i> file already exists, it could mean either of the following:</p> <ul style="list-style-type: none"> • An instance of Monitor Server for the Adaptive Server named in the -S parameter is already running. • An instance of Monitor Server for the Adaptive Server named in the -S parameter terminated ungracefully and could not delete its <i>.mrg</i> file. <p>The -E and -O options specify opposite behavior. See the description of -E for more information.</p>
-P <i>password</i>	<p>Specifies the password of the user specified with the -U option. If the -U parameter is omitted, then the -P parameter should also be omitted, however both -U and -P are optional. If you do not want to explicitly store a password in a file, see the following notes for alternatives.</p> <p><i>UNIX</i>: If you omit this parameter, Monitor Server prompts for a password during start-up. To configure a Monitor Server start-up script to prompt for a password at start-up, make the following changes.</p> <ul style="list-style-type: none"> • Remove the -P parameter and the ampersand (&) from the start-up script file. • Execute the Monitor Server start-up script file. • When prompted for a password, enter the password that is valid with the account you specified in the -U parameter. • Put the Monitor Server process in the background.
-p	<p><i>Applies to Windows only.</i> Sets the execution priority of Monitor Server to high priority. Use this parameter only if you set the Adaptive Server priority to high. The execution priorities for Adaptive Server and Monitor Server must match.</p>
-S <i>AdServerName</i>	<p><i>Required.</i> Specifies the name of Adaptive Server to monitor. Must match the value used in the -s parameter in the Adaptive Server start-up command.</p>

Parameter	Description
-T0	-T0 specifies that error messages received from Adaptive Server are not printed.
-T1	-T1 specifies that Monitor Server does not shut itself down when Adaptive Server shuts down. In general, Sybase does not recommend this parameter for production environments. By default, Monitor Server periodically checks to see if Adaptive Server is down and shuts itself down when it detects that Adaptive Server is down. See “Heartbeat interval” on page 25 for more information. To activate both of the conditions, use two -T arguments in your command: -T0 -T1
-Uusername	Specifies the user name of the Monitor Server superuser. The name, along with the password provided with the -P parameter, must be a valid login account in the Adaptive Server being monitored. It must have permission to execute the master.mon_rpc_attach stored procedure installed in the Adaptive Server being monitored. Monitor Server uses the superuser account in the following ways: <ul style="list-style-type: none"> • To connect to Adaptive Server to run the mon_rpc_attach stored procedure and to determine the location and attributes of Adaptive Server shared memory. • To verify shutdown requests. The superuser and the “sa” user are the only accounts allowed to shut down the Monitor Server. <p><i>UNIX:</i> This parameter is <i>required</i> unless the \$USER environment variable is set. If \$USER is set and you omit the -U and -P parameters, Monitor Server prompts for the password associated with \$USER during start-up. Sybase recommends that you use the “sa” or “sybase” user account as the Monitor Server superuser.</p> <p>-U is an optional configuration parameter.</p>
-v	Displays the Monitor Server version string and exits. When this parameter is used, all other parameters are ignored.

Adjusting Monitor Server runtime configuration

You can tune Monitor Server execution by overriding default values for certain runtime configuration parameters. An optional Monitor Server configuration file provides the method for overriding the default values.

This section describes the configuration file and the parameters that you can change. The topics discussed are:

- Monitor Server configuration file
- Initial scan interval
- Heartbeat interval

- Configuring Monitor Server heap space usage

Another configuration condition that you can change is the maximum number of client connections allowed for Monitor Server. This number is controlled by the `-nmax_connections` parameter to the Monitor Server start-up command. See “Monitor Server start-up parameters” on page 20 for more information.

Monitor Server configuration file

The Monitor Server configuration file is optional. To specify a configuration file to Monitor Server, use the `-L` parameter in the Monitor Server start-up command.

If a parameter is not in the configuration file, or if no configuration file is specified in the start-up command, Monitor Server uses default or initial computed values for the parameters.

In the Monitor Server configuration file, specify parameters one to a line, using the following format:

```
parameter_name parameter_value
```

Any number of white space characters can separate the parameter name and value fields. The parameter names are case-sensitive. All parameter values are numeric.

Initial scan interval

Many Monitor Viewer windows and Historical Server views cause Monitor Server to create summaries of monitoring events.

The scan interval specifies how often Monitor Server obtains new information from Adaptive Server event buffers. The scan interval at start-up is an *initial* scan interval. During execution, if Monitor Server detects that event loss has occurred or is about to occur, it reduces the scan interval in an attempt to prevent losses. For the remainder of execution, the scan interval remains at the reduced level.

You can view the current value of `scan_interval` with the `sms_status scan_interval` command. See `sms_status` on page 46 for more information about this command.

By default, Monitor Server computes an initial scan interval at start-up. The calculation is based on the event buffers per engine Adaptive Server configuration parameter. You can override the computed value for the initial scan interval with the Monitor Server `scan_interval` configuration parameter.

Note Overriding the default computation for initial scan interval is generally not necessary. If you notice that the scan interval tends to reduce over time, a more effective method of ensuring that Monitor Server does not lose events is to increase the event buffers per engine Adaptive Server configuration parameter. Increasing the number of event buffers makes Monitor Server scan less frequently. See “Configuring event buffers” on page 30 for more information.

The configuration file entry for this parameter is:

```
scan_interval value
```

where the *value* is specified in milliseconds. The minimum valid scan interval is 1 millisecond. The default is calculated by Monitor Server and is generally sufficient.

Heartbeat interval

Monitor Server periodically checks whether Adaptive Server is running or not by examining appropriate counter values. When Monitor Server detects that the Adaptive Server it is monitoring is down, Monitor Server shuts itself down. This is called the heartbeat mechanism.

