SYBASE®

Installation and Configuration Guide

Sybase® IQ

12.6

[LINUX]

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Contents

About This Book

This book, *Sybase IQ Installation and Configuration Guide for Linux*, 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 the 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, with the Sybase Central™ database management tool.

- *New Features in Sybase IQ 12.6*

  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, utilities, stored procedures, data types, and system tables supported by Sybase IQ.

- *Sybase IQ System Administration Guide*

  Read for a full description of administrative concepts and procedures and performance tuning recommendations supported by Adaptive Server IQ.

- *Sybase IQ Troubleshooting and Error Messages Guide*

  Read to solve problems, perform system recovery and database repair, and understand both IQ error messages which are 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.

- *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.

Note 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 Error Messages*

  This book lists all Adaptive Server Anywhere error messages with diagnostic information.

- *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 9.0.1 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/.

- The Infocenter Web site is an online version of SyBooks manuals as Eclipse Online Help that you can access 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. Select Products from the navigation bar on the left.
3. Select a product name from the product list and click Go.
4. Select the Certification Report filter, specify a time frame, and click Go.
5. Click a Certification Report title to display the report.

❖ **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 12.6 and the HTML documentation have 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 *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.

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

Topics

It includes the following topics:

It provides procedures for installing the following software components:

- Sybase IQ
- Sybase Central Java™ Edition
- SDK (Open Client)
- Sybase jConnect JDBC Driver
- Java Runtime Environment

There are two ways to install Sybase IQ:

- For *operation as* a network server, install the Sybase IQ *Server Components*. See “Installing Sybase IQ Server Components” on page 12.
- For *connection to* a network server, install the Sybase IQ *Client Components*. See Chapter 2, “Installing Sybase IQ Network Client.”

Before you install

Read this section carefully before you install Sybase IQ.

Plug-in requirements

For full Sybase Central functionality, Sybase IQ may require the Java Runtime Environment. You may also need to upgrade the version of the Sybase Central toolkit on your system. Review Table 1-1 before you install.

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

Plug-in	Sybase IQ	Sybase Central Toolkit	Agent	JRE
IQ 126	12.6 or 12.5 fully supported. Earlier IQ versions minimally supported.	4.3 or later required	126 Agent required	142 required
IQ 125	12.5 or earlier	3.2 required	125 Agent required	122 required (131 on Linux)

Mixed-mode multiplex

Any multiplex where all servers are not at the same version is mixed-mode multiplex. Upgrading Sybase IQ from version 12.5 to 12.6, for example, typically results in a mixed-mode multiplex for a short period.

The following operations are not recommended on mixed-mode multiplexes:

- *Creating a local store.* Creating a local store succeeds on a 12.6 query server but not on the write server where it is lost at the next synchronize.
- *Creating a main store.* The create operation succeeds but displays a warning. You cannot delete the space explicitly from any 12.6 query server. The query servers that still define the deleted main store will continue running, but once stopped will not restart without override flags, and a file_id mismatch between write and query servers causes subsequent main store creates to fail.

Running multiple IQ Agents

In general, you cannot install Sybase IQ 12.6 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 12.6 IQ Agent on a 12.5 server in order to manage a multiplex containing both 12.5 and 12.6 servers (mixed-mode multiplex).

To convert 12.5 multiplex databases to 12.6, you first must convert each query server to 12.6. After all query servers are converted, you must install the 12.6 IQ Agent on the write server and convert the write server to 12.6. (If desired, you may run a 12.5 IQ Agent and the 12.6 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 12.6 IQ Agent on a 12.5 Sybase IQ server, use the sybinstall parameter -add_agent. See "Installing the standalone IQ Agent on the write server" on page 37.

Upgrading LONG BINARY columns

Sybase IQ 12.6 does 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 enforces 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. You need not repeat this procedure for 12.6 ESD releases.

