



Installation Guide

## **SQL Expert**

15.0

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# About This Book

## Audience

This guide explains the system requirements and installation processes for Sybase® SQL Expert. It serves as an installation guide and reference manual for:

- System administrators installing SQL Expert
- Database administrators interested in providing developers an advanced tool for tuning SQL statements

## Assumptions

This book assumes that you are familiar with:

- The components of your platform, such as directories, files, and environment variables
- Platform-specific commands, such as commands used to change directories and mount a CD
- Sybase servers
- SQL statements

## How to use this book

This book contains these chapters:

- Chapter 1, “Overview,” describes the user roles, system requirements, and product limitations of SQL Expert.
- Chapter 2, “Installing SQL Expert,” provides specific instructions for installing and removing SQL Expert using InstallShield. It also includes information about directory structures.
- Appendix A, “SySAM Administration,” provides information about configuring Sybase Software Asset Management (SySAM) to perform license administration.

## Related documents

**SQL Expert documentation** The following SQL Expert documents are available on the *Getting Started with SQL Expert* CD:

- The SQL Expert installation guide for your platform explains how to install the SQL Expert software.

- 
- The SQL Expert release bulletin for your platform contains last-minute information not documented elsewhere. A more recent version of the release bulletin may be available on the Sybase Product Manuals Web site.

**SQL Expert online documentation** SQL Expert documentation includes online help in the product.

**Adaptive Server® Enterprise 15.0 documentation** SQL Expert works with Sybase Adaptive Server Enterprise. To refer to the Adaptive Server Enterprise documentation on the Sybase Product Manuals Web site, go to Product Manuals at <http://www.sybase.com/support/manuals/> and select the Adaptive Server Enterprise product.

#### 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/>.

#### 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.

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

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

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

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

- 1 Point your Web browser to Technical Documents at <http://www.sybase.com/support/techdocs/>.
- 2 Click MySybase and create a MySybase profile.

**Sybase EBFs and  
software  
maintenance**

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

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

Conventions

The formatting conventions used in this manual are:

Formatting example	To indicate
command names and method names	When used in descriptive text, this font indicates keywords such as: <ul style="list-style-type: none"><li>• Command names used in descriptive text</li><li>• C++ and Java method or class names used in descriptive text</li><li>• Java package names used in descriptive text</li></ul>
<i>myCounter</i> variable <i>Server.log</i> <i>myfile.txt</i> <i>sybase/bin</i>	Italic font indicates: <ul style="list-style-type: none"><li>• Program variables</li><li>• Parts of input text that must be substituted</li><li>• File names</li></ul>
File   Save	Directory names appearing in text display in lowercase unless the system is case sensitive. A forward slash (“/”) indicates generic directory information. A backslash (“\”) applies to Windows users only.
	Menu names and menu items display in plain text. The vertical bar indicates how to navigate menu selections, such as from the File menu to the Save option.
<code>create table</code>  <code>table created</code>	Monospace font indicates: <ul style="list-style-type: none"><li>• Information that you enter on a command line or as program text</li><li>• Example output fragments</li></ul>

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.



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

**If you need help**

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



# Overview

This chapter describes the system and licensing requirements for installing SQL Expert. It also discusses the required user roles and privileges, and the limitations of the product.

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## Product summary

SQL Expert is a SQL performance tuning tool that helps monitor, tune, and rewrite SQL statements quickly and efficiently.

SQL Expert provides the following modules and functionality:

- Performance diagnostics
  - SQL Collector for Monitor Server
  - SQL Scanner
- Performance optimization
  - Syntactical SQL Optimizer
  - Abstract Plan Manager
- Development
  - SQL Worksheet
  - SQL Formatter
  - Database Explorer
  - Code Finder
- Functionality

- User-defined temp table
- SQL history
- Common SQL functions
- Editor functions
- Activity log
- Reports
- Plan help
- SQL Expert assistant

See the SQL Expert online help for complete instructions on using this tool.

## System requirements

The minimum system requirements for installing SQL Expert are:

Operating system	Service pack requirement
Windows XP	1.0
Windows NT	4.0 or later
Windows 2000	2.0 or later
Windows 2003 server	1.0

- 486 DX or above
- 64MB RAM
- 60MB hard disk space

## Software requirements

SQL Expert has the following software version requirements:

- SQL Expert version 15.0 requires Adaptive Server Enterprise 15.0 ESD #1, or Adaptive Server Enterprise 11.9.2 or 12.x with the latest corresponding ESD for that version.
- SQL Expert version 12.5 requires Adaptive Server Enterprise 11.x or 12.x with the latest corresponding ESD for that version.

- To use SQL Collector for Monitor Server, you must have Adaptive Server Enterprise Monitor Server installed and running. For information on how to install Monitor Server, see the *Adaptive Server Enterprise Installation Guide for Windows*.
- To use Abstract Plan Manager, you must have Adaptive Server Enterprise version 12.0 or later installed and running.

## Sybase Software Asset Management

SQL Expert version 15.0 includes a new Sybase Software Asset Management System (SySAM) implementation. SySAM configuration is no longer optional, which results in installation and configuration changes.

SySAM product licensing software allows you to:

- Manage SQL Expert entitlements.
- Perform asset management tasks by viewing and analyzing historic use data.
- Control SQL Expert use within your organization.

## How SySAM works

SQL Expert uses SySAM to “check out” a license for product functionality, then checks the license back in when the product is no longer in use. The basic SySAM components are:

- SQL Expert linked with SySAM libraries
- One or more local license files
- Optionally, a SySAM network license server

When you install the product, you choose to configure an unserved license or a network license server. Both configurations create a local license file on the same machine as SQL Expert in `%SYBASE%\SYSAM-2_0\licenses`. When you start SQL Expert, the product searches for a license in the default location—`%SYBASE%\SYSAM-2_0\licenses`—looking at all files with a `.lic` extension. The local license file contains the actual licenses or a pointer to a SySAM network license server. When a license is successfully checked out, SQL Expert continues to start.

