SYBASE®

Users Guide

Sybase® Software Asset Management

2.0

Contents

About This Book

Audience

This book is for people who install or administer Sybase® products that use Sybase Software Asset Management (SySAM) 2.0. This book introduces you to Sybase asset management concepts and provides instructions for establishing and managing your license files.

Related documents and other sources of information

Refer to the documentation set for your product. To access the Sybase Product Manuals Web site, go to Product Manuals at http://sybooks.sybase.com.

In addition to product manuals, you will find links to EBFs/Maintenance, Technical Documents, Case Management, Solved Cases, newsgroups, and the Sybase Developer Network.

Also see the following Macrovision user documentation on the Sybase Web site at http://sybooks.sybase.com. At the product manual site, search for the SySAM documentation set.

- *FLEXnet Licensing End User Guide* – this Macrovision manual 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.

- *SAMreport User's Guide* – this Macrovision manual explains how to use SAMreport, a report generator that helps you monitor the usage of applications that use FLEXnet licensing.

Sybase certifications on the Web

Technical documentation at the Sybase Web site is updated frequently.

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

1   Point your Web browser to Technical Documents at http://www.sybase.com/support/techdocs/.

2   Click Certification Report.

3   In the Certification Report filter select a product, platform, and timeframe and then click Go.

4   Click a Certification Report title to display the report.

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

1 Point your Web browser to Availability and Certification Reports at
http://certification.sybase.com/.

2 Either select the product family and product under Search by Base
Product; or select the platform and product under Search by Platform.

3 Select Search to display the availability and certification report for the
selection.

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

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

1 Point your Web browser to Technical Documents at
http://www.sybase.com/support/techdocs/.

2 Click MySybase and create a MySybase profile.

**Sybase EBFs and
software
maintenance**

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

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

2 Select EBFs/Maintenance. If prompted, enter your MySybase user name
and password.

3 Select a product.

4 Specify a time frame and click Go. A list of EBF/Maintenance releases is
displayed.

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

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

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

CHAPTER 1 **SySAM Quick Start**

This chapter contains a brief overview of Sybase Software Asset
Management (SySAM) 2.0, which is the system used to license Sybase
products.

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Overview

This book introduces you to basic SySAM concepts and provides
instructions for establishing and managing your license files.

Small environments

If you manage an environment with a small number of Sybase products
and users, or are familiar with asset management, follow the SySAM
instructions in your product installation guide and use this book as a
reference if you have questions.

To complete a simple installation, see "Getting started with SySAM" on
page 3, and the installation guide for your product.

Large environments

If you manage a large environment, or are unfamiliar with asset
management, use this book in combination with your product installation
guide.

1   Review this chapter for an overview of the steps to set up SySAM, then read Chapter 2, "Understanding Licensing Concepts and Models" for guidance on selecting a license model.

2   Read Chapter 3, "Getting and Using Your License" for instructions for setting up the license files.

Additional information

Additional information is available in:

*   Chapter 4, "License Server Administration," Chapter 5, "Mobile Licensing," and Chapter 6, "Using SAMreport for Asset Management," – provide information about license server administration and asset management.

*   Chapter 7, "GUI Administration for SySAM," – explains SySAM GUI administration.

*   Chapter 8, "Troubleshooting," – contains troubleshooting information.

Introducing SySAM

SySAM is a licensing and asset management system built on FLEXnet technology from Macrovision Corporation. In its simplest form, SySAM provides a mechanism for acquiring licenses for your product. However, SySAM can also satisfy the asset management needs of large corporations by ensuring that you know what Sybase software you have, where it is running, and at what version. In this way, SySAM helps you remain compliant with regulatory acts such as Sarbanes-Oxley.

SySAM enforces licensing and requires your action, so it is important that you read this document and understand how to acquire and deploy the licenses required by SySAM-enabled products.

Note SySAM-enabled products work for an initial grace period without a license. If you do not install a valid license for your configuration during the grace period, the product ceases to function.

Getting started with SySAM

The first step is to choose a license model. The remaining steps that you take depend on whether you chose a served license model or an unserved license model.

See "SySAM components" on page 5, and "Choosing a license model" on page 9 to determine the most appropriate license model for your environment.

Note Typically, a served license model works best for medium to large installations, and an unserved license model works best for small or isolated installations.

