SYBASE®

Installation and Configuration Guide

Sybase® IQ

12.7

[HP-UX]

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Contents

About This Book

Subject

This book, *Sybase IQ Installation and Configuration Guide for HP-UX*, provides instructions for:

- Installing Sybase® IQ
- Migrating Sybase IQ data
- Configuring Sybase IQ and your operating system

Audience

This guide is for system administrators, managers, or anyone who will be involved in setting up Sybase IQ. This guide assumes no technical knowledge of Sybase products.

How to use this book

The following table shows which chapters fit a particular interest or need.

Table 1: Guide to using this book

To do this...	See...
Install Sybase IQ for the first time	Chapter 1
Install the Sybase IQ Network Client	Chapter 2
Migrate data	Chapter 3
Configure Sybase IQ after installation	Chapter 4

Related documents

Documentation for Sybase IQ:

- *Introduction to Sybase IQ*

  Read and try the hands-on exercises if you are unfamiliar with Sybase IQ or with the Sybase Central™ database management tool.

- *New Features in Sybase IQ 12.7*

  Read just before or after purchasing Sybase IQ for a list of new features.

- *Sybase IQ Performance and Tuning Guide*

  Read to understand query optimization, design, and tuning issues for very large databases.

- *Sybase IQ Reference Manual*

  Read for a full description of the SQL language, stored procedures, data types, and system tables supported by Sybase IQ.

- *Sybase IQ System Administration Guide*

  Read to understand administration issues such database creation and load operations, data security and integrity, server start-up and connection, and multiplex operations.

- *Sybase IQ Troubleshooting and Recovery Guide*

  Read to solve problems, perform system recovery, and repair databases.

- *Sybase IQ Error Messages*

  Read to understand Sybase IQ error messages (referenced by SQLCode, SQLState and message text) and SQL preprocessor errors and warnings.

- *Sybase IQ Utility Guide*

  Read for Sybase IQ utility program reference material, such as available syntax, parameters, and options.

- *Large Objects Management in Sybase IQ*

  Read to understand storage and retrieval of Binary Large Objects (BLOBs) and Character Large Objects (CLOBs) within the Sybase IQ data repository. You need a separate license to install this product option.

- *Encrypted Columns in Sybase IQ*

  Read to understand the use of user encrypted columns within the Sybase IQ data repository. You need a separate license to install this product option.

- *Sybase IQ Release Bulletin*

  Read just before or after purchasing Sybase IQ for an overview of new features and for last-minute changes to the product and documentation. Read for help if you encounter a problem.

Sybase IQ and Adaptive Server Anywhere

Because Sybase IQ is an extension of Adaptive Server® Anywhere, a component of SQL Anywhere® Studio, IQ supports many of the same features as Adaptive Server Anywhere. The IQ documentation set refers you to SQL Anywhere Studio documentation where appropriate.

Documentation for Adaptive Server Anywhere:

- *Adaptive Server Anywhere Programming Guide*

  Intended for application developers writing programs that directly access the ODBC, Embedded SQL™, or Open Client™ interfaces, this book describes how to develop applications for Adaptive Server Anywhere.

- *Adaptive Server Anywhere Database Administration Guide*

  Intended for all users, this book covers material related to running, managing, and configuring databases and database servers.

- *Adaptive Server Anywhere SQL Reference Manual*

  Intended for all users, this book provides a complete reference for the SQL language used by Adaptive Server Anywhere. It also describes the Adaptive Server Anywhere system tables and procedures.

You can also refer to the Adaptive Server Anywhere documentation in the SQL Anywhere Studio 9.0.2 collection on the Sybase Product Manuals Web site. To access this site, go to Product Manuals at http://www.sybase.com/support/manuals/.

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/.

- Infocenter is an online version of SyBooks that you can view using a standard Web browser. To access the Infocenter Web site, go to Sybooks Online Help at http://infocenter.sybase.com/help/index.jsp.

Sybase certifications on the Web

Technical documentation at the Sybase Web site is updated frequently.

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

1. Point your Web browser to Technical Documents at http://www.sybase.com/support/techdocs/.
2. Click Certification Report.
3. In the Certification Report filter select a product, platform, and timeframe and then click Go.
4. 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 Base 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 EBF/Maintenance releases is displayed.

   Padlock icons indicate that you do not have download authorization for certain EBF/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 EBF/Maintenance report, or click the product description to download the software.

Typographic conventions

Table 2 lists the typographic conventions used in this documentation.

Table 2: Typographic conventions

Item	Description
`Code`	SQL and program code is displayed in a mono-spaced (fixed-width) font.
`User entry`	Text entered by the user is shown in bold serif type.
emphasis	Emphasized words are shown in italic.
file names	File names are shown in italic.
database objects	Names of database objects, such as tables and procedures, are shown in bold, san-serif type in print, and in italic online.

The sample database

Sybase IQ includes a sample database used by many of the examples in the IQ documentation.

The sample database represents a small company. It contains internal information about the company (employees, departments, and financial data) as well as product information (products), sales information (sales orders, customers, and contacts), and financial information (fin_code, fin_data).

The sample database is held in a file named *asiqdemo.db*, located in the directory *$ASDIR/demo* on UNIX systems and *%ASDIR%\demo* on Windows systems.

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.

Sybase IQ 12.7 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.

For information about accessibility support in the Sybase IQ plug-in for Sybase Central, see "Using accessibility features" in the *Introduction to Sybase IQ*. The online help for this product, which you can navigate using a screen reader, also describes accessibility features, including Sybase Central keyboard shortcuts.

Configuring your accessibility tool

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 and see "Using screen readers" in *Introduction to Sybase IQ*.

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.

For a Section 508 compliance statement for Sybase IQ, go to Sybase Accessibility at http://www.sybase.com/products/accessibility.

If you need help

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

CHAPTER 1

Installing Sybase IQ

About this chapter

This chapter tells how to install Sybase IQ server components.

Contents

Sybase IQ components

Sybase IQ installs the following software products:

- Sybase IQ
- Sybase Central Java™ Edition (optional)
- Software Developer's Kit (SDK)
- Sybase jConnect JDBC Driver
- Java Runtime Environment

Products come in two sets of installable components:

- To install components required for *operation as* a network server, install the Sybase IQ *Server Components* on your IBM RISC System/6000 system. See "Installing Sybase IQ Server Components" on page 12.
- To install components required for *connection to* a network server, see Chapter 2, "Installing Sybase IQ Network Client."

Before you install

Plug-in requirements

Read this section carefully and follow the procedures that affect your configuration.

For full Sybase Central functionality, this of Sybase IQ requires a new version of the IQ plug-in, the IQ Agent (formerly ASIQ Agent), the Sybase Central Toolkit, and the Java Runtime Environment. Before you install, compare your configuration toTable 1-1:

Table 1-1: Plug-in compatibility with Sybase IQ installed products

IQ Plug-in	Sybase IQ	Sybase Central Toolkit	IQ Agent	JRE
12.7	12.5 and higher fully supported. Earlier IQ versions minimally supported.	4.3 or later required	12.7 Agent required	1.4.2 required
12.6	12.6 or 12.5 fully supported. Earlier IQ versions minimally supported.	4.3 or later required	12.6 Agent required	1.4.2 required
12.5	12.5 or earlier	3.2 required	12.5 Agent required	1.2.2 required (1.3.1 on Linux)

Running multiple IQ Agents

In general, you cannot install Sybase IQ 12.6 or higher server components on a Sybase IQ 12.5 server without first uninstalling Sybase IQ 12.5. The exception to this rule is that you *can* install a standalone IQ Agent on a 12.5 server in order to manage a multiplex containing both 12.5 and higher version servers (mixed-version multiplex).

To convert multiplex databases to 12.7, you first must convert each query server to 12.7. After converting all query servers, install the 12.7 IQ Agent on the write server and convert the write server to 12.7. (If desired, you may run a 12.5 IQ Agent and a higher version IQ Agent on the same machine, *as long as the agent version matches that of the connected server, and each has its own port number*.)

To install a standalone IQ Agent on a Sybase IQ server, use the sybinstall parameter -add_agent. See “Upgrading 12.6 multiplex databases to 12.7” on page 49.

Upgrading LONG BINARY columns

Sybase IQ 12.6 and higher releases *do not support* existing LONG BINARY columns created using any release prior to Sybase IQ 12.5 ESD8. You must explicitly drop LONG BINARY columns before installing 12.6, and recreate them after installing. For details, see the appendix "Upgrading existing LONG BINARY columns" in the manual *Large Objects Management in Sybase IQ*.

Preserving check constraints before database upgrade

Sybase IQ 12.6 and higher releases enforce previously unenforced column and table CHECK constraints on updates, inserts, and loads of new data. Existing data in databases created with previous versions of Sybase IQ may contain unsupported constraints that now generate errors.

Note You need only remove and recreate constraints once per upgrade to 12.6 or higher. You need not repeat this procedure for ESD releases and subsequent upgrades.

To avoid errors:

1 Install Sybase IQ 12.7.

2 Query the database (before upgrade) to identify potential constraint violations.

3 Generate commands to recreate constraints in existing tables.

4 Run ALTER DATABASE UPGRADE as instructed in Chapter 3, "Migrating Data".

5 Recreate constraints in the upgraded database.

To find existing table data that violates a given constraint, create a query. For example, to find data that violates the constraint `C1 < 15`, run the following query:

```
SELECT COUNT(*) FROM TABLE x WHERE NOT(C1 < 15)
```

Sybase provides two special stored procedures to help you remove and recreate constraints. These stored procedures are located in the *scripts* subdirectory of $ASDIR. Run these procedures, if desired, before upgrading each database:

- The sp_iqprintconstraints procedure creates a script that you can run to recreate constraints. Commands are written to the server log, in the file *servername.nnn.SRVLOG* (where *nnn* is the number of times the server has been started) in the directory specified by $ASLOGDIR).
- The sp_iqdropconstraints procedure drops all constraints on all IQ tables in database.

After you run ALTER DATABASE UPGRADE on each database, run the command script(s) to recreate constraints.

For example, the following commands create the table rental, with a check constraint to validate that the date_returned is later than the date borrowed.

```
CREATE TABLE rental (
date_borrowed DATE NOT NULL,
date_returned DATE,
title CHAR(20)
            REFERENCES titles (id_num),
CHECK( date_returned >= date_borrowed )
)
```

The sp_iqprintconstraints procedure returns the following:

```
ALTER TABLE rental ADD CHECK date_returned >=
date_borrowed
```

Updating SDK

The Sybase IQ installation CD contains the Sybase Software Developer's Kit (SDK), also called the Sybase SDK or Sybase Open Client Developers Kit.

Sybase IQ requires a minimum of Open Client 12.5.1. If your system already has this minimum version installed as part of Open Client, Open Server, or Adaptive Server Enterprise, you can skip installing the Open Client supplied with IQ 12.7.

Sybase recommends that you install Sybase IQ 12.7 in a clean directory for easier version management. Environmental variables are local to the shell and the subdirectories are specific to the versions.

The start_asiq utility controls the version of the SDK used by Sybase IQ, and always sets it to the version installed by Sybase IQ.

The SYBASE_OCS environment variable controls the version of the SDK used by other Sybase products. On UNIX platforms, the behavior of setup files has changed regarding this variable.

In previous versions of Sybase IQ, running the setup procedure set the SYBASE_OCS variable. If another installed Sybase product had already set the variable, the value was changed.

In Sybase IQ 12.7, running the setup procedure *ASIQ-12_7.csh* or *ASIQ-12_7.sh* only sets the variable if it is not already set. *If the value of SYBASE_OCS has been set by another Sybase product, that value remains in effect unless you unset SYBASE_OCS, and then run the source file.* See "Setting environment variables" on page 19 for details.

You can update the Sybase SDK (Open Client) as future versions become available, provided that you set the INSTALL_ALL_PATCH environment variable before installing the update.

To set the variable using the C shell (csh):

```
setenv INSTALL_ALL_PATCH "Y"
```

To set the variable using Bourne shell (sh):

```
INSTALL_ALL_PATCH="Y"
export INSTALL_ALL_PATCH
```

System requirements

Note You must install the correct operating system patches required to run Sybase IQ. Sybase recommends that you update your operating system with the latest maintenance release and the patch level recommended by the manufacturer.

Sybase IQ is tested with the latest patches available at build time. For *minimum* operating system and patch level requirements, see the *Sybase IQ Release Bulletin*.

Before you install Sybase IQ, make sure you have enough disk space, RAM, and swap space for the installation. If you plan to use multiplex capability, you must also set up raw device access.

To install and run Sybase IQ 12.7 on HP-UX, you need:

Table 1-2: Configuration recommendations

System Requirement	HP-UX 11.23 suggested value	HP-UX 11.23 Itanium suggested value
Disk space to install and run Sybase IQ	327MB	409MB
Disk space to install Open Client Developer's Kit 12.5.1	505MB	793MB
Disk space to install Sybase Central Java Edition 4.3	3MB	3MB
Disk space to install jConnect 5.5	17MB	17MB
Disk space to install jConnect 6.0	16MB	16MB
Disk space to install Java Runtime Environment 1.4.2	109MB	150MB
Disk space for databases	Site dependent	Site dependent
RAM	At least 1GB dedicated to Sybase IQ	At least 1GB dedicated to Sybase IQ
Processor	1GHz, either 1CPU or SMP	1GHz, either 1CPU or SMP

The table lists minimum requirements. For larger numbers of active users, you will need more resources.