To avoid errors:

1 Install Sybase IQ 12.6.

2 Query the existing 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 or scripts 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 Developers Kit, also called the Sybase SDK or Sybase Open Client Developer's Kit.

Sybase IQ requires a minimum of Open Client 12.5.1 ESD3. If your system already has this minimum required version installed as part of Open Client, Open Server, or Adaptive Server Enterprise, you can skip installing the Open Client supplied with Sybase IQ 12.6.

Sybase recommends that you install Sybase IQ 12.6 in a clean directory for easier version management. Environmental variables are local to the shell and the subdirectories are specific to the versions.

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 csh or C shell:

```
setenv INSTALL_ALL_PATCH "Y"
```

To set the variable using bash or Korn shell (ksh):

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

System requirements

Note You must install the correct operating system patches required to run Sybase IQ. See the *Sybase IQ Release Bulletin* for system requirements and lists of required patches.

Red Hat Enterprise Linux 3 provides three ways to boot your system on Linux 32-bit versions. For the full benefits of Sybase IQ, install and boot your system with the *hugemem* kernel, which increases the process size and available memory for caches. For details, see the *Red Hat Enterprise Linux AS3 Release Notes*.

There are no special patch requirements for Red Hat Enterprise Linux 64-bit versions.

Before you begin the installation process, make sure you have enough disk space and RAM for the installation.

To install and run Sybase IQ 12.6 on Linux, you need:

Table 1-2: Configuration recommendations

System Requirement	*Recommendation for Linux on x86, AMD64, or EM64T*	*Recommendation for Linux on IBM POWER*
Disk space to install and run Sybase IQ	304MB	410MB
Disk space to install Open Client Developer's Kit 12.5.1	297MB	430MB
Disk space to install Sybase Central Java Edition 4.3	4MB	2MB
Disk space to install jConnect 5.5	17MB	16MB

System Requirement	Recommendation for Linux on x86, AMD64, or EM64T	Recommendation for Linux on IBM POWER
Disk space to install jConnect 6.0	6MB	17MB
Disk space to install Java Runtime Environment 1.4.2	68MB	60MB
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

Note Table 1-2 lists minimum requirements. Add more resources for larger numbers of active users.

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 Linux client, you need:

Table 1-3: Configuration recommendations for Sybase Central

System requirement	Recommendation
Processor	Pentium 400 MHz or greater
Disk space for Sybase Central Java Edition	2MB free disk space
RAM for Sybase Central Java Edition	48MB
Resolution	800x600x256

Note The tables list minimum requirements. For larger numbers of active users, you will need more resources.

Disk space

Use the df -k (local disk free) command to see space available on your current device in kilobytes:

```
% df -kl .
```

Compare the available disk space information from your machine to the required disk space requirements.

Here is sample output from a df -kl command on a Linux system:

```
Filesystem     1k-blocks       Used    Available    Use%     Mounted on
/dev/sda6       5344528     2306520      2766512     45%     /
/dev/sda1         54416        8770        42837     17%     /boot
/dev/sda5      10080488     6393224      3175196     67%     /syz2_d1
/dev/sdb1      10080092      749828      8818216      8%     /syz2_d2
/dev/sdb5       7422328          36      7045256      0%     /syz2_d3
```

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

RAM

The recommended minimum RAM is 1GB.

To check the random access memory (RAM) available, use the following command:

```
$ cat /proc/meminfo

   total:    used:    free:  shared: buffers:  cached:
Mem:4084117504 395767808 3688349696 59658240 319209472
 34263040
Swap: 2097405952   626688 2096779264
MemTotal:   3988396 kB
MemFree:    3601904 kB
MemShared:    58260 kB
Buffers:     311728 kB
Cached:       33460 kB
BigTotal:   3112956 kB
BigFree:    3099904 kB
SwapTotal   2048248 kB
SwapFree:   2047636 kB
```

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 "Managing System Resources" in the *Sybase IQ Performance and Tuning Guide* for more information about buffers.