Choosing a served license model

1   Choose your license server host – see "Choosing a license server host for a served license" on page 10.

2   Install the license server – see the installation guide for your product.

3   Determine the host ID – see "Getting your host ID" on page 21.

4   Determine the exact product that you want to install.

    Before you install a product, familiarize yourself with "Sybase product licensing concepts" on page 13.

5   Generate and deploy your licenses – log in to SPDC, generate your licenses and install them on the license server. See Chapter 3, "Getting and Using Your License."

6   Start the license server – see "Starting and stopping a license server" on page 31.

7   Install the Sybase product – see the product's installation guide.

8   If users will use the licensed software while disconnected from the license server, inform users of the mechanism to obtain licenses for mobile use – see Chapter 5, "Mobile Licensing."

9   Administer your license server – see Chapter 4, "License Server Administration."

10 React to license failure notifications – see "License availability and product grace periods" on page 16.

11 Use a SAMreport to manage your assets – see Chapter 6, "Using SAMreport for Asset Management."

Choosing an unserved license model

1 Determine the exact product that you want to install – before you install a product, familiarize yourself with "Sybase product licensing concepts" on page 13.

2 *Install your product:* See the installation guide for your product.

3 *Determine the host ID:* See "Getting your host ID" on page 21.

4 *Generate and deploy your licenses:* Log in to SPDC, generate your licenses and install them on the machine where you will be running your product. See Chapter 3, "Getting and Using Your License."

Note For some products, you must determine your host ID and generate and deploy your licenses as part of the product installation.

Maintaining your licenses

Regardless of your license model, you may need to:

1 *Install product updates or future product releases*: You may need to generate and deploy new or upgraded licenses. See "Updating your Sybase licenses" on page 25.

2 *Rehost your license:* In the event of a failed machine or hardware update, you must rehost the license to a new machine. See "Checking in your Sybase licenses for rehosting" on page 26.

Understanding Licensing Concepts and Models

This chapter contains licensing information.

SySAM components

SySAM-enabled products can obtain licenses using either of two models:

- Unserved license model – gets licenses directly from the license file.
- Served license model – gets licenses from a license server to distribute to one or more machines.

Each license model requires different SySAM components.

Note Some products or specific license types may not allow you to choose a license model. In this case, use the license model dictated by the product or license type. For example, tools products purchased under a floating license type require that you use a served license model.

Unserved license model

The unserved license model consists of:

- The SySAM-enabled product.

- One or more license files, which have been generated for a specific machine.

Figure 2-1: Unserved license components
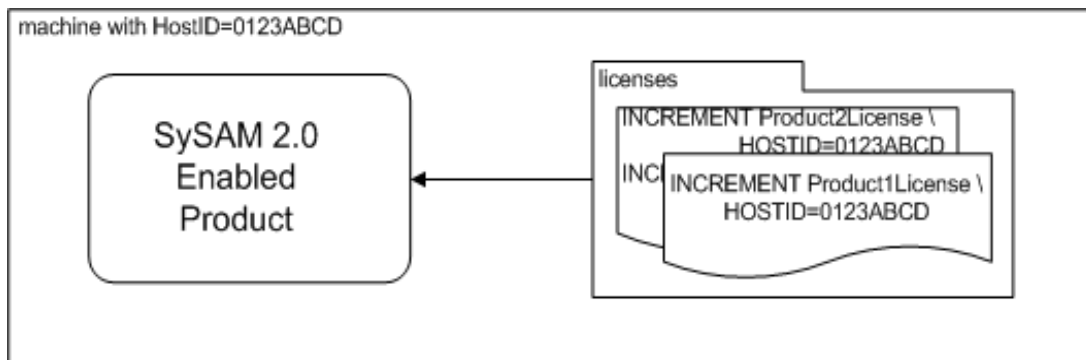
Served license model

The served license model configuration includes:

- The SySAM-enabled product.

- License file used by the product, that contains pointers to the license servers. This is typically generated by the installation program, or you can create it manually. For example:

```
SERVER server_host ANY port
USE_SERVER
```

where:

- *server_host* – is the machine on which you are running your license server.

- *port* – is the port number for the license server if specified.

- The license server, which consists of:

- The license server manager daemon called lmgrd.

- The vendor daemon processes called SYBASE.

The license server manager daemon starts the vendor daemon. If you have installed a license server to use with non-Sybase products or older Sybase products, SySAM requires lmgrd version 10.8 or higher. See "Determining your license server version" on page 74.

- SySAM utility programs used to manage the license server.