Sybase Central Java Edition is a graphical administration tool for managing certain Sybase products, including IQ databases. When you install Sybase IQ, you also install the Sybase IQ plug-in, which enables Sybase Central to manage IQ databases. To install and run the Sybase IQ plug-in and Sybase Central Java Edition as a Windows client, you need the following on your Windows system:

Table 1-3: Configuration recommendations for Sybase Central

System Requirement	*Recommendation*
Processor	Pentium 400Mhz or greater
Disk space for Sybase Central Java Edition	3MB free disk space
RAM for Sybase Central Java Edition	48MB
Resolution	800x600x256

Disk space

Use the bdf command to display the space available in kilobytes. Compare the available disk space information from your machine to the required disk space requirements.

Here is sample output from a bdf command on an HP-UX system:

```
Filesystem         kbytes    used      avail    %used
Mounted on
/dev/vg00/lvol1 59797     27071    26746    50%      /
/dev/vg00/lvol3    299157        9   269232    0%    /home
/dev/vg00/lvol4    299157    92583   176658   34%    /opt
/dev/vg00/lvol5     53653    21011    27276   44%    /tmp
/dev/vg00/lvol6    498645   325027   123753   72%    /usr
/dev/vg00/lvol7    288157    50620   208721   20%    /var
/dev/vg01/LVM1    1294257    570472   594359   49%
/work1
/dev/vg02/LVM2    2035601   1599385   232655   87%
/work2
/dev/vg03/LVM3    2035601   1464104   367936   80%
/work3
```

The "*avail*" column shows the amount of disk space available on each file system.

RAM

The recommended minimum RAM is 1GB.

The following command gives the RAM available. This example shows 946116KB, which is 946.116MB of RAM.

```
grep "Physical" /var/adm/syslog/syslog.log
Sep 1 10:57:17 chong vmunix:
Physical: 1048576 Kbytes,
lockable: 903392 Kbytes,
available: 946116 Kbytes
```

Swap space

Certain operations may cause the memory used by Sybase IQ to grow dynamically. Changing the way Sybase IQ uses buffers can dramatically change the way it uses memory. See the chapter entitled "Managing System Resources" in the *Sybase IQ Performance and Tuning Guide* for more information about buffers.

Depending upon the load on the system where Sybase IQ is running, the amount of system swap required may sometimes exceed the suggested minimum. Insufficient swap space may result in the system supporting fewer users, and large processes that cannot acquire sufficient swap space may be prematurely killed by the operating system.

See your operating system documentation for information about extending swap space.

Setting up raw devices for multiplex access

This section applies only to users of multiplex capability. The Main IQ Store of a multiplex database should occupy raw disks on a shared disk subsystem, typically a fiber channel disk array. Make sure that raw disks are available with enough space to store all persistent data in the IQ database.

Note Be sure to configure your shared disk subsystem so that all systems where multiplex servers will reside can access the same physical disks as local drives. This access must not use remote drive mapping.

Raw device setup on UNIX

On UNIX systems, system administrators should use the chmod command to give each user who runs the IQ server read/write access to the raw devices.

If your configuration includes Windows systems, see the *Sybase IQ Installation and Configuration Guide for Windows* for raw device setup instructions for those systems.

Adjusting the operating system configuration

This section provides instructions for adjusting your environment before you begin a new installation of Sybase IQ. Refer to *Sybase IQ Release Bulletin* for the latest information.

To configure the operating system correctly, you must:

- Install any required operating system patches
- Adjust system-wide parameters (such as shared memory parameters)

Installing kernel patches

See *Sybase IQ Release Bulletin* for a list of any patches required to run Sybase IQ.

Adjusting kernel parameters

You also need to adjust certain HP-UX kernel parameters to run Sybase IQ. The HP System Administration Manager (SAM) allows verification and setting of these parameters. Generally superuser or "root" privileges are needed to run SAM. Use the Kernel Configuration submenu to change the parameters listed in the following table.

Table 1-4: HP-UX parameters

Parameter	HP-UX 11.23 Itanium suggested value	HP-UX 11.23 RISC suggested value
STRMSGSZ	0	0
bufpages	n/a	n/a
max_thread_proc	4096	4096
maxfiles	2048	2048
maxfiles_lim	2060	2060
maxswapchunks	n/a	n/a
maxusers	n/a	n/a
nfile	20000	20000
nkthread	8416	4096
sema	n/a	n/a
semmap	n/a	n/a
semmni	7082	7082
semmns	14164	14164
shmmax	2147483647 (0X7FFFFFFF)	2147483647 (0X7FFFFFFF)
swapmem_on	0	0
unlockable_mem	10240	10240
maxdsiz_64bit	17179869184 (0x400000000)	17179869184 (0x400000000)
maxrsessiz_64bit	1073741824	n/a
maxssiz_64bit	1073741824	268435456 (0x10000000)
maxtsiz_64bit	4294967296 (0x100000000)	4294967296 (0x100000000)

After setting these parameters as required, reboot your system.

Notes

- The swapmem_on parameter is set to 0 because setting it to 1 increases paging and deactivation activity.
- The maxswapchunks parameter is increased to raise the limit of configurable swap space beyond the default.
- For HP-UX 11.23 Itanium, set the nkthread value greater than (nproc + 100).

Using large dbspaces

To use dbspaces larger than 2GB, the file system must be enabled for large files.

Use the HP System Administration Manager (SAM) to enable the file system. Choose Disks and File Systems > File Systems > Select the file system to enable > Actions > Modify, then check “Allow large files.”

Verifying network functionality

Sybase IQ uses networking software whenever the client and server components are installed on different systems.

1 Verify that the network is configured properly by using this command:

```
% telnet host
```

where *host* is the computer you are currently using. For example, if the host is called “tahoe”, enter:

```
% telnet tahoe
```

This should give you a login prompt for the same machine you are currently using.

For example:

```
tahoe>
```

Note If telnet does not allow you to log in, there is a problem with your network. Ask your vendor technical support organization for assistance.

2 Check that you can log in over the network, then log out.

3 Use either remsh to open a remote shell or ping the system from another machine. For example, to check the system "tahoe":

```
% remsh tahoe
% ping tahoe
```

Choosing file locations

Before you install Sybase IQ, consider where to put your data.

Subsequent sections introduce file placement. For details about where to place files for the best possible performance, see the chapter entitled "Managing System Resources" in the *Sybase IQ Performance and Tuning Guide*.

Database files

For each database you create, Sybase IQ creates four files:

- A file for permanent IQ data, called the IQ Store (*filename.iq* by default)
- A file for temporary IQ data, for sorting and other internal uses (*filename.iqtmp*)
- A file for system information and your database schema, called the Catalog Store (*filename.db*)
- A message log file, (*filename.iqmsg*)

Note The directory where the server is started becomes the default directory for all database files created by Sybase IQ.

Each database file is called a **dbspace**. You may need to create additional dbspaces for your IQ data. Depending on your query needs, you may need more dbspaces for temporary data as well.

Make sure that you have enough disk space for your dbspaces. The chapter "Working with Database Objects" in the *Sybase IQ System Administration Guide* includes a procedure for estimating the disk space you will need for your IQ data. For the best performance, especially with larger databases, you should spread the dbspaces for your IQ data across multiple disks.

Consider carefully where you want to place your database files. In order to move a database file, you must do a full backup and restore of that database.

Placing databases in raw partitions

You can put a database file—that is, a dbspace—in either a file system file or a raw partition.

In a production environment, for some applications that use databases on UNIX servers, raw partition installations may provide increased processing performance. File systems, on the other hand, make it easier to manage your devices.

A raw partition can hold only one dbspace. The size of the dbspace is the size of the raw partition. However, you can add up to 2047 dbspaces, as long as each is stored on a different raw partition. You cannot store anything besides a main or temporary dbspace on the raw partition.

Transaction log

Sybase IQ records in the transaction log information it needs to recover from a system failure. The default filename extension for this file is *.LOG*. You should store the transaction log on a separate device from the database for greater security, as well as for better performance. A transaction log mirror on a separate device is also recommended for IQ databases.

Message log

The default filename extension for the IQ message log is *.iqmsg*. For a minor performance boost, store the message log separately from the data files. The message log cannot be on a raw partition.

Installing Sybase IQ Server Components

This section describes how to install the Sybase IQ Server Components. To install components required for *connection to* a network server, see Chapter 2, "Installing Sybase IQ Network Client."

If you have a previous 12.x version of Sybase IQ, you need to upgrade your databases as part of installation. See "Upgrading non-multiplex databases" on page 40 for important steps you must complete before installing.

To install Sybase IQ, run the installation program on the product CD. For UNIX systems, the program is called sybinstall.

By default, the program installs:

- Sybase IQ 12.7
- Sybase Central Java Edition viewer 4.3 (the graphical administration tool) and the latest plug-in for Sybase IQ. For details about using Sybase Central, see its online help or *Introduction to Sybase IQ*.
- Software Developer's Kit (SDK) version 15.0, which provides Open Client connections for ASE servers.
- The Sybase jConnect JDBC Driver, version 5.5. The installation includes a recent EBF. If you install the jConnect driver, Java classes installed into a database can make JDBC calls to access and modify data. You need TCP/IP to use the jConnect driver.

  The Sybase jConnect JDBC Driver version 6.0 is optionally available, but Sybase IQ requires jConnect 5.5 in order to work with Sybase Central and other java components. If you install jConnect 6.0 without installing 5.5, Sybase IQ functionality will be incomplete.
- Java Runtime Environment 1.4.2.

You may deselect unneeded components before installing.

Warning! If you have an existing version of Open Client on your system, installing the Open Client libraries will add missing Open Client files and overwrite older files.

To install the Server Components, you must:

1 Mount the CD and set up the sybase account

2 Prepare the installation directory

3 Run the sybinstall utility

4 Set environment variables

5 Unmount the CD

The sections that follow describe each of these tasks.

❖ **Mounting the CD and setting up the *sybase* account**

1. If your CD has been set up for auto-mount, you must get the absolute pathname for this device from the System Administrator. In this case, change directory to this specified directory and skip to the section titled "To prepare the installation directory" on the following page. Otherwise follow all the steps below to load the Sybase IQ software from a CD.
2. Log on as the user "root".
3. Place the CD into the CD drive.
4. Create a subdirectory of the root directory where you will mount the CD, if one does not already exist. For example:

   ```
   % cd /
   % mkdir /cdrom
   ```

5. If your system does not auto-mount, mount the CD with a command like the following:

   ```
   % mount -o ro device_name /cdrom
   ```

   where *device_name* is the name of the CD drive and */cdrom* is the name of the directory where the CD will be mounted.

6. If there is no "sybase" account on your system, set one up to perform all unloading tasks. (Setting up this account requires "root" privileges.)

   It is important to maintain consistent ownership and privileges for all files and directories. A single user with read, write, and execute permissions should perform all Sybase IQ unload, installation, upgrade, and setup tasks.

   The "sybase" user must have permission privileges from the top (or root) of the disk partition or operating system directory down to the specific physical device or operating system file.

7. Log out as "root" and type "exit".

❖ **Preparing the installation directory**

1. Log on as the "sybase" user. This command logs into system *storm*:

   ```
   % rlogin -l sybase storm
   ```

2. Identify or create a directory location for the Sybase installation directory, where you install the Sybase IQ product. The "sybase" user should be the owner of the directory. If you have other Sybase products installed, Sybase recommends that you install Sybase IQ in its own separate directory, not the $SYBASE directory used by another product.

```
% mkdir cd-install;chmod 777 cd-install
```

3 Run the "disk free" command to verify that the directory location for the Sybase installation directory is in a UNIX file system with enough space to accommodate the software.

```
df -k .
```

Check the amount of free space against "System requirements" on page 5.

4 Set the SYBASE environment variable to the path of the installation directory you have chosen for Sybase IQ, using the following formats. In these examples, the SYBASE installation directory is */work/server*

- For the C shell (csh), add this line to the *.cshrc* file:

```
setenv SYBASE /work/server
```

- For the Korn (ksh) or Bourne (sh) shell, add this line to the*.profile* file:

```
SYBASE=/work/server;
export SYBASE
```

5 Use the ls -la command to verify that you have permission to read, write and execute in the Sybase installation directory.

❖ **Running the *sybinstall* utility**

1 Change directory to the installation directory:

```
% cd $SYBASE
```

2 Start the install utility, sybinstall. You can run this utility as series of menus with prompts or bypass menus using the *sybinstall* command line parameters in Table 1-5.

Table 1-5: Optional parameters for sybinstall utility

Parameter	Function
-add_agent	Install standalone IQ Agent. Use only on systems where IQ is already installed. Do not combine with any other parameters.
-add_license	Install options ordered and licensed separately.
-autoinstall	Install all defaults.
-dst <*source*> | <*CD-directory*>	Install in specified directory
-help	Display all parameters and usage.
-I_accept_sybase_license	Bypass license agreement prompt.
-info|version	Display information about this product.
-products	Specify product(s) to install. Products not listed are ignored. If a parameter is omitted, all products are installed or selected by user menu selection. Products are: • IQ — Sybase IQ • OC — Open Client • SC — Sybase Central • JC5 — jConnect 5.5 • JC6 — jConnect 6.0 • JRE — Java Runtime Environment
-src <*source*> | <*CD-directory*>	Specify directory from which to install.
-y	Assume “yes” to all questions, warnings, and errors.