Depending upon the load on the system where the Sybase IQ executable is running, swap requirements may exceed space allotted. 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.

Installing runtime libraries required for Linux on POWER

Warning! Linux on POWER requires the following procedure for installation.

❖ **Installing Visual Age xlc compiler runtime libraries**

To install the required Visual Age xlc compiler runtime libraries:

1 Sybase IQ is compiled and linked with the Visual Age compiler, xlc version 7.0. Before installing Adaptive Server, the runtime libraries for the Visual Age compiler must be installed on your system.

2 Check to see if the Visual Age runtime packages have been installed previously, by running:

```
rpm -q vacpp.rte-7.0.0
```

If "vacpp.rte-7.0.0-0" is returned, the Visual Age runtime packages have been installed and you can skip the following steps.

If "package vacpp.rte-7.0.0-0 is not installed" is returned, the Visual Age packages have not been installed, and you must install them.

3 To install XLC V7.0 libraries, go to the IBM website at http://www-1.ibm.com/support/docview.wss?uid=swg24007906

Follow the instructions to download and install the runtime libraries on your operating system. Select the package appropriate for your Linux distribution (RH 3.0 or SUSE Linux 9.0)

4 You can proceed with installing Sybase IQ on Linux on POWER.

Adjusting the operating system configuration

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

To configure the operating system correctly, you must:

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

Installing kernel patches

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

Setting kernel parameters

Sybase recommends that you set the number of available semaphore identifiers to at least 4096.

Use this command to display the current values of the semaphore kernel parameters:

```
cat /proc/sys/kernel/sem
250 32000 32 128
```

The four values displayed are:

- SEMMSL — Maximum number of semaphores per set
- SEMMNS — Maximum number of semaphores system-wide
- SEMOPM — Maximum number of operations allowed for one semop call
- SEMMNI — Maximum number of semaphore identifiers (sets)

To adjust these values, edit the */etc/sysctl.conf* file. Setting values in this file saves them for future reboots. For example, to increase the maximum number of semaphore identifiers to 4096, add the following line:

```
kernel.sem = 250 32000 32 4096
```

Make sure that you leave spaces around the equals sign.

To make a change that only lasts until the next reboot, use this command:

```
echo 250 2000 32 4096 > /proc/sys/kernel/sem
```

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:

```
login:
```

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 rsh to open a remote shell or ping the system from another machine. For example, to check the system “tahoe”:

```
% rsh 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 message log file, (*filename.IQMSG*)
- 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*)

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.

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

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.

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 many as you need to hold your database, 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	Only a small amount of information goes to the IQ message log. The default filename extension for this file is*.iqmsg*. For a minor performance boost, store the message log separately from the data files. A 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 the Sybase IQ Client Components, see Chapter 2, “Installing Sybase IQ Network Client.”

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

By default, the program installs:

- Sybase IQ 12.6
- 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 12.5.1, 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, except for Open Client, which is required.

Warning! If you have an existing version of Open Client on your system, installing Open Client 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 procedure titled "To prepare the installation directory" on the following page. Otherwise follow all the steps 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 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 unload 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. To create a directory, use a command like the following:

```
% mkdir cd-install;chmod777 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 Table 1-2 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 tcsh or C (csh) shell, add this line to the *.cshrc* file:

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

- For the bash or Korn (ksh) 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.

Table 1-4: Command parameters for sybinstall utility

Parameter	Function
-autoinstall	Install all defaults.
-help	Display all parameters and usage.
-I_accept_sybase_license	Bypass license agreement prompt.
-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`.

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.

If you have previously installed Sybase IQ 12, the script first displays information about servers currently running. This screen ends with the message:

```
The above IQ servers have been found running on this
system. Please check that all Sybase IQ servers
running in $SYBASE directory have been shut down
before continuing.
```

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

4 Type “Y” or “N” depending on the status of the servers:

- Type “Y” if servers are not running in the *$SYBASE* directory.
- Type “N” to exit the install. Verify that the server or servers are shut down before you continue.