## Using an unserved license

When you configure an unserved license, SQL Expert does not connect to a network license server, but obtains the required license information directly from the local license file.

When you use an unserved license configuration, there is no network license server. In this configuration, SQL Expert reads the unserved license and directly checks out the required license. You activate the licenses for each machine separately; that is, you do not have centralized control over licenses. You also do not have asset management or reporting capabilities, and the license must be rehosted if you move SQL Expert from one machine to another.

When using an unserved configuration, the local `%SYBASE%\SYSAM-2_0\licenses` directory contains all necessary licenses. You do not maintain a license server.

## Setting up an unserved configuration

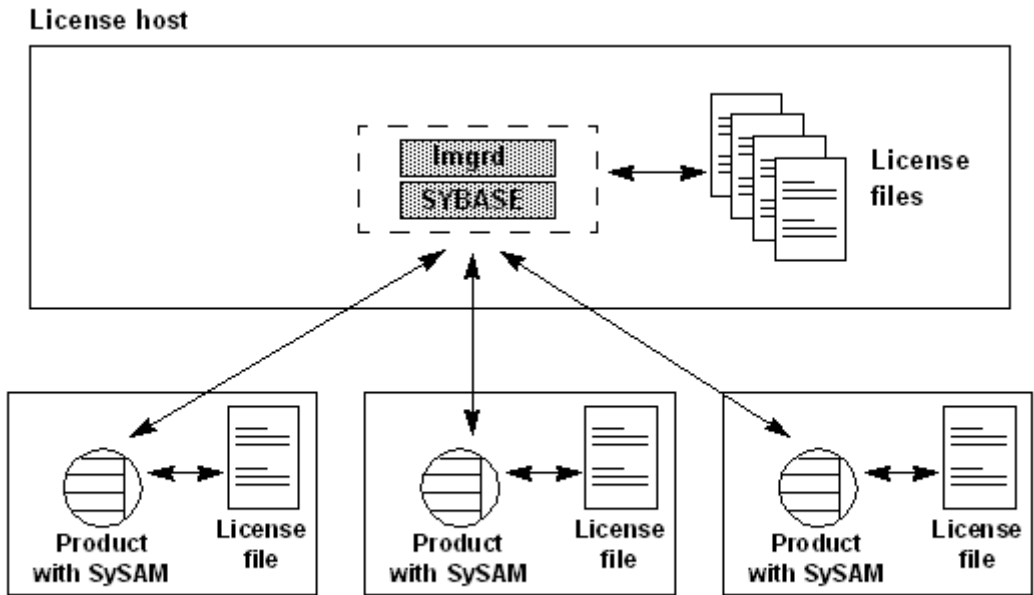
During SQL Expert installation, select the option to use a local license file. When you are activating licenses from the Sybase Software Product Download Center (SPDC) at <https://sybase.subscribenet.com>, select the “Unserved” license format and save the license in the local license directory at `%SYBASE%\SYSAM-2_0\licenses`.

To change to a local license file after installation is complete, edit the `SYBASE.lic` file in `%SYBASE%\SYSAM-2_0\licenses` directory to comment out the lines that point SQL Expert to the network license server. Obtain the unserved license required for SQL Expert on this machine and save it in the local `%SYBASE%\SYSAM-2_0\licenses` directory.

## Using a network license server

When you configure a network license server, the server uses two daemons—the `lmgrd` FLEXlm daemon and the vendor (SYBASE) daemon—to handle license check-in and check-out for licensed products. Using the pointer in the local license file, SQL Expert connects to the network license server and attempts to check out a license (`ASE_SXP`).

In a network license server configuration, the license server host runs the network license server. The local license file on the SQL Expert machine contains a pointer to the network license server.

**Figure 1-1: Network license server configuration**

Multiple users connect to the network license server to obtain the required license. You can activate several licenses at once, you have full control over license use, and you have access to complete asset management and reporting capabilities.

You can use an existing network license server or install a new one. The network license server can be installed on the same host with SQL Expert or as a standalone system. The number of free cycles on the machine with SQL Expert and the total expected license server activity should dictate whether a standalone system is needed. See Chapter 4, "Selecting License Server Machines," in the *FLEXnet Licensing End User Guide* for system requirements.

## Setting up a network license server

To install a network license server on a separate system, use the SQL Expert installation program. Under the Custom option, select only the SySAM server components and complete the installation. When activating licenses at the Sybase Product Download Center, select the "Served" license model. Save the activated license file in your machine's `%SYBASE%\SYSAM-2_0\licenses` directory. See "Installing a new license server" on page 19 for instructions.

To configure SQL Expert to use the network server, specify the network server host name and port number during installation. Specify the host ID for the network license server host when you obtain a license from the Sybase Software Product Download Center. After installation, you can edit the *SYBASE.lic* file in *%SYBASE%\SYSAM-2\_0\licenses* and change the network license server host name and port number if necessary.

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**Note** A license responds only to the license server that you specify when you obtain the license from the Sybase Software Product Download Center.

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## Limitations

The SySAM network license server has the following limitations:

- 1 You cannot start the SySAM network license server until there is at least one “Served” license copied into the *\licenses* directory. Obtain a “Served” license from the Sybase Software Product Download Center before starting the license server. See “Managing licenses” on page 29.
- 2 SQL Expert version 15.0 uses a newer version of the SySAM licensing technology and an updated license format. On any one machine, you can have only one instance of a license server running. You must make some adjustments to use earlier versions with SQL Expert 15.0. See “Co-existing with earlier versions of SySAM” on page 11.

## Using multiple network license servers

As part of a failover plan or a load-balancing system, you can have multiple SySAM network license servers running a subset of the total licenses. The SySAM network license servers can be connected by a local area network (LAN) or by a wide area network (WAN).

This configuration is an excellent load-balancing mechanism for physically distant locations. You can specify the local servers ahead of the remote servers in the license location list.