The following command runs sybinstall with all menus and prompts, so that you can choose the components installed.

```
% /cdrom/sybinstall
```

The following command runs sybinstall so that it updates Sybase Central and Sybase IQ:

```
% /cdrom/sybinstall -autoinstall -update -products
"IQ SC" -y
```

The installation procedure log is created in `$SYBASE/sybinstall.log`. If the file cannot be created in the $SYBASE directory, it defaults to `/tmp/sybinstall.log`.

To enter a response on a *sybinstall* screen, type the desired letter or number and press Return.

3 On the Welcome screen, press Return to continue.

4 If you have previously installed Sybase IQ, the script displays information about any servers currently running. This screen ends with the message:

```
The above IQ servers have been found running on this
system. Please check that all IQ servers running in
$SYBASE directory have been shut down before
continuing. Do you want to continue <Y/N>?
```

5 If any of the listed servers are running in the $SYBASE directory, exit the install and make sure the server(s) are shut down before you continue. If the servers are not running in the $SYBASE directory, enter "Y."

6 Type the number that corresponds to the location where you are installing.

If the country where you are located is not listed, select the most appropriate area ('Americas (Mid/So.), Asia Pacific', 'Europe, Middle East, Africa', or 'Other Locations').

If you don't find a license agreement that matches your location, or if the license agreement is unreadable on your system, you can read all available license agreements at the Sybase website at http://www.sybase.com and rerun *sybinstall* passing it the parameter -I_accept_sybase_license. For example:

```
% /cdrom/sybinstall -I_accept_sybase_license
```

7 The first screen of the License Agreement for your location displays. As you read, hold down the Return key to scroll until you reach the end of the agreement.

When you have read the complete agreement, you will see a prompt. To accept the license terms and continue the installation, enter "Y." If you disagree with the terms of the license, enter "N," which exits the installation procedure.

8 The script next lists the amount of free space available in your $SYBASE directory, and the amount of space required for the products it installs.

9 To accept the default, enter "S."

By default, all six products are installed. You *must* install SDK (Open Client) 15.0 (or have it already installed) in order to start Sybase IQ.

To deselect or change any of the installed products, type the option number at the prompt. For example, to deselect Sybase Central Java Edition, enter "3." Deselected product(s) will not be installed.

If Adaptive Server Enterprise is on the same system as Sybase IQ, you must maintain the environment for each product separately and correctly.

10 You can only deselect one product per screen. The screen displays again with the words "Not Selected" under the Install directory for each deselected product.

11 Numbers 1 through 6 are toggle options. If you change your mind, type the number of a deselected product to reselect it.

12 Check the Install Directory listed *for each product to be installed*. If the installation does not default to the desired directory, enter "C" and type the target directory you prefer at the `Enter new target directory` prompt.

13 After selecting products, enter "S" to start the installation.

14 Before installing files, sybinstall displays the Setup Utility Database screen. The utility database (*utility_db*) never holds data. It is used in special cases when the server needs a connected database but either no database exists or none should be running, for example, when restoring a database. Connecting to utility_db allows you only a narrow range of specialized file manipulation statements: CREATE DATABASE, DROP DATABASE, and RESTORE DATABASE. For more information, see "Utility database server security" in *Sybase IQ System Administration Guide*.

The ascii file that holds the login and password for this database is *$ASDIR/bin/util_db.ini*. By default, the login is "DBA" and the password is "SQL". You can change the login and password by responding to the prompt:

```
Do you want to change the default user/password now
<Y/N>?
```

To change the login and password, type "Y". The installation procedure prompts you for a new login, then a password. If you do not wish to change the default login or password, type "N".

15 As the procedure installs each product selected, it displays a list of the files installed. This may take a few minutes. When the installation completes, a message lists environment setup files created.

16 After installing the required components, the install procedure prompts for optional components or licenses:

```
Do you have any components and licenses to enter at
the time <Y/N>?
```

If you do, enter "Y". The installation procedure prompts you for the key. Type the installation key exactly as it appears on your installation key document. Entering the key returns the message `<Component> enabled!`.

If you have no optional components, enter "N". When the installation completes, a message lists environment setup files created.

❖ **Setting environment variables**

You must set certain environment variables to run the Open Client Developers Kit and Sybase IQ. Sybase IQ installs environment files that you can run to set variables.

1 If you plan to run Open Client and Sybase IQ on the same system, skip to Step 2.

To run Open Client Developers Kit on a standalone system, perform this step.

Bourne shell users should enter:

```
%. $SYBASE/SYBASE.sh
```

C shell users should enter:

```
%source $SYBASE/SYBASE.csh
```

2 The environment files that set Sybase IQ variables also set the variables needed by Open Client.

Bourne shell users should enter:

```
%source $SYBASE/ASIQ-12_6/ASIQ-12_6.sh
```

C shell users should enter this command:

```
%source $SYBASE/ASIQ-12_6/ASIQ-12_6.csh
```

You may also set optional environment variables to tune Sybase IQ performance on HPUX machines. For details, see "Tuning memory allocation" on page 25.

❖ **Completing the installation**

1 Print and read *$ASDIR/readme.txt*.

2 Log in as the "root" user and unmount the CD:

```
% umount /cdrom
```

3 Remove the CD from the drive.

4 If you installed Sybase Central, see the *Sybase IQ System Administration Guide* for instructions on configuring and running the IQ Agent. You must configure and run the IQ Agent in order to manage multiplex databases with Sybase Central.

Note Do not discard this document after installing Sybase IQ. "Starting the server" on page 21 lists required parameters for starting the product.

5 Log out.

To test Sybase IQ, see "Running Sybase IQ" on page 20.

Note After installing the software, Sybase strongly recommends that you check the online support Web site for software updates. If a software update (ESD or EBF) has been released, it contains bug fixes made after this product shipped.

❖ **Finding the latest information on EBFs and software updates**

1 Point your Web browser to the Sybase Support Page at http://www.sybase.com/support.

2 Select EBFs/Maintenance. Enter user name and password information, if prompted (for existing Web accounts) or create a new account (a free service).

3 Select a product.

4 Specify a time frame and click Go.

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

Running Sybase IQ

Now you are ready to test your installation. This section tells how to start and stop the server.

Starting the server

To start the server, change to a directory where you have write privileges and run the start_asiq utility at the command prompt, using the following command format:

start_asiq @*configuration_filename*.cfg *dbname*.db

This command starts the database and sets parameters named in the (optional) configuration (*.cfg*) file.

Note If Adaptive Server Anywhere is installed on the same subnet as Sybase IQ, you must change the default port number for IQ; both products use the default port of 2638. First, set a new port number in the *$ASDIR\scripts\default.cfg* file. Then update each IQ database configuration file (for example, *ASDIR\demo\asiqdemo.cfg*) by changing the port number in the following line:

```
-x tcpip{port=2638}
```

Change to an unused number, for example, 4444:

```
-x tcpip{port=4444}
```

You can use a configuration file to specify options that you want to set whenever you start your server. A configuration file for the sample database is installed in the *$ASDIR/demo* directory as an example. For details about configuration files, see “Setting server configurations” on page 71.

Note The directory where the server is started becomes the default directory for all server files created by Sybase IQ.

For example, to start the sample database installed with the product, you could use these commands:

```
% cd $ASDIR/demo
% start_asiq @asiqdemo.cfg asiqdemo.db
```

Note The server name may not start with a number.

Startup information, which includes the version of Open Client Libraries in use, is saved in the *stderr* log. Output from start_asiq ends with this line:

```
Server started successfully
```

For more information, see *Sybase IQ System Administration Guide*.

Note If you run the start_asiq utility from *$ASDIR/bin*, the script changes directory to "./.." to avoid creating database files in the */bin* directory.

Using defaults in *$ASDIR/scripts/default.cfg*, the start_asiq utility sets any required environment variables that have not been set and sets parameters that govern Sybase IQ to the recommended defaults. *If you start your server using any command other than start_asiq, or if your configuration file is encrypted, you must specify the following parameters:*

Table 1-6: Parameters set by start_asiq

Parameter	Value	Description
-c	48MB	Catalog store cache size
-gc	20	Checkpoint interval
-gd	all	Allows all users to start the database by connecting
-gl	all	Allows all users to load or unload tables
-gm	10	Default number of connections
-gp	4096	Catalog store page size
-ti	4400	Client time-out set to 72 hours

For a complete list and description of parameters, see "The database server" in Chapter 2 of *Sybase IQ Reference Manual*.

Note Do not discard this document after installing Sybase IQ. You may need these required parameters later.

If you have Sybase Central, you may use the Start Database Server wizard, as documented in *Introduction to Sybase IQ*, instead of start_asiq.

Note On UNIX systems, always run Sybase Central Java and dbisql using the default colors of the Common Desktop Environment. Running these products under Open Windows or changing the default colors may cause display problems.

The server process runs in the background. It sends output to a server log file, *$ASLOGDIR/servername.NNN.srvlog* where *NNN* is the number of times the server has been started. For example, *$ASLOGDIR/fiona.123.srvlog*.

Note On the start_asiq command line, the last option specified takes precedence, so if you want to override your configuration file, list any options you want to change *after* the configuration file name. For example:

```
start_asiq @asiqdemo.cfg -x 'tcpip{port=1870}'
asiqdemo.db
```

The –x parameter here overrides connection information in the *asiqdemo.cfg* file.

Creating databases

A sample database, *asiqdemo*, is installed in the *$ASDIR/demo* directory.

To create your own databases, start and connect to the utility database, as described in *Sybase IQ System Administration Guide*.

Running queries

Follow the "Quick start" directions in the *readme.txt* file to run Interactive SQL queries in the sample database.

Stopping the server

To stop a server, run the stop_asiq command, for example:

```
                    stop_asiq
Checking system for IQ 12 Servers ...
The following 2 server(s) are owned by 'kthayer'

##     Owner    PID   Started  CPU_Time
-- ---------  -----  --------  --------
1:   kthayer   4378  10:34:42      0:04
start_asiq @asiqdemo.cfg asiqdemo.db -o /c
--
2:   kthayer   4726  10:41:09      0:04
```

```
start_asiq @jd_banking.cfg jd_banking.db -o /c
--
Please note that 'stop_asiq' will shutdown a server completely
without regard for users connections or load processes status.
For a finer level of detail the utility 'dbstop' has the options
to control whether a server is stopped based on active
connections.

Enter the server to shutdown ('1'...'2') or 'Q' to Quit:

                    2
Shutting down server ...

Checkpointing server ..............

Server shutdown.
```

Managing processes

The stop_asiq -agent command lets you stop the IQ Agent on your Unix or Linux system. This is compatible with Sybase IQ 12.5 ESD8 or higher releases.

Stopping servers in cron or at jobs

To use stop_asiq in a cron or at job, specify the utility with the appropriate -stop option:

```
stop_asiq -stop one
```

Setting -stop one shuts down a single server, when exactly one running server was started by the user ID that starts the cron or at job. This prevents accidentally shutting down the wrong server if several are running.

```
stop_asiq -stop all
```

Setting -stop all shuts down all servers that were started by the user ID that starts the cron or at job.

You can specify both options on the same command, for example:

```
stop_asiq -agent -stop all
```

Note You must specify the full pathname to the stop_asiq executable in the cron statement.

For complete stop_asiq syntax, see the *Sybase IQ Utility Guide*.

Other ways to stop servers

There are other ways to stop an IQ database server:

- Run the Interactive SQL (DBISQL) STOP ENGINE command
- Select the server name and choose Stop from the dropdown in Sybase Central. For details, see *Introduction to Sybase IQ*.

- Run the Stop utility, documented in the *Sybase IQ Utility Guide*.

Tuning memory allocation

The performance of the malloc() family can be tuned via two environment variables, _M_ARENA_OPTS and _M_SBA_OPTS. For more information see the malloc(3C) man page.

Memory is dynamically allocated in threaded applications using **arenas**. The environment variable _M_ARENA_OPTS can be used to adjust the number of arenas and the how memory expands within the arenas. The number of arenas can be from 1 to 64 for threaded applications, the default number is 8.

Each time an arena expands itself, it grows by the number of pages (the expansion factor) defined by the _M_ARENA_OPTS.

The following setting is recommended:

```
_M_ARENA_OPTS=1:4096
```

The first number determines the number of arenas to be used. The second number determines the expansion factor or how much the arena will be incremented (in 4096 byte pages) as memory allocations are performed to expand the heap. The expansion factor has a default value of 32 and has a valid range from 1 to 4096.

In the recommended setting, the number of arenas is 1 and expansion is 4096 pages. The default page size in HP-UX is 4096 bytes so the expansion size is 4096 pages * 4096 bytes or 16MB.

Threaded applications like Sybase IQ use multiple arenas by default. The default behavior is for memory requests by different threads to be handled by different arenas. For Sybase IQ, may be best to have a single arena so that all threads share a single memory allocation pool.

