



Installation and Configuration Guide

SAP Sybase IQ 16.0

Windows

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Preparing for Installation

Read this section before you install SAP® Sybase® IQ.

About SAP Sybase IQ

SAP® Sybase® IQ is a high-performance decision-support server designed specifically for mission-critical business intelligence, analytics, and data warehousing. Component Integration Services within SAP Sybase IQ provide direct access to relational and non-relational databases on mainframe, UNIX, or Windows servers.

Supported Server Platforms

SAP Sybase IQ is compatible with these platforms and operating systems.

- Microsoft Windows XP (x64) for 64-bit systems - Service Pack 2
- Microsoft Windows 2008 for 64-bit systems - Service Pack 1
- Microsoft Windows 7 for 64-bit systems

Supported Client Platforms

SAP Sybase IQ includes a network client for all supported server platforms.

SAP Sybase IQ Network Client for Windows includes 32-bit ODBC Windows drivers, which allow you to connect to SAP Sybase IQ from third-party 64-bit Windows applications, and 64-bit Windows applications written in C++.

Licensing Requirements

All product editions except the Evaluation Edition require a license. Optional features are sold and licensed separately.

Whether you install a licensed or evaluation edition, you have 30-day access to all features and options. To use an option beyond the 30-day evaluation period, you must purchase and install an appropriate SAP Sybase Software Asset Management (SySAM) license.

The e-mail message or Web key you receive when you purchase an SAP Sybase product provides specific product and licensing information. Before installing and configuring any product edition, know which features you are licensed to use.

Installation Media

SAP Sybase IQ installation media includes software for server and client installations.

Table 1. SAP Sybase IQ Installation Media.

| Media | Description |
|----------------------------|--|
| SAP Sybase IQ Server Suite | Installs server components and other support tools. |
| SAP Sybase IQ Client Suite | Installs the components required for client connections to a SAP Sybase IQ server. |

Planning Your Installation

The installation process depends on whether you are installing for the first time, upgrading from a previous version, or migrating your databases to a new hardware platform.

Note: Sybase Control Center is a Web-based tool for managing and monitoring SAP Sybase servers, including single-node and multiplex servers. If you plan to use SCC to manage your servers, see the *Sybase Control Center Installation Guide* before you install.

Installing For the First Time

Follow these steps to install SAP Sybase IQ for the first time.

- Read the release bulletin for the latest information. See the special installation instructions section for any installation instructions not included in this document.
- Complete all pre-installation tasks. Apply any required operating system patches, check to see that there is sufficient disk space and memory, and update any necessary configuration changes.
- Determine the license model you want to use. SySAM supports served and unserved license models. See the *Sybase Software Asset Management (SySAM) 2 Users Guide* to determine which model is best suited for your environment.
- Use the product and licensing information you received from SAP Sybase to log in to the SAP Sybase Product Download Center at: <https://sybase.subscribenet.com> or SAP® Service Marketplace at <http://service.sap.com/licensekeys> and generate a license key for your software.
- Install SAP Sybase IQ server components, activate your license, then start and test your server.
- Install and configure SAP Sybase IQ client components.

Upgrading From an Earlier Version

Follow these general guidelines when you install a new version of SAP Sybase IQ.

- Uninstall the version currently installed on your system, then install the new version. Proceed as if you were installing for the first time.
- Upgrade your client tools. Although you can use the current version of the client tools to connect to an earlier server version, some options, tools, and objects may not be available.

Upgrading a Multiplex Database

Before upgrading an existing 15.x multiplex database to SAP Sybase IQ 16.0, you must follow these steps:

1. Shutdown all multiplex servers.
2. Start the 15.x coordinator with the **-iqmpx_sn 1** server option. This step is required to clear out all multiplex related metadata which can interfere with an upgrade.
3. Shut down the 15.x server.
4. Follow the database upgrade steps in the *SAP Sybase IQ Migration Guide*.

Additional Information

Migration Guide > Database Upgrades

Avoiding Environmental Issues

Installing SAP® Sybase SQL Anywhere and SAP Sybase IQ on different machines avoids potential start-up problems.

Install SQL Anywhere and SAP Sybase IQ on different host machines. When you install both products on the same machine, the environment variables for the product installed last overwrite those of the product installed first, causing start-up problems for the first product.

Changing Hardware Platforms

Although SAP Sybase IQ Server Suite is no longer available for 32-bit platforms, you can move a 32-bit database to a 64-bit platform, and move a database from one platform to another.

Additional Information

- *Migration > Hardware Changes > Moving 32-Bit Databases to 64-bit Platforms*
- *Migration > Hardware Changes > Converting to a new hardware platform*

Planning for Distributed Query Processing or High Availability

Distributed query processing can benefit from an optional high-speed interconnect. Use scalable interconnect technology to connect multiplex nodes.

For best performance, use:

Preparing for Installation

- A high-speed network interconnect providing a local network that connects all multiplex nodes. Use an interconnect bandwidth of 1Gb or higher or the highest bandwidth, lowest latency interconnect available.
- Two physically separate network interfaces for each multiplex node:
 - A public network for multiplex interconnection traffic and client traffic.
 - A private network for multiplex interconnect traffic only, excluding external client traffic. Currently, multiplex interconnects support only the TCP/IP standard.These two networks improve security, fault-tolerance, and performance.
- A switch that enables high-speed communication between nodes.
- Network cards that reside on different fabrics so that the multiplex survives network failure. Separate the public and private networks physically.
- Private interconnect fabrics that contain only links to machines participating in the multiplex. Private interconnect for all multiplex nodes should connect to the same switch, which connects to no other public switches or routers.
- Redundant network interface cards added to private or public networks if desired. The private and public connection information allows for multiple IP addresses on each.

Preinstallation Tasks

Perform the following tasks before you install SAP Sybase IQ.

Check for Operating System Patches

Check with your vendor and apply the latest operating system patches. Do not use a patch that is earlier than the version suggested for your operating system.

Increase the Swap Space

The recommended minimum swap space is at least 1GB. Certain operations may cause the memory usage to grow dynamically. Changing the way SAP Sybase IQ uses buffers can dramatically change the way it uses memory.

Depending on the load, 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.

License Server Requirements

SAP Sybase IQ requires SySAM license server version v11.6.1 or later, which is distributed on the SAP Sybase IQ Server Suite installation media. Using an older SySAM server can cause the server to become unresponsive. Install the license server before you install SAP Sybase IQ.

To check the version of your current SySAM license server, open a console or command prompt, change to %SYBASE%\SYSAM-2_0\bin, and enter:

```
lmutil lmver lmgrd
```

If you currently use a license server to host SySAM licenses for other Sybase products:

- Uninstall your current license server
- Install the license server distributed on the SAP Sybase IQ Server Suite DVD
- Rehost your licenses

Rehost your SySAM licenses after you install the new license server.

Additional Information

Sybase Software Asset Management (SySAM) 2 Users Guide

Enable 4GT

Enabling 4-gigabyte tuning (4GT) increases the amount of physical memory available to memory-intensive applications running on Windows Server 2003, Enterprise Edition, or Windows Server 2003, Datacenter Edition.

To enable 4GT, add the /3GB parameter to the start-up lines in the `boot.ini` file by. For example:

```
[boot loader] timeout=5 default=multi(0)disk(0)rdisk(0)
partition(1)\WINNT
[operating systems] multi(0)disk(0)rdisk(0)
partition(1)\WINNT="Microsoft Windows 2000 Professional"
/fastdetect /3GB
```

Note:

- Setting cache sizes with 4GT support allows the size of the main and temporary caches to be increased up to a combined total of 2GB.
 - With Windows platforms that support 4GT, a process can extend beyond the 2GB address space boundary, up to a total of 3GB. However, the total size of the two buffer caches cannot exceed 2GB. This is due to the Windows restriction that prevents a single memory allocation from crossing the 2GB boundary.
-

Windows Support Issues

Review these issues related to running SAP Sybase IQ on Windows Vista and Windows 2008.

Windows Security

Windows 2008 incorporates a new security model. User Account Control (UAC) is enabled by default and may affect the behavior of programs that expect to be able to write files, especially when the computer supports more than one user. Depending on where and how files and directories are created, a file created by one user may have permissions that do not allow another user to read or write to that file. If you install SAP Sybase IQ in the default directories, files and directories that require read/write access for multiple users are set up appropriately.

SAP Sybase IQ Elevated Operations Agent

Certain actions require privilege elevation to execute when run under User Account Control. The programs `dbelevate11.exe` and `iqdsn.exe` may require elevation in SAP Sybase IQ. The following dll files require elevation when they are registered or unregistered: `dbodbc11.dll` and `dboledb11.dll`.