To bypass the heartbeat mechanism, use the `-T1` parameter when you invoke Monitor Server. In that case, Monitor Server continues to run, even if the Adaptive Server being monitored is down.

Warning! Bypassing the heartbeat mechanism is not recommended. Allowing Monitor Server to run after Adaptive Server shuts down ties up the shared memory segment from the previous Adaptive Server instance and might prevent Adaptive Server from allocating enough resources to restart. Other memory problems might also occur.

When the heartbeat mechanism is active, the `heartbeat_interval` controls the frequency that Monitor Server checks on Adaptive Server. The default value is 120 seconds. You can change the default with the `heartbeat_interval` parameter. The configuration file entry for this parameter is:

```
heartbeat_interval value
```

where *value* is specified in seconds. The minimum value is one second. The maximum value 2678400 seconds (31 days). The default is 120 seconds.

Configuring Monitor Server heap space usage

Monitor Server collects information from two sources in Adaptive Server shared memory space:

- *Counters* collect information at a high level, such as the number of times a certain activity occurs server-wide or per engine or per database device.
- *Events* are data structures in Adaptive Server shared memory containing detailed information about activities in Adaptive Server. Monitor Server collects information from these events and summarizes it. Monitor Server maintains *event summaries* at a level of detail specified by its clients.

Monitor Server allocates the following internal buffers in heap space to hold this information:

- For each client connection, when the connection initially occurs, Monitor Server allocates a small buffer to hold a snapshot of counter values before the values are sent to the client.
- For each event summary request enabled over a client connection, Monitor Server allocates a summary buffer. If a summary buffer fills up, Monitor Server allocates additional buffers dynamically. The size and number of these buffers are controlled by three Monitor Server configuration parameters:
 - `bufsize` controls the size of each summary buffer
 - `max_mem_blks` controls how many buffers may be allocated for each event summary request
 - `max_summaries` controls how many event summaries may be requested by each client connection

The amount of heap space per summary buffer is typically 32KB, but it can vary with the volume of data encountered. There is a risk that, if the Monitor Server uses too much heap space, its heap will collide with the location at which Adaptive Server shared memory is attached. In that case, you should reconfigure and reboot Adaptive Server so that it uses a higher virtual memory starting address, which allows Monitor Server to do the same. This effectively provides more heap space to Monitor Server.

Summary buffer size

The `bufsize` parameter controls the size of each buffer allocated for summarized event data. The configuration file entry for this parameter is:

```
bufsize value
```

where *value* is specified in kilobytes. The maximum valid value is 16,384, which equals 16MB. The minimum buffer size is 32K, which is also the default value.

Number of summary buffers per event summary request

The Monitor Server allocates buffers dynamically to accumulate summaries of event-related data. Monitor Server acquires a separate set of buffers on behalf of each enabled summary. The `max_mem_blks` parameter controls the maximum number of buffers that may be allocated to any one summary.

The configuration file entry for this parameter is:

```
max_mem_blks value
```

The maximum valid value is 1024. The minimum valid value is one. The default is 32. That is, by default, up to 32 summary buffers may be acquired for a single summary request.

Maximum number of event summaries per connection

By default, a maximum of 15 summary requests can be enabled concurrently on a single client connection. You can reset this maximum by specifying the `max_summaries` parameter.

The configuration file entry for this parameter is:

```
max_summaries value
```

where *value* is the maximum number of event summaries that may be active on a client connection. The maximum value is 1024. The minimum value is one.

You must shut down Monitor Server and restart it for this change to take effect.

Various Monitor Viewer monitors in Sybase Central and Historical Server views cause event summaries to be created in Monitor Server. The more windows or views that are active on a given client connection, the more summaries are likely to be created. The following messages received by a client indicates that the maximum summaries were reached:

```
Unable to retrieve data
Unable to obtain initial information
Maximum number of concurrent summaries already enabled
```

Table 2-2 shows which client requests cause event summaries. This information might help you to estimate a reasonable value for `max_summaries` for your site. The right column indicates which windows or data items have the potential to create summaries, but it does not indicate an actual number of summaries. For example, some Monitor Viewer monitors might consume multiple summaries. Depending on how data items are combined in views, some data items in Historical Server or Monitor Client Library might share summaries.

Table 2-2: Client requests resulting in event summaries

Client type	Requests resulting in event summaries
Monitor Viewer monitors	<ul style="list-style-type: none">• Cache Monitor• Process Activity Monitor• Object Page I/O Monitor• Stored Procedure Activity Monitor• Process Current SQL Statement Monitor

Client type	Requests resulting in event summaries
Historical Server data items	<ul style="list-style-type: none"> • All “current statement” data items • CPU Percent • CPU Time • Lock Count • Locks Granted After Wait • Locks Granted Immediately • Locks Not Granted • Logical Page Reads • Page Hit Percent • Page I/O • Page Writes • Physical Page Reads • Procedure Elapsed Time • Procedure Execution Count
Monitor Client Library data items	<ul style="list-style-type: none"> • All “current statement” data items • SMC_NAME_CPU_PCT • SMC_NAME_CPU_TIME • SMC_NAME_LOCK_CNT • SMC_NAME_LOCKS_GRANTED_AFTER_WAIT • SMC_NAME_LOCKS_GRANTED_IMMEDIATELY • SMC_NAME_LOCKS_NOT_GRANTED • SMC_NAME_PAGE_HIT_PCT • SMC_NAME_PAGE_IO • SMC_NAME_PAGE_LOGICAL_READ • SMC_NAME_PAGE_PHYSICAL_READ • SMC_NAME_PAGE_WRITE • SMC_NAME_STP_ELAPSED_TIME • SMC_NAME_STP_NUM_TIMES_EXECUTED

Adaptive Server configuration issues that affect Monitor Server

Since Monitor Server and Adaptive Server share memory, a few coordination issues exist between them. This section discusses:

- Restrictions on length of Adaptive Server name
- Configuring event buffers
- Configuring SQL text buffers

Restrictions on length of Adaptive Server name

If your system is configured with a limit on the length of file names, the operating system truncates file names that exceed the limit. Monitor Server cannot run if the Adaptive Server shared memory file name has been truncated. If you encounter this limitation and cannot reconfigure your machine with a larger maximum file name length, you must take the shared memory file name length into consideration when assigning an Adaptive Server name.