Here is an example of how to use _M_ARENA_OPTS,

```
$ export _M_ARENA_OPTS = 1:4096
```

The _M_SBA_OPTS environment variable turn on the SBA (Small Block Allocator) and sets the parameters maxfast, grain and numlblks. For the SBA to take effect, you must set the environment variable before starting the IQ Server. Once the first small block is allocated, you cannot change the values. The SBA uses a different strategy to make small block allocations more efficient. It handles malloc requests smaller than M_MXFAST bytes by allocating large groups of those small blocks and then allocating and releasing those smaller blocks within the groups of the same size. This strategy can speed up malloc/free. It can also reduce fragmentation caused when small blocks get in between large free blocks and prevent them from being coalesced for a large request.

The default behavior is for the SBA to be turned on for Itanium-based systems and turned off for PA-RISC systems running HP-UX. The SBA can be disabled using the following:

```
export _M_SBA_OPTS=0:0:0
```

The following setting is recommended setting of the SBA for Sybase IQ:

```
_M_SBA_OPTS=65536:50:256
65536 maxfast size, 50 small blocks, 256 grain size
```

This means that the maxfast size is 65536, the number of small blocks (NUMBLKS) is 50, and the GRAIN size is 256. If you do not supply all three values, default values are used instead.

MAXFAST - The algorithm allocates all blocks below the size of maxfast in large groups, then doles them out very quickly. The default value for maxfast is zero.

NUMBLKS - The above mentioned "large groups" each contain *numlblks* blocks. The default value for *numlblks* is 100 and the value of *numlblks* must be greater than 1.

GRAIN - The sizes of all blocks smaller than maxfast are rounded up to the nearest multiple of grain. The default value of grain is the smallest number of bytes that can accommodate alignment of any data type. The value of grain must be greater than zero.

To use this environment variable:

```
$ export _M_SBA_OPTS = 65536:50:256
```

Controlling syslog messages

By default, Sybase IQ logs messages to the "user" syslog facility on UNIX. On most UNIX systems, the user syslog facility is not logged, however, on HP-UX systems, the default syslog configuration places the messages sent to the user facility in the syslog files. As a result, these files may fill up, causing the file system on which they reside to become full.

You can solve this problem in either of two ways:

1. Turn off the user facility in *syslog.conf*, or

2. Use the -s IQ server switch to redirect the server's syslog output to a different facility, and turn off that different facility.

Method 1:

The following example shows how you might edit the *syslog.conf* file on an HP-UX system.

Original syslog.conf file

```
# @(#) $Revision: 74.1 $
# syslogd configuration file.
#
# See syslogd(1M) for information about the format of
this file.
#
mail.debug  /var/adm/syslog/mail.log
*.info;mail.none  /var/adm/syslog/syslog.log
*.alert  /dev/console
*.alert  root
*.emerg  *
```

syslog.conf file after modification

```
    # @(#) $Revision: 74.1 $
#
# syslogd configuration file.
#
# See syslogd(1M) for information about the format of
this file.
#
mail.debug  /var/adm/syslog/mail.log
*.info;mail.none;user.none  /var/adm/syslog/syslog.log
*.alert;user.none  /dev/console
*.alert;user.none  root
*.emerg;user.none  *
```

See UNIX man pages syslogd(1) and syslog(1) for more information.

CHAPTER 2

Installing Sybase IQ Network Client

About this chapter

This chapter explains how to install Sybase IQ Network Client, available on two platforms.

Contents

Installing Sybase IQ Network Client for Linux

Sybase IQ Network Client for Linux contains the components required for connection to a network server. It is compatible with IQ servers on all supported server platforms. Sybase IQ Network Client for Linux is certified to run on:

- Red Hat Enterprise Linux 2.1 x86, Advanced Server or Workstation, with kernel 2.4.9-e.40smp and glibc 2.2.4-32.8.
- Red Hat Enterprise Linux 3.0 i86 or AMD64, Advanced Server or Workstation Edition:
  - kernel 2.4.21-27.0.2.ELsmp #1 SMP and glibc 2.3.2-95.30 on 32-bit systems
  - kernel 2.4.21-27.0.2.ELhugemem #1 SMP and glibc 2.3.2-95.30 on 64-bit systems
- SuSE Linux Enterprise Server (SLES) 8.0, kernel 2.4.9-e.57smp #1 SMP and glibc 2.2.4.-32.18
- SuSE Linux Enterprise Server (SLES) 9.0 for 32-bit systems, kernel 2.6.5-7.97-smp #1 SMP and glibc 2.3.3-98.28

Sybase IQ Network Client is also compatible with Red Flag Linux DB Server release 4.0, kernel 2.4.21-AS.2 smp on i686 and glibc 2.2.93.

Note Sybase IQ Network Client does not run on IBM Linux on POWER.

Table 2-1 demonstrates that you can have different versions of Sybase IQ running on the same system.

Table 2-1: Linux client/server downward compatibility

Product and version to install	Product and version already installed	Compatibility
12.7 Server	12.5 Server	Standalone IQ Agent only
	12.5 Network Client	Allowed, provided that environment for each is set up for the appropriate version
	12.6 Network Client	Allowed as an upgrade
12.7 Network Client	12.5 Server	Allowed, provided that environment for each is set up for the appropriate version
	12.5 Network Client	Allowed. If one is uninstalled, user must repair remaining one.
	12.6 Server	Prohibited

See the configuration recommendations in Table 2-2 to install and run Sybase IQ Network Client for Linux.

Table 2-2: Configuration recommendations

System requirement	Recommendation
Disk space to install and run Sybase IQ 12.7	304MB
Disk space to install and run Sybase IQ 12.7 Network Client	275MB
Disk space to install Open Client Developer's Kit 15.0	297MB
Disk space to install Sybase Central Java Edition 4.3	4MB
Disk space to install jConnect 5.5	17MB
Disk space to install jConnect 6.0	6MB
Disk space to install Java Runtime Environment 1.4.3	68MB
Disk space for databases	Site dependent
RAM	At least 1GB dedicated to Sybase IQ
Processor	1GHz, either 1 CPU or SMP

The following procedure describes how to install the Sybase IQ Network Client for Linux. To install Sybase IQ Network Client for Windows, see "Installing Sybase IQ Network Client for Windows". To install the Sybase IQ Server Components, see Chapter 1, "Installing Sybase IQ."

❖ **Running the *sybinstall* utility**

If this is the first Sybase product you have installed, see "Mounting the CD and setting up the sybase account" on page 14 and "Preparing the installation directory" on page 14.

1 Change directory to the installation directory:

```
% cd $SYBASE
```

2 Start the install utility, sybinstall. You can run this utility as a series of menus with prompts, or bypass menus using the *sybinstall* command line parameters.

Table 2-3: Command parameters for sybinstall utility

Parameter	Function
-add_agent	Install standalone 12.7 IQ Agent only
-autoinstall	Install all defaults
-help	Display all parameters and usage
-I_accept_sybase_license	Bypass license agreement prompt when using -autoinstall
-info|version	Display information about this product
-y	Assume "yes" to all questions, warnings, and errors

The following command runs sybinstall with all menus and prompts, so that you can choose the components installed:

```
% /cdrom/sybinstall
```

The following command runs sybinstall so that it installs the default products:

```
% /cdrom/sybinstall -autoinstall
-I_accept_sybase_license
```

The installation procedure log is created in `$SYBASE/sybinstall.log`. If the file cannot be created in the $SYBASE directory, it defaults to `/tmp/sybinstall.log`.

Avoid installing Sybase IQ Network Client in the same directory as an IQ server. If you attempt to do this, an error like the following displays:

```
WARNING

The directory '/olddev1/users/sybase_scr/ASIQ-12_7'
contains files for the ASIQ server. This install
contains only the network client files and should
```

```
never be installed in the same directory as an
existing server.
Please make sure that /remote/ase/linux is set to the
correct directory

Do you want to continue <Y/N>?
```

The following steps show the menus that *sybinstall* displays by default.

To enter a response, type the desired letter or number, then press Return.

3 On the Welcome screen, press Return to continue.

4 Type the number that corresponds to the location where you are installing.

If you find no license agreement that matches your location, or if the license agreement is unreadable on your system, you can read all available license agreements at the Sybase Web site at http://www.sybase.com, and rerun *sybinstall*, passing it the parameter -I_accept_sybase_license. For example:

```
% /cdrom/sybinstall -I_accept_sybase_license
```

The first screen of the Software Test and Evaluation License Agreement displays.

5 As you read, hold down the Return key until you reach the end of the agreement.

At the end of the agreement, a prompt appears.

6 Type “Y” to accept the license terms and continue the installation. If you disagree with the terms of the license, type “N.”

The script next lists the amount of free space available in your $SYBASE directory, and the amount of space required for the three components it installs.

7 To install all four products, type “S.” To deselect or change any of the installed products, type the option number at the prompt. For example, to deselect Sybase Central Java Edition, type “2.”

Deselected products are not installed. You can deselect only one product per screen. When you deselect a product, the screen displays again with the words “Not Selected” under the Install directory for that product.

Note Numbers 1 through 4 are toggle options. If you change your mind, type the number of a deselected product to reselect it.

8 After selecting products, type “S” to start the installation.

As the procedure installs each product selected, it displays a list of the files installed. This may take a few minutes. When the installation completes, a message lists environment setup files created.

❖ **Setting environment variables**

You must set certain environment variables to run Sybase IQ. Sybase IQ installs environment files that you can run to set variables.

1 bash or Korn (ksh) shell users should type:

```
% source $SYBASE/ASIQ-12_7/ASIQ-12_7.sh
```

2 tcsh or C (csh) shell users should type:

```
% source $SYBASE/ASIQ-12_7/ASIQ-12_7.csh
```

Installing Sybase IQ Network Client for Windows

Sybase IQ Network Client contains the components required for *connection to* a network server. Sybase IQ 12.7 Network Client is certified to run on:

- Microsoft Windows NT 4.0 (Service Pack 6)
- Microsoft Windows 2003 (Service Pack 1)
- Microsoft Windows 2000 (Service Pack 4)
- Microsoft Windows 98 SE
- Microsoft Windows ME
- Microsoft Windows XP Professional (Service Pack 2)

Table 2-4: Windows client/server downward compatibility

Product and version to install	Product and version already installed	Compatibility
12.7 Server	12.5 Server	Standalone IQ Agent only
	12.5 Network Client	Prohibited
	12.6 Network Client	Prohibited
12.7 Network Client	12.5 Server	Prohibited
	12.5 Network Client	Prohibited
	12.6 Server	Prohibited

The following procedure describes how to install the Sybase IQ Network Client. To install Sybase IQ Network Client for Linux, see "Installing Sybase IQ Network Client for Linux". To install the Sybase IQ Server Components, see Chapter 1, "Installing Sybase IQ."

Note You can install the Network Client on many end-user machines, remotely, without displaying dialog boxes or requiring interactive responses. For directions, see "Performing a silent installation" on page 38.

❖ **Installing Sybase IQ Network Client for Windows**

1 Log in to the Windows machine using an account with Administrator privileges.

2 Exit any Windows programs running on your machine.

3 Place the Network Client CD in the CD drive.

Note You need to perform the next step only when restarting the installation after interrupting it. If your system is equipped with autorun, the installation starts automatically the first time you place the CD in the drive.

4 Select Start > Run.

Use Browse to select your CD drive letter and, in the File Name box, type:

```
setup.exe
```

5 Read the Welcome window and click Next.

6 Select the location where you are installing the software and click Next.

7 Read the License Agreement and click Yes if you accept it, or Back to return to a previous screen. To stop the procedure without installing Sybase IQ, click No.

8 Type your name and your company name in the text boxes on the Customer Information screen and click Next.

9 Choose Complete or Custom install. The Complete install is recommended for most users. The Custom install lets you select components of products to install.

10 Products are installed in separate folders under the folder you specify. You can accept the default, or use the Browse button to select another folder.

Click Next.

11 For a Complete install, skip to step 13.

For a Custom install, choose products to install. The Products Selection screen shows names, descriptions, and space requirements of products. Required products are automatically selected. Click any checked product to deselect it. Required products vary depending on selections. Products are:

- Sybase IQ
- Sybase Central Java Edition
- Java Runtime Environment
- Sybase jConnect JDBC Driver

For each product, a Customize Product screen lets you select desired components. Click Browse to specify a new destination folder. Click Disk Space to calculate available space on other drives and to change the destination drive for installed products.

12 Click Next when satisfied with selected products.

13 Before copying the program files, the setup procedure lists the products selected and the target directories where they will be installed. Click Back to make changes or Next to install.

The installation procedure displays a gauge to show the percentage and names of files installed.

Note It is best to reboot after any program installation, to ensure that registry and environment settings are correct.

14 When the installation procedure completes, it prompts you to reboot your system. To reboot your system now, remove the Network Client CD from the CD drive and click Finish. To reboot at a later time, click "No, I will restart my computer later," then click Finish.

After installing

If you installed Sybase Central, see the *Sybase IQ System Administration Guide* for instructions on configuring and running the IQ Agent. You must run the IQ Agent to use Sybase Central.