Certain actions require privilege elevation to execute when run under User Account Control. The following programs may require elevation in SAP Sybase IQ: `SybaseIQservice16.exe`, `dbelevate11.exe`, and `iqdsn.exe`. The following dlls require elevation when they are registered or unregistered: `dbodbc11.dll` and `dboledb11.dll`.

On a system with User Account Control activated, you may receive an elevation prompt for the SAP Sybase IQ elevated operations agent. The prompt is issued by the User Account Control system to confirm that you want to continue running the identified program (if logged on as an administrator) or to provide administrator credentials (if logged on as a non-administrator).

Deployment Changes

The program `dbelevate11.exe` is used internally by SAP Sybase IQ components to perform operations that require elevated privileges. This executable must be included in deployments of .SAP Sybase IQ Administrator privileges are required to run **dbelevate**.

SAP Sybase IQ Executables Signed

SAP Sybase IQ executables are signed by Sybase, Inc.

Using an AWE Cache

To use an AWE (Address Windowing Extensions) cache on Windows 2008, you must run the database server as administrator. Starting a non-elevated database server with an AWE cache results in a warning that the database server must be run as an administrator to use AWE.

Samples

Samples now correctly handle SAP Sybase IQ installation path names that contain one or more spaces.

Windows Services

Windows 2008-compliant services are not allowed to interact with the desktop. SAP Sybase IQ services do not interact with the desktop (even if Allow Interaction with Desktop is enabled in the service definition). SAP Sybase IQ database servers can be monitored using the **dbconsole** utility or SAP Sybase IQ Control Center.

Verify Network Functionality

Make sure your network devices can communicate before you install SAP Sybase IQ.

SAP Sybase IQ uses networking software whenever the client and server components are installed on different systems. Use the **ping** command to and from another computer to verify that the server where you plan to install SAP Sybase IQ can use TCP/IP to communicate with other devices on your network.

Licensing Your Software

When you purchase a SAP Sybase product, you receive an e-mail message or a Web key that tells you how to generate SAP Sybase IQ license keys on the Web. The e-mail message or Web key also provides specific product and licensing information. Use this information when you generate your licenses.

Available Licenses

Available licenses are determined by the product edition and options you purchase.

Enterprise Edition (EE)

SAP Sybase IQ Enterprise Edition requires a CPU license and supports several licensing options.

Table 2. Enterprise Edition.

| Orderable License | Actual License | Required | Optional | Description |
|-------------------|----------------|----------|----------|--|
| CPU | IQ_CORE | • | | License restricts the number of cores (not CPUs) which an IQ server can use. |
| LOMO | IQ_LOB | | • | <p>Allows you to create and use CLOB or LOB columns. The number of LOB licenses must match number of cores.</p> <p>IQ_LOB license is included for customers who purchase an IQ_UDA license. An IQ_LOB license is also available as a separate purchase option.</p> <p>This license is required for 12.6 or 12.7 customers who already have a LOB license (IQ_LOB).</p> |

| Orderable License | Actual License | Required | Optional | Description |
|-------------------|----------------|----------|----------|---|
| VLDB MO | IQ_VLDBMGMT | | • | <p>Allows you to create multiple tablespaces and additional IQ dbspaces beyond the defaults allowed.</p> <p>You are allowed one IQ_SYSTEM_TEMP dbspace, one IQ_SYSTEM_MAIN dbspace, one IQ_SHARED_TEMP, and one additional user defined main store dbspace.</p> <p>To create any additional IQ dbspace requires the IQ_VLDBMGMT license. This license restricts the ability to create table partitions. An IQ_VLDBMGMT is required whenever an IQ server creates or starts with two or more IQ user dbspaces.</p> <p>Each VLDB license allows for 1 TB of storage. You will need to purchase one license for each additional TB of storage in the main store.</p> |
| ASO | IQ_SECURITY | | • | <p>Allows you to use column encryption, ECC Kerberos and FIPS. The number of ASO licenses must match cores</p> <p>This license is required for 12.6 or 12.7 customers who already have encryption (IQ_ENC).</p> |
| MPXO | IQ_MPXNODE | | • | <p>Allows you to start secondary multiplex nodes (readers/writers). The number of nodes must always be less than cores, as each multiplex server must have at least one core.</p> <p>This license is required for 12.6 or 12.7 customers who are already running multiplex. This is a new license requirement.</p> |
| IDBA-PSO | IQ_UDF | | • | <p>Allows you to define and run high-performance scalar and aggregate user-defined functions.</p> <p>This license is only available with approved third-party libraries.</p> |
| | IQ_IDA | | • | <p>Allows you to build, deploy and run your own C/C++ V4 User-Defined Functions (UDF).</p> <p>The IQ_IDA license will function as both the InDatabase Analytics Option and Partner Solutions license.</p> |

| Orderable License | Actual License | Required | Optional | Description |
|-------------------|----------------|----------|----------|--|
| UDA | IQ_UDA | | • | Allows you to use the IQ Text Search functionality, which lets SAP Sybase IQ search unstructured and semi-structured data. An IQ_UDA also includes an IQ_LOB license. This license applies to IQ TEXT indexes. |

Note: SySAM verifies optional feature licensing at various times. See *Troubleshooting SySAM > License Checkout and Verification* for a table that describes the events that determine when SySAM checks out different licenses.

Small Business Edition (SE)

SAP Sybase IQ Small Business Edition requires a CPU license.

Table 3. Small Business Edition.

| Orderable License | Actual License | Required | Optional | Description |
|-------------------|----------------|----------|----------|---|
| CPU | IQ_CORE | • | | Licenses the number of sockets (not CPUs) which an IQ server can use. |

Note:

- Server checks out licenses equal to the number of sockets. One license allows one socket, and you can have up to four licenses. The total number of cores should never exceed 4 (MAXCP).
 - Total concurrent IP connections ≤ 25 (MC)
 - Total main store ≤ 250 GB (MS)
-

Evaluation Edition

The Evaluation Edition does not require a license. The Evaluation Edition is an unlicensed server, which provides full access to all features and options available in the Enterprise Edition. To run an unlicensed database beyond a 30-day evaluation period, however, you must purchase and install an appropriate license.

Express Edition

Unlike the Evaluation Edition, the Express Edition does not expire, but does place some limits on the way you deploy your server.

Available at no cost, the SAP Sybase IQ Express Edition supports all options and features available in the Evaluation Edition. The Express Edition includes a new IQ_XE SySAM license, which is installed as part of the Express Edition server package.

Unlike the Evaluation Edition, which limits server access to a 30-day appraisal period, the IQ_XE SySAM license does not expire. However, the IQ_XE license restricts the aggregated size of all IQ main dbspaces to a size of 5GB or less, and does not allow you to add any other incremental license options. The SAP Sybase IQ Express Edition is not eligible for production deployment and is not supported by SAP Sybase Customer Service and Support (CS&S).

Single Application Edition (SA)

SAP Sybase IQ Single Application Edition requires a CPU license.

Table 4. Single Application Edition.

| Orderable License | Actual License | Required | Optional | Description |
|--------------------------|-----------------------|-----------------|-----------------|---|
| CPU | IQ_CORE | • | | Licenses the number of cores (not CPUs) which an IQ server can use. |

Note: Other limits set by the SA license

- Total cores per server <= 64 (MAXCP)
 - Total number of user tables <= 25 (MT)
 - Total number of columns <= 100 (MV)
 - Total number of mpx nodes <= 1 (MSN)
-

Before You Generate Your License

Follow these steps before you generate your license.

Read the SySAM Documentation

Review the SySAM documentation for specific information about SySAM licensing, license models, and procedures.

- *Sybase Software Asset Management (SySAM) 2 Users Guide* introduces asset management concepts and provides instructions for establishing and administering SySAM 2 licenses.

- *SySAM 2 Quick Start Guide* tells you how to get your SySAM-enabled Sybase product up and running quickly.
- *FLEXnet Licensing End User Guide* explains FLEXnet Licensing for administrators and end users and describes how to use the tools which are part of the standard FLEXnet Licensing distribution kit from Sybase.

Decide On the License Model You Want To Use

A license model refers to the way you set up your license files for your licensed programs. License files can reside on a central, networked license server in a served license model or on the machine running the licensed program in an unserved license model.

Decide on the license model you want to use before you generate your license file. For information about served and unserved licenses, and which model is best suited for your environment. See the *Sybase Software Asset Management (SySAM) 2 Users Guide*.

Get Your Host ID

To install or use a license server, you need the license server host ID.