To specify multiple license servers, you set up the *SYBASE\_LICENSE\_FILE* or *LM\_LICENSE\_FILE* environment variable to contain a list of license files, where each license file refers to one of the network license servers. SQL Expert uses this list to check-out licenses, starting with the first server on the list. If check-out fails for any reason, SQL Expert attempts to check out licenses using the second server in the list, and so on.



Although this configuration provides a basic level of failover protection, if one or more license servers in the list are down, the licenses served by these servers are no longer available, so the total number of available licenses is reduced until the servers restart.

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**Note** See “Redundant License Server Systems” in Chapter 4, “Selecting License Server Machines,” of the *FLEXnet Licensing End User Guide*, for more information.

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## Setting up multiple network servers

To use multiple network license servers, install a network license server on two or more servers using the instructions in “Installing a new license server” on page 19.

To configure SQL Expert to use multiple network servers, specify the network server addresses in the SYBASE\_LICENSE\_FILE environment variable as *port@host* separated by a semi-colon (;). For example:

```
set SYBASE_LICENSE_FILE=1700@tokyo;1700@chicago
```

SQL Expert attempts to use the first server in the list. If that fails for any reason, SQL Expert tries to use the second server.

## Using three-server redundancy

To achieve true high availability, you can set up SQL Expert to acquire a license that is used in a three-server redundant configuration. The same license is served by all three license servers. With three-server redundancy, if any two of the three license servers are running (referred to as a quorum), the system is functional and serves its total complement of licenses.

Machines in a three-server redundant configuration must:

- Run the same operating system
- Communicate with each other
- Reside on the same subnet

The three servers must be located physically close to each other. This form of redundancy requires that the servers exchange heartbeats periodically, and poor communication can cause poor performance. Avoid configuring redundant servers with slow communication or dial-up links.

Three-server redundancy provides only hardware failover protection and does not provide load-balancing because only one of the three servers is “master,” capable of issuing licenses. Because all clients must contact the “master,” all clients must have reliable networking to a single machine. To implement load-balancing, see “Setting up multiple network servers” on page 7.

---

**Note** Because Sybase provides grace periods for any licensing issues, setting up the license servers for failover may be unnecessary. SQL Expert operations are not compromised as long as license server issues are fixed within the grace period.

---

## Setting up three-server redundancy

To use this configuration, you must obtain licenses that are set up for such an environment. When you activate your licenses, specify the three-server redundancy option.

Install the network license server on the three selected machines and deploy the license obtained on all three machines. See “Installing a new license server” on page 19 for instructions.

To configure SQL Expert to use these redundant network servers, specify the addresses for three servers in SYBASE\_LICENSE\_FILE environment variable as *port@host* separated by a semi-colon (;). For example:

```
set SYBASE_LICENSE_FILE=1700@srv1;1700@srv2;1700@srv3
```

Any two of the servers specified in SYBASE\_LICENSE\_FILE must be running for checkout to succeed.

## Using alternative license file locations

You can specify alternate license locations using the SYBASE\_LICENSE\_FILE and LM\_LICENSE\_FILE environment variables. The product looks at the locations provided in these variables before looking in the default location.

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**Note** See “Specifying Location of the License File” in Chapter 2, “License File Basics,” of the *FLEXnet Licensing End User Guide*.

To access this guide, go to the Sybase Product Manuals Web site at Product Manuals at <http://www.sybase.com/support/manuals/>, select the Adaptive Server Enterprise product from the drop-down list, then select Adaptive Server 15.0 core documentation. Select the Eclipse icon for online documentation. The *FLEXnet Licensing End User Guide* appears at the end of the Adaptive Server 15.0 documentation list in the left pane.

Portions of the *FLEXnet Licensing End User Guide* and the *SAMreport User's Guide* are included with permission of Macrovision Corporation.

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## License availability and grace periods

If SQL Expert cannot obtain a suitable license, the product does not run. A license is considered unavailable if it cannot be checked out or the license cannot be issued during a grace period. Licenses can be unavailable during start-up or heartbeat runtime.

When SySAM detects a checkout failure, the event is logged in the SQL Expert SySAM error log, %SYBASE%\DatabaseExpert-15\_0\_0\sysam.log, which you can use to diagnose any unexpected licensing failures. After the initial checkout failure, periodic events are logged during a grace period.

If a suitable license cannot be found when requested, SQL Expert evaluates if a license can be issued during a grace period. There are three types of grace periods:

- Install time – when you configure a new SQL Expert (or upgrade an earlier version to 15.0), you have 30 days to activate and configure the appropriate license.
- Runtime – a runtime grace period is evaluated when one of these conditions occurs:

- A license was not checked out at start-up, but there is a history of successfully using the requested license on this machine.
- A license that was successfully checked out at start-up becomes unavailable at a later time.

If SQL Expert encounters either situation, it enters into a 30-day runtime grace period. If the problem is not resolved within 30 days, SQL Expert stops running; however, the user can save any work and exit. If the problem that causes the license to be unavailable is fixed during the runtime grace period, SQL Expert automatically picks up the license and no longer operates in the grace period.

- Support renewal time – this grace period allows you enough time to update the license after renewing support. The support grace period for SQL Expert is one year.

This means that you can install and use EBFs and updates that are released up to one year past the end-of-support date recorded in the license.

If SQL Expert cannot obtain a license, SySAM evaluates whether the license can be issued under a grace period. The grace periods evaluated are described in “License availability and grace periods” on page 9.

## If a SySAM license cannot be acquired

If the license cannot be issued during the grace period, then SQL Expert does not start and errors are reported in the error log file.

The error messages indicate the product’s inability to obtain a valid license, and why the license could not be obtained. You must fix the license failure before you can use SQL Expert.