Installing without user interaction

You can use the silent installation feature to ensure a uniform Network Client installation on Windows for a large number of end-user machines. By eliminating end-user input, the silent installation may reduce installation errors.

The silent installation uses a response file as input. The client CD includes a default response file, which automatically accepts all installation defaults. You can create a specialized version of the response file, for example, if you need to install in a nonstandard location, or do not want to reboot the client machine immediately after installing.

This procedure requires that you have a network machine that is visible to all client machines. This can be either the machine where you install IQ, or a separate machine.

❖ **Creating a response file**

Follow these steps only for nondefault silent installations on Windows.

1 Copy the installation CD contents onto a Windows machine in your network.

2 Log in to the machine where you will install IQ Client, using an account with Administrator privileges.

3 Exit any Windows programs running on your machine.

4 Change directory to the location of the *setup.exe* file.

5 Type the following command, which will record all of your responses to installation prompts as you make them:

```
setup -r
```

6 Install Sybase IQ Client.

Warning! When creating a response file, do not answer Yes to the dialog box question, "Would you like to restart your computer now?"

When the installation completes, it creates the response file *C:\winnt\setup.iss*.

7 Copy the *C:\winnt\setup.iss* file to the same location as the *setup.exe* file on each machine where you want to perform a silent install based on this response file.

❖ **Performing a silent installation**

Follow these steps to install using the default response file, or a specialized response file you have placed in the client's *setup.exe* directory.

1 Copy the installation CD contents onto the network machine if you have not already done so.

Perform the remaining steps on each machine where you will install IQ silently.

2 Log in to the machine where you will install IQ Client, using an account with Administrator privileges.

3 Exit any Windows programs running on the machine.

4 Open an MS-DOS window and change the drive and directory to the location of the *setup.exe* file on the network machine.

5 Type the following to run the silent installation:

```
setup -s -accept_sybase_license
```

All errors are written to the file *%temp%\Sybase_IQ.install.log*. The TEMP variable defaults to *C:\WINDOWS\Temp*.

Next steps

The next chapter, Chapter 3, "Migrating Data,"describes how to move your data from one version to the next, from a 32-bit to a 64-bit version, and from one hardware platform to another.

If you anticipate a need to restore data to its previous version after you upgrade, read "Restoring to your previous version after upgrade" on page 53 before you begin the upgrade process.

CHAPTER 3

Migrating Data

About this chapter

This chapter explains how to migrate data from one Sybase IQ version to the next, from 32-bit to 64-bit systems, and across hardware platforms.

Contents

If you have a Sybase IQ version prior to 12.5, you must first upgrade to version 12.5. Refer to the 12.5 *Sybase IQ Installation and Configuration Guide*.

If you are running a 64-bit version of Sybase IQ for the first time, and you have existing databases created using a 32-bit version, no special migration steps are necessary. For general procedures, see "Migrating databases to a 64-bit system" on page 52. As always, Sybase recommends that you have a stable backup for databases before making significant changes in the environment.

Note Before you install Sybase IQ 12.7, you must upgrade LONG BINARY columns. For instructions, see the appendix, "Upgrading existing LONG BINARY columns" in the manual *Large Objects Management in Sybase IQ*.

Upgrading non-multiplex databases

Table 3-1 lists steps for upgrading non-multiplex servers and databases to Sybase IQ 12.7. Details follow the table.

Table 3-1: Upgrading non-multiplex databases

To do this ...	See ...
1. Shut down servers	"Shutting down servers" on page 40
2. Install IQ	"Installing IQ" on page 40
3. Start the server	"Starting the server" on page 41
4. Upgrade databases	"Upgrading databases" on page 41
5. Enforce referential integrity	"Enforcing referential integrity" on page 42
6. Verify after upgrade	"Verifying databases after upgrade" on page 43
7. Back up databases again (recommended)	"Backing up databases after upgrade" on page 43

Before you upgrade

You must have a recent backup before you upgrade to a major release of Sybase IQ.

If you anticipate a need to restore data to its previous version after you upgrade, read "Restoring to your previous version after upgrade" on page 53 before you begin the upgrade process.

If you have multiplex servers, instead of following the steps in this section follow those in "Upgrading 12.5 multiplex databases to 12.7" on page 45 or "Upgrading 12.6 multiplex databases to 12.7" on page 49.

Shutting down servers

Before installing Sybase IQ, you must shut down each server. At the command prompt, issue a stop_asiq command You can also stop a server by using the STOP ENGINE command from DBISQL or any front-end client.

Installing IQ

Install Sybase IQ, following the instructions in Chapter 1, "Installing Sybase IQ." If you find a software update on the online support Web site, install it before completing the remaining upgrade steps. *Install IQ on every query server before you upgrade the write server.*

Starting the server

To start the server, change to a directory where you have write privileges. Run the start_asiq utility, using the following command format:

start_asiq @*configuration_filename*.cfg -gm 1 -gd *dbname*.db

The *dbname* is the name of the database to upgrade. (You can also start the server using any of the start-up methods described in *Sybase IQ System Administration Guide*.)

Run start_asiq only from a session where you have previously set the environment variables. For information about setting the variables, see "Setting environment variables" on page 19.

Note If you run the utility from a directory that does not contain the database and configuration files, be sure to provide the full path name for the file or files.

Upgrading databases

Upgrading from 12.5 or higher

Run the ALTER DATABASE UPGRADE command against every existing Sybase IQ database to upgrade it to IQ 12.7. This makes the databases compatible with the new version of Sybase IQ.

Upgrading a database adds and modifies system tables, system procedures, and options to enable 12.7 options. It does *not* change the file format used to store and access data on a disk. It also does not remove preexisting options that have been eliminated in version 12.7.

❖ **Upgrading databases to version 12.7**

Performance optimizations in Version 12.7 depend on structural changes and option settings made by the ALTER DATABASE UPGRADE command. The format of the database files is the same as in Sybase IQ Version 12.6, but some system tables, stored procedures, and database options have changed.

To upgrade, follow these steps:

1 Make sure that you have performed the preceding steps in this chapter and installed any available EBFs. For details, see "Finding the latest information on EBFs and software maintenance" on page ix.

2 Disconnect from the database and reconnect to your database (again using an account with DBA privileges).

Be sure to start the server in a way that restricts user connections. Never allow other users to connect when ALTER DATABASE UPGRADE is running. Sybase recommends using two server start-up options:

- Use -gd DBA so that only users with DBA authority can start and stop databases.
- Use -gm 1 to allow a single connection plus one DBA connection above the limit so that a DBA can connect and drop others in an emergency.

An alternate way to restrict connections is to specify

```
sa_server_option('disable_connections', 'ON')
```

just after you start the connection where you are performing the upgrade and

```
sa_server_option('disable_connections', 'OFF')
```

on the same connection after upgrading. *The disadvantage is that this method precludes emergency access from another DBA connection.*

3 Start DBISQLC or DBISQL and execute the ALTER DATABASE UPGRADE statement. For example:

```
ALTER DATABASE UPGRADE
```

If the database you are upgrading was created with the Java options set off, append the keywords JAVA OFF JCONNECT OFF to the preceding command.

Note The defaults for MAIN_RESERVED_DBSPACE_MB and TEMP_RESERVED_DBSPACE_MB were increased in version 12.5 for newly created databases. If these options are set to less than the 200MB in your database, set the options to 200MB or 50% of the size of the last dbspace before or immediately after upgrading your database.

Enforcing referential integrity

ALTER DATABASE UPGRADE does not upgrade any unenforced foreign keys defined prior to Sybase IQ version 12.5. See *Sybase IQ System Administration Guide* for details on how to identify existing unenforced foreign keys and enforce referential integrity with them.

Starting the Sybase IQ Agent

If you have installed Sybase Central, you now need to start the Sybase IQ agent.

Verifying databases after upgrade

Run sp_iqcheckdb to verify the consistency of the upgraded databases.

Note In this step, you run the IQ 12.7 version of sp_iqcheckdb, which uses input parameters, rather than database options, to specify the type of database consistency checking.

❖ **Running sp_iqcheckdb**

1 Issue a CHECKPOINT command.

2 Run sp_iqcheckdb in detailed check mode.

```
sp_iqcheckdb 'check database'
```

If you run the procedure from Interactive SQL, redirect output to a file by typing the following:

```
sp_iqcheckdb 'check database' >& filename
```

3 Issue a COMMIT statement.

Examine the sp_iqcheckdb report for errors. For information on interpreting the sp_iqcheckdb results and corrective action, refer to Chapter 2, "System Recovery and Database Repair," in *Sybase IQ Troubleshooting and Recovery Guide*. If you need to contact Sybase Technical Support, you must provide the output from sp_iqcheckdb.

Backing up databases after upgrade

Sybase recommends that you back up your databases again with the BACKUP statement. For complete syntax, see the *Sybase IQ System Administration Guide*.

This backup after the upgrade is recommended but not required. If you use the IQ BACKUP statement instead of a system-level backup, you can run backups and queries concurrently.

After you upgrade

Updating configuration files

Be sure to compare your existing *params.cfg* files with the new *default.cfg* file created by the installation. The installation does not update or overwrite existing *params.cfg* files. In each *params.cfg* file, update parameter defaults that differ from those in the *default.cfg* file, while maintaining any customized parameter settings appropriate for your system. Be sure that you add any new start-up parameters in *default.cfg* to your *params.cfg* file. The -gl parameter, for example, is required for server start-up in version 12.5 and above.

Checking new option settings

ALTER DATABASE UPGRADE changes many database option settings, including all performance options, to the new default. Some other settings retain their previous value. To see the effect of ALTER DATABASE UPGRADE on your database option settings, you can do any of the following:

- To list current settings for all database options, query the SYSOPTIONS system view:

  ```
  SELECT *
  FROM SYSOPTIONS
  ```

  For other ways to list all option settings, see the chapter "Database Options" in the *Sybase IQ Reference Manual*.

- Run sp_iqcheckoptions. This stored procedure displays a list of database options that have been changed from the default value together with the current value of the option and the default value for the connected user. It also displays nondefault server start-up options. For more information, see sp_iqcheckoptions in the chapter "System Procedures" in the *Sybase IQ Reference Manual*.

Note that the Query_Plan option is ON by default, which can lead to a large IQ message file size.

Running a mixed-version multiplex

You can deploy new releases on one server of an existing multiplex without interrupting other servers, as long as the servers being upgraded are version 12.5 or higher. *Always upgrade the write server last.*

Any multiplex where all servers are not at the same version is **mixed-version multiplex**.

New features are completely available only after all databases are upgraded using ALTER DATABASE UPGRADE. If you upgrade databases on a query server, but leave the write server at 12.6, synchronization returns database versions on the query server to version 12.6, and you must repeat the ALTER DATABASE UPGRADE. Databases take their version from the write server.

Synchronizing affects database version, *not the installed software version* on a server. If you install 12.7 software on the query server, that software continues to be at version 12.7 after any synchronizations. Multiple database versions can exist on servers with installed software version 12.7, as shown in Table 1-1 on page 2. However, you must connect to each server using an IQ agent of the same version, and the appropriate agent port.

Be sure to back up the write server before an upgrade. Once you create an IQ Local Store on a query server, you must back up that query server as part of future upgrades.

If you have a mixed-version multiplex with a 12.5 write server, be aware that creating a local store succeeds on a 12.6 or 12.7 query server but is not recognized by the 12.5 write server, and is lost at the next synchronization. (Version 12.5 did not support local stores.)

Upgrading 12.5 multiplex databases to 12.7

Upgrade all multiplex databases to version 12.5 before following the instructions in this section.

Before upgrading multiplex databases

Note Sybase Central uses default settings for server start-up switches from the *params.cfg* file. The default values of some start-up options, such as those that control cache sizes, may be insufficient for migrating large multiplex servers. For best results, create a configuration file with higher values for switches such as -c, -cl and -ch. Specify this file explicitly when starting the multiplex server for database upgrade. For details about configuration files, see “Setting server configurations” on page 71.

To upgrade multiplex databases from 12.5 to 12.7, perform the steps in that follow on each server in the multiplex.

To upgrade 12.6 databases, see “Upgrading 12.6 multiplex databases to 12.7” on page 49.

Wherever backup is recommended, you should back up the write server and any query servers where you created an IQ Local Store.

❖ **Upgrading 12.5 multiplex databases**

Note On UNIX systems, you may optionally install 12.7 Sybase IQ software on all the servers in a separate directory from the previously installed version before starting the upgrade process. Once the separate directories are ready, follow the steps below.

1 Shut down all the servers.

2 Install Sybase IQ 12.7 on the write server's system. (See Chapter 1.) On UNIX, you can do this before shutting down the servers. On Windows, installation forces a system reboot.

3 If you plan to run only 12.7 servers, skip to Step 4. To run 12.5 servers in the same multiplex as 12.7, install a 12.7 agent on the write server. The 12.7 IQ plug-in is compatible with 12.5 servers, but you must start 12.5 servers with a 12.5 agent and 12.7 servers with a 12.7 agent.

   To install the standalone agent, use the following command on UNIX or Linux systems:

   ```
   sybinstall -add_agent
   ```

   After this install, you have two IQ agents:

   - The agent for your existing version, which runs on the default port. The 12.5 agent is S99SybaseIQAgent.
   - The 12.7 agent, which requires its own port. The 12.7 agent is S99SybaseIQAgent12.