When you install Adaptive Server, its shared memory file is created from the name of the server and the suffix *.krg*. Therefore, the maximum length you should use for an Adaptive Server name is the maximum file name length configured for your machine, minus four (to allow for the *.krg* suffix).

For example, if the Adaptive Server name is `test_sql_server11_5`, the shared memory file name will be `test_sql_server11_5.krg`, unless that name is too long. If your machine is configured with a maximum allowable file name length of 15 characters, the shared memory file name will be `test_sql_server`, which will not work.

Configuring event buffers

Event buffers are configured in Adaptive Server, but Monitor Server uses them. This section describes how to configure event buffers for Monitor Server.

Understanding event buffers and event loss

Adaptive Server Monitor uses several mechanisms to collect data. One source of data is low-level Adaptive Server monitoring events, which each Adaptive Server engine writes to its own event buffer in shared memory. Monitor Server scans the event buffers at regular intervals and summarizes the events according to client specifications.

The writing of event records by the Adaptive Server and reading of events by the Monitor Server are not directly synchronized in any way. This is essential to avoid impacting the throughput of Adaptive Server, but it opens the possibility of event buffer overruns and lost events. Events can be lost if:

- The number of event buffers per engine configured for Adaptive Server is too small, or
- The Monitor Server scan interval is too long.

When Monitor Server detects that events were lost, it dynamically reduces the scan interval to a value at which event loss no longer occurs. It also writes the following message in the log file:

```
Event buffer wrap: <n> events lost.
```

You configure the number of event buffers per engine using the `event buffers per engine Adaptive Server` configuration parameter. The following sections contain information about sizing and changing this parameter.

Monitor Server automatically computes the frequency of event buffer scans. The calculation is based on the number of events that can be stored in the event buffers configured in Adaptive Server. You can affect this frequency in two ways:

- Change the value of the `event buffers per engine Adaptive Server` configuration parameter. The computed interval between scans varies in direct proportion to the size of the event buffers.
- Override the Monitor Server computed scan interval by specifying the `scan_interval Monitor Server` configuration parameter.

In either case, Monitor Server dynamically reduces the initial scan interval if it detects that the event buffers are filling too rapidly. See “Initial scan interval” on page 24 for more information about the `scan_interval` parameter.

Determining a value for *event buffers per engine* parameter

The event buffers per engine Adaptive Server configuration parameter specifies the maximum number of events to be buffered per engine. The default is 100, a number which most users will need to increase. Trade-offs are involved in selecting an optimal buffer size, since a low number forces more frequent scans by the Monitor Server, but a large buffer size reduces the amount of memory available for other uses, such as procedure cache.

You should balance the possibility of event loss against the memory costs of a large number of event buffers. The following calculation determines how much Adaptive Server memory your setting will use:

$$\text{Adaptive Server memory (bytes)} = 100 \text{ bytes} * \text{number of event buffers} * \text{number of active engines}$$

The recommended procedure is to first reset the event buffer size to a somewhat larger number. A size of 2000 usually is large enough to avoid event buffer overruns.

Note For very active servers, you may need to set this parameter to a considerably higher number to avoid event loss.

You may want to increase the event buffer size beyond the minimum size that prevents overruns because larger event buffers decrease the frequency of scans by Monitor Server.

Changing the *event buffers per engine* parameter

To change the event buffers per engine configuration parameter in Adaptive Server:

- 1 Make sure that Adaptive Server is running and Monitor Server is not running.
- 2 Change the event buffers per engine parameter using either of the following methods:

Using Sybase Central	Using isql
<ol style="list-style-type: none"> 1. Select the appropriate Adaptive Server folder. 2. From the File menu, choose Configure. 3. In the scroll box, find the entry for event buffers per engine. In the Value column, change the number to the desired number of event buffers per engine. 4. Select OK. The new value appears in the Pending column until you restart Adaptive Server. 	<ol style="list-style-type: none"> 1. Open an isql connection to the appropriate Adaptive Server. 2. In isql, issue the following commands: <pre>1> sp_configure "event buffers per engine", number 2> go</pre> where <i>number</i> is the desired number of event buffers per engine.

- 3 Stop and restart Adaptive Server, and verify that it starts correctly.
- 4 Start Monitor Server, and verify that it starts correctly.

To verify that Monitor Server has started correctly, run isql with the following command:

```
isql -Username -Ppassword -Smonitor_server
```

where *username* is the name specified with the -U parameter when starting the Monitor Server, and *password* is that user's password.

Then execute:

```
1> sms_status server
2> go
```

You should see the following output, showing the Adaptive Server that your Monitor Server is monitoring:

```
Server Name
-----
AdaptiveServerName
```

To verify that the correct number of event buffers is in effect, execute:

```
1> sms_status numeventbuf
2> go
```

You should see the following output showing the number of event buffers you have just configured for the Adaptive Server being monitored:

```
Number of Event Buffers
-----
number
```

Configuring SQL text buffers

SQL text buffers are configured in Adaptive Server. This section describes how to configure SQL text buffers for Monitor Server.