5 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 – General’, ‘Europe, Middle East, Africa – General’, or ‘Other Locations’).

The first screen of the License Agreement for your location displays.

Note 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
```

---

6 Press Return to scroll through the agreement until you reach the end where a Y/N prompt displays.

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

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

8 To accept the default, type “S”.

Note By default, all six products are installed. You *must* install Open Client 12.5.1 (or have it already installed) in order to start Sybase IQ.

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

9 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 “3”. Deselected products will not be installed.

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. In this example, the installer has deselected Sybase Central Java Edition.

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

10 Check the Install Directory listed for each product to be installed. If the installation does not default to the desired directory, type “C” and type the target directory you prefer at the “Enter new target directory” prompt.

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

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 *$ASIQ_DIR/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 current user and password
<Y/N>?
```

12 To change the login and password, type “Y”. The installation procedure prompts you for a new login and a password.

13 Type “N” if you do not want to change the default login or password.

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.

After installing the required components, the install procedure may prompt for optional components or licenses:

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

14 Type one of the following:

- Type “Y” if you have optional components to install.

  The installation procedure prompts you for the key, which you type exactly as it appears on your installation key document.

  The following message will appear `<Component> enabled!`

- Type “N” if you have no optional components to install. When the installation completes, a message lists environment files that the setup created.

❖ **Setting environment variables**

You must set certain environment variables to run the Open Client Developer’s Kit, Sybase IQ, and/or utility programs. Sybase IQ installs environment files that you can run to set variables.

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

1 To run Open Client Developer’s Kit on a standalone system, perform this step.

bash or Korn (ksh) shell users type:

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

tcsh or C (csh) shell users type:

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

2 To run Sybase IQ, set environment variables by running the environment file appropriate to your shell.

Note Note that the environment files listed below also set the variables needed to run Open Client and the variables needed to run any of the administration utilities (dbisqlc, dbstop, etc.).

---

bash or Korn (ksh) shell users type:

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

tcsh or C (csh) shell users type:

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

❖ **Completing the installation**

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

2 Log on as the "root" user and unmount the CD (if you had to mount to begin the installation):

```
% 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 servers with Sybase Central.

5 Log out.

To test Sybase IQ and read about the parameters required to start the product, see "Running Sybase IQ" on page 19.

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

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

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 sample database

To start the server, change to a directory where you have write privileges and run the start_asiq utility, 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 61.

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 must not start with a number.

Startup parameters

Startup information, which includes the version of Open Client 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*.

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. You may use a configuration file to override these 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 1-5: Parameters set by start_asiq

Parameter	Default 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. Prevents users with long queries from being logged off over a long weekend.

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.

For a complete list and description of startup parameters, see "Starting the database server" in Chapter 1 of *Sybase IQ Utility Guide*.

If you have Sybase Central, you can 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*.

Hyperthreading parameter

When hyperthreading is on (the default), any system call that requests the number of threads returns twice the number of physical CPUs. Use the -iqnumbercpus parameter to set the number of CPUs returned. You should set this to the number of usable CPUs on your machine.

Creating databases

The 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 Chapter 3. See *Sybase IQ System Administration Guide* for complete instructions.

Running queries

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

Stopping the server

Stop utility syntax

To stop the server, run the stop_asiq utility, using the following command format:

```
stop_asiq [ -agent | -cleanup | -stop [one | all ] | -help ]
```

Switches

Table 1-6: Switches for stop_asiq utility

Parameter	Purpose
-agent	Stops the ASIQ Agent on UNIX or Linux systems
-cleanup	Kills the orphan ASIQ process on Linux
-stop [one | all]	Removes user interaction with stop_asiq. Assumes "Y" response to all questions.
-help	Displays stop_asiq syntax and switches

Example on stopping the server

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

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

```
##     Owner    PID   Started  CPU_Time
-- ---------  -----  --------  --------
1:   rsmith   4378  10:34:42      0:04
start_asiq -gn 25 @asiqdemo.cfg asiqdemo.db -o /c
--
2:   rsmith   4726  10:41:09      0:04
start_asiq -gn 25 @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
process 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

On RedHat 2.1 (Linux kernel 2.4.9), each thread is listed as a process. Output from the ps command may list a single process dozens to hundreds of times. Linux users can use ps -efw to generate wide format output. Even with extended output lines, it may still be difficult to identify a single process from the display. 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 if you have ESD8 or above installed.