4 Stop the IQ agent on the write server's system and restart it using the 12.7 installation environment.

   First, use the `ps` command to locate the java process for the IQ agent:

```
ps -ef | grep jre
fionat 5795 5705 0 17:46:49 pts/8 0:00 grep jre
fionat 5781 5755 0 17:46:49 pts/8 0:00
/wrk/sybcentral/java/jre2/bin/../bin/sparc/native_threads/java -ms8m -m
```

   To determine if the process is the IQ agent or the client process for the Sybase Central viewer, repeat the command with the parent process's ID:

```
ps -fp 5755
UID    PID    PPID C STIME     TTY    TIME CMD
```

```
fionat 5755  1    0 17:45:09  pts/8  0:00 /bin/ksh /work ASIQ-
12_5/bin/scjview -mainclass sybase.scf.ro.SCAgent -1
```

At the end of the line, *sybase.scf.ro.SCAgent* indicates the IQ agent. (If the parent process ends with *scjview*, it is the client process for the Sybase Central viewer, not the agent.)

To stop the agent in the preceding example, enter:

```
kill -HUP 5781
```

5 Remove any -n <*servername*> switch in a *params.cfg* file used to start a multiplex database.

6 (Mixed-version multiplex only) Edit the *params.cfg* file in the database directory on each query server to set the following switch(es):

- Set -iqnomain 1
- If the query server has local stores, set -iqnolocalreplay 1

You must set these switches before you run ALTER DATABASE UPGRADE and they must still be set when you synchronize query servers.

7 Start the write server in single node mode using the -iqmpx_sn 1 switch. *If you use a server name different from the write server name, you must also use the override switch,* -iqmpx_ov 1.

Use a unique server name that you have not previously used, as follows:

```
start_asiq @params.cfg -n <upgrade_server>
-iqmpx_sn 1 -x 'tcpip{port=<writer_port>}' <dbfile>
```

You may use the write server's normal TCPIP port.

8 Disconnect Sybase Central and SQL Remote from the database.

9 **Note** Sybase IQ 12.6 and higher releases enforce column and table CHECK constraints that were previously unenforced, but only on inserts, updates, and loads of new data. Before you upgrade the database, Sybase suggests that you follow the procedure in "Before you install" on page 2 to record and recreate constraints.

Connect to the server to be upgraded with dbisqlc or dbisql as DBA. *Make sure that no other users connect during the upgrade process*. See "Upgrading databases" on page 41 for recommended syntax to restrict users.

10 Make sure that you have performed the preceding steps in this chapter and installed any available EBFs. For details, see "Finding the latest information on EBFs and software maintenance" on page ix.

11 Upgrade the database by issuing the following command:

```
ALTER DATABASE UPGRADE
```

If the database you are upgrading was created with the Java options set off, append the keywords JAVA OFF JCONNECT OFF to the preceding command. For more about the ALTER DATABASE UPGRADE statement, see the *Sybase IQ Reference Manual*.

Note The defaults for MAIN_RESERVED_DBSPACE_MB and TEMP_RESERVED_DBSPACE_MB were increased in version 12.5 for newly created databases. If these options are set to less than the 200MB in your database, set the options to 200MB or 50% of the size of the last dbspace before or immediately after upgrading your database.

---

12 *If your multiplex has a write server with no query servers*, issue the following statement to convert to a non-multiplex database.

```
call sp_iqendmpx();
```

After you run sp_iqendmpx, you have a non-multiplex database. Skip the remaining steps in this procedure, see "Enforcing referential integrity" on page 42, and complete the remaining tasks in "Upgrading non-multiplex databases" instead.

13 Reset the SQL Remote configuration by issuing the SQL statements:

```
call sp_iqmpxdroppublication()
call sp_iqmpxcreatepublication()
```

You can check the multiplex configuration by issuing:

```
call sp_iqmpxvalidate()
```

It should indicate that dbremote is not running for this server, but there should be no other errors.

14 Install Sybase IQ 12.7 on each query server system, if not done in advance.

15 Stop and restart the IQ agent in the 12.7 environment on each query server.

16 Start Sybase Central, connect, and run Synchronize from the write server.

17 (Mixed-version multiplex only) Edit the *params.cfg* file in the database directory on the upgraded query server as follows:

- Remove the -iqnomain 1 switch
- If the query server has local stores, remove the -iqnolocalreplay 1 switch

Restart the query server that you just upgraded.

18 Perform the ALTER DATABASE UPGRADE and subsequent steps on each query server in the multiplex.

All upgraded servers in the multiplex environment are now running version 12.7.

After upgrading multiplex databases

Because the shared top-level directory is not a good location for database files, you should move these files to directories local to each server in the multiplex environment. For instructions, see the section "Migration" in Chapter 14, "Data Backup, Recovery, and Archiving" in the *Sybase IQ System Administration Guide*. After you move all database files, you can remove the shared top-level directory from the server systems if desired.

See also "After you upgrade" on page 44 for other items you may want to check after upgrading.

Upgrading 12.6 multiplex databases to 12.7

To upgrade multiplex databases from 12.6 to 12.7, perform the following steps.

❖ **Upgrading 12.6 multiplex databases**

You may optionally install 12.7 Sybase IQ software on all the servers in a separate directory from the previously installed version before starting the upgrade process. Once the separate directories are ready, follow the steps below.

1 Shut down all the servers.

2 Install Sybase IQ 12.7 on the write server's system. (See Chapter 1.) You can do this before shutting down the servers.

3 If you plan to run only 12.7 servers, skip to Step 4. To run 12.6 servers in the same multiplex as 12.7, install a 12.7 agent on the write server. The 12.7 IQ plug-in is compatible with 12.6 servers, but you must start 12.6 servers with a 12.6 agent and 12.7 servers with a 12.7 agent.

To install the standalone agent, use the following command on UNIX or Linux systems:

```
sybinstall -add_agent
```

After this install, you have two IQ agents:

- The agent for your existing version, which runs on the default port. The 12.6 agent is S99SybaseIQAgent1260.
- The 12.7 agent, which requires its own port. The 12.7 agent is S99SybaseIQAgent12.

4 Stop the IQ agent on the write server's system and restart it using the 12.7 installation environment. (On Windows, this is not needed because the IQ agent starts automatically during reboot.)

First, use the `ps` command to locate the java process for the IQ agent:

```
ps -ef | grep jre
fionat 5795 5705 0 17:46:49 pts/8 0:00 grep jre
fionat 5781 5755 0 17:46:49 pts/8 0:00
/wrk/sybcentral/java/jre2/bin/../bin/sparc/native_threads/java -ms8m -m
```

To determine if the process is the IQ agent or the client process for the Sybase Central viewer, repeat the command with the parent process's ID:

```
ps -fp 5755
UID    PID    PPID C STIME     TTY    TIME CMD
fionat 5755   1    0 17:45:09  pts/8  0:00 /bin/ksh /work ASIQ-
12_5/bin/scjview -mainclass sybase.scf.ro.SCAgent -1
```

At the end of the line, *sybase.scf.ro.SCAgent* indicates the IQ agent. (If the parent process ends with *scjview*, it is the client process for the Sybase Central viewer, not the agent.)

To stop the agent in the preceding example, enter:

```
kill -HUP 5781
```

5 Remove any -n <*servername*> switch in a *params.cfg* file used to start a multiplex database.

6 (Mixed-version multiplex only) Edit the *params.cfg* file in the database directory on each query server to set the following switch(es):

- Set -iqnomain 1
- If the query server has local stores, set -iqnolocalreplay 1

You must set these switches before you run ALTER DATABASE UPGRADE and they must still be set when you synchronize query servers.

7 Disconnect Sybase Central and SQL Remote from the database.

8 Start the write server in single node mode using the -iqmpx_sn 1 switch. *If you use a server name different from the write server name, you must also use the override switch,* -iqmpx_ov 1.

Use a unique server name that you have not previously used, as follows:

```
start_asiq @params.cfg -n <upgrade_server>
-iqmpx_sn 1 -x 'tcpip{port=<writer_port>}' <dbfile>
```

You may use the write server's normal TCPIP port.

9 **Note** Sybase IQ 12.6 and higher releases enforce column and table CHECK constraints that were previously unenforced, but only on inserts, updates, and loads of new data. Before you upgrade the database, Sybase suggests that you follow the procedure in "Before you install" on page 2 to record and recreate constraints.

Connect to the server to be upgraded with dbisqlc or dbisql as DBA. *Make sure that no other users connect during the upgrade process*. For suggested syntax, see "Upgrading databases" on page 41.

10 Make sure that you have performed the preceding steps in this chapter and installed any available EBFs. For details, see "Finding the latest information on EBFs and software maintenance" on page ix.

11 Upgrade the database by issuing the following command:

```
ALTER DATABASE UPGRADE
```

If the database you are upgrading was created with the Java options set off, append the keywords JAVA OFF JCONNECT OFF to the preceding command. For more about the ALTER DATABASE UPGRADE statement, see the *Sybase IQ Reference Manual*.

12 Reset the SQL Remote configuration by issuing the SQL statements:

```
call sp_iqmpxdroppublication()
call sp_iqmpxcreatepublication()
```

To check the multiplex configuration, issue this statement:

```
call sp_iqmpxvalidate()
```

It should indicate that dbremote is not running for this server, but there should be no other errors.

13 Install Sybase IQ 12.7 on each query server system, if not done in advance.

14 Stop and restart the IQ agent in the 12.7 environment on each query server.

15 Start Sybase Central, connect, and run Synchronize from the write server.

16 (Mixed-version multiplex only) Edit the *params.cfg* file in the database directory on each query server as follows:

- Remove the -iqnomain 1 switch
- If the query server has local stores, remove the -iqnolocalreplay 1 switch

Restart the query server that you just upgraded.

17 Perform the ALTER DATABASE UPGRADE and subsequent steps on each query server in the multiplex.

All upgraded servers in the multiplex environment are now running version 12.7.

Migrating databases to a 64-bit system

This section describes how to migrate your database from a 32-bit to a 64-bit hardware platform.

Prerequisite

The procedures assume your database is already upgraded to Sybase IQ 12.7.

❖ **Migrating databases to a 64-bit machine**

1 Back up the database.

2 Shut down the server.

3 Install the Sybase IQ 64-bit software and any required ESDs.

4 If the current version of Sybase IQ is higher than the version on which you were previously running, start Interactive SQL and issue the database upgrade statement:

```
ALTER DATABASE UPGRADE
```

If the database was created with the Java options off, append the keywords JAVA OFF JCONNECT OFF to the preceding command.

5 Start the server.

Sybase recommends that you perform regular backups.

Restoring to your previous version after upgrade

If you anticipate a need to restore data to its previous version after you upgrade, follow the guidelines in this section to ensure that IQ files are saved *before* you upgrade.

Note Sybase recommends that you install Sybase IQ 12.7 to a separate location from the directory where you installed previous Sybase IQ software.

❖ **Preparing for upgrade**

Before you upgrade, follow these steps to ensure that you can restore your data to its previous version.

1 Perform an IQ backup, as described in Chapter 13, "Backup and Data Recovery" in *Sybase IQ System Administration Guide*.

2 When you install Sybase IQ, install it in another directory, and follow the upgrade steps.

❖ **Restoring data to the previous Sybase IQ version**

If you find that you need to go back to the previous version, follow these steps.

1 Change the environment variables to point at the older installation directories.

2 Start the utility database and restore the backup that you performed before the upgrade.

3 Stop the utility database and start the database that you restored.

Migrating across hardware platforms

Sybase IQ supports migrating your database from one platform to another, as long as both have the same endian structure. See Table 3-2 and Table 3-3. In these tables, the source platform is the horizontal axis and the target platform, the vertical axis.