FLEXnet Licensing uses different machine identifications for different machine architectures. If you have a copy of the FLEXnet licensing utilities installed, you can use the `lmhostid` utility to print the exact host ID that FLEXnet Licensing expects to use on any given machine. `lmutil` is included in your product distribution, or you can download a copy from the FLEXnet Publisher download page at: http://www.globes.com/support/fnp_utilities_download.htm#unixdownload

You can also use a system-level command to find the host ID. For platform-specific commands and examples, see Hostids for FLEXnet Licensing-Supported Platforms at: <http://www.flexerasoftware.com/products/flexnet-publisher/requirements.htm>.

Note: Some platforms derive the host ID from the network adapter address. If your machine has multiple network adapters, the command you use to get the host ID may return one host ID for each network adapter. If this occurs, choose only one from the list of host IDs. Use the value associated with the primary wired Ethernet adapter. Do not use values associated with internal loopback adapters.

Determine the Host Name

You must specify the host name of the license server for served licenses. Although the host name is optional for unserved license models, providing the host name for all license types can simplify future license administration tasks.

Choose a Port Number

If you plan to install a license server or use an existing license server, you need to know the TCP/IP port number that the license server will use to serve your licenses.

If you do not specify a port number, the license server uses the first available port in the range of 27000 to 27009. If you are using three-server redundancy, specify a port number outside of this range.

Generating a SySAM License

Login to SAP Sybase Product Download Center or SAP Service Marketplace. Refer to the Web key or email you received for information about your account.

When you purchase SySAM 2–enabled SAP Sybase products, you must generate, download, and deploy SySAM product licenses.

- Before you generate your license, you need the host ID and host name of the server where you plan to install SAP Sybase IQ.
- Served licenses require a license server. If you do not plan to use an existing license server, you must install one before you install SAP Sybase IQ.

1. Start your browser, and do one of the following:

- If you purchased your product from SAP Sybase or authorized SAP Sybase reseller:
Log in to the SAP Sybase Product Download Center at: *https://sybase.subscribenet.com* to generate license keys for SAP Sybase products that use SySAM 2-based licenses.
- If you ordered your product under an SAP contract and were directed to download from SAP Service Marketplace:
Log in to the SAP Service Marketplace at: *http://service.sap.com/licensekeys* to generate license keys for SAP Sybase products that use SySAM 2-based licenses.

2. Follow the online instructions.

3. Save your license to a temporary location on the local file system. You must save the license file with a `.lic` extension.

Note: The process you use to generate license keys on the Sybase Product Download Center at: *https://sybase.subscribenet.com* depends on whether you purchased your product directly from Sybase, or from a Sybase reseller.

Installing a New License Server

The SAP Sybase IQ Server Suite installation media includes SySAM Network License Server utilities you can use to install a new license server.

Prerequisites

- Use an account with Administrator privileges to log in to Windows.
- Stop and shut down all programs before you run the installation.

Task

1. Insert the installation media into the drive.
If the installer does not start automatically, start Windows Explorer, change to your DVD drive, and choose:
`setup.exe`
2. On the Welcome screen, click Next.
3. Choose an installation directory, then click Next.
4. Choose Custom as the installation type you want to perform, click Next.
5. Unselect all installation options except SySAM License Utilities.
6. Select SySAM License Server, click Next.
7. Review the installation summary, then click Install.

Starting a License Server

Copy your license to the license directory, and start the license server from a console or command line.

Prerequisites

If you installed your license server on Windows 7, you must use the **Run as Administrator** command to start and stop the license server.

Task

1. From a console or command line, copy the license file you generated to the `%SYBASE%\SYSAM-2_0\licenses` directory on the network license server.
2. Change to `%SYBASE%\%SYSAM-2_0\bin`, then refresh or restart the license server:

| | |
|---------------------|--|
| sysam start | <p>Start the license server.</p> <p>Perform this step if the license server is not running. After you perform this step, repeat step 2 to verify that the server is running.</p> |
| sysam reread | <p>Make the license server read the new license file.</p> <p>Perform this step if the license server is already started.</p> |

3. To verify that the license server is running, enter `sysam status`.

Note: The SySAM License Server Installer installs both IPv4-only and IPv4/IPv6 dual-stack license server binaries during installation and configures use of IPv4-only binaries.

Use the **sysam configure** [IPv6 | IPv4] to configure the appropriate version of the license server. For example, **sysam configure IPv6** will configure use of the IPv4/IPv6 dual stack binaries. For more information, see *SySAM Users Guide*.

Server Installations

Read this section for step-by-step server installation instructions.

Server Components

Server components are grouped by feature. Items marked as default are installed in typical installations. Optional items can be installed in custom installations.

Table 5. SAP Sybase IQ Server Components.

| Feature | Components | De- fault | Notes |
|-----------------------|--|--------------|---|
| SAP Sybase IQ | SAP Sybase IQ Server | • | Installs server software, client tools, ODBC drivers, and Web application development tools. |
| | SAP Sybase IQ Client | • | |
| | SAP Sybase IQ Web Drivers | • | Additional Connectivity Language Modules support character sets for Eastern Europe, Turkey, and Greece. |
| | SAP Sybase IQ ODBC Driver | • | |
| Sybase Control Center | Management User Interface for SAP Sybase IQ | • | Sybase Control Center (SCC) is a Web-based administrative console for Sybase products. At least one SCC server is required to deploy Sybase Control Center. |
| | Remote Command and Control Agent for SAP Sybase IQ | • | Sybase Control Center Agent is required to manage SAP Sybase IQ servers within Sybase Control Center. |
| jConnect | jConnect 7.0 for JDBC | • | jConnect is a Type 4 JDBC driver, which is entirely Java-based. jConnect 7.0 is JDBC 4.0 compliant |
| SySAM | SySAM License Server | | Installs FLEXnet Licensing utilities to support your licensing model. |
| | SySAM License Utilities | • | |

Sybase Control Center

Sybase Control Center is a Web-based administrative console, which lets you manage and monitor SAP Sybase IQ in a graphical environment.

Sybase Control Center (SCC) includes a Management User Interface, Remote Command and Control Agent, and Web client. The Management User Interface, or SCC server, manages communication between the SCC agent and client. The SCC agent is installed with the SAP Sybase IQ server, and continually broadcasts information about the server to subscribing clients via the SCC server. Messages from an SCC client pass through the SCC server to the agent, which in turn, processes the request on the SAP Sybase IQ server.

SCC activities range from simple resource monitoring to complete database administration. Specific user activities are determined by the role assigned to the user initiating the request.

Server Deployment

A single SCC server can monitor up to 100 resources. (The number of resources one SCC server can effectively monitor depends on the complexity of the monitored resources, the frequency of data collection, the number of concurrent SCC users, and the hardware configuration of the host on which SCC is running.) To monitor more than 100 resources, install additional SCC servers and distribute the resources among them. The monitoring limit applies whether you install SCC on the same machine as a managed server or on a dedicated machine.

Installation locations

SCC may collect and store performance data for every server it monitors. Because data collection can use significant quantities of CPU cycles, disk space, and network resources, SCC can affect the performance of other servers sharing the same host machine. Choose your installation location carefully before installing an SCC server on the same host as a managed server in a production environment.

Table 6. SCC Installation Locations.

| Location | Description |
|-----------------------------------|---|
| Dedicated SCC Host | Installing an SCC server on a dedicated host lets you manage all SAP Sybase servers from a single location. This method is recommended for production environments. |
| Shared SCC and SAP Sybase IQ Host | Installing an SCC and SAP Sybase IQ server on the same host. This deployment method is suitable for test environments, but not recommended for production. |

| Location | Description |
|---------------------|--|
| Existing SCC server | Unless the current SCC server is approaching the resource limit or requires an upgrade, a separate SCC server installation may not be necessary. |

If you install SCC on the same machine as an SAP Sybase IQ server, consult the system requirements for both SCC and the SAP Sybase IQ server and make sure that the host machine provides ample CPU, RAM, disk, and network resources for both products. The resources required by an SAP Sybase IQ server vary a great deal based on the server's configuration, as do the resources required by SCC. In general, SCC uses more resources to manage more complex servers. SCC also uses more resources when it is configured to run more frequent data collections.

Note: For additional SCC installation options, see:

- *Sybase Control Center Installation Guide* – provides complete installation, configuration, and troubleshooting procedures. This document is available on the Web at: <http://infocenter.sybase.com/help/topic/com.sybase.infocenter.dc01002.0327/doc/html/title.html>.
 - *Sybase Control Center for SAP Sybase IQ* – includes SAP Sybase IQ configuration procedures, user assistance, and troubleshooting information.
-

SCC Installation Scenarios

Review these SCC deployment scenarios to determine which SAP Sybase IQ installation method to use and when.