- One or more license files containing product licenses that have been generated for the license server. The license files begin with three lines that identify the license server. For example:

```
SERVER server_host host_id port
VENDOR SYBASE
USE_SERVER
```

where:

- *server_host* – is the name of the license server host machine.

- *host_id* – is the host identifier for the license server host machine.

- *port* – is the port number for the license server, if specified.

- An options file called *SYBASE.opt*. This file specifies the location of:

- The license server debug log file.

- The SYBASE vendor daemon report log file.

Figure 2-2: Served license components
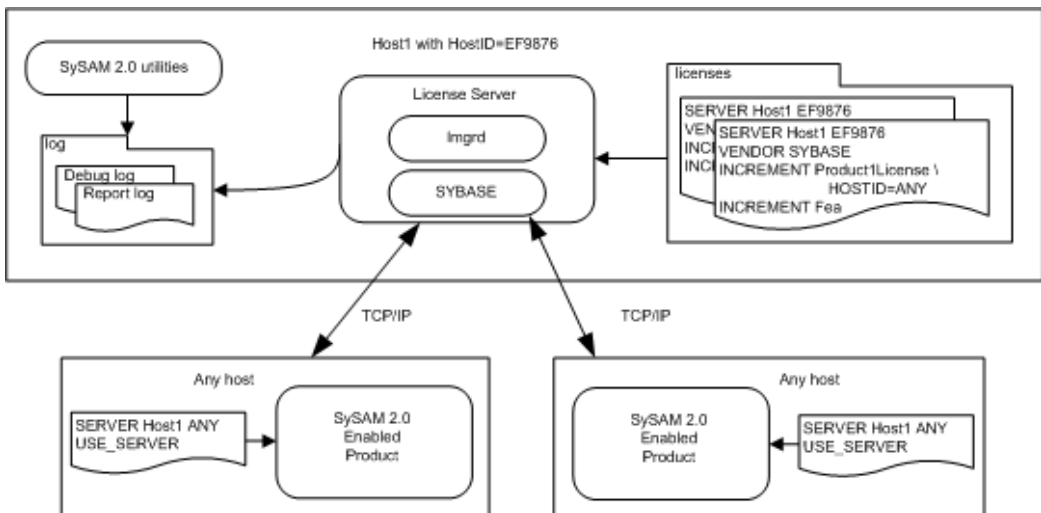
Note The license server and your Sybase product can run on the same machine or on different machines, including machines that have different architectures or operating systems.

For more information on SySAM components, see "FLEXnet Licensing Components" in Chapter 1 of the *FLEXnet Licensing End User Guide*.

How SySAM components work

SySAM-enabled products execute these steps:

1   The product starts.

2   The product attempts to acquire a license.

   •   If you are using an unserved license model, the product reads the license files to determine whether it has a valid license.

   •   If you are using a served license model, the product requests a license from the license server. The license server determines if there is a valid license available.

3   If a license is successfully acquired, the product functions normally. If you have enabled any optional functionality that requires additional licenses, the product attempts to acquire the additional licenses.

4   If a license cannot be acquired, the product evaluates whether one can be granted for a grace period.

   a   If the license can be granted, the product starts and functions normally.

   b   If a license cannot be granted, the product cannot start or the optional feature is disabled, depending on which license cannot be granted.

5   During operation, the product periodically verifies that a license is still valid or, if operating within a grace period, attempts to obtain valid licenses. This periodic verification is called a heartbeat.

   If a heartbeat detects that a license is no longer available:

   •   The product continues functioning in grace mode, if applicable.

- If no grace period is available, the optional functionality or the product governed by the license is disabled.

6   If a product is disabled due to lack of license, you are allowed to save your work before it exits, and the product shuts down in an orderly fashion.

Choosing a license model

Table 2-1 compares the attributes of served and unserved license models.

Note Some products or specific license types may not allow you to choose a license model. In this case, use the license model dictated by the product or license type. For example, tools products purchased under a floating license type require that you use a served license model.