Understanding the SQL text feature

Adaptive Server Monitor can obtain the text of the currently executing SQL batch in each client connection to Adaptive Server. Viewing the SQL text of long-running batches helps you debug hung processes or fine-tune long statements that are heavy resource consumers.

To enable collection of SQL text, Adaptive Server must be configured to collect the text and write it to shared memory, where it is read by Monitor Server when Monitor Server clients request such data. The client requests might come from the Process Current SQL Statement Monitor in Sybase Central, Monitor Historical Server, or from other Monitor Client Library applications.

The `max SQL text monitored` Adaptive Server configuration parameter controls whether SQL batch text is collected and how much text is stored per client connection.

For each client connection, text of only the currently executing batch is available. The text of a new batch overwrites the text of previously executed batches. If the batch text is larger than the value of `max SQL text monitored`, the remainder is truncated.

Determining a value for the *max SQL text monitored* parameter

The total amount of memory allocated for the SQL text feature is: `max SQL text monitored` multiplied by number of user connections, where `max SQL text monitored` is specified in bytes. The space is reserved in the shared memory area shared by Adaptive Server and Monitor Server.

Sybase recommends an initial value of 1024 bytes for `max SQL text monitored`. The default when Adaptive Server is installed is zero bytes. The theoretical limit is 2,147,483,647 bytes; however, Adaptive Server immediately rejects very large values because they do not leave enough memory for data and procedure caches.

Consider the following when configuring the amount of batch text that you want Adaptive Server to save per client connection:

- Batches of SQL text that exceed the allocated amount of memory are truncated without warning.
- The amount of memory you reserve for SQL text reduces the amount of memory available for data and procedure caches. A shortage of memory for data and procedure cache can impact Adaptive Server performance.

If users of Monitor Server clients notice that batch text is consistently truncated, consider increasing the size of max SQL text monitored. Remember that Adaptive Server must be restarted before the new value takes effect.

Changing the *max SQL text monitored* parameter

To change the max SQL text monitored configuration parameter:

- 1 Make sure that Adaptive Server is running and Monitor Server is not running.
- 2 Change the max SQL text monitored parameter using either of the following methods:

Using Sybase Central	Using isql
1. Select the appropriate Adaptive Server folder.	1. Open an isql connection to the appropriate Adaptive Server.
2. From the File menu, choose Configure.	2. In isql, issue the following commands:
3. In the scroll box, find the entry for max SQL text monitored. In the Value column, change the number to the desired number of bytes of SQL text to save per client connection.	<pre>1> sp_configure "max SQL text monitored", number 2> go</pre>
4. Click OK. The new value appears in the Pending column until you restart Adaptive Server.	where <i>number</i> is the desired number of bytes of SQL text to save per client connection.

- 3 Stop and restart Adaptive Server, and verify that it starts correctly.
- 4 Start Monitor Server, and verify that it starts correctly.

To verify that Monitor Server has started correctly, run isql with the following command:

```
isql -Uusername -Ppassword -Smonitor_server
```

where *username* is the name specified with the -U parameter when starting the Monitor Server, and *password* is that user's password.

Execute the following isql statements:

```
1> sms_status server
2> go
```

You should see the following output showing the name of the Adaptive Server that Monitor Server is monitoring:

```
Server Name  
-----  
AdaptiveServerName
```


Starting, Verifying, and Stopping Monitor Server

This chapter discusses managing Monitor Server.

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Starting, verifying, and stopping Monitor Server on UNIX platforms

This section describes how to start and stop Monitor Server running on UNIX platforms. It also describes how to verify if Monitor Server is running.

Starting Monitor Server on UNIX

On a UNIX platform, you can start Monitor Server by:

- Executing the `monserver` command from a UNIX shell prompt. If you use this method, you must type all appropriate parameters each time.
- Executing a script file that contains the `monserver` command and all appropriate parameters. If you followed the configuration instructions in Chapter 2, “Configuring Monitor Server,” you would start Monitor Server using:

```
install_dir/install/RUN_monServerName
```

where:

- *install_dir* is the Sybase root directory.

- *monServerName* is the name of the Monitor Server you want to start.

You can also add the Monitor Server start-up command to the machine's automatic start-up script.

Regardless of which method you use:

- The Adaptive Server to be monitored must be started first.
- Use the same UNIX account to start both Adaptive Server and Monitor Server. The same account is required to ensure appropriate access to the Adaptive Server shared memory file. Sybase recommends that you use the "sybase" account to start both Adaptive Server and Monitor Server.
- Set the SYBASE environment variable to the root directory of the Sybase installation.

The SYBASE environment variable also identifies the default location of the *interfaces* or *sql.ini* file and the Adaptive Server shared memory *.krg* file used by Monitor Server. Use parameters to the *monserver* command to override the default locations of these files.

Monitor Server displays the following message to indicate that start-up was successful:

```
Initialization is over. Ready to accept
connections.
```

Monitor Server writes messages to its log file during start-up. You can ignore these messages if start-up was successful. If start-up is not successful, examine the log file to research the problem.

The default path name for the Monitor Server log file is *ms.log* in the current directory at the time of start-up. You can override this default path name with the *-l* parameter (the letter l) to the *monserver* command.

Verifying that Monitor Server is running on UNIX

To verify that Monitor Server has started correctly, run *isql* with the following command:

```
isql -Uusername -Ppassword -SmonitorServerName
```

where:

- *username* is the name specified with the *-U* parameter when starting the Monitor Server.

- *password* is that user's password.
- *monitorServerName* is the Monitor Server whose status you want to verify.