Dedicated SCC Host

Install SCC and SAP Sybase IQ servers on separate hosts in a production environment.

1. Start the SAP Sybase IQ Installer in GUI or Console mode on the SAP Sybase IQ host.
2. Run a **Custom Install**.
3. Unselect the **Management User Interface for Sybase IQ** option, then complete the installation.
4. Start the SAP Sybase IQ Installer in GUI or Console mode on the SCC host.
5. Run a **Custom Install**.
6. Unselect all installation options, except the **Management User Interface for Sybase IQ** option, then complete the installation.

Shared SCC and SAP Sybase IQ Host

In a test environment, you may want to install SAP Sybase IQ and SCC on the same host.

1. Start the SAP Sybase IQ Installer in GUI or Console mode.
2. Run a **Typical Install**.

Server Installations

3. Follow the instructions on the screen.

Shared SCC Server

To use an existing SCC server for SAP Sybase IQ.

1. Start the SAP Sybase IQ Installer in GUI or Console mode.
2. Run a **Custom Install**.
3. Unselect the **Management User Interface for Sybase IQ**.
4. Click **Next**, and then follow the instructions on the screen.

SCC Installation Options

Review these settings and options before you install SCC.

Sybase Control Center (SCC) Authentication

Initial passwords for SCC administrator and SCC agent are set in the SAP Sybase IQ installer. SCC passwords must have at least 6 characters.

| Role | Requirements |
|-------------------|---|
| SCC Administrator | SCC Administrator is a preconfigured login with access to all SCC administration features. The default SCC Administrator user name is <i>sccadmin</i> . |
| SCC Agent User | SCC Agent User name for authentication of the agent. The default SCC Agent User name is <i>uafadmin</i> . |

Network Ports

SCC uses TCP ports for a variety of services. You can choose new RMI, HTTP, or HTTPS port numbers in the installer if the default ports are unavailable.

Table 7. Sybase Control Center Port Numbers.

| Port Name | Default Port Number | Required? | Description |
|-----------|---------------------|-----------|---|
| RMI | 9999 | Yes | SCC server port used for RMI protocol access. |
| HTTP | 8282 | Yes | SCC server port used for HTTP Web access to the server. All HTTP traffic is redirected to the secure HTTPS channel. |
| HTTPS | 8283 | Yes | SCC server port used for secure HTTPS Web access to the server. All HTTP traffic is redirected to the secure HTTPS channel. |

| Port Name | Default Port Number | Required? | Description |
|-------------------|---------------------|-----------|--|
| Database | 3638 | Yes | SCC server repository database port; used by several services. |
| Messaging Service | 2000 | Yes | SCC server messaging port. |
| Tds | 9998 | No | SCC server port used for Tabular Data Stream™ (TDS) protocol access. |
| Jini Http | 9092 | No | Jini HTTP port for Jini discovery services. |
| Jini Rmid | 9095 | No | Jini RMID server port for Jini discovery services. |
| Ldap | 389 | No | LDAP discovery service adaptor port. |

SCC Server Start Up Option

If you install an SCC server, the SAP Sybase IQ installer includes an option that lets you start the server from within the installer.

Additional Information

- Sybase Control Center Installation Guide > Planning Your Installation > System Requirements
- Sybase Control Center Installation Guide > Planning Your Installation > SCC Network Ports

Other SAP Sybase IQ Installation Options

Installing a licensed copy of SAP Sybase IQ Server Suite includes configuration options not available in the evaluation edition.

License Keys

The license you downloaded from the *Sybase Product Download Center* or *SAP Service Marketplace* Web site contains the license key(s) for your software.

| Option | Action |
|----------------------|---|
| Specify License Keys | Browse to the location of license file and choose the license file. |
| Use License Server | Identify the license server <i>Host Name</i> and <i>Port Number</i> . |

| Option | Action |
|-----------------------------|--|
| Install without License Key | Click Continue installation without a license key . If you don't specify a license, you can continue to install without a license, but you must obtain the required license key(s) within 30 days or the server will stop functioning. |

Email Alerts

To configure email alerts, you must provide:

- SMPT server host name
- SMPT server port number
- Sender email
- Recipient emails (for multiple recipients, separate each email address with a comma)
- Message severity for email alerts (Information, Warning, Error)

What a Server Installation Does

A typical installation installs the server and other components into a parent directory on the host machine.

Directory Variables

SAP Sybase IQ uses environment variables that point to different installation directories.

Table 8. Directory Variables.

| Variable | Description |
|--------------------------------|---|
| <code>%SYBASE%</code> | Points to the parent installation directory. This variable is set by the installer. |
| <code>%IQDIR16%</code> | Points to the product installation directory. This variable is set by the installer. |
| <code>%ALLUSERSPROFILE%</code> | Points to the Windows local resources directory. The location of these resources depends on the Windows version: <ul style="list-style-type: none"> • On Windows XP, these resources are located in the <code>C:\Documents and Settings\All Users\SybaseIQ</code> directory. • On Windows 7, these resources are located in the <code>C:\ProgramData\SybaseIQ</code> directory. |

Note: Do not install SAP Sybase IQ into a destination directory or path that contains spaces. The GUI installer warns you if you try to install to an invalid path; other installation methods do not display this warning.

Parent Installation Directory

The `%SYBASE%` directory contains the files, scripts, and other objects required to support the server.

Table 9. Parent Installation Directory.

| Directory | Contents |
|-------------------------|---|
| charsets | Character sets available for compatibility with Adaptive Server Enterprise. |
| collate | Collation sequences available for compatibility with Adaptive Server Enterprise. |
| ini | Various configuration files. |
| IQ-16_0 | Subdirectories, scripts, and property files required to run the server. |
| jConnect-7_0 | JDBC 4.0 compliant driver for SAP Sybase IQ. |
| jre | Java runtime environment. |
| jutils-3_0 | Version 3.0 Java-based utilities, including Ribo, a Tabular Data Streams utility. |
| locales | Language modules for system messages and date/time formats. |
| log | Installation log files. |
| OCS-15_0 | Open Client tools and utilities. |
| SCC-3_2 | Sybase Control Center startup and configuration files. |
| Shared | Objects and libraries shared by other components, including the Java Runtime Environment (JRE). |
| Sybase_Install_Registry | Server registry file that holds information related to the installed products. Do not modify. |
| sybuninstall | Subdirectories for scripts that uninstall SAP Sybase IQ and SySAM. |
| SYSAM-2_0 | SySAM licenses and utilities. This directory contains three subdirectories: <code>bin</code> , <code>licenses</code> , and <code>log</code> . |
| ThirdPartyLegal | Third party license terms and agreements. |

Product Installation Directory

%IQDIR16% is a *%SYBASE%* subdirectory that contains the files, scripts, and other objects required to run the server.

Table 10. Product Installation Directory.

| Directory | Contents |
|--------------------------|---|
| Assembly | ADO.NET and .NET assembly files. |
| Bin32 | Libraries required for 32-bit compatibility. |
| Bin64< <i>platform</i> > | Utilities you use to start and manage your server. |
| demo | A readme that identifies the location of the demo database and other local resources. |
| install | Installation history file. |
| java | Different JAR files. |
| logfiles | SAP Sybase IQ writes log files to this directory. |
| lsunload | Local Store Unload utility. |
| Scripts | Sample scripts and stored procedures. |
| SDK | Subdirectories for various language utilities. |
| SNMP | Definitions for Simple Network Management Protocol servers. |
| support | A Web page with links to online resources. |
| Sysam | Local SysAM configuration information. |
| unload | Various unload scripts, files, and utilities. |

Local Resources Directory

The *%ALLUSERSPROFILE%\SybaseIQ* directory contains local resources, including the demo database, server logs, and utilities.

| Directory | Contents |
|-----------|--|
| demo | Sample data and scripts for the demo database. |
| logfiles | Server log files. |
| samples | Sample scripts, drivers, and utilities. |

Installing Server Software

Server installation media supports GUI, console, and unattended (silent) installs.

Installing in GUI Mode

Use this option to set up your software in a graphic user interface (GUI) environment. The GUI installer is wizard-driven and supports all product editions and installation types.

1. Insert the installation media into the drive.

If the installer does not start automatically, start Windows Explorer, change to your drive, and choose:

```
setup.exe
```

2. Follow the instructions on the screen.
3. Remove the installation media from the drive.

Installing from the Command Line

Choose a command-line installation if you prefer a non-windowing interface or for developing custom installation scripts. Installing components in console mode is similar to installing in GUI mode, except that you run the installer from the command line, and enter text to select the installation options.

1. Insert the installation media into the drive.

If the installation program launches automatically, click Cancel to stop the installer.