Table 2-1: Served versus unserved licenses

Served licenses	Unserved licenses
The license can be distributed to products running on any machine or operating system.	The license can be used only by a product running on the machine for which the license was generated.
Generate licenses for products running on multiple machines by: 1 Specifying the single host ID of the license server. 2 Specifying the number of licenses required. 3 Deploying the license to the license server.	Generate an unserved license for every machine on which a product is running, then deploy the license to the specific machine.
You must administer the license server.	No additional license administration is required.
Enables license usage reporting, capacity planning, and asset management.	No license reporting or asset management capabilities are available.
Requires a functioning license server and network. If the license server or network fails, you must respond to product license failure notifications, and understand product behavior under license grace periods.	Installed locally and always available. No further knowledge of licensing is required once the license has been generated and installed.
If your product machine fails, you can move your product to a new machine and it obtains licenses from the existing license server. If your license server host fails, you can regenerate all served licenses to be served by a license server on another machine.	If your machine fails or you want to move to a new machine, you must regenerate all required licenses, for all affected products, on the new machine.

When deciding whether to choose a served or an unserved license, consider:

- *Asset management and reporting* – if you need asset management and reporting functionality, choose a served license model.

- The number of Sybase products you plan to use:

  - *Small installations* – if you use a small number of Sybase products, Sybase recommends an unserved license model. You must generate licenses for each machine but once this is done, no further licensing actions are required, unless new licenses are required for new product releases, updates, or EBFs.

  - *Large installations* – if you use a large number of Sybase products, Sybase recommends a served license model. A single license server can support hundreds of products, but multiple license servers may be required for installations with thousands of products or to provide load-balancing or redundancy.

- *Multi-site installations* – if you use a large number of Sybase products in a geographically distributed environment, Sybase recommends a served license model with a license server for each major geographical location so that license requests are fulfilled by a license server located in close proximity.

Choosing a license server host for a served license

Consider the following resources to determine which machine to use as your license server.

Note You can install a license server on a machine that uses a different platform than the platform used by your Sybase products. See "Using a license server on a different platform" on page 29 for more information.

- *Sockets* – each product connected to the license server requires one socket connection.

- *CPU time* – the license server uses very little CPU time and may, after many days of service, have used only a few seconds of CPU time. The factors affecting CPU usage are:

- How often products are started and stopped. Each license request requires that the license server searches for a license in its cache, marks it as in-use by the product, and returns the license details to the product.

- The frequency of product heartbeat to verify licenses. This typically occurs every 2 hours for server products and every 30 minutes for tool products. The heartbeat requires the license server to check that the licenses are still associated with the product and informs the product whether that is the case.

- The number of different licenses that are being served affects the time to find a specific license in memory. Licenses are sorted and pooled by the license server on start-up, or when licenses are reread. This search is efficient and should not be a significant performance factor. Do not confuse the number of different licenses with having a large quantity of a particular license.

- The number and type of products using the license server affects the frequency of requests and heartbeats.

- The number of licenses required by each product affects the frequency of requests and increases the verification time for each heartbeat.

  For example, a license server running on a Solaris UltraSparc-60 serving 100 *different* licenses to 200 tools and server product instances obtaining licenses from the server used 5 minutes of CPU time in a week.

- *Disk space* – the only output files created by the license server system are the debug and report log files. When you have a large amount of licensing activity, your debug and report log files can become very large. To minimize disk space, consider deleting older debug log files and archiving older report log files. The amount of space used depends on how much historical data you want to maintain online.

  Note Sybase recommends that you install lmgrd, the vendor daemons, the license file, and the debug and report log files on local disks

- *Memory* – the license server uses very little memory. Less than 5MB is required by the server itself, but this increases with the number of different licenses that are stored and the number of concurrent users. The license server system mentioned in the CPU time example above used 50MB of memory.

• *Network bandwidth* – generally, licensing operations require less than 1KB of data transferred between the client and the server. The bandwidth required is affected by the number of products, how often they check licenses in and out, and how regularly they perform heartbeat operations.

Using mobile licensing for a served license

If you chose an unserved license model you can work offline because the product license is installed on the machine itself. However, if you use a served model, your product cannot contact a license server to obtain the license if you are working offline.

To enable mobile licensing, borrow one or more licenses from the license server for a specified time. Your Sybase product uses the borrowed license and heartbeat checks are suspended for the duration of the borrow period.

At the end of this period, you can obtain a new borrowed license by connecting back to the network and borrowing the license again. You can also return the license earlier than when the borrow period ends.

If you do not obtain a new borrowed license by the end of the borrow period, the product continues to operate for the duration of the "runtime grace period" and then it ceases to function until a valid license is obtained.

Redundant license servers and load balancing

SySAM-enabled products provide grace periods to accommodate temporary license server failures. Therefore, you generally need not set up redundant license servers.