Then execute:

```
1> sms_status server
2> go
```

You should see the following output showing the name of the Adaptive Server that your Monitor Server is monitoring:

```
Server Name
-----
AdaptiveServerName
```

Stopping Monitor Server on UNIX

The only users who can stop Monitor Server are the “sa” user and the Monitor Server superuser. The superuser is the one whose account was specified in the -U and -P parameters to the Monitor Server start-up command.

In its default configuration, Monitor Server detects when Adaptive Server is not running and stops itself automatically. For more information about this feature, see “Heartbeat interval” on page 25.

To stop Monitor Server manually on a UNIX platform, connect to Monitor Server. Use the following isql command:

```
isql -Username -Ppassword -Smon_server
```

where:

- *username* is either “sa” or the same user name that was specified with the -U parameter when Monitor Server was started.
- *password* is the password associated with *username*.
- *monitor_server* is the name of the Monitor Server you want to stop.

When the isql prompt appears, issue:

```
1> sms_shutdown
2> go
```

This command tells Monitor Server to complete all currently executing commands, release all held resources, and then terminate.

The `no_wait` option (`sms_shutdown no_wait`) allows shutdown to occur immediately, even when an outstanding command from another client connection exists against Monitor Server.

Starting, verifying, and stopping Monitor Server on Windows NT

This section describes how to start and stop Monitor Server running on Windows NT.

Starting Monitor Server on Windows NT

On Windows NT, you can configure Monitor Server to start automatically when the system restarts. See “Setting up the automatic start-up service” on page 15 for instructions.

If Monitor Server does not start automatically, you can start it manually with any of these methods:

- The Windows NT Control Panel’s Services window. The start-up user must be an Administrator.
- A batch (*.bat*) file containing the start-up command and parameters. The Sybase installation procedure creates a default *.bat* file in `$SYBASE\install\RUN_sqlServerName_MS.bat`, where *sqlServerName* is the name of the Adaptive Server being monitored. Sybase recommends that you invoke the batch file from a command line shell utility (such as the MS-DOS prompt) rather than double-clicking on it in File Manager. The command line shell utility captures start-up error messages, if any occur, whereas the File Manager does not.
- The start-up command typed directly from a command prompt window. The name of the Monitor Server executable file for Windows NT is *monsrvr.exe*.
- If Monitor Server is running on the Sybase Central machine, you can start it in Sybase Central. Right-click the Monitor Server icon, and choose Start from the menu.

When you use a *.bat* file or a command line command to start Monitor Server, the server process is linked to your current login account. When you log off, the server shuts down.

For production systems, Sybase recommends starting Monitor Server using the Windows NT Control Panel Services Manager. When started as a service, Monitor Server persists across logins.

How start-up parameters are inferred on Windows NT

The Monitor Server installation process adds start-up parameters for Monitor Server in the following NT Registry entry:

```
\\HKEY_LOCAL_MACHINE\SOFTWARE\SYBASE\SERVER\  
servername\Parameters
```

When you start Monitor Server using the Control Panel, Monitor Server reads its start-up parameters from this NT Registry entry. If you start Monitor Server from a command line or by means of a batch file, the start-up parameters are taken from both the registry entry and from the command. If the same parameter appears in both places, the value specified in the command takes precedence over the value in the registry entry. If you do not specify any start-up parameters in the command, by default all of the NT Registry entry parameters are used.

See “Changing start-up information in the NT Registry” on page 18 for information on editing the NT Registry entries.

Verifying that Monitor Server is running on Windows NT

On Windows NT, use the following methods to determine if Monitor Server is running:

- Check the status on the Windows NT Control Panel Services window.
- Check the status using *isql*. To use this method, run *isql* with the following command:

```
isql -Username -Ppassword -SmonitorServerName
```

where:

- *username* is the name specified with the *-U* parameter when starting the Monitor Server.

- *password* is that user's password.
- *monitorServerName* is the Monitor Server you are verifying.

Then execute:

```
1> sms_status server
2> go
```

If Monitor Server is running, you should see:

```
Server Name
-----
AdaptiveServerName
```

where *AdaptiveServerName* is the name of the Adaptive Server being monitored.

Stopping Monitor Server on Windows NT

The only users who can stop Monitor Server are the "sa" user and the Monitor Server superuser. The superuser is the one whose account was specified in the -U and -P parameters to the Monitor Server start-up command.

In its default configuration, Monitor Server detects when Adaptive Server is not running and stops itself automatically. For more information about this feature, see "Heartbeat interval" on page 25.

To stop Monitor Server manually on Windows NT, you can use the Stop button on the Windows NT Control Panel Services window. This method stops Monitor Server immediately. It does not wait for outstanding commands from other client connections to complete.

Another way to shut down Monitor Server is with an isql command. To use this method, connect to Monitor Server using isql:

```
isql -Uusername -Ppassword -SmonitorServerName
```

where:

- *username* is either "sa" or the same user name that was specified with the -U parameter when Monitor Server was started.
- *password* is the password associated with *username*.
- *monitorServerName* is the Monitor Server you want to stop.

When the isql prompt appears, issue:

```
1> sms_shutdown
```

```
2> go
```

This command tells Monitor Server to complete all currently executing commands, release all held resources, and then terminate.

The `no_wait` option (`sms_shutdown no_wait`) allows shutdown to occur immediately, even when an outstanding command from another client connection exists against Monitor Server.

Orderly shutdowns and restarts

This section describes the recommended sequence for shutting down Adaptive Server, Monitor Server, and its clients.