Table 3-2: Sybase IQ migration scenarios for big-endian platforms

Platform	AIX 64	HP-UX64 PA-RISC	HP-UX64 Itanium	IBM Linux on POWER	SunOS 64	SunAMD 64
AIX64	12.5 to 12.6 12.5 to 12.7	12.5 to 12.6 12.6 to 12.6 12.6 to 12.7	12.5 to 12.6 12.6 to 12.6 12.6 to 12.7	12.5 to 12.6 12.6 to 12.6 12.6 to 12.7	12.5 to 12.6 12.6 to 12.6 12.6 to 12.7	12.5 to 12.6 12.6 to 12.6 12.6 to 12.7
HP-UX64 PA-RISC	12.5 to 12.6 12.6 to 12.6 12.6 to 12.7	12.5 to 12.6 12.6 to 12.7	12.5 to 12.6 12.6 to 12.6 12.6 to 12.7	12.5 to 12.6 12.6 to 12.6 12.6 to 12.7	12.5 to 12.6 12.6 to 12.6 12.6 to 12.7	12.5 to 12.6 12.6 to 12.6 12.6 to 12.7
HP-UX64 Itanium	12.5 to 12.6 12.6 to 12.6 12.6 to 12.7 12.7 to 12.7	12.5 to 12.6 12.6 to 12.6 12.6 to 12.7 12.7 to 12.7	12.5 to 12.6 12.6 to 12.7 12.7 to 12.7	12.5 to 12.6 12.6 to 12.6 12.6 to 12.7 12.7 to 12.7	12.5 to 12.6 12.6 to 12.6 12.6 to 12.7 12.7 to 12.7	12.6 to 12.7 12.7 to 12.7
IBM Linux on POWER	12.6 to 12.6 12.6 to 12.7 12.7 to 12.7	12.6 to 12.6 12.6 to 12.7 12.7 to 12.7	12.6 to 12.6 12.6 to 12.7 12.7 to 12.7	Not a migration	12.6 to 12.6 12.6 to 12.7 12.7 to 12.7	12.6 to 12.7 12.7 to 12.7

Platform	AIX 64	HP-UX64 PA-RISC	HP-UX64 Itanium	IBM Linux on POWER	SunOS 64	SunAMD 64
SunOS64	12.5 to 12.6 12.6 to 12.6 12.6 to 12.7 12.7 to 12.7	12.5 to 12.6 12.6 to 12.6 12.6 to 12.7 12.7 to 12.7	12.5 to 12.6 12.6 to 12.6 12.6 to 12.7 12.7 to 12.7	12.5 to 12.6 12.6 to 12.6 12.6 to 12.7 12.7 to 12.7	12.5 to 12.6 12.6 to 12.6 12.6 to 12.7 12.7 to 12.7	12.7 to 12.7
SunAMD 64	12.6 to 12.7 12.7 to 12.7	12.6 to 12.7 12.7 to 12.7	12.6 to 12.7 12.7 to 12.7	12.6 to 12.7 12.7 to 12.7	12.6 to 12.7 12.7 to 12.7	Not a migration

Sybase IQ 12.6 ESD #2 and higher releases support migration between Windows and Linux.

Table 3-3: Sybase IQ migration scenarios for little-endian platforms

Platform	Linux32	Linux64	WIndows32	WInAMD64
Linux32 **	12.5 to 12.6	12.5 to 12.6 12.6 to 12.6 12.6 to 12.7 12.7 to 12.7	12.5 to 12.6 12.6 to 12.6 12.6 to 12.7 12.7 to 12.7	12.5 to 12.7 12.6 to 12.7 12.7 to 12.7
Linux64	12.6 to 12.6 12.6 to 12.7 12.7 to 12.7		12.6 to 12.6 12.6 to 12.7 12.7 to 12.7	12.6 to 12.7 12.7 to 12.7
Windows32	12.5 to 12.6 12.6 to 12.6 12.6 to 12.7 12.7 to 12.7	12.5 to 12.6 12.6 to 12.6 12.6 to 12.7 12.7 to 12.7	12.5 to 12.6 12.6 to 12.7 12.7 to 12.7	12.5 to 12.7
WinAMD64	12.6 to 12.7 12.7 to 12.7	12.6 to 12.7 12.7 to 12.7	12.6 to 12.7 12.7 to 12.7	Not a migration

IMPORTANT!
** If you created your Sybase IQ database on a Linux 32-bit version prior to Sybase IQ 12.6 ESD #2, you must first install IQ 12.6 ESD #2 for Linux 32-bit and create a new data backup before migrating to another platform.

❖ **Migrating a database from one platform to another**

1 Back up the database.

2 Shut down the Sybase IQ server.

3 Install the Sybase IQ server on the new platform. Your migration can take place on the same or a different machine.

4 Start the Sybase IQ server on the new hardware platform.

5 Connect to the utility database, *utility_db*.

6 Restore the database from the backup you created in Step 1.

7 Shut down the server and restart it against the restored database. If the current version of Sybase IQ is higher than the version on which you were previously running, you need to upgrade databases, and therefore restart the server in a way that restricts user connections. Sybase recommends using two server start-up options:

- Use -gd DBA so that only users with DBA authority can start and stop databases.
- Use -gm 1 to allow a single connection plus one DBA connection above the limit so that a DBA can connect and drop others in an emergency.

An alternate way to restrict connections is to specify

```
sa_server_option('disable_connections', 'ON')
```

on the connection where you intend to perform the upgrade and

```
sa_server_option('disable_connections', 'OFF')
```

on the same connection after upgrading. *The disadvantage is that this method precludes emergency access from another DBA connection.*

8 Start Interactive SQL and issue the database upgrade statement. For example:

```
ALTER DATABASE UPGRADE
```

If the database was created with the Java options off, append the keywords JAVA OFF JCONNECT OFF to the preceding command.

For more information, see “Upgrading non-multiplex databases” on page 40.

CHAPTER 4

Configuring Sybase IQ

About this chapter

This chapter tells how to configure Sybase IQ.

Contents

Running client applications

Sybase IQ supports ODBC and JDBC applications. It uses Adaptive Server Anywhere (ASA) as the server for storing catalog information.

Sybase IQ versions prior to 12.0 used Adaptive Server Enterprise as catalog server. ODBC applications used as client front-end tools with older versions of Sybase IQ will continue to run in IQ version 12.x, but third-party and customer-written Open Client™ DB-Library and Client-Library applications are unlikely to perform as expected.

When developing Open Client applications to run with Sybase IQ *12.x, avoid using catalog tables or system stored procedures supported by Adaptive Server Enterprise but not* Sybase IQ. *See Appendix A, "Compatibility with Other Sybase Databases," in the Sybase IQ Reference Manual.*

Sybase IQ is compatible with clients (like Open Client-Library and DB-Library) that use TDS. Open Client version 11.1.1 supports TDS 5.x and applications would therefore work with Sybase IQ, but only if these applications use the system tables, views and procedures that are found in Sybase IQ. System procedures, catalog tables, and views available in Sybase IQ are listed in the *Sybase IQ Reference Manual*. There are no restrictions accessing data in the IQ Store through any supported interface.

Connecting using JDBC

JDBC provides a SQL interface for Java applications. Sybase Central and DBISQL can use either JDBC or ODBC. This section describes how to configure a JDBC connection for Sybase IQ. For an overview of using JDBC, see "Data Access Using JDBC," in the *Sybase IQ System Administration Guide*.

In order for Sybase IQ to access a server on your network using JDBC, you must supply the host name, port number, and database name when you connect.

For example, in Sybase Central, type F11 or choose Connect from the Tools menu, and supply connection information. IQ supplies the host machine, port number, and database name from the last successful connection. If that is correct, you need only supply User ID and Password on the Identification tab. On this tab, Alt-U activates the User ID text box and Alt-P activates the Password text box.

In the DBISQL Connect dialog, you can choose the iAnywhere JDBC Driver via a radio button on the Advanced tab.

The IQ Agent can only use jConnect with JDBC to connect to a multiplex server. The jConnect JDBC drivers have been certified with multiplex and non-multiplex servers.

Connecting using ODBC

Open Database Connectivity (ODBC) is a standard application programming interface (API) developed by Microsoft. It allows a single application to access a variety of data sources for which ODBC-compliant drivers exist. The application uses SQL as the standard data access language.

ODBC conformance

Sybase IQ supports ODBC 3.5.2.

Levels of ODBC support

ODBC drivers manufactured by different vendors may vary widely in the functions they provide. ODBC features are arranged according to a level of conformance. Features are either Core, Level 1, or Level 2, with Level 2 being the most complete level of ODBC support. These features are listed in the *ODBC Programmer's Reference*, which is available from Microsoft Corporation as part of the ODBC software development kit or from the Microsoft Web site. Using your browser, go to the Microsoft Web site at http://www.microsoft.com.

Features supported by Sybase IQ

Sybase IQ ODBC 3.5.2 support is as follows:

- **Core conformance** Sybase IQ supports all Core level features.
- **Level 1 conformance** Sybase IQ supports all Level 1 features, except for asynchronous execution of ODBC functions.

  Sybase IQ does support multiple threads sharing a single connection. The requests from the different threads are serialized by Sybase IQ.
- **Level 2 conformance** Sybase IQ supports all Level 2 features, except for the following:
  - Three part names of tables and views. This is not applicable for Sybase IQ.
  - Asynchronous execution of ODBC functions for specified individual statements.
  - Ability to time out login request and SQL queries.

ODBC 3.5.x new features

While you can use new ODBC 3.5.x features, such as descriptors, in your ODBC applications, ODBC 2.x applications will continue to work with Sybase IQ.

Installing ODBC drivers

When you install Sybase IQ on your UNIX or Linux server, the installation procedure also installs the ODBC driver, which can be directly accessed by applications. If you are using an ODBC application that uses *libodbc.so* (*libodbc.so.1*) or *libodbcinst.so* (*libodbcinst.so.1*), simply create symbolic links to that point to *$SYBASE/ASIQ-12_6/lib/dbodbc9.so.1* for single threaded or *$SYBASE/ASIQ-12_6/lib/dbodbc9_r.so.1*. If you are creating an ODBC application, you can link directly to *dbodbc9.so* for non-threaded applications and *dbodbc9_r.so* for threaded applications. References to ODBC functions are resolved at run time.

Note The filenames cited above have platform-specific suffixes. The *so* suffix shown is specific to the Sun Solaris system. See "Linking ODBC applications on UNIX" in Chapter 7 of the *Adaptive Server Anywhere Programming Guide* for a list of files included in the driver managers for supported UNIX platforms.

You need to install the Sybase IQ Client Components on each client computer in your network, which contains the Sybase IQ 32-bit ODBC Driver.

If you are using ODBC with UNIX or Linux, see "Using ODBC without the driver manager" in Chapter 4 of the *Adaptive Server Anywhere Programming Interfaces Guide* to ensure that you are using the correct driver.

The ODBC Driver shipped with Sybase IQ connects clients on a Windows platform or the platform of the IQ server to the IQ server. To connect clients on other UNIX or Linux platforms to your server, download and install a platform-specific Sybase IQ ODBC Driver. Check the EBF/Update information on the Web for the appropriate driver, following the steps in "Sybase EBFs and software maintenance" on page ix.

32-bit and 64-bit drivers

UNIX 64-bit applications, including many third party tools, can use 64-bit ODBC drivers to connect to 64-bit IQ servers.

32-bit applications can use 32-bit ODBC drivers to connect to 64-bit IQ servers. (32-bit applications *cannot* use 64-bit ODBC drivers to connect to 64-bit IQ servers.)

The Sybase IQ Network Client CD supplied with all platforms contains a 32-bit ODBC driver for connecting from Windows-based ODBC applications. The Sybase IQ CD contains a 64-bit ODBC driver.

To connect via ODBC from 32-bit UNIX client applications, you need to download and install the 32-bit ODBC driver kit. Check the EBF/Update information on the Web for the appropriate driver, following the steps in the procedure “Sybase EBFs and software maintenance” on page ix.

Using UNIX or Linux-based query tools through ODBC

Applications that use ODBC connect to a software component called a driver manager, which provides a standard interface and a variety of basic services. The driver manager then connects to the specific ODBC driver, which accesses the requested data source. On Windows, the driver manager is a standard part of the environment. On UNIX or Linux, no standard ODBC driver manager is provided.

There are several ways driver manager functionality can be presented to an application. The easiest approach is to use the driver manager emulation capabilities provided by the Sybase IQ ODBC driver. Many tools (like Brio) which do not require extensive driver manager services can use the symbolic links provided with Sybase IQ to connect directly to the driver.

Some tools require the presence of a driver manager. Some (like Whitelight) ship with a driver manager, others do not. For information and recommendations about compatible driver managers available, see the documentation for the application.

Third-party ODBC applications

Several popular PC applications have been tested in-house with Sybase IQ using the ODBC interface. Other front-end clients may work with Sybase IQ, but have not been tested.

For information on third-party vendor applications that are certified with Sybase IQ, refer to the section “Sybase certifications on the Web” in the *Sybase IQ Release Bulletin*.

The Sybase IQ ODBC Driver is shipped with Sybase IQ as part of the Network Client CD and installed automatically.

See “Creating ODBC data sources” for information on how to set up an ODBC Data Source if you need to access a database or data file over a network using ODBC.

Usage notes for client applications

The following note applies to third-party PC client applications certified with Sybase IQ:

With BrioQuery, each query requires you to connect to the database. Be sure to close the query after processing to ensure that the connection to Sybase IQ is closed. If you leave multiple queries open, you could consume more connections than you realize, eventually preventing other users from connecting to Sybase IQ (since the number of configured connections would be exceeded).

See the *Sybase IQ Release Bulletin* for problems that may affect using PC client applications with Sybase IQ.

Creating ODBC data sources

You need an ODBC data source on the client computer for each UNIX or Linux database you wish to access using ODBC. A data source describes how to get to data on a network. For example, a data source may include the name of a database, the server where it resides, and the network used to access the server.

On UNIX or Linux, ODBC data sources are held in a file named *.odbc.ini*. You can edit this file with any text editor to specify data sources. For details, see "Using ODBC data sources on UNIX," in the *Sybase IQ System Administration Guide*.

You can also use the cross-platform iqdsn utility to create data sources. See "The Data Source utility" in the *Sybase IQ Utility Guide*.

On Windows, the ODBC Administrator adds new data sources for you. Each data source allows you to access a database over a network by means of ODBC.

❖ **Creating an ODBC data source**

1. To start the ODBC Administrator on your Windows client system, select Sybase > Data Access > ODBC Data Source Administrator.
2. In the ODBC Data Source Administrator, click Add on the User DSN tab.
3. In the Create New Data Source dialog box, select the Sybase IQ 12 driver and click Finish.