On rare occasions, the server may stop in a way that leaves some threads running. Before starting a server, always shut down any remaining threads cleanly using stop_asiq -cleanup. This command only shuts down threads owned by the person who runs it.

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.

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 Reference Manual*, Chapter 4, "Database Administration Utilities."

CHAPTER 2

Installing Sybase IQ Network Client

About this chapter

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

Topics

It includes the following topics:

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
12.6 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
12.6 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 on page 27 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 12.6	304MB
Disk space to install and run Sybase IQ 12.6 Network Client	275MB
Disk space to install Open Client Developer's Kit 12.5.1	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 1.4.2	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" on page 30. 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 13 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 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 12.6 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_5'
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 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
```

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 product(s) are not installed. You can only deselect 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.

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

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

tcsh or C (csh) shell users should type:

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

Installing Sybase IQ Network Client for Windows

Sybase IQ Network Client contains the components required for *connection to* a network server. Sybase IQ 12.6 Network Client is certified to run on:

- Microsoft Windows NT 4.0 (Service Pack 6)
- Microsoft Windows 2003
- Microsoft Windows 2000 Advanced Server 5.0.2195 (Service Pack 2)
- 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
12.6 Server	12.5 Server	Standalone IQ Agent only
	12.5 Client	Prohibited
	12.6 Client	Prohibited
12.6 Client	12.5 Server	Prohibited
	12.5 Client	Allowed. If one is uninstalled user must repair remaining one.
	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" on page 26. 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 34.

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

1 Log into 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 only need to perform the next step 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 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 in order 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 non-standard 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 non-default silent installations on Windows.

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

2 Log into 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 into 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 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 upgrading" on page 46 before you begin the upgrade process.

CHAPTER 3

Migrating Data

About this chapter

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

Topics

It includes the following topics:

If you have a Sybase IQ 12.x version prior to 12.4.3, you must first upgrade to version 12.4.3. Refer to the 12.4.3 *Sybase IQ Installation and Configuration Guide*.

Note Before you install Sybase IQ 12.6, 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 servers and databases to 12.6

Overview

Table 3-1 briefly lists the steps for upgrading servers and databases to Sybase IQ 12.6. Details are provided further in this section.

Table 3-1: Upgrading 12.x databases to 12.6

To do this	See ...
1. Shut down servers	“Shutting down servers” on page 37
2. Install IQ	“Installing IQ” on page 37
3. Install the standalone IQ Agent (multiplex only)	“Installing the standalone IQ Agent on the write server” on page 37
4. Start the server	“Starting the server” on page 38
5. Upgrade databases	“Upgrading databases” on page 38
6. Enforce referential integrity	“Enforcing referential integrity” on page 39
7. Start write server	“Starting the write server” on page 39
8. Stop the write server	“Stopping the write server” on page 39
9. Start the IQ Agent (multiplex only)	“Starting the Sybase IQ Agent” on page 40
10. Restart after upgrading	“Restarting after upgrading” on page 40
11. Verify after upgrade	“Verifying databases after upgrade” on page 40
12. Back up databases again (recommended)	“Backing up databases after upgrade” on page 41

Before you upgrade

You must have a recent backup before you upgrade.

If you anticipate a need to restore data to its previous version after you upgrade, read “Restoring to your previous version after upgrading” on page 46 before you begin the upgrade process.

Different IQ versions on multiplex servers

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.*

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.

New 12.6 features are only completely available after all databases are upgraded to version 12.6 using ALTER DATABASE UPGRADE. If you upgrade databases on a query server, but leave the write server at 12.5, synchronization returns database versions on the query server to version 12.5 and you will need to 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 12.6 software on the query server, that software continues to be 12.6 after any synchronizations. Multiple database versions may exist on servers with installed software version 12.6, 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.

Upgrading multiplex databases

To upgrade 12.5 databases to 12.6, perform the steps that follow on each server in the multiplex. Note that, wherever backup is recommended, you need only back up the write server.

To upgrade 12.4.3 multiplex databases to 12.6, see "Upgrading 12.4.3 multiplex databases to 12.6" on page 42.

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 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.*

Installing the standalone IQ Agent on the write server

If you plan to run only 12.6 servers, skip to step 5. To run 12.5 and 12.6 servers in the same multiplex, install a 12.6 IQ Agent on the write server. While the 12.6 IQ plug-in is compatible with 12.5 or 12.6 servers, you must start 12.5 servers with a 12.5 agent and 12.6 servers with a 12.6 agent.

Use the following command:

```
sybinstall -add_agent
```

After this install, you will have two IQ Agents:

- the 12.5 IQ Agent, S99SybaseIQAgent, which runs on the default port

- the 12.6 IQ Agent, S99SybaseIQAgent1260, which requires its own port

Choose the option Install a standalone Sybase IQ 12.6 Agent (Alt+A) and click Next.

Starting the server

To start the 12.6 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 *dbname*.db

The *dbname* is the name of the 12.4.3 or 12.5 database that you wish to upgrade. (You may also start the server using any of the startup 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 Chapter 1.

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

Upgrading databases

Upgrading from 12.4.3 or 12.5 to 12.6

Run the ALTER DATABASE UPGRADE command against every existing Sybase IQ database to upgrade it to IQ 12.6. 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 12.6 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 12.6.

❖ **Upgrading databases to version 12.6**

Performance optimizations in Version 12.6 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 12.4.3 or 12.5, 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 viii.

2 Disconnect from the database and reconnect to your database (again using an account with DBA privileges). This must be the only connection to the database.

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 write server

Start the write server in single node mode by running start_asiq with the switch -iqmpx_sn 1.

Stopping the write server

Stop the write server by using the stop_asiq utility at the operating system command line. For more information, See the *Sybase IQ System Administration Guide*, Chapter 2, “Example — Stop a server with stop_asiq.”

Starting the Sybase IQ Agent

If you have installed Sybase Central, you now need to start the Sybase IQ Agent. If you plan to run a mixed-mode multiplex, start the IQ Agent only on the query server(s). Be sure to specify the correct IQ Agent port for each connection. For details, see *Sybase IQ System Administration Guide*.

Restarting after upgrading

After upgrading, Sybase recommends that you start all servers in multiplex mode and synchronize the query servers.

Verifying databases after upgrade

Run sp_iqcheckdb to verify the consistency of the upgraded databases. This may produce errors if you did not restart all servers in multiplex mode and synchronize the query servers after upgrading.

Note In this step, you run the IQ 12.6 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 the "System Recovery and Database Repair" chapter in the IQ version 12.6 *Sybase IQ Troubleshooting and Error Messages 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 startup parameters in *default.cfg* to your *params.cfg* file. The -gl parameter, for example, is required for server startup in version 12.4.3 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 *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 non-default server startup options. For more information, see sp_iqcheckoptions in the chapter "System Procedures" in *Sybase IQ Reference Manual*.

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

Upgrading 12.4.3 multiplex databases to 12.6

You must upgrade all multiplex databases to version 12.4.3 before you can follow the instructions in this section.

Upgrading 12.4.3 databases

To upgrade 12.4.3 multiplex databases to 12.6, use the following procedure:

❖ **Upgrading 12.4.3 multiplex databases to 12.6**

Note On UNIX systems, you may optionally install Sybase IQ 12.6 software on all the servers in a separate directory from the previously installed version before starting the upgrade process.

Once the new directories are ready, follow these steps:

1 Shut down all the servers.

2 Install Sybase IQ 12.6 on the write server's system. On UNIX, you can do this before shutting down the servers. On Windows, installation forces a system reboot.

3 On UNIX systems only, stop the IQ Agent on the write server's system and restart it using the 12.6 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
```