Orderly shutdowns

Sybase recommends the following restart procedure:

- 1 Disconnect all Monitor Viewer connections and terminate all active Historical Server recording sessions that are using this Adaptive Server/Monitor Server pair.
- 2 Stop Monitor Server.
- 3 Stop Adaptive Server.
- 4 Restart Adaptive Server.
- 5 Restart Monitor Server.
- 6 Restart clients.

Automatic shutdowns

The Monitor Server heartbeat mechanism causes Monitor Server to shut itself down when it detects that Adaptive Server is no longer running. Before automatic shutdown occurs, Monitor Server writes the following message in its log file:

```
Adaptive Server seems to be down. Shutting down Monitor Server.
```

If clients remain connected to Monitor Server, Monitor Server can not shut down gracefully. You can ignore an abnormal termination in this case.

The `-T1` parameter in the Monitor Server start-up command bypasses the heartbeat mechanism. If you use this option on start-up, Monitor Server does not shut down when Adaptive Server stops.

Orderly restarts

If Adaptive Server shuts down, you should make sure that Monitor Server is shut down before restarting Adaptive Server. Monitor Server must be shut down to release resources, including the shared memory segment. Otherwise, the new Adaptive Server might not have enough resources to allocate a new shared memory segment, causing start-up to fail.

If the heartbeat mechanism is in effect, Monitor Server automatically detects the termination of the Adaptive Server within the specified `heartbeat_interval` and shuts itself down. The default `heartbeat_interval` is 120 seconds. See “Heartbeat interval” on page 25 for more information.

Therefore, before attempting to restart Adaptive Server after a shutdown, you must either wait for the automatic shutdown of Monitor Server to occur or explicitly stop Monitor Server yourself.

Connecting to clients

To access performance data that Monitor Server collects, you must connect to Monitor Server using one of its clients. Monitor Server clients are:

- Historical Server running on any supported platform. See the *Adaptive Server Enterprise Monitor Historical Server User's Guide* for information on the Historical Server interface using `isql` commands. See the *Adaptive Server Enterprise Monitor Client Library Programmer's Guide* for information on the Historical Server programming interface.
- A user-written or third-party application using Monitor Client Library. See the *Adaptive Server Enterprise Monitor Client Library Programmer's Guide* for information on creating and running your own client applications.

Monitor Server *isql* commands

This chapter describes the *isql* interface to Monitor Server. The interface consists of two commands:

- `sms_shutdown` – provides a way to manually stop Monitor Server.
- `sms_status` – provides status information about a running Monitor Server.

Using the commands

The only users who can issue these commands are the “sa” user and the Monitor Server superuser. The superuser is the account named or implied in the `-U` parameter of the Monitor Server start-up command.

To use these commands, open an *isql* session and connect to the Monitor Server that you want to stop or obtain status information about. Use the following command syntax:

```
isql -Uusername -Ppassword -SmonitorServerName
```

where:

- `username` is the name specified with the `-U` parameter to the Monitor Server start-up command.
- `password` is the password for `username`.
- `monitorServerName` is the Monitor Server you want to stop or obtain status information about.

`sms_shutdown`

Description	Terminates Monitor Server.
Syntax	<code>sms_shutdown [no_wait]</code>

Parameters	<p><i>no_wait</i></p> <p>terminates Monitor Server immediately, without waiting for commands executing on other client connections to complete. This parameter allows Monitor Server to release all resources, such as shared memory, before termination.</p> <p>If this parameter is omitted, Monitor Server terminates after waiting for active commands executing on other client connections to complete. No new commands are accepted.</p>
Usage	<p>Only the “sa” or the Monitor Server superuser can use this command.</p> <p>The Monitor Server heartbeat feature detects when Adaptive Server is down and shuts down Monitor Server as a result. See “Heartbeat interval” on page 25 for more information.</p>

sms_status

Description	Displays information about the state of Monitor Server.
Syntax	<code>sms_status {<i>server</i> <i>numeventbuf</i> <i>scan_interval</i>}</code>
Parameters	<p><i>server</i></p> <p>displays the name of the Adaptive Server being monitored.</p> <p><i>numeventbuf</i></p> <p>displays the value of the number of event buffers Adaptive Server configuration parameter. See “Configuring event buffers” on page 30 for more information.</p> <p><i>scan_interval</i></p> <p>displays the current scan interval in Monitor Server. This value might not be the value of the <code>scan_interval</code> Monitor Server configuration parameter at start-up, since Monitor Server dynamically recomputes the scan interval if it detects that events are being lost. See “Initial scan interval” on page 24 for more information.</p>
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Troubleshooting Monitor Server

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Error messages

This section describes the error messages that might appear in the Monitor Server error log. The error log file name is specified in the `-l` parameter to the Monitor Server start-up command. The default path name is `ms.log` in the current working directory.

The messages are listed alphabetically. Possible causes and resolutions follow each message. Sometimes several messages have the same root cause and the same solution. If you see messages grouped together in the error log, consider whether the same solution might address all of them.

```
Allocation failure for <n> bytes: all configured
summary buffers in use.
```

A client connection has exceeded the configured maximum per-connection buffer allocations. To increase the maximum size of the buffers or the maximum number of buffers per connection, increase the value of the `bufsize` or the `max_mem_blks` Monitor Server configuration parameters. See “Configuring Monitor Server heap space usage” on page 26 for more information.

```
Event buffer wrap: <n> events lost.
```

Low-level monitoring information is being written by Adaptive Server into its event buffers more rapidly than Monitor Server can extract it.

The recommended procedure is to first reset the event buffers per engine Adaptive Server configuration parameter to a larger number. See “Configuring event buffers” on page 30 for more information. If event loss still occurs, consider overriding the default value of the `scan_interval` Monitor Server configuration parameter.