   The Configuration dialog box appears.
4. Type the Data Source Name in the appropriate text box, Type a Description of the data source in the Description text box if desired. Do not click OK yet.

5 Click the Login tab. Type the User ID and Password for your database. For the sample database used in this example, use “DBA” and “SQL”.

6 Click the Database tab. If the data source is on a remote machine, type a server name and database file name (with the .DB suffix) in the appropriate text boxes.

7 If the data source is on your local machine, type a start line and database name (without the .DB suffix) and skip to Step 8.

8 If the data source is on a remote system, click the Network tab. Click the checkbox for the appropriate protocol and type the options in the adjacent text box. For example, to connect to server on system fiona-pc using TCP/IP protocol and port 1870, you would click TCP/IP and type
`host=fionaw2k:port=1870`

You could also use the host network address. For example,

```
host=157.133.66.75:1870
```

Note When specifying network connections, you need a different *systemname*:*port#* combination for each database server. The port number must match the one you use when you start the server.

9 Click OK when you have finished defining your data source.

10 The ODBC Data Source Administrator returns you to the User DSN tab.

Note You cannot connect to a Sybase IQ 12.6 or 12.7 server using an ODBC Data Source Name created for a 12.5 server, even if you specify the same server name, port number, and database name. Use the ODBC Data Source Administrator to remove DSNs created in 12.5 and add new DSNs.

You may use files as data sources instead of databases. File data sources are stored as files with the extension.*dsn*. For information about creating a file data source, see *Sybase IQ System Administration Guide.*

❖ **Testing an ODBC data source**

1 Start the database. (To start the Sample Database, use Start > Programs > Sybase > Adaptive Server IQ 12.7 > Start ASIQ Demo Database.)

2 In the ODBC Data Source Administrator, select your new data source from the list of User Data Sources.

3 Click Configure.

4 On the ODBC Configuration dialog box, click Test Connection.

If you cannot access the data source, check that you have filled out the various tabs with correct file and pathnames.

Storing connection information

If you are running a UNIX client, an *.odbc.ini* file on your system stores the information used to access each database. (Note that the filename begins with a period.)

To connect with ODBC data sources, the location of your *.odbc.ini* file must be referenced by one of the following variables. Sybase IQ searches the directories specified by the variables below in the following order:

- $ODBCINI – must contain the exact full pathname of the *.odbc.ini* file.
- $ODBCHOME – must be set to the directory that contains the *.odbc.ini* file.

Sybase IQ clients ignore the following environment variables when searching for *.odbc.ini*:

- $ODBC_HOME
- $ODBC_INI
- $PATH
- $HOME

You need to edit the *.odbc.ini* file with any text editor to add entries for your data sources.

Each entry in the *.odbc.ini* file should have the following format:

[an_entry_name]
Userid — the user ID
Password — the password
EngineName — desired engine
CommLinks — tcpip(port=engine_port_number)
AutoStop — no (Required parameter - must be set to no)
DatabaseFile — desired database with path. Used with embedded databases.

For example:

```
[sample_dsn]
Driver=/s3/mysybase12.4.3/ASIQ-12_6/lib/dbodbc9_r.so.l
Userid=DBA
```

```
Password=SQL
EngineName=test_server1
CommLinks=tcpip(port=1870)
AutoStop=no
DatabaseName=asiqdemo
DatabaseFile=asiqdemo.db
```

Once you have created a data source entry, you can connect to your database, by entering the dbisql command at the command prompt and specifying the data source entry name in a connection string. Sybase IQ finds the rest of the connection information in the *.odbc.ini* file. For example:

```
% dbisql -c "dsn=sample_dsn"
```

For more information about dbisql and its options, see *Sybase IQ Utility Guide*.

Note For Sybase IQ Version 12.5 and higher, by default any server that is started from a connection string is *stopped* when there are no more connections to it, and any database that is loaded from a connection string is *unloaded* as soon as there are no more connections to it. (This does not apply in the case of multiplex IQ databases, which are started with Sybase Central.)

To have the database continue running after connections disconnect, as in Sybase IQ releases prior to 12.5, you must specify the connection parameter AutoStop=No in your connection string or data source.

For example, the following data source fragment instructs the client library to keep the database loaded after the connection is dropped:

```
[dbcli7 Connection Parameters]
ServerName=testsrv
Autostop=No
UserID=DBA
Password=SQL
```

If you want to connect without using *.odbc.ini*, you can enter an Interactive SQL command that specifies the entire entry, like the following. While it is shown here on multiple lines, you must enter the entire command at the command prompt on one line.

```
dbisql -c
"UID=DBA;PWD=SQL;AutoStop=no;DBF=$ASDIR/demo/asiqdemo.
db"
```

Connecting using OLE DB

OLE DB is a data access model from Microsoft. It uses the Component Object Model (COM) interfaces. Unlike ODBC, OLE DB does not assume that the data source uses a SQL query processor.

This release of Sybase IQ includes an OLE DB provider. If you use the Sybase IQ OLE DB provider, ODBC is not required in your deployment.

OLE DB requires a Windows client. However, you can access both Windows and UNIX servers using OLE DB.

For more information, see *Adaptive Server Anywhere Programming Guide*. For information on connecting to a database using OLE DB, see *Sybase IQ System Administration Guide*.

Note Sybase IQ support for certain features used with OLE DB differs from Adaptive Server Anywhere support. Be aware of these differences when using the Anywhere documentation:

- Sybase IQ does *not* support Windows CE.
- Sybase IQ does *not* support remote updates through a cursor.
- Sybase IQ supports Dynamic (dynamic scroll), Static (insensitive), and and Forward only (no-scroll) cursors, but does *not* support Keyset (scroll) cursors.
- In Sybase IQ the isolation level is always 3, no matter what you specify.

Creating interfaces file entries

If you need to insert from an Adaptive Server Enterprise database to a Sybase IQ database, or you want to connect using ISQL, each server must have an entry in the interfaces file on the client computer. Interfaces file entries, also called **server objects**, also simplify database startup. Use DSEDIT (Directory Services Editor) to create entries in the interfaces file. You must be the owner of the Sybase home directory ($SYBASE) in order to run DSEDIT.

❖ **Adding a server object**

The dsedit utility lets you view and edit server entries in the interfaces file using a GUI based on X11/Motif in UNIX platforms.

1 Start the Open Client Directory Service Editor.

```
% $SYBASE/$SYBASE_OCS/bin/dsedit
```

2 The default interfaces file and configuration file display.

Click OK to continue or Exit to quit.

3 Select "Add new server entry."

4 Type the server name and click Add new network transport. *The server name in your DSEDIT entry must be the same as the database name.*

5 Select the TCP transport and enter the host name and port number. (The defaults are usually sufficient.) Click OK.

6 Click OK.

7 The server is now listed under "Available servers."

8 Click Close session to make new server entries usable.

9 Click Exit to close dsedit.

10 Click Yes to "Are you sure you want to exit dsedit?"

Running client and server on the same system

Shared memory is the default communications mechanism when the client and server are on the same system. It is configured automatically, and starts up automatically, on both UNIX and Windows platforms. Sybase IQ uses a shared memory segment and several semaphores for communication between the client and server on the same machine.

Note Local connections through shared memory are not supported for Linux 64-bit. Use standard network connectivity by adding the parameters -host <*hostname*> and -port <*portnumber*> to the client connection string.

See the *Sybase IQ System Administration Guide* for more information on using the -host and -port parameters.

Network issues for IQ servers

Properly configured Sybase IQ UNIX servers run under the TCP/IP protocol, which enables non-UNIX clients to communicate with a UNIX database server.

In order for Sybase IQ to run properly, the protocol stack on the client and server computers must be compatible at each layer.

Many vendors supply TCP/IP protocol stacks and associated software. Sybase IQ communications have been explicitly verified with the following TCP/IP implementations:

- **NetWare** TCP/IP For NetWare.
- **Windows** Microsoft Winsock version 2.0.

There are several entries into the TCP/IP protocol stack. Sybase IQ employs the User Datagram Protocol (UDP). While it is called a transport protocol here and elsewhere, UDP provides little more than a user interface to the network layer IP. In particular, UDP is not a guaranteed transmission protocol.

Although the default packet size for TCP/IP is 1460 bytes, a larger packet size may improve query response time, especially for queries transferring a large amount of data between a client and a server process. You can set the maximum packet size using the database server command lines or CommBufferSize (CBSIZE) in the client connection string. This option may be used with either the start_asiq or the asiqsrv12 command.

For more information about server startup switches, see the *Sybase IQ Utility Guide*. For more information about connection parameters, see the *Sybase IQ System Administration Guide*.

Connecting across a firewall

There are restrictions on connections when the client application is on one side of a firewall and the server is on the other. Firewall software filters network packets according to network port. Also, it is common to disallow UDP packets from crossing the firewall.

When connecting across a firewall, you must use a set of communication parameters in the CommLinks connection parameter of your application's connection string.

- Set the ClientPort parameter to a range of allowed values for the client application to use. You can then configure your firewall to allow these packets across. You can use the short form CPort.
- Set the HOST parameter to the host name on which the database server is running. You can use the short form IP.
- Specify the port your database server is using in the ServerPort parameter if it is not using the default port of 2638. You can use the short form Port.

- Set the DoBroadcast=NONE parameter to prevent UDP from being used when connecting to the server.

For more information on these parameters see the *Sybase IQ System Administration Guide*.

Example

In the following example, the connection string fragment:

- Restricts the client application to ports 5050 through 5060
- Connects to a server named myeng running on the machine at address myhost using the server port 2020

No UDP broadcast is carried out because of the DoBroadcast option.

```
CEng=myeng;Links=tcpip(ClientPort=5050-
5060;Host=myhost;Port=2020;DoBroadcast=NONE)
```

Setting server configurations

A configuration file lists switches that you want to set whenever you start your server. See Chapter 1 of the *Sybase IQ Utility Guide* for a complete list of switches.

Installing Sybase IQ creates a configuration file called *asiqdemo.cfg* for the sample database. You can start the sample database using this configuration file as follows:

```
% cd $ASDIR/demo

% start_asiq @asiqdemo.cfg asiqdemo.db
```

For example, for an *asiqdemo* database on a system named *arches* on a 64-bit system, the *asiqdemo.cfg* file might look like this:

```
-n  arches_asiqdemo
-c 48MB
-gc 20
-gd all
-gl all
-gm 10
-gp 4096
-ti 4400
-x  tcpip(port=5555)
```

The *asiqdemo.cfg* file sets parameters that govern Sybase IQ to the following recommended defaults:

Table 4-1: Parameters set by asiqdemo.cfg

Parameter	Value	Description
-n	<HOSTNAME>_ asiqdemo	Name of system followed by "_asiqdemo"
-c	32MB on 32-bit systems 48MB on 64-bit systems	Catalog store cache size in MB
-gd	all	Users permitted to start a database
-gl	all	Users permitted to load a table
-gm	10	Default number of connections
-gp	4096	Catalog store page size
-ti	4400	Client timeout
-x	tcpip{port=xxxx}	Network connection protocol where xxxx=port number. Sybase strongly recommends that you change the default port number from 2638 to another number.

You can use the *asiqdemo.cfg* file as a template to create configuration files for all of your databases if you:

- Change the *asiqdemo.cfg* file name
- Replace the –n value with a unique server name
- Replace the –x port number with a unique port number for that server

If you use the same parameters to start all your databases, you could create a generic configuration file. Simply delete the –n and –x lines and supply these parameters on the command line at startup.

Note On the start_asiq command line, the last switch specified takes precedence, so if you want to override your configuration file, list any switches you want to change *after* the configuration file name. For example:

```
start_asiq @asiqdemo.cfg -n myserver
-x 'tcpip{port=1870}' asiqdemo
```

The –x parameter here overrides connection information in the *asiqdemo.cfg* file.

When specifying network connections, you need a different *server name*:*port#* combination for each database server. When you connect to the server, you need to specify the same combination used to start the server.

You can add comments to configuration files by preceding each comment line with the #symbol. For example:

```
#Here are parameters:
-gl all
#This is a test for -gm change
-gm 40
-gp 4096
```

Begin each comment on a new line.

Default configuration file

The *asiqdemo.cfg* file gets default parameter values from *$ASDIR/scripts/default/default.cfg*. This file is also the source for the *params.cfg* file used in start_asiq, by Sybase Central, and in multiplex configurations. You can maintain consistency by editing parameters in *default.cfg*, although you should keep a copy and avoid changing recommended default values.

Security and configuration files

To protect password information, you can encrypt your configuration files using the dbfhide (File Hiding) utility. For details see *Adaptive Server Anywhere Database Administration Guide*. If you specify log file parameters (-o *logfile*) in encrypted files, the log is not available to the IQ Agent or start_asiq, which will be unable to display server log information back to the database administrator. Sybase recommends that you put log file parameters and others that do not require encryption on the command line or in a separate configuration file. For example:

```
start_asiq @encrypt_params @other_params
```

or

```
start_asiq @encrypt_params -n myserv -c 400 -o
$ASDIR/logfile/myserv.log
```

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