## Acquiring SySAM licenses during the grace period

If the license can be issued during the grace period, the issue is logged and SQL Expert starts. The log entry looks similar to this:

```
00:00000:00000:2005/07/05 15:46:08.84 kernel Sybase
Licensing: Using licenses from: /opt/sybase/
SYSAM-2_0/licenses
00:00000:00000:2005/07/05 15:46:08.91 kernel Sybase
Licensing: Checked out graced license for 1
<license_name>
(2005.0703) will expire Tue Jul 5 15:47:02 2005.
00:00000:00000:2005/07/05 15:46:08.91 kernel Sybase
```

Licensing: Cannot find license file

SQL Expert continues to operate normally until the issue causing the license failure is fixed, or until the grace period expires. The error message indicates the date and time the grace period is scheduled to end. The error log entry is repeated with increasing frequency while SQL Expert operates in the grace period until you fix the issue causing the license failure. When the issue is fixed, SQL Expert automatically acquires the license and moves from grace period mode into normal mode. If SQL Expert cannot obtain the license before the grace period expires, SQL Expert stops running.

---

**Note** If you obtain a SQL Expert license from a network license server, SQL Expert periodically executes a “heartbeat” with the network license server. A successfully acquired license could be invalidated during the heartbeat; for example, the acquired had an expiration date or the network license server was restarted and other SQL Expert instances acquired all available licenses before this instance could reacquire a license. If this happens, SQL Expert enters a grace period. This information is written in the error log, and is similar to the information written to the error log when you initially start the product.

---

Select Help | About in SQL Expert to see the current license status.

## Co-existing with earlier versions of SySAM

SQL Expert version 15.0 uses a newer version of the SySAM licensing technology and an updated license format. On any machine, you can have only one instance of a license server running. You must make some adjustments to use earlier versions of Sybase products with SQL Expert 15.0.

### Case 1

If you are using a central network server for SQL Expert 15.0, and a network license server-based SySAM license for earlier versions of the product, migrate to SQL Expert version 15.0:

- 1 Update the network license software with the version provided in SQL Expert 15.0. Use the instructions in “Setting up a network license server” on page 5.
- 2 Copy the earlier license files (typically a single file named *license.dat*) into the new `%SYBASE%\SYSAM-2_0\licenses` directory and rename *license.dat* to *license.lic*.
- 3 Shut down the old license server and start the new license server.

- 4 Copy any new licenses into this new directory.

Old and new Sybase software now use this license server.

## Case 2

If you are using individual license servers for earlier versions of SQL Expert, with each machine running earlier Sybase software hosting a local license server, Sybase recommends that you move to a single network license server model to migrate to SQL Expert version 15.0.

### ❖ Using a central license server only for new licenses

- 1 Select the machine for the new network license server and install the SySAM network license server supplied with SQL Expert version 15.0 on that machine.
- 2 If this machine is already running an older license server, use the instructions in Case 1 to migrate the local licenses. All new licenses are now installed on this machine.
- 3 Point the SQL Expert version 15.0 installation to this license server. Use the Impath utility (see “Using SySAM utilities” on page 36) to do this or edit *license.dat* and add these lines at the beginning of the file:

```
SERVER <network license server hostname> ANY <license server port>
VENDOR SYBASE
USE_SERVER
```

### ❖ Migrating old licenses to a new central license server

- 1 Set up the new SySAM network license server using the instructions in “Setting up a network license server” on page 5.
- 2 Collect licenses from all old local license servers to deploy to the new network license server.
  - a Create a new license file that includes the contents of all individual licenses from each earlier local license server.
 

When you create the new license file, discard the license header from each file. The header is the first three lines that start with “SERVER,” “VENDOR,” and “USE\_SERVER.”
  - b Create one license header with the above three lines in the merged file to match the requirements on the new network license server and save this file as *license.lic* in the *%SYBASE%\SYSAM-2\_0\licenses* directory.

- 3 Shut down the earlier individual license servers on each machine and point the software to the new license server. Use the `Impath` utility (see “Using SySAM utilities” on page 36) to do this or edit the `license.dat` file on each installation by adding these lines at the beginning of the file:

```
SERVER <network license server hostname> ANY <license server port>
VENDOR SYBASE
USE_SERVER
```

#### Case 3

If you are not using the network license server for SQL Expert version 15.0, no changes are required to the previous software. When fulfilling SQL Expert version 15.0 licenses, select the unserved license model and copy the license locally on each installation. The software runs appropriately, however, you lose the asset management functionality in this approach. See “Choosing the appropriate license server configuration” on page 18 for the pros and cons of using a network license server versus using a local license file.

## Managing licenses from multiple vendors

If you use software from multiple vendors that use Macrovision’s *FLEXnet* technology, you can consolidate licenses from all vendors to centrally manage the licenses. See Chapter 3, “Managing Licenses from Multiple Vendors,” in the *FLEXnet Licensing End User’s Guide*.”

## User roles

The InstallShield setup process defines various user roles. Different user roles have different responsibilities and privileges. These user roles clarify the way Adaptive Server Enterprise and SQL Expert are integrated into your system:

- Operating System Administrator – the individual who maintains the operating system. This individual has superuser or “root” privileges.
- Sybase System Administrator – the individual in charge of system administration, creating user accounts, assigning permissions on databases, and creating new databases. During installation, the System Administrator’s login name is “sa”. The “sa” login is not a UNIX login. The “sa” login is specific to Adaptive Server and is used to log in to Adaptive Server using the `isql` command.

- Sybase Login – the “sybase” login is a UNIX login that owns all Sybase installation directories and files, sets permissions on those directories and files, and installs and upgrades Sybase software.

## SQL Expert login privileges

You must have the privileges listed below to access SQL Expert functions and modules.

You must have sa\_role to:

- Use the SQL Collector for Monitor Server module
- Terminate the Run Result function when the SQL statement produces a result set in the SQL Optimizer and SQL Worksheet modules
- Access the dbcc traceon information

To optimize a SQL statement that is used in a cursor in the Syntactical SQL Optimizer, you must have the privilege to create a procedure.

## Adaptive Server configuration parameters

In Adaptive Server, you must set the parameters listed below.