Upon detecting event loss, Monitor Server dynamically reduces its scanning interval from its initially computed value to a value at which event loss no longer occurs. You can determine this recomputed scanning interval by using the `sms_status scan_interval` command. Enter the value returned by this command in the Monitor Server configuration file as the value of the `scan_interval` parameter. This causes Monitor Server to scan at or below this interval, rather than starting at its calculated interval whenever it is booted. See “Initial scan interval” on page 24 for more information.

```
Failed to allocate a chunk of <n> bytes for summarized
event data.
```

Monitor Server tried to allocate space for summary data but no more space was available. This condition occurs most often when data for many Historical Server views is being collected.

To resolve this condition, you can increase the ceiling of the address space available to Monitor Server by changing the shared memory starting address Adaptive Server configuration parameter. Specifying a higher shared memory starting address provides more heap space to Monitor Server.

The problem is independent of the amount of memory Adaptive Server starts with as dictated by the `sp_configure` memory command. It is dependent on the amount of memory available between the size of the Monitor Server binary and the starting address of shared memory.

To change the shared memory starting address:

- 1 Make sure that Adaptive Server is running and Monitor Server is not running.
- 2 Change the shared memory starting address parameter using either of the following methods:

Using Sybase Central	Using isql
<p>a Select the appropriate Adaptive Server folder.</p> <p>b From the File menu, choose Configure.</p> <p>c In the scroll box, find the entry for shared memory starting address. In the Value column, change the number to a properly aligned starting address that is higher than the current value. For example, to start shared memory at the 16MB address, use 16777216.</p> <p>d Select OK. The new value appears in the Pending column until you restart Adaptive Server.</p>	<p>a Open an isql connection to the appropriate Adaptive Server.</p> <p>b Issue the following commands:</p> <pre>1> sp_configure "shared memory starting address", number 2> go</pre> <p>where <i>number</i> is a properly aligned starting address that is higher than the current value. For example, to start shared memory at the 16MB address, use 16777216.</p>

- 3 Stop Adaptive Server, restart it, and verify that it starts correctly. See step 5 if Adaptive Server fails to start.
- 4 Start Monitor Server and verify that it starts correctly. See Chapter 3, “Starting, Verifying, and Stopping Monitor Server” for more information.
- 5 If Adaptive Server fails to start with the new shared memory starting address, edit the Adaptive Server configuration file. The file resides in the *SYBASE* root directory. Its name is *serverName.cfg*, where *serverName* is the Adaptive Server name. Search for the phrase “shared memory starting address” and change the associated value to the previously used value. To find the most recently used configuration values for your Adaptive Server, look in the file whose name is *serverName.nnn*. If there are multiple files with *.nnn* extensions for *serverName*, the file with the highest value for *.nnn* is the latest one.

After editing the configuration file and successfully restarting Adaptive Server, try changing the starting address again, making sure to use a shared memory address valid for your platform.

```
ftok(<$$SYBASE/install/sqlServerName>.krg) failed:
No such file or directory.
Fatal error -1 detected
```

Monitor Server is unable to locate the Adaptive Server *.krg* file, which it requires in order to attach to shared memory. In the message text, *sqlServerName* is the Adaptive Server being monitored. Check the following:

- The implied or explicit value of the *-M* parameter in the Adaptive Server start-up command must match the implied or explicit value of the *-m* parameter in the Monitor Server start-up command. These parameters specify the location of the *.krg* file.

- The *sqlServerName* in the message text must not be truncated. Truncation might occur if the operating system has a limitation on the number of characters in file names, and the Adaptive Server name plus the four characters required for the *.krg* extension exceeds this limit. If your system imposes a limit on file name lengths, the Adaptive Server name must be four characters less than the limit if you want to monitor that Adaptive Server.

```
Monitor Server has encountered a fatal error and is
quitting.
```

Monitor Server detected an unrecoverable error condition and is terminating. A message describing the error condition is written to the Monitor Server log file, if possible. The exit status of Monitor Server may be of use to Sybase Technical Support in diagnosing the problem if the log file does not provide sufficient information.

```
Stored procedure 'master..mon_rpc_attach' not found.
```

Monitor Server attempted to call the *mon_rpc_attach* stored procedure, but the procedure is not in Adaptive Server. Either the stored procedure was not created during Monitor Server installation, or it was deleted from the Adaptive Server.

Create the stored procedure in the Adaptive Server you are monitoring by executing the *installmon* batch file in *isql*. The *installmon* batch file contains the SQL text to create two stored procedures required by Monitor Server.

Follow these steps:

- 1 Make sure Adaptive Server is configured and running. Monitor Server can be running or not running.
- 2 Execute *isql*, attaching to the Adaptive Server you are monitoring, and using the *installmon* batch file as input. Example *isql* commands are:

```
UNIX:  isql -User -Ppasswd -SsqlServer $SYBASE/scripts/installmon
NT:    isql -User -Ppasswd -SsqlServer %SYBASE%/scripts/installmon
```

```
msgid:20073 -- os_attach_region: shmget(0xc70e0703): No
such file or directory
msgid:20111 -- kbattach: couldn't attach to Kernel
region
Unable to attach with shared memory.
Fatal error -1 detected
```

For Monitor Server to attach to Adaptive Server shared memory, the user account that starts Monitor Server must have:

- Read and write permissions on the Adaptive Server shared memory file (*sqlServerName.krg*) and on the shared memory segment that Adaptive Server created.
- The same level of permissions as the user account that started Adaptive Server.