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

5 Start the write server in single node mode using the -iqmpx_sn 1 switch. *Note that 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.

Note
Sybase IQ 12.6 enforces 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 with dbisqlc or dbisql as DBA. *Make sure that no other users connect during the upgrade process* and 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 viii. Upgrade the database to 12.6 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.

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.

6 Reconfigure the database definitions, as follows.

Issue the following SQL statement:

```
call sp_iqmpxdropserverdbspaces('<write_server>')
```

Note The <write_server> specified for sp_iqmpxdropserverdbspaces must be the original multiplex write server name, not the <upgrade_server> name used to start the server in Step 4.

If your multiplex has a write server and no query servers, also issue the following statement to convert to a non-multiplex database:

```
call sp_iqendmpx();
```

Now that you have a non-multiplex database, continue at step 7 in "Upgrading servers and databases to 12.6" and skip the remaining steps in this procedure.

7 Stop the upgrade server. Start Sybase Central and use it to start the write server.

8 Connect to the server as DBA with dbisqlc or dbisql.

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

```
call sp_iqmpxsetpublisher()
call sp_iqmpxaddremoteusers()
```

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.

10 Install Sybase IQ 12.6 on each query server system, if not done in advance. Windows systems will reboot as part of software installation.

11 (UNIX only) Stop and restart the IQ Agent in the 12.6 environment on each query server.

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

All servers in the multiplex environment are now running version 12.6.

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 titled "Migration" in *Sybase IQ System Administration Guide* chapter "Backup and Data Recovery." 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 41 for other items you may want to check after upgrading.

Migrating databases to a 64-bit system

The procedures in this section describe 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 12.6.

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

1 Back up the database.

Note If you created your Sybase IQ database on a Linux 32-bit version prior to Sybase IQ 12.6 ESD2, you must first install IQ 12.6 ESD2 for Linux 32-bit and create a new data backup before migrating to the Linux 64-bit version.

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 upgrading

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 12.6 to a separate location from the directory where you installed previous Sybase IQ software.

❖ **Before upgrading**

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.

Sybase IQ 12.6 ESD2 or higher supports migration between Windows and Linux.

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

Platform	AIX64	HP-UX64 PA-RISC	HP-UX64 Itanium	IBM Linux on POWER	SunOS64
AIX64	12.5 to 12.6	12.5 to 12.6 12.6 to 12.6	12.5 to 12.6 12.6 to 12.6	12.5 to 12.6 12.6 to 12.6	12.5 to 12.6 12.6 to 12.6
HP-UX64 PA-RISC	12.5 to 12.6 12.6 to 12.6	12.5 to 12.6	12.5 to 12.6 12.6 to 12.6	12.5 to 12.6 12.6 to 12.6	12.5 to 12.6 12.6 to 12.6
HP-UX64 Itanium	12.5 to 12.6 12.6 to 12.6	12.5 to 12.6 12.6 to 12.6	12.5 to 12.6	12.5 to 12.6 12.6 to 12.6	12.5 to 12.6 12.6 to 12.6
IBM Linux on POWER	12.6 to 12.6	12.6 to 12.6	12.6 to 12.6	Not a migration	12.6 to 12.6
SunOS64	12.5 to 12.6 12.6 to 12.6	12.5 to 12.6 12.6 to 12.6	12.5 to 12.6 12.6 to 12.6	12.5 to 12.6 12.6 to 12.6	12.5 to 12.6 12.6 to 12.6