- To access the Database Object’s DDL text in Database Explorer and SQL Scanner:

```
"select on syscomments.txt", 1
```

- To access the Estimated I/O Cost estimation in SQL Optimizer:

```
"allow resource limits", 1
```

- To capture SQL statements with SQL Collector for Monitor Server:

```
"event buffers per engine", 2000  
"max SQL text monitored", 4096  
"enable monitoring", 0
```

---

**Note** The "enable monitoring", 0 setting is needed only when you are connected to Adaptive Server Enterprise 12.5.0.3.

---

- To save abstract plans in the SQL Optimizer module and use the Abstract Plan Manager module:

```
"abstract plan cache", 0
```



"abstract plan replace", 0



# Installing SQL Expert

This chapter explains how to install SQL Expert.

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## Overview

The installation process copies all of the files from the installation media to the hard drive. At the end of the installation, the SQL Expert software is ready to use.

The basic process for installing SQL Expert is:

- 1 Perform pre-installation tasks related to license administration as described in “SySAM pre-installation tasks.”
- 2 Perform the installation as described in “Installing SQL Expert using InstallShield.”

## SySAM pre-installation tasks

Before you install SQL Expert, you must plan the type of SySAM license configuration you want to use. Depending on your configuration choice, you may also need to perform additional pre-installation tasks before installing SQL Expert.

In this section you:

- 1 Choose the appropriate SySAM licensing configuration. SySAM allows you to acquire a license using a local file or you can acquire a license from a network license server. See “Choosing the appropriate license server configuration” on page 18.
- 2 Install a new network license server if necessary. See “Installing a new license server” on page 19.

## Choosing the appropriate license server configuration

### Serverless configuration

When you configure your license server, you must choose between configuring for a local license file, or for a network license server.

If you are using a serverless configuration, the local `\licenses` directory should contain all necessary licenses. You do not maintain a license server.

When you use a serverless configuration, you must activate the licenses for each machine separately; that is, you do not have centralized control over your licenses. You also do not have asset management or reporting capabilities, and your license must be rehosted if you move SQL Expert from one machine to another.

### Network license server configuration

In this setting, you can activate several licenses at once. You have full control over license use, and complete asset management and reporting capabilities.

Before you install SQL Expert, decide which SySAM configuration to use:

- Serverless model using “Unserviced” licenses.
- Network license server using “Served” licenses.

If you are going to use a network license server, decide whether to use an existing license server or a new license server.

- If you use an existing license server, you must know the server host name and port number.
- To create a new license server before installing SQL Expert, see “Installing a new license server” on page 19.

---

**Note** Sybase recommends that you obtain the license files from the Sybase Product Download Center (SPDC) at <https://sybase.subscribenet.com> before you begin installation.

---

## Installing a new license server

Perform the following steps to install a new license server on a machine separate from the SQL Expert you want to run:

- 1 Install the licensing tools by:
  - a Insert the CD into the CD drive. The Installer should start automatically. If it does not, start the setup program manually by selecting Start | Run. Browse to *setup.exe*.
  - b Launch the Sybase installer program by entering:

```
setup
```
  - c The Welcome Window displays. Click Next.
  - d Accept the license agreement.
  - e Enter or select the destination directory.
  - f Select the custom installation.
  - g Select only SySAM Network License Server for installation.
  - h Unselect other components, to install the Net License Server only.
  - i Click OK for the installer to install SySAM licensing tools.
- 2 Get the host ID for the machine on which the new license server will run. To get the host ID:
  - a Open a Command Prompt window and go to *%SYBASE%\%SYBASE\_SYSAM%\bin* where *%SYBASE%* is the Sybase installation directory and *%SYBASE\_SYSAM%* is *SYSAM-2\_0*.
  - b Enter:

```
lmutil lmhostid
```

**Note** If your machine has multiple network adapters, *lmutil lmhostid* returns host IDs associated with each adapter. Choose one of the IDs. Avoid using IDs for removable network adapters.
  - c Save the host ID to use later at the Sybase Product Download Center (SPDC.)
- 3 Go to the Sybase Product Download Center (SPDC) at <https://sybase.subscribenet.com>.

- 4 Get the license you want to install.
  - a Log in to your account. When you place an order for Sybase software, the Sold To and Ship To contacts become members of the Sybase Product download Center account, and their e-mail addresses are automatically added as a login. The Sold To Contact is also established as the administrator of the account. Each member receives a welcome message from the Sybase Product Download Center, which contains a login name and password. In addition, technical support contacts are added as members to the Sybase Product Download Center account.

The administrator can add new members to their Sybase Product Download Center account at any time.
  - b Select the product for which to activate licenses.
  - c Complete the License Activation wizard to generate required licenses. The generated licenses are displayed when the wizard completes.
  - d Click Save All to save the license file. Make sure you have saved the license file with the extension *.lic*.
- 5 Copy the license file in the licenses directory  
`%SYBASE%\%SYBASE_SYSAM%\licenses` on the network license server machine.
- 6 Start the SySAM network license server:
  - a In a Command Prompt window, go to:  
`%SYBASE%\%SYBASE_SYSAM%\bin`
  - b Enter:  

```
sysam start
```

Or, start the license server from the Windows Services panel (Start | Settings | Control Panel | Administrative Tools | Services).
- 7 Validate that the license daemon is running by entering:  

```
sysam status
```
- 8 Close the Command Prompt window.

## Installing SQL Expert using InstallShield

InstallShield creates the target installation directory, if it does not already exist, and unloads all selected components into that directory.

At the end of the installation, you can verify the product installation. You may need to perform additional configuration procedures before you can use SQL Expert.

To install SQL Expert:

- 1 Log in to your Windows computer using an account with Windows administrator privileges.
- 2 Free system resources and release any Sybase DLLs by closing any open applications or utilities, including currently installed Sybase products or the SySAM Manager.

---

**Warning!** If any Sybase executables or DLLs are loaded into memory, and the installation program tries to overwrite any of the files that are in use, the installation program may generate an error and provide an error log.

---

- 3 Insert the Sybase SQL Expert CD in the CD drive.
- 4 InstallShield should start automatically. If it does not, select Start | Run, and enter the following, where *x:* is your drive:

`x:\setup.exe`

Click OK.