Log in using the same account that started Adaptive Server and attempt to start Monitor Server again.

```
msgid:20112 -- kbattach: attached to wrong Kernel region
Unable to attach with shared memory.
Fatal error -1 detected
```

A version mismatch between Monitor Server and Adaptive Server exists. Make sure that Monitor Server is attached to a supported Adaptive Server.

```
<n> failures to allocate space for summarized data - no
more will be logged.
```

Check earlier messages in the error log describing failed attempts to allocate memory for summarizing event-based monitoring information. Take the actions prescribed for those error messages.

```
No server log file open; Using stderr for log.
Open Server: Error: 16012/10/0: Can't open log file
'$SYBASE/install/ms.log'
Openserver srv_init call failed.
Monitor Server has encountered a fatal error and
quitting
```

Start Monitor Server as a user who has permission to read and write to the Monitor Server log file.

```
Open Server: Fatal Error: 16029/20/0: Failed to start
any network listeners
```

Monitor Server is already running or you specified a port number in the *interfaces* file that is already in use by another application.

See Chapter 3, “Starting, Verifying, and Stopping Monitor Server” for ways to verify whether Monitor Server is running. If a Monitor Server is not running for Adaptive Server, change the Monitor Server port number used in the *interfaces* file. Then restart Monitor Server.

```
Open Server: Error: 16104/10/1: Unable to allocate
stack, size 34816, for new thread
```

The starting address of the shared memory segment that Monitor Server is sharing with Adaptive Server is too low. It is not a fatal error for Monitor Server, but no new connections can be made.

To change the shared memory starting address to a higher number, follow the procedures described earlier in this chapter for the error message:

```
Failed to allocate a chunk of <n> bytes for summarized
event data.
Adaptive Server seems to be down. Shutting down the
monitor server.
```

In its default configuration, Monitor Server shuts itself down gracefully if Adaptive Server has been down for approximately two minutes. After restarting Adaptive Server, restart Monitor Server.

The Monitor Server heartbeat feature checks periodically to see if Adaptive Server is still running. When Monitor Server detects that Adaptive Server is down, it shuts itself down. The `heartbeat_interval` Monitor Server configuration parameter controls the frequency that Monitor Server checks on Adaptive Server. The default value is 120 seconds.

```
Unable to attach with shared memory.
```

Monitor Server cannot find the correct `.krg` file. Adaptive Server creates a `.krg` file during start-up. Monitor Server reads the `.krg` file during start-up, and uses the information to attach to the Adaptive Server shared memory segment.

Check for these situations:

- The `.krg` file is left over from a previous Adaptive Server start-up.
- The `.krg` file exists in a directory other than the directory identified to Monitor Server in its start-up command.
- Someone has copied the `.krg` file to the current directory from some other directory, thus changing the file's characteristics.

To confirm that a `.krg` file is old, compare the date of the `.krg` file to the last Adaptive Server start-up date. You can find the last Adaptive Server start-up date by checking the Adaptive Server error log. If the dates do not match, Monitor Server was trying to access a bad version of the `.krg` file.

Also check the usage of start-up parameters for both Monitor Server and Adaptive Server. The value specified for the `-M` parameter in the Adaptive Server start-up command must match the value for the `-m` parameter in the Monitor Server start-up command. The `-M` parameter tells Adaptive Server where to put the `.krg` file, and the `-m` parameter tells Monitor Server where to look for it.

Do *not* move the *.krq* file after Adaptive Server starts.

Common problems

This section describes some common problems that might not be reported or detected in error messages.

Monitor Server fails to start

Check the Monitor Server error log file and resolve any problems reported there. This section describes some additional reasons for start-up failure.

Access violations

If you receive an access violation error when starting Monitor Server, check the TCP/IP connection information in the *interfaces*, *sql.ini*, or other Directory Service file. Either correct the TCP/IP connection entry in the file, or try removing the connection entry and adding a new connection for a different network protocol.

Check the NT Registry services entry (NT only)

Using the Services Manager, the Monitor Server may fail to start and no error message is logged. Using the NT Registry Editor (*regedt32.exe*), perform the steps below to correct this problem.

- 1 Start the *regedt32* utility.
- 2 Open the registry key *HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\SYBMON_MonServerName* where *MonServerName* is the name of the Monitor Server.
- 3 Open the *DependOnService* value.
- 4 Choose OK.
- 5 Exit *regedt32*, shutdown and restart Windows NT.

Client errors

Clients to Monitor Server might receive errors indicating problems with Monitor Server configuration.

Maximum connection errors

Clients to Monitor Server might receive messages stating that no more connections to Monitor Server are possible. When this occurs, try the following resolutions:

- Close other connections. Users who receive the connection messages might have multiple client connections opened. They should close other unneeded connections before making a new connection.
- Increase the number of connections permitted. The number of connections allowed to Monitor Server is controlled by the `-n` parameter to the Monitor Server start-up command. Increasing this parameter value allows more client connections. The default value is five. The maximum value is 20.
- Change the starting address of the Adaptive Server shared memory region. Use this solution if the connection messages occur before the maximum number of connections is reached. In this case, the current configuration does not allow enough memory to support the number of connections requested. To remedy this problem, reconfigure the Adaptive Server being monitored to start its shared memory region at a higher virtual address. Increase the address by 50K per additional connection required.

ct_netlib errors (Windows NT)

If clients receive `ct_netlib` connection errors, make sure the local machine has a Net-Library driver associated with it.

Start `ocscfg` from the Sybase program group. Choose the Net-Library tab. If the protocol you are using has the value `<Not Set>` for the Net-Library driver, choose a driver from the Net-Lib Drivers drop-down box. For example, associate `NLWNSCK` with TCP.

Messages in Adaptive Server error log

Client monitoring processes cause dbcc traceon messages to be written to the Adaptive Server error log. You can ignore these messages.

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