2. From a command line, change to the setup directory.

The setup directory is the directory that contains `setupConsole.exe`, `installer.properties`, and other installation files.

3. Enter:

```
setupConsole.exe -i console
```

4. Follow the instructions on the screen.

Note: Selecting or deselecting a product feature typically installed with SAP Sybase IQ also selects or deselects all child components associated with that feature. To select individual components, omit the number of the main product feature, and choose the child components you want to install.

Installing in Unattended (Silent) Mode

Unattended or silent installations are typically used for updating multiple systems. Except for the absence of the GUI screens, all actions of InstallAnywhere are the same, and the result of

an installation in silent mode is exactly the same as one done in GUI mode with the same responses.

Prerequisites

A response file is a text file that contains installation options. You can override or edit the default response file, `installer.properties`, for use in subsequent installations. To override the default installation options, use the `-f` argument to point to a custom response file.

Task

1. Insert the installation media into the drive.

If the installation program launches automatically, click Cancel to stop the installer.

2. From a command line, change to the setup directory.

The setup directory contains `setupConsole.exe`, `installer.properties`, and other installation files.

3. Enter:

```
setupConsole.exe -f <responseFileName> -i silent  
-DAGREE_TO_SYBASE_LICENSE=true  
-DSYBASE_PRODUCT_LICENSE_TYPE=license
```

Table 11. Response File Arguments.

| Argument | Description |
|--|---|
| <code>-f <responseFileName></code> | Optional argument that includes the absolute path and file name of the response file. If you omit this argument, the installer defaults to <code>installer.properties</code> or other <code>.properties</code> file in the same installation directory. |
| <code>-i silent</code> | Switch that starts the silent installer. |
| <code>-DAGREE_TO_SYBASE_LICENSE=true</code> | Argument that indicates you accept Sybase end-user license agreement. |
| <code>-DSYBASE_PRODUCT_LICENSE_TYPE=license</code> | Required to install a licensed version of the software. |
| <code>-DUNINSTALL_DELETE_DATA_FILES=true</code> | Deletes unnecessary files after installation. |

Creating a response file

Start the installer from the command line and use the `-r` switch as an argument to create a response file. The installer starts a GUI installation and records your responses in a response

file. The response file is a text file that you can edit to change any responses prior to using it in any subsequent installations.

1. From the command line, enter:

```
setup.exe -r <responseFileName>
```

Where <responseFileName> includes the absolute path and file name of the response file.

2. Run the installer in GUI mode to record your actions in the response file.

Use an editor to change any responses for subsequent installations, if necessary.

Install Logs

Check the install logs to troubleshoot installation problems.

The installer writes a general log (`IQ_Suite.log`) that records all SAP Sybase IQ Suite installation activity and individual logs for each installed component. If an installation problem occurs, start with the `IQ_Suite.log`, then refer to the component log for specific details.

The installer also creates a set of corresponding `.out` files for each component `.log` file. These files capture different component installation activities. If the installer runs normally, some or all of these files may remain empty.

Table 12. SAP Sybase IQ Log Files.

| File Name | Contents |
|--|---|
| <code>conn_add_lang.log</code> | Additional Connectivity Language Modules |
| <code>conn_lang.log</code> | Connectivity Language Modules |
| <code>iq_agent.log</code> | SAP Sybase IQ Agent Plug-in |
| <code>iq_client_common.log</code> | Client components |
| <code>iq_client_ms.log</code> | Windows client components |
| <code>iq_client_web.log</code> | Web Drivers |
| <code>iq_odbc.log</code> | ODBC Driver |
| <code>iq_server.log</code> | Server components |
| <code>viq_shared.log</code> | Shared SAP Sybase IQ Configuration files |
| <code>IQ_Suite.log</code> | SAP Sybase IQ Server Suite installation summary |
| <code>IQ_Suite_Variable_Reference.log</code> | InstallAnywhere installation variables |

| File Name | Contents |
|-----------------|--|
| jconnect7.log | jConnect7 installation summary |
| jre6.log | Java Runtime Environment v6 installation |
| jre7.log | Java Runtime Environment v7 installation |
| lang.log | Language Modules |
| open_client.log | Open Client installation summary |
| scc_server.log | Sybase Control Center installation summary |
| sysam_util.log | SySAM License Utilities installation summary |

Solutions to Common Installation Problems

Check this section for solutions to common installation issues.

Table 13. Troubleshooting installation problems

| Problem | Possible Cause and Solution |
|---------------|---|
| Install fails | <p>Check the installer log: %SYBASE%/log/IQ_Suite.log</p> <p>The install log can help you trace the install progress and troubleshoot failed installations. The installer also writes individual logs for components included as part of the install to this directory.</p> |

Uninstalling Windows Servers

To uninstall SAP Sybase IQ, run the uninstaller from the Control Panel.

1. On the **Control Panel**, choose **Add or Remove Programs**.
2. Choose SAP Sybase IQ from the program list.
3. Click **Remove**.
4. Follow the instructions on the screen.

Testing Installed Products

This section tells you how to start SAP Sybase IQ and use the demo database to test your installation.

Demo Database

Many of the examples throughout the documentation use the demo database (`iqdemo.db`) as a data source. The demo database is installed as part of the SAP Sybase IQ Server Suite and resides on the server. Client access is provided by tools installed as part of the SAP Sybase IQ Client Suite.

Starting the Demo Database

Use the demo database to test your installation.

From the SAP Sybase IQ program group, choose **SAP Sybase IQ 16.0 > Start SAP Sybase IQ Demo Database**.

The first time you use this option, SAP Sybase IQ may prompt you for some additional information. Scripts that create and load the demo database are located in the `%ALLUSERSPROFILE%\SybaseIQ\demo` directory.

Table Names

Demo database table names and owners.

Table 14. Demo database table names

| Table Name | Owner |
|-----------------|--------|
| Contacts | GROUPO |
| Customers | GROUPO |
| Departments | GROUPO |
| Employees | GROUPO |
| FinancialCodes | GROUPO |
| FinancialData | GROUPO |
| Products | GROUPO |
| SalesOrderItems | GROUPO |

| Table Name | Owner |
|-------------|--------|
| SalesOrders | GROUPO |
| emp1 | DBA |
| iq_dummy | DBA |
| sale | DBA |

Running SAP Sybase IQ Server

Use the startup utility, **start_iq**, to start your server. **start_iq** is a command line utility that runs on all platforms and ensures that all required parameters are set correctly.

Starting a Server or Database

To use **start_iq** to start a server or database from the command line, change to a directory where the configuration and database files are located, and use the following command format:

```
start_iq [ server-options ] [ database-file
[ database-options ], ...]
```

- *server-options* include the database server name and other options that control the behavior of the server, for all databases that are running on that server.
- *database-file* is the file name of the catalog store. You can omit this option, or enter one or more database file names on the command line. Each of these databases is loaded and available for applications. If the starting directory contains the database file, you do not need to specify the path; otherwise, you must specify the path. You need not specify the .db file extension.
- *database-options* are options that you can specify for each database file you start, that control certain aspects of its behavior.

Default Startup Parameters

start_iq uses a default configuration file (`%IQDIR16%\scripts\default.cfg`) to set the default start-up parameters.

Table 15. Parameters set by start_iq

| Parameter | Value | Description |
|-----------|-------|---|
| -c | 48MB | Catalog store cache size. |
| -gc | 20 | Checkpoint interval. |
| -gd | all | Allows all users to start the database by connecting. |

| Parameter | Value | Description |
|------------|-------|---|
| -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 timeout set to 72 hours. Prevents users with long queries from being logged off over a long weekend. |

Note: If SQL Anywhere is installed on the same subnet as SAP Sybase IQ, the server must have a unique name. Both SQL Anywhere and SAP Sybase IQ servers default to the port **2638**.

Use a new port number for each server. Set each new port number in the `%IQDIR16%\scripts\default.cfg` file. Change the following line in each IQ database configuration file (for example, `%ALLUSERSPROFILE%\SybaseIQ\demo\iqdemo.cfg`) to update the port number:

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

Configuration Files

To override the default start-up parameters, store your options in a configuration file.

To start a server with a configuration file, use this syntax:

```
start_iq @configuration_filename.cfg dbname.db
```

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

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

```
start_iq @iqdemo.cfg -x 'tcpip{port=1870}' iqdemo.db
```

The **-x** parameter here overrides connection information in the `iqdemo.cfg` file.

A configuration file for the demo database (`iqdemo.cfg`) is installed in the `%ALLUSERSPROFILE%\SybaseIQ\demo` directory as an example.