- 5 When the license selection displays, select your location from the drop-down list, read the license terms, click “I agree,” then click Next.

Not every country is listed in the drop-down list. If your country is not listed, select the most appropriate location.

- 6 InstallShield checks for an existing *SYBASE* directory structure.
  - If a *%SYBASE%* environment variable is not defined, the Install Directory window opens. The directory you enter becomes the *%SYBASE%* environment variable.  
Enter an installation directory, then click Next.
  - If a *%SYBASE%* environment variable is defined, its value becomes the installation directory where SQL Expert and any other Sybase required components are automatically installed. The Install Directory window does not display.

Click Next.

- 7 In the Install Type window, choose the installation type:
  - Typical – installs the required components. If Open Client™ is installed, the regular language modules are also installed.
  - Full – installs the required components. If Open Client is installed, all language modules are also installed.
  - Custom – allows you to select optional components.

---

**Note** If you select a Custom installation, the Products and Features Selection window displays. Select the products and components to install.

Components installed in a standard installation appear with the check box selected to the left of the product name. Click to select or unselect subcomponents.

---

If the installer finds that a component is already installed, it displays an “installed” tag to the right of that component and the installer overwrites the current files.

Make your selections, then click Next.

- 8 The Product Selection Summary window displays the components selected for installation. Verify that you selected the correct type of installation and have enough disk space to complete the process.

Click Next to continue.

- 9 The Install Progress window shows the installation’s progress. When the installation finishes, click Next.
- 10 The Sybase Software Asset Management License Server window opens and displays this prompt:

Will licenses be obtained from the License Server?

Select:

- Yes – select “Yes” if you have an existing SySAM network license server installed or you have installed a new license server using “Installing a new license server” on page 19.

Enter the host name and the port number of the license server.



- No – select “No” if you do not have a SySAM license server installed and are going to use a local license file. A message displays telling you to download the license file.

If you select “Yes” and the license server is not found, or you select “No” and the local license file is not installed on your local machine, this message displays:

```
Installer can't check out a license. Do you want to
continue with a license?
```

Click Yes to complete the installation. If you select No, this message displays:

```
Please remember to download and install the license
file after this installation.
```

Click OK to return to the beginning of step 10.

---

**Note** See “Choosing the appropriate license server configuration” on page 18 for information on which choice is appropriate for your installation.

---

- 11 Click Finish.

---

**Note** The shortcut for SQL Expert is placed in the Sybase directory with all other previously installed Sybase products. If this directory does not exist, it is automatically created.

---

If you encounter any errors, refer to “Troubleshooting” on page 25.

## Installation directory structure

You install SQL Expert 15.0 into a new or existing `%SYBASE%` directory structure. Shared components are installed in separate subdirectories.

For example, SQL Expert 15.0 is installed in `%SYBASE%\SQL Expert-15_0_0`. The SySAM component, required for SQL Expert, is installed in `%SYBASE%\SYSAM-2_0`.

InstallShield builds the installation directory structure shown in Table 2-1.

**Table 2-1: SQL Expert directory structure under %SYBASE%**

Directory	Contents
\installed	*.xml files
\OCS-15_0	Open Client and Open Server 15.0 directories and files <sup>a</sup>
\SQL Expert-15_0_0	Product-specific (unshared) files required to run SQL Expert
\SYSAM-2_0	Sybase System Asset Management (SySAM) version 2.0 manager files (\bin), license files (\licenses), and library files (\lib)
\collate	Unicode files <sup>b</sup>
\ini	Adaptive Server Enterprise <i>sql.ini</i> file that contains entries (host name and port number) for each server in the installation
\locales	Localization files <sup>a</sup>
\charsets	Character sets and sort order <sup>a</sup>
\uninstall	Files used by InstallShield to uninstall SQL Expert software

a. Only if Open Client is installed.

b. Only in Full and Typical installations.

## Starting SQL Expert

InstallShield automatically creates the shortcut that adds SQL Expert to the Windows Start menu. Start SQL Expert by selecting Start | Programs | Sybase | Sybase SQL Expert.

## Removing SQL Expert components

To uninstall SQL Expert, use the Windows Add/Remove Programs utility:

- 1 Select Start | Settings | Control Panel | Add/Remove Programs.
- 2 When the Add/Remove Programs window opens, select Sybase SQL Expert from the list of installed programs and click Change/Remove.

- 3 Follow the instructions on the screen, then close the Add/Remove Programs window when the uninstall is finished.

## Troubleshooting

This section discusses common problems and error messages you may encounter.

### Common problems

If you have problems running SQL Expert after you log in to your database, your machine may not have sufficient resources. Try to adjust:

- Disk space – Sybase recommends that you have at least 50MB of free disk space to run SQL Expert. Close all other applications. You may need to restart your machine.
- Virtual memory – increase the virtual memory setting in Windows:
  - a For Windows 2000 and XP, select Start | Settings | Control Panel | System.
  - b When the System Properties window opens, select the Advanced tab, then select Performance Options.
  - c In the Performance Options window, click Change.
  - d In the Virtual Memory window, increase the Paging File Initial Size and Maximum Size up to the available space that displays.
  - e Click Set, then click OK to close the window. Close any other open windows.

### Error messages

- Failed to initialize the application.

This message is from the Windows operating system, and indicates that the current user does not have the correct permissions in the Windows Registry.