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

Platform	Linux32	Linux64	WIndows32
Linux32 **	12.5 to 12.6	12.5 to 12.6 12.6 to 12.6	12.5 to 12.6 12.6 to 12.6
Linux64	12.6 to 12.6		12.6 to 12.6
Windows32	12.5 to 12.6 12.6 to 12.6	12.5 to 12.6 12.6 to 12.6	12.5 to 12.6

IMPORTANT!
** If you created your Sybase IQ database on a Linux 32-bit version prior to Sybase IQ 12.6 ESD2, you must first install IQ 12.6 ESD2 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.

8 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.

For more information, see “Upgrading servers and databases to 12.6” on page 36.

CHAPTER 4

Configuring Sybase IQ

About this chapter

This chapter tells how to configure Sybase IQ.

Topics

This chapter includes the following topics:

Running client applications

Sybase IQ Version 12.6 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.

ASA 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 ASA, but only if these applications use the system tables, views and procedures that are found in ASA. System procedures, catalog tables, and views available in ASA 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.

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 Sybase IQ servers with clients on a Windows platform or the platform of the IQ server. To connect clients on 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 viii.

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, almost always the Merant Driver Manager. Other tools need the driver manager but do not ship with one. These tools require special attention. The most popular tool in this category is SAS, which does not ship a driver manager in the base product. The simple solution for SAS users is to get the SAS Access module for Microsoft SQL Server. This module includes the SAS support software, the Merant Driver Manager, and the Merant ODBC Driver for Microsoft SQL Server (which can be deleted because it is not used). For products that do not have an option, the best solution is to purchase the Merant Data Direct ODBC kit, which is supported to work with the driver, but is expensive.

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. Start the ODBC Administrator on your Windows client system. On Windows 2000, ODBC Administrator is in the Sybase program group.

   To configure a 32-bit ODBC Driver, select Settings > Control Panel > ODBC Data Sources. (This runs odbcad32.exe.)

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=fiona-pc: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.

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 12.6 > 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, your *.odbc.ini* file must be located in one of the following directories. Sybase IQ searches the directories in the order listed:

- Current directory
- $ODBCINI
- Directory specified by the $ODBCHOME environment variable
- Directory specified by the $HOME environment variable

Sybase IQ ignores the following environment variables:

- $ODBC_HOME
- $ODBC_INI

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 options, 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 options that you want to set whenever you start your server. 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 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 -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:

```
#These are the protocols:
-x tcpip(port=3333)
```

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
```

Maintaining a secure environment

To maintain a secure environment when using Sybase IQ, system administrators must:

- Be aware that Sybase IQ relies on the provided Adaptive Server Anywhere database engine to provide the database functionality.
- Be non-hostile, appropriately trained, and follow all administrative guidance.
- Ensure that the IT environment provides support commensurate with Sybase IQ expectations.
- Ensure that the IT environment provides a time source that creates reliable timestamps. Generally, the hardware provides this.
- Ensure that the IT environment protects Sybase IQ and its assets from external interference or tampering.
- Provide authorized administrators with the necessary information for secure management of Sybase IQ.
- Install, configure, manage, and maintain Sybase IQ according to its technical manuals and support publications.
- Follow applicable security policies and Sybase IQ system administration guidelines to establish and maintain security.

- Ensure that general-purpose computing capabilities are unavailable on Sybase IQ servers, except for those services needed to operate, administer, and support the data warehouse.
- Provide physical security within the domain for the value of the IT assets protected by Sybase IQ and the value of the stored, processed, and transmitted information.
- Protect the IT environment and its assets from external interference, tampering, and unauthorized disclosure.
- Install, configure, manage, and maintain each IT entity Sybase IQ relies on for security functions in a manner appropriate to the entity and consistent with the security policy of Sybase IQ and the relationship between them.
- Ensure that sessions are never left unattended.

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