An exception to this general guideline is if you are using cold standby servers which are installed and configured, but not usually in a running state. Cold standby systems are brought online only when the primary system fails. If the license server is not responding when the cold standby server tries to start, the cold standby server cannot acquire a license. Even if the cold standby server has previously connected to the license server, if the elapsed time is longer than the run-time grace period allowed for this product, it will not run with a grace period. You can mitigate such a situation, by:

- Using unserved licenses. Unserved licenses do not need a license server so they are always available.

- Setting up a license server with redundancy.

You can set up the license server to provide redundancy in one of two ways:

- *Using multiple license servers in the license search path* – set up multiple license servers and split available licenses across the license servers. The product looks for licenses from all of these license servers. If one of the license servers is down, then the next license server is tried.

Warning! Such a configuration does not provide 100% redundancy. If one of the license servers stops responding, the licenses it was serving are no longer available. The only licenses available are the unused licenses from the other licenses servers including any overdraft licenses.

If you have multiple license server installations, you may want to adopt such a configuration.

- *Setting up a three-server redundant configuration* – three license servers form a cluster that serves the same set of licenses. Any two members of such a cluster must be running in order for the cluster to serve licenses. That is, a three-server redundant configuration can tolerate failure of one member and still be operational.

This setup does provide 100% redundancy, as failure of one member does not reduce the number of licenses being served. The three members of the cluster must be similar machines that are located close enough to each other to accommodate inter-server communications.

For instructions on how to configure your server for redundancy, see "Configuring SySAM for redundancy" on page 38, and Chapter 4 of the *FLEXnet Licensing End User Guide*.

Sybase product licensing concepts

Many Sybase products are offered with several editions and license types. Since such products are distributed as a single installation image, you must configure the product to use the correct license for the product edition and license type. For product-specific license information, see the SySAM product licensing page at http://www.sybase.com/sysam.

For more information about your product, see the confirmation e-mail message or Web key certificate you received when you placed your order.

Product editions

Some Sybase products are offered under different editions or bundles with varying capabilities and features. Make sure you configure your product to use the correct license for the product edition you purchased.

Optional features

Some Sybase products offer optional features in addition to the base product. For example, you can license the High Availability option on top of a base Adaptive Server. To install and configure any optional features, you should know which features you are licensed to use.

For product-specific optional features, see the SySAM product licensing page at http://www.sybase.com/sysam. For information about installing and configuring optional features, see the installation guide for your product.

Note When an optional feature is offered for multiple product editions, the feature is offered as a different, orderable item for each edition. You can use the optional feature license *only* with the base product of the same edition. For example, you cannot use the optional feature license for Small Business Edition with an Enterprise Edition base product.

Standby licensing

You can license some Sybase products and optional features with standby licenses to set up standby systems in a high availability environment.

If a product is using an active license, then all the optional product features must have an active license. Similarly, if a product is using a standby license, then all of its optional product features must use a standby license. The exception to this is that some optional features do not offer standby licensing, and in such cases you may use active license for the optional feature, even when a standby license is used for the base product.

Overdraft licenses

Some Sybase products include an optional overdraft reserve. An overdraft allows you to generate additional licenses in excess of the quantity of licenses you actually purchased. This enables you to exceed your purchased quantity of licenses in a peak usage period without impacting your operation.

Overdraft licenses are governed by the terms of the agreement presented when you obtain such a license.

License types

Sybase products are licensed under a number of different license types. Some examples of license types include CPU license (CP), Server license (SR), Standalone Seat (SS), and Floating license (FL).

Note If you have multiple orders with different license types for the same product, identify the license type for your specific installation when generating your license file.

Not all Sybase products and options are licensed under every license type. When a configuration requires multiple licenses, license types can be mixed. For example, your base product might be licensed under the "Server" license type, but your optional features are licensed under the "CPU" license type.

The number of licenses used by a product depends on the license type. For example:

- *For CPU (CP) licenses* – the quantity of licenses required depends on the number of CPUs on the machine where the product will be used.

- *For Server (SR) licenses* – typically a single license is used per machine where the product is running.

- *For Standalone Seat (SS) licenses* – install and use the program on a single workstation.

- *For Floating User (FL) license* – install the program on any number of machines but the number of programs you can simultaneously run is limited to the number of FL licenses purchased.

License availability and product grace periods

SySAM-enabled products are built with tolerance for situations when a license is not available. Depending on the product purchased, any of the following three grace periods are provided:

- *Installation grace periods:* A Sybase product uses an installation grace period when no license is available during installation. Once a license has been installed, the product registers the license during the next heartbeat or restart, and continues to function normally.