Set the Windows Registry permissions for SQL Expert:

```

HKEY_CURRENT_MACHINE                      (F)
|___Sybase                               (F)
|   |___SQL Expert                       (F)
|       |___Current Version              (F)
|           |___Connections              (F)
|               |___Monitor Server Connection (F)
|                   |___Performance Monitor (F)
|                       |___Preferences   (F)

HKEY_LOCAL_MACHINE                        (R)
|___Sybase                               (R)
|   |___SQL Expert                       (R)
|       |___Current Version              (R)

```

- Invalid Sybase Monitor Server login.
  - Verify that Monitor Server is installed. Monitor Server is shipped with Adaptive Server Enterprise 11.5 or later.
  - Verify that Monitor Server is up and running.
  - Verify that the following two Adaptive Server parameters are set:
    - event buffers per engine = 2000
    - max SQL text monitored = 4096
  - Restart the server to accept the parameter changes.
  - Verify that the tempdb system segment is large enough for Monitor Server. You may want to add an extra 20MB to tempdb.
  - Make sure the Monitor Server is configured on the same machine as the database server you want to monitor.
  - Use dsedit to ping the remote Monitor Server to ensure that a connection is available.
  - Verify that the Adaptive Server and Monitor Server are defined in the %SYBASE%\ini\sql.ini file. The names in sql.ini must match the name of the Adaptive Server and the Monitor Server on the database server.
  - When you are adding a new collector, make sure the name for the Monitor Server matches exactly the name of the Monitor Server in the sql.ini file.
  - Verify that sa\_role privileges are assigned to your login.
- Failed to connect to Sybase.

Check that other Sybase products, such as isql, connect successfully to the database, using the same login name, password, and host string.



# SySAM Administration

SQL Expert uses Sybase Software Asset Management (SySAM) to perform license administration and asset management tasks.

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Borrowing a license to work offline	32
Enabling the network license server REPORTLOG file	34
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## Managing licenses

The Sybase Product Download Center is an online kiosk where you obtain license keys to enable Sybase software.

When you purchase software from Sybase, go to the download site at <https://sybase.subscribenet.com>. When your order is processed, you receive an e-mail message that includes the above URL, your login, and your password for the Sybase Product Download Center.

When you purchase software from a Sybase reseller, go to the download site at <https://sybase.subscribenet.com/webkey>. Use the certificate that you received in your software package to enter the activation string.

Before you go the Sybase Product Download Center, determine:

- Your license configuration – whether to use the network license server or a serverless SySAM configuration.
- The host ID for the servers you want to run.
  - If you are going to use a serverless configuration, you need the host ID for the machine where SQL Expert will run.

- If you are going to use a network license server, you need the host ID of the machine where the license server will run.

To obtain a host ID, go to %SYBASE%\SYSAM-2\_0\bin and execute:

```
lmutil lmhostid
```

---

**Note** If you want to obtain the hostid before installing SQL Expert, the lmutil executable binary is available as a standalone download from the Sybase Product Download Center.

---

- The host name for the network license server if you are using a license server.
- The TCP/IP port number to be used by the network license server if you are using a license server. If you do not specify the port number, the network license server uses the first available port number in the 27000 through 27009 range.

At the Sybase Product Download Center, you can:

- Generate a license file for an order.
- Generate a license file for partial fulfilment of an order. For example, if you want ten copies of the software, you can acquire five now and obtain the remaining copies later.
- Download ordered software.
- Complete the remaining fulfillment for an order.
- Rehost a license. To change the machine where a license is located, you must generate a new license file at the Sybase Product Download Center.
- View a history of fulfilled licenses and re-download the licenses.



- Obtain updated licenses after renewing support.

---

**Note** When you renew your software support with Sybase, the SySAM licenses are updated with the new support date. Download updated licenses from the Sybase Product Download Center after renewing support. The designated support contact receives an e-mail message when a support renewal is processed. The support date is checked when you install SQL Expert to verify the your support is current when the update is posted.

---

If you cannot access the Sybase Product Download Center or have problems generating license keys, contact Sybase Customer Services and Support. They can generate the license keys on your behalf and provide the keys to you.

The Sybase Product Download Center keeps a record of the license keys you have activated, and allows you access the records of the software for which you are licensed.

## Using the options file to manage licenses

Use the options file (`%SYBASE%\SYSAM-2_0\licenses\SYBASE.opt`) to provide control to the SQL Expert license from the network server. For example, you may want to limit the machines on which SQL Expert can be run, or restrict usage to particular users.

For example, the following options file restricts the use of SQL Expert to the users Tom, Sam, and Harry:

```
# the sse_group are
GROUP sse_group tom sam harry
INCLUDE ASE_SXP GROUP sse_group
```

---

**Note** When you specify INCLUDE, you must include all machines or all users licensed for the product in the host group. A machine or a user that is not included in the host group will not be able to use the product.

---

## Starting and stopping network license servers

### ❖ Manually starting SySAM servers

When you install a network license server on Windows, it is configured to startup automatically as a Windows service.

1 In a Command Prompt window, go to %SYBASE%\SYSAM-2\_0\bin.

2 Enter:

```
sysam start
```

### ❖ Manually stopping a SySAM server

1 In a Command Prompt window, go to %SYBASE%\SYSAM-2\_0\bin.

2 Enter:

```
sysam stop
```

### ❖ Starting and stopping SySAM as an automatic service

- When you install a network license server on Windows, it is automatically configured to start as a Windows service.

## Borrowing a license to work offline

Use the `lborrow` option to check out licenses from the network license server, if you will be disconnected from the network for extended period of time.

SQL Expert periodically executes a “heartbeat” on the network license server to update license status. If the machine running SQL Expert is disconnected from the network, these heartbeats fail and eventually the software becomes unavailable. Borrowing a license before disconnecting from the network suspends the heartbeat checks and provides full use of the software while disconnected.

Specify the end time when you perform the borrow operation. At the end of the lease, you can obtain a new lease by connecting back to the network. You can also return a license earlier than the lease end time.

---

**Note** You cannot borrow a license when you are use local license files.

---

**❖ Borrowing a license using *lmborrow***

- 1 Before disconnecting from the network, shut down SQL Expert.
- 2 Go to %SYBASE%\SYSAM-2\_0\bin.
- 3 In a Command Prompt window, enter:

```
lmutil lmborrow SYBASE enddate [ time ]
```

where enddate [time] is the desired borrow end date.

---

**Note** Run lmborrow from the same machine on which licenses are being borrowed, and from the same user that starts SQL Expert.