Default Server Directories

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

Startup and Server Logs

SAP Sybase IQ writes start-up and server logs in the `%ALLUSERSPROFILE%\SybaseIQ\logfiles` directory:

Testing Installed Products

- Startup information is saved in the `iq_startup_nt.log` file.
- Server status is logged in the `servername.nnnn.srvlog` file.

The *nnnn* variable in the file name indicates the number of times the server has been started. For example, `localhost.0004.srvloglocalhost_iqdemo.0006.srvlog`

Additional Information

- *Utility Guide > start_iq Database Server Startup Utility > start_iq Server Options*

Starting and Stopping the Sybase Control Center Agent

(Optional) Launch or shut down the Sybase Control Center agent included with your Sybase IQ server.

Sybase Control Center is a Web-based tool for managing and monitoring Sybase servers, including SAP Sybase IQ single-node and multiplex servers. One SCC server can manage and monitor all the SAP Sybase IQ servers in your enterprise. SCC performs management tasks using the SCC agent, which is installed with each SAP Sybase IQ server.

For instructions on installing SCC, see the *Sybase Control Center Installation Guide*. For instructions on starting and stopping the SCC agent service and starting and stopping the SCC agent from the command line, see Sybase Control Center online help. Sybase Control Center documentation (including the installation guide and online help) is available at <http://sybooks.sybase.com/nav/summary.do?prod=10680>.

1. Use the **scc** script to start the SCC agent.

```
%SYBASE%\SCC-3_2\bin\scc.bat
```

2. Connect to the Sybase Control Center server. In your Web browser, enter: `https://scc-hostname:8283/scc`.

3. Log in.

When logging in to a newly installed Sybase Control Center for which secure authentication has not been configured, use the `sccadmin` account—the password is set during installation. For more information, see the *Sybase Control Center Installation Guide*.

Tip: If you use a Windows account to log in to SCC, enter your user name in the format `username@domain`. Omit top-level domain extensions such as `.com` or `.net`—for example, enter `fred@sap`, not `fred@sap.com`.

4. In SCC, register and authenticate your Sybase IQ server's SCC agent.
5. (Optional) Stop the SCC agent. To shut down from the `scc-console>` prompt, enter `shutdown`.

If you use SCC to manage your Sybase IQ server, leave the SCC agent running whenever Sybase IQ is running. The easiest way to do this is to run the SCC agent as a service that restarts automatically.

Running Interactive SQL

Interactive SQL is a utility that ships with SAP Sybase IQ that lets you execute SQL statements, build scripts, and display database data. Use Interactive SQL to connect to the server and run a sample query.

1. Select **Start > Programs > Sybase > Sybase IQ 16.0 > Interactive SQL 16.0**.
2. On the **Connect** dialog, enter:

| Tab Name | Field | Value | |
|-----------------|--------------------------|--|-------------|
| Identifica-tion | Authentication | Database | |
| | User ID | DBA or dba (case-insensitive) | |
| | Password | sql (case-sensitive) | |
| | Action | Connect to a running database on this computer | |
| | Server name | <localhost>_iqdemo | |
| | Database name | iqdemo | |
| Network | TCP/IP protocol op-tions | Host | <localhost> |
| | | Port | 2638 |

3. In the **SQL Statements** window, enter:

```
SELECT * FROM Employees
```
4. Press **F9** to run the query.

Note:

- Interactive SQL does not support jConnect. Use the SQL Anywhere JDBC Driver instead. jConnect is provided with SAP Sybase IQ for customer application backward compatibility.
 - As a general rule, the jConnect driver cannot use ODBC data sources. You can, however, use the jConnect driver with Interactive SQL and specify an ODBC data source.
-

Post-Installation Tasks

Perform these tasks after you install and test SAP Sybase IQ.

Verify Your License

Connect to the server and run **sp_iqlmconfig** to verify your license.

To verify your license, connect to the server, and run the **sp_iqlmconfig** stored procedure in Interactive SQL (**dbisql**). To verify the license from a custom license installation, check the %SYBASE%\SYSAM-2_0\log\SYBASE.log file. You can use iqdemo.db to perform this task.

A line that begins with "Checked out license..." indicates a successful license configuration. If you see a "Sysam: FLEXnet Licensing error:" message, check with your Sybase representative to resolve the issue.

Additional Information

Troubleshooting SySAM section and the *SySAM 2 Users Guide*.

Change the Default Connection Parameters

Change the default connection parameters to protect your system against unauthorized access.

Do not rely on the default connection parameters to secure your database against unauthorized access. Change these parameters to protect your data.

Table 16. Default Connection Parameters

| Parameter | Default Value |
|-------------|-------------------------------|
| User ID | DBA or dba (case insensitive) |
| Password | sql (case sensitive) |
| Port Number | 2638 |

Additional Information

- *Administration: Database > Security Overview*

Remove Sample Application Files

Before you deploy your server in a production environment, remove the sample client applications.

The SAP Sybase IQ Server Suite installation includes several directories that contain sample client applications, which are included for training purposes only. Remove these sample directories before you deploy your server in a production environment:

- `%ALLUSERSPROFILE%/samples`
- `%ALLUSERSPROFILE%/sdk`
- `$IQDIR16/samples`
-

Testing Installed Products

Client Installations

Installing client components lets you connect a client to a network server.

Client Components

Client components are grouped by feature. Items marked as default are installed in a typical installation. Optional items can be installed in a custom installation.

Table 17. SAP Sybase IQ Client Components.

| Feature | Components | De- fault | Notes |
|---------------|---------------------------|--------------|--|
| SAP Sybase IQ | SAP Sybase IQ Client | • | Installs client software, Web application development tools, and ODBC drivers. |
| | SAP Sybase IQ Web Drivers | • | |
| | SAP Sybase IQ ODBC Driver | • | |
| jConnect | jConnect 7.0 for JDBC | • | jConnect is a Type 4 JDBC driver, which is entirely Java-based. jConnect 7.0 is JDBC 4.0 compliant |

What a Client Installation Does

A typical client installation installs the network client components into a parent directory on a client machine.

Directory Variables

SAP Sybase IQ uses environment variables to point to different installation directories.

Table 18. Directory Variables.

| Variable | Contents |
|------------------|---|
| <i>%SYBASE%</i> | Points to the parent installation directory. This variable is set by the installer. |
| <i>%IQDIR16%</i> | Points to the SAP Sybase IQ installation directory. |

| Variable | Contents |
|--------------------------|--|
| <i>%ALLUSERSPROFILE%</i> | <p>Points to the Windows local resources directory. The location of local resources depends on the Windows version:</p> <ul style="list-style-type: none"> • On Windows XP, these resources are located in the C:\Documents and Settings\All Users\SybaseIQ directory. • On Windows 7, these resources are located in the C:\ProgramData\SybaseIQ directory. |

Parent Installation Directory

The *%SYBASE%* directory contains the files, scripts, and other objects required to support the client. The default *%SYBASE%* directory is C:\Sybase.

Table 19. Parent Installation Directory.

| Directory | Contents |
|-------------------------|---|
| IQ-16_0 | SAP Sybase IQ client components. |
| jConnect-7_0 | JDBC 4.0 compliant driver for SAP Sybase IQ. |
| Shared | Shared software components. |
| Sybase_Install_Registry | Client component registry file. |
| jre | Java Runtime Environment directory. |
| jutils-3_0 | Version 3.0 Java-based utilities, including Ribo, a Tabular Data Streams utility. |
| log | Client log file directory. |
| ThirdPartyLegal | Third-party license agreements. |
| sybuninstall | Subdirectories for scripts that uninstall SAP Sybase IQ and SySAM. |

Product Installation Directory

%IQDIR16% is a *%SYBASE%* subdirectory that contains the files, scripts, and other objects required to run the client.

Table 20. Product Installation Directory.

| Directory | Contents |
|-----------|-----------------------------|
| Assembly | SQL Anywhere support files. |

| Directory | Contents |
|-----------|--|
| charsets | Character encoding files. |
| install | Installation history file. |
| java | Different JAR files. |
| samples | Sample SQL Anywhere tools and scripts. |
| scripts | Sample scripts and stored procedures. |
| sdk | Subdirectories for various language utilities. |
| sun | Local copy of the JRE to support Java in the database. |
| support | A Web page with links to online resources. |

Local Resources Directory

The `%ALLUSERSPROFILE%` directory contains local resources, including the demo database, server logs, and utilities.

Table 21. Local Resources Directory.

| Directory | Contents |
|-----------|---|
| Samples | Sample scripts, drivers, and utilities. |

Installing Client Software

Client installation media supports GUI, console, and unattended installations.

- Use an account with Administrator privileges to log in to Windows.
- Stop and shut down all programs before you run the installation.