---

For example, the following command sets the end date at 1 p.m. on August 20th, 2005:

```
lmutil lmborrow SYBASE 20-aug-2005 13:00
```

The maximum borrow time is 30 days. Your license administrator can reduce the maximum borrow time following the instructions in “Returning a borrowed license early” on page 33.

- 4 Start SQL Expert. The checked out license is borrowed.
- 5 Disconnect from the network.

**❖ Displaying status on a borrowed license**

- 1 In a Command Prompt window, go to %SYBASE%\SYSAM-2\_0\bin.
- 2 Enter:

```
lmutil lmborrow -status
```

**❖ Returning a borrowed license early**

- 1 Connect to the network.
- 2 Shut down SQL Expert.
- 3 In a Command Prompt window, go to %SYBASE%\SYSAM-2\_0\bin.
- 4 Return each borrowed license by entering:

```
lmutil lmborrow -return [-c licfile]  
[-d display_name] feature
```

For example, the following command returns the ASE\_SXP license:

```
lmutil lmborrow -return -c  
%SYBASE%\SYSAM-2_0\licenses -d myhost ASE_SXP
```

❖ **Renewing a borrowed license**

- 1 Connect to the network.
- 2 Shut down SQL Expert.
- 3 Return the currently borrowed license if the lease has not expired.
- 4 Execute the steps to borrow licenses with a new lease end date.

See “License Borrowing with BORROW” in Chapter 8, “Mobile Licensing,” in the *FLEXnet Licensing End User Guide*, and Chapter 7, “License Administration Tools,” for more details.

## Enabling the network license server *REPORTLOG* file

The network license server can produce a *REPORTLOG* file that records license use.

---

**Note** Asset management reporting capabilities require a report log.

---

The report log is enabled by adding this command in the options file, where *report\_log\_path* is the report log file for this vendor daemon.

```
REPORTLOG [+] report_log_path
```

Sybase recommends that you prepend the *report\_log\_path* with a plus (+) character to append logging entries, otherwise, the file is overwritten each time the daemon starts.

---

**Note** The SQL Expert installation automatically creates an options file with *REPORTLOG* enabled. The options file, *SYBASE.opt*, is located in *%SYBASE%\SYSAM-2\_0\licenses*.

---

On Windows, path names that include spaces must be enclosed in double quotes. If you start *lmgrd* as a service, the default location for the report log file is *C:\WINNT\system32* unless you specify a fully qualified path name.

## Using SAMreport

SAMreport is a report generator that records the license use of FLEXnet-licensed applications. SAMreport records license use based on license activity recorded in the FLEXnet report logs, and on selected criteria that includes product and feature name, user, date and time, and display or host.

The SAMreport install program is on the SQL Expert installation media in the `\samreport` directory.

---

**Note** The recommended `%SAMreport_home%` location is `%SYBASE%\SYSAM-2_0\samreport`.

---

The report types provided by SAMreport are:

- Usage Over Time – produces a line graph that shows the maximum number of licenses in use over a period of time.
- High Water Mark – produces a line graph that shows the maximum number of licenses used during the specified time period.
- Summary Barchart – provides a format to compare license use across users and features, based on calculations made in the Usage Summary report.
- Usage Efficiency – shows how long each successive license for a given product was in use.
- Usage Summary – produces text output that summarizes usage statistics for each product.
- Server Coverage – documents the time during which the license server was servicing licenses.
- Raw – shows individual use events, not a summary of license use. In general, a Raw report provides one line of data for every license checkout, listed in chronological order of check-in.

### ❖ Using SAMreport

1 To start SAMreport:

- Select Start | Programs | SAMreport | SAMreport; or
- Double-click `report.exe` in the `%SAMreport_home%` directory; or
- Open a Command Prompt window, go to the `%SAMreport_home%` directory, and enter:

```
report
```

- 2 To stop SAMreport, select File | Exit or click the Exit button in the SAMreport interface.

## Managing and collecting logs

SAMreport must access report logs on the SySAM license server on which you want the report. If you are using a serverless license, the report log files must be on the local machine. If you are using a network license server, the report log files must be accessible via a network-mounted server. SAMreport does not manage this task; you must manually copy the reports to the appropriate local or network machine and map a drive to the network server if necessary.

---

**Note** Appendix A of the *SAMreport User's Guide* discusses how to manage report logs, including scripts to automate collection of such logs. To access this guide, go to the Sybase Product Manuals Web site at Product Manuals at <http://www.sybase.com/support/manuals/>, select the Adaptive Server Enterprise product from the drop-down list, then select Adaptive Server 15.0 core documentation. Select the Eclipse icon for online documentation. The *SAMreport User's Guide* appears at the end of the Adaptive Server 15.0 documentation list in the left pane.

Portions of the *FLEXnet Licensing End User Guide* and the *SAMreport User's Guide* are included with permission of Macrovision Corporation.

---

## Using SySAM utilities

SySAM provides these utilities, which allow the license administrator to manage network licensing activities:

- `lmborrow` – supports license borrowing.
- `lmdiag` – diagnoses license checkout problems.
- `lmdown` – shuts down selected license daemons.
- `lmhostid` – reports the system hostid.
- `lminstall` – converts license files to different formats.

- `lmnewlog` – moves existing report log information to a new file name or starts a new report log file with the existing file name.
- `lmpath` – allows direct control over license file path settings.
- `lmremove` – releases a failed license to the pool of free licenses.
- `lmreread` – directs the license daemon to reread the license file and to start any new vendor daemons.
- `lmstat` – displays the license server system status.
- `lmswitch` – controls the size and location of the debug log.
- `lmswitchr` – switches the report log to a new file name.
- `lmver` – reports the FLEXnet licensing version of a library or binary file.

For more information, see Chapter 7 in the *FLEXnet Licensing End-User Guide*.

The `sysam` script located in `%SYBASE%\SYSAM-2_0\bin` provides a wrapper for the most frequently used FLEXlm utilities. To display the help text, which provides complete instructions, enter the following command in a Command Prompt window:

```
sysam help
```

To display detailed help on a specific action, enter:

```
sysam help <action>
```





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