Installing in GUI Mode

Use this option to set up your software in a graphic user interface (GUI) environment. The GUI installer is wizard-driven and supports all product editions and installation types.

1. Insert the installation media into the drive.

If the installer does not start automatically, start Windows Explorer, change to your DVD drive, and choose:

```
setup.exe
```

2. Follow the instructions on the screen.
3. Remove the installation media from the drive.

Installing from the Command Line

Choose a command-line installation if you prefer a non-windowing interface or for developing custom installation scripts. Installing components in console mode is similar to installing in GUI mode, except that you run the installer from the command line, and enter text to select the installation options.

1. Insert the installation media into the drive.

If the installation program launches automatically, click Cancel to stop the installer.

2. From a command line, change to the setup directory.

The setup directory is the directory that contains `setupConsole.exe`, `installer.properties`, and other installation files.

3. Enter:

```
setupConsole.exe -i console
```

4. Follow the instructions on the screen.

Installing in Unattended (Silent) Mode

Unattended or silent installations are typically used for updating multiple systems. Except for the absence of the GUI screens, all actions of `InstallAnywhere` are the same, and the result of an installation in silent mode is exactly the same as one done in GUI mode with the same responses.

Prerequisites

A response file is a text file that contains installation options. You can override or edit the default response file, `installer.properties`, for use in subsequent installations. To override the default installation options, use the `-f` argument to point to a custom response file.

Task

1. Insert the installation media into the drive.

If the installation program launches automatically, click Cancel to stop the installer.

2. From a command line, change to the setup directory.

The setup directory contains `setupConsole.exe`, `installer.properties`, and other installation files.

3. Enter:

```
setupConsole.exe -f <responseFileName> -i silent  
-DAGREE_TO_SYBASE_LICENSE=true  
-DSYBASE_PRODUCT_LICENSE_TYPE=license
```

Table 22. Response File Arguments.

| Argument | Description |
|--|---|
| <code>-f <responseFileName></code> | Optional argument that includes the absolute path and file name of the response file. If you omit this argument, the installer defaults to <code>installer.properties</code> or other <code>.properties</code> file in the same installation directory. |
| <code>-i silent</code> | Switch that starts the silent installer. |
| <code>-DAGREE_TO_SYBASE_LICENSE=true</code> | Argument that indicates you accept Sybase end-user license agreement. |
| <code>-DSYBASE_PRODUCT_LICENSE_TYPE=license</code> | Required to install a licensed version of the software. |
| <code>-DUNINSTALL_DELETE_DATA_FILES=true</code> | Deletes unnecessary files after installation. |

Creating a Response File

Start the installer from the command line and use the `-r` switch as an argument to create a response file. The installer starts a GUI installation and records your responses in a response file. The response file is a text file that you can edit to change any responses prior to using it in any subsequent installations.

1. From the command line, enter:

```
setup.exe -r <responseFileName>
```

Where `<responseFileName>` includes the absolute path and file name of the response file.

2. Run the installer in GUI mode to record your actions in the response file.
Use an editor to change any responses for subsequent installations, if necessary.

Uninstalling Windows Clients

To uninstall SAP Sybase IQ, run the uninstaller from the Control Panel.

1. On the **Control Panel**, choose **Add or Remove Programs**.
2. Choose SAP Sybase IQ Client Suite from the program list.
3. Click **Remove**.
4. Follow the instructions on the screen.

Configuration

This section outlines basic configuration concepts and procedures.

Using Configuration Files

Use a configuration file to store server startup options.

The `@data` option allows you to specify environment variables and configuration files on the command line. To specify a configuration file, replace *data* with the path and name of the configuration file:

```
start_iq @configuration_filename.cfg dbname.db
```

If a startup parameter is passed from the command line and the same parameter exists in the `.cfg` file, the value in the command line overrides the value in `.cfg` file.

Configuration files can contain line breaks, and can include any set of options, including the `@data` option. Use a number sign (`#`) to designate lines as comments. An ampersand (`&`) character that appears by itself at the end of a line indicates that the previous token is continued on the next line. See the *Utility Guide* for a complete list of startup parameters.

Default Configuration File

When you start a server and do not include any command line parameters or specify a configuration file, IQ retrieves the start-up parameters from a default configuration file, `default.cfg`, in the `%IQDIR16%\scripts` directory. The `default.cfg` file is also the source of parameters for the Service Manager and multiplex configurations. You can maintain consistency by editing parameters in `default.cfg`.

To increase the amount of virtual memory, change the parameters in `default.cfg`. To reduce the virtual memory that other programs use, add swap space to machines or reduce IQ memory demands (cache sizes, thread count, stack size, etc.).

Security and Configuration Files

You can use the **dbfhide** (File Hiding) utility to encrypt your configuration files. If you specify log file parameters (`-o logfile`) in encrypted files, the log is not available to the `start_iq` utility. You may want to add parameters that do not require encryption on the command line or in a separate configuration file. For example:

```
start_iq @encrypt_params @other_params
```

or

```
start_iq @encrypt_params -n myserv -c 400 -o %IQDIR16%\logfile
\myserv.log
```

Running SAP Sybase IQ as a Windows Service

Running SAP Sybase IQ as a Windows service starts the server whenever you restart your computer. Windows services runs in the background as long as Windows is running.

Creating a New Windows Service

Run SAP Sybase IQ as a Windows service to start the server whenever you restart your computer. Services run in the background as long as Windows is running.

1. Start **Sybase IQ Service Manager**.
2. Choose **Create a New Service**.
3. Name the new service.
4. Add the appropriate start-up parameters.

Include the full path to the database file. The server cannot start without a valid database path name.

5. Click **Apply**.
6. Restart Windows.

Because Window service manager reads environmental variables only at system startup, you must restart Windows after you configure SAP Sybase IQ as a Windows service.

Note:

- Copy any input files that you use to load your databases into the directory where the service starts, not where the database files are located. On most systems, the services start-up defaults to the `%SYSTEMROOT%\system32` directory.
 - To use SAP Sybase IQ as a Windows service when raw device access is required, you must grant the service Administrator privileges.
 - Use **Modify an Existing Service** or **Delete an Existing Service** to change or delete SAP Sybase IQ services.
-

Suppressing Windows Event Log Messages

If you run the database server as a Windows service, you can set the SAP SQL Anywhere registry entry to suppress event log entries.

To control event log entries, set the EventLogMask key, which is of type REG_DWORD.

The value is a bitmask containing the internal bit values for the different types of event messages:

```
errors EVENTLOG_ERROR_TYPE 0x0001
warnings EVENTLOG_WARNING_TYPE 0x0002
information EVENTLOG_INFORMATION_TYPE 0x0004
```

If the EventLogMask, for example, is set to zero, no messages appear at all. Setting EventLogMask to 1 suppresses informational and warning messages, but logs all errors messages. The default setting (no entry present) logs all message types to appear.

Granting Administrator Privilege to the SAP Sybase IQ Service

Assign Administrator privileges to a SAP Sybase IQ service when raw device access is required.

1. On the **Control Panel**, click **Administrative Tools > Services**.
2. On the **Services** dialog, right-click **Sybase IQ**, choose **Properties**.
3. On **Properties**, choose **Automatic** as the **Startup type**.
4. Click the **Log On** tab, then click **This account**.
5. Assign the account to a user with Administrative privileges. In **This account**, type the administrator's user ID, then enter and confirm the user's password.
6. Click **OK** to close **Properties**.
7. Click **File > Close**.

Configuring Backup Devices

Set the appropriate parameters to set backup devices.

Windows does not specify rewind or no rewind devices and supports only fixed-length I/O operations to tape devices. SAP Sybase IQ requires variable-length devices and must perform additional processing to accommodate fixed-length tape I/O.

Because SAP Sybase IQ does not support Windows tape partitioning, do not use another application to format tapes for Sybase IQ backup or restore. Windows uses a simpler naming strategy for its tape devices.

The value for `block_size` is 0. This tape drive is in variable-length block mode. A non-zero value indicates fixed length block mode, which IQ backup does not support.

Additional Information

- *Administration: Backup, Restore, and Data Recovery*

Configuring Client Connectivity

SAP Sybase IQ supports ODBC and JDBC connectivity.

Connecting Using ODBC

Open Database Connectivity (ODBC) is a standard API that allows a single application to access a variety of data sources through ODBC-compliant drivers.

ODBC Conformance

ODBC drivers manufactured by different vendors may vary widely in the functions they provide. SAP Sybase IQ supports ODBC 3.5.2.

Table 23. ODBC Conformance Levels.

| Conformance level | Sybase IQ support |
|--------------------------|---|
| Core conformance | All core features. |
| Level 1 conformance | All level 1 features, except for asynchronous execution of ODBC functions. SAP Sybase IQ does support multiple threads sharing a single connection. The requests from the different threads are serialized by SAP Sybase IQ. |
| Level 2 conformance | All level 2 features, except: <ul style="list-style-type: none"> • Three-part names of tables and views. This is not applicable for SAP Sybase IQ. • Asynchronous execution of ODBC functions for specified individual statements. • Ability to time out login requests and queries. |

Note:

- Although 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 SAP Sybase IQ.
 - For more information about ODBC, see the *ODBC Programmer's Reference*, available from Microsoft Corporation as part of the ODBC software development kit, or from the Microsoft Web site at: [http://msdn.microsoft.com/en-us/library/windows/desktop/ms714177\(v=vs.85\).aspx](http://msdn.microsoft.com/en-us/library/windows/desktop/ms714177(v=vs.85).aspx).
-

Installing ODBC Drivers

Server and client installations include ODBC drivers. Platform-specific drivers are available from the SAP Sybase Product Download Center and SAP Service Marketplace.

Using UNIX or Linux–Based Query Tools Through ODBC

There are several ways to use ODBC to connect to UNIX or Linux-based Query tools.

UNIX-like operating systems do not provide a standard ODBC driver manager, but you can use the driver manager emulation capabilities provided by the SAP Sybase IQ ODBC driver to connect to the driver.

Tools that do not require extensive driver manager services can use symbolic links to connect directly to the driver. Tools that require a driver manager may ship with a driver manager.

For information and recommendations about compatible driver managers available for specific applications, see the documentation for the application.

Creating an ODBC Data Source

On a UNIX-like operating systems, ODBC data sources are stored in `.odbc.ini`. Use a text editor to update this file manually, or use the cross–platform `iqdsn` utility to create an ODBC data source. On Windows, use ODBC Administrator to add a new ODBC data source.

1. Click **Start > Programs > Sybase > Sybase IQ 16.0**.
2. Choose the option appropriate for your operating system:
 - ODBC Data Source Administrator 32 bit
 - ODBC Data Source Administrator 64 bit
3. On the **ODBC Data Source Administrator** dialog, click **Add**.
4. On the **Create New Data Source** dialog, choose the Server IQ driver, then click **Finish**.
5. When you return to the **ODBC Configuration** dialog, type a Data Source Name in the **Data Source Name** box.
6. Click the **Login** tab, type a database User ID and Password in the appropriate text boxes.
7. Click the **Database** tab. What you do next depends on the data source location:
 - If the data source is on a remote machine, type the *server name* and *database file name*. (The database file is used only if the database is not started automatically on server start-up.)
 - If the data source is on your local machine, type a start line and database name (without the `.db` extension).
 - If the data source is on a remote system, click the Network tab, and select the appropriate protocol and options.
8. Click **OK** to return to the **ODBC Data Source Administrator**.

After you create the data source, use **ODBC Data Source Administrator** to test the new data source. See online help for more information.

Command Line Connections to 32-bit Applications

Use ISQL to connect to 32-bit applications from the command line.

To connect to a 32-bit application without using a data source, use dbisql to connect from the command line. To connect to the demo .db you would use a command similar to this:

```
dbisql -c "UID=DBA;PWD=sql;AUTOSTOP=no;  
ENG=<engine name>;DBF=%ALLUSERSPROFILE%\SybaseIQ\  
demo\iqdemo.db"
```

Adding ODBC Data Source Names on 64-bit Windows Systems

On 64-bit Windows systems, SAP Sybase IQ installs a 32-bit ODBC driver. Use the ODBC Administrator to add a new ODBC data source name.

1. Click **Start > Programs > Sybase > Sybase IQ 16.0 > ODBC Administrator 64 bit.**
2. Run `C:\WINDOWS\SysWOW64\odbcad32.exe`.

Do not launch the ODBC Administrator from the Control Panel or Run box. Attempts to add a DSN starting the ODBC Administrator incorrectly may return these errors:

- The setup routines for the Adaptive Server IQ ODBC driver could not be loaded due to system error code 126.
- Driver's ConfigDSN, ConfigDriver, or ConfigTranslator failed: Could not load the setup or translator library.
- The setup routines for the Adaptive Server IQ ODBC driver could not be found. Please reinstall the driver.

Connecting Using JDBC

JDBC and jConnect provide access to SAP Sybase IQ for Java-based applications.

Java Database Connectivity (JDBC) is a Java application programming interface (API) that provides programmatic access to SAP Sybase IQ. jConnect is a SAP Sybase utility that provides high-performance native access to all SAP Sybase products as a standard installation option.

Interactive SQL (**dbisql**) can use either JDBC or ODBC connectivity.

Note: The SQL Anywhere JDBC driver is the default driver for Interactive SQL.

Connecting Using OLE DB

SAP Sybase IQ includes an OLE DB provider as an alternative to ODBC.

OLE DB is a data access model from Microsoft that uses the Component Object Model (COM) interfaces. Unlike ODBC, OLE DB does not assume that the data source uses a SQL query processor. Although OLE DB requires a Windows client, you can use using OLE DB to access Windows and UNIX servers.

Note: SAP Sybase IQ OLE DB support differs from SQL Anywhere support.

SAP Sybase IQ supports Dynamic (dynamic scroll), Static (insensitive) and Forward only (no-scroll) cursors, but does not support Keyset (scroll) cursors. In SAP Sybase IQ the isolation level is always 3, no matter what you specify.

SAP Sybase IQ does not support:

- Windows CE.
- Remote updates through a cursor.

Additional Information

- *Administration: Database > Connect to Servers and Databases > Database Connections Using OLE DB*

Connecting Using Open Client

Clients require a server object in the interfaces file to access server properties and methods. Use the SAP Sybase IQ Directory Services Editor (dsedit) to create the interfaces file entries.

Prerequisites

- You must be the owner of the SAP Sybase IQ home directory (`%SYBASE%`) to run `dsedit`
- Make a copy of the interfaces file before you make any changes.

Task

1. From a terminal or command line, change to `%IQDIR16%\bin64`
2. Start **dsedit**.
3. On the **Directory Service** dialog, click **OK**.
4. From the **Server Object** menu, choose **Add**.
5. On the **Server Name** dialog, enter the server name, then click **OK**.
6. From the **Server Entry Editor**, type the server name, then click **Add new network transport**.

The server name in your `dsedit` entry must be the same as the database name.

7. On the **Network Transport Editor**, select **TCP transport**, then enter the host name and port number.

The defaults are usually sufficient.

8. Click **OK** to return to the **Server Entry Editor**.

The server is now listed under **Available Network Transports**.

Running the Client and Server On the Same System

SAP Sybase IQ uses a shared memory segment and several semaphores for communication between the client and server on the same machine.

Shared memory is the default communications mechanism when the client and server are on the same system. Shared memory is configured automatically, and starts automatically.

Local connections through shared memory are not supported for Solaris x64 systems. Use standard network connectivity by adding the parameters **-host** <hostname> and **-port** <portnumber> to the client connection string.

Additional Information

Administration: Database > Connection and Communication Parameters

Network Issues for SAP Sybase IQ Servers

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

Verified TCP/IP Protocol Stacks

For SAP 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. SAP Sybase IQ communications have been explicitly verified with these TCP/IP implementations:

- TCP/IP For NetWare
- Microsoft Winsock version 2.0

Using TCP/IP with Windows

Windows NT 3.5 and later ship with TCP/IP software that uses NDIS network drivers. This software allows an IQ server for Windows or an SAP Sybase IQ client application to use Windows TCP/IP. Install TCP/IP Protocol from the Network Settings options on the Control Panel.

User Datagram Protocol

There are several entries into the TCP/IP protocol stack. SAP 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.

Tuning Performance Under TCP/IP

Although the default packet size for TCP/IP is 1460 bytes, a larger packet size may improve query response time, especially for queries that transfer 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 the `start_iq` command.

Connecting Across a Firewall

Set the `CommLinks` connection parameters in your application's connection string to connect 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 **UseUDP** parameter to off to prevent UDP packets from being used to locate the server. You can use the short form **UDP**.
- 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**.
- If your database server is not using the default port of **2638**, you must specify the port it is using, in the **ServerPort** parameter. You can use the short form **Port**.

In this example, the connection string fragment:

- Restricts the client application to ports **5050** through **5060**
- Disables UDP packets
- Connects to a server named `myiq` running on the machine at address `myhost` using the server port 2020:

```
CommLinks=tcPIP (UseUDP=OFF;ClientPort=5050-5060;Host=myhost;Port=2020;Eng=myiq)
```

Additional Information

- *Administration: Database > Connection and Communication Parameters.*

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