- *Runtime grace periods:* A Sybase product uses a runtime grace period if a previously obtained license is no longer accessible. If a suitable license becomes available, the product registers the license during the next heartbeat.

- *Support grace periods:* For products with updates offered only under support plans, when you renew your support contract, you must update your licenses to reflect your extended support agreement. A Sybase product uses a support grace period when a product update has been installed, but you have not yet updated your license to reflect the new support plan end date. A support grace period differs from installation and runtime grace periods in that after a support grace period ends your product continues to run, but you can no longer apply product updates.

The duration of installation and runtime grace periods are product-dependent, but generally, a 30-day grace period is provided for server products and a 15-day grace period is provided for tool products.

When operating within a grace period, products periodically verify that licenses are still valid or attempt to obtain valid licenses. This "heartbeat" occurs every 2 hours for server products and every 30 minutes for tool products.

Licenses for optional features do not impact the license for the core product. If a license for an optional feature cannot be obtained, that functionality is disabled, however, the base product continues to function normally.

Grace notification

Your Sybase product notifies you that you are running in a grace period at an exponentially increasing rate. The error messages indicate the duration of the remaining grace period.

The manner in which these notifications are presented is product-specific. Most products log errors to the error log. For most tool products, a pop-up message or status bar displays. Some products allow you to configure e-mail alerts to notify you when you are running within a grace period.

End of grace behavior

If a product license cannot be obtained during the grace period, your product ceases to operate. For tool products, you are allowed to save any outstanding work before the tool exits. For server products, an orderly shutdown is performed.

Getting and Using Your License

This chapter includes an overview of a license, and instructions for obtaining a license from the Sybase Product Download Center (SPDC).

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An SPDC overview

The SPDC allows you to download Sybase products and manage product licenses.

In general, when you order a Sybase product:

1   You order a product that corresponds to a catalog number and license type.

2   You receive the order confirmation that includes information about SPDC.

3   You log in to SPDC and download your product and generate the license key.

4   You install the product and the license key.

Accessing SPDC

Once you have purchased a Sybase product, you are enrolled into the Sybase Product Download Center (SPDC.)

When you are enrolled as an SPDC member, you receive a welcome e-mail message that contains a URL to the SPDC site, as well as a user name and password. Use this information to access SPDC.

Note If you have purchased your Sybase software from a Sybase reseller, you may receive a Web key rather than an e-mail message. For information about how to proceed with a Web key, see "Buying Sybase software from Sybase resellers" on page 27. If you receive your product with a Web key certificate attached, go to SPDC at https://sybase.subscribenet.com/webkey.

Downloading a Sybase product from SPDC

Once you have logged in to SPDC, you are ready to download your Sybase product:

1   On the Welcome screen of SPDC, you can view all of the products to which you have access.

2   Click the product with the edition and version you want to download. Make sure you select the product for the correct operating system.

3   The license agreement displays. To continue with the download, agree to the terms and conditions set out in the license agreement.

Note The license agreement only displays the first time you attempt to download a product. Once you have agreed to the license, you will not encounter the license agreement for subsequent downloads of that product.

4   At the product download page, you can download your product and its associated documentation. You can also:

- Estimate the time it will take to download your Sybase product by clicking the Estimate Times and Details link.

- Configure the download protocol to use by clicking the Advanced Download Options link. Browser FTP is the default download protocol for Sybase products at SPDC.

5   When you are ready to download your Sybase product file, click the Download button. In most instances, there will be more than one Sybase file to download.

6   Select the directory to which you want to download the file. Save your file either to your desktop or to a temporary directory. Once you have entered your directory, click OK.

Once you have downloaded your Sybase product, generate a license file, and then install the product. See the installation guide for your product.

Before you generate a license

Before you generate a license for your Sybase product:

1   Determine your license model. You must know whether you will be using a served or an unserved license model.

2   Determine the host ID.

3   If you are using a served license model, Sybase recommends that you know the host name for the license server.

4   Determine the TCP/IP port number that will be used by the license server. If you do not specify a port number, the license server will use the first available port in the range of 27000 to 27009. If you are using three-server redundancy, a port outside of this range must be specified.

Getting your host ID

The host ID is required when generating licenses at SPDC.

You can use the lmutil utility to obtain your host ID. lmutil is included in your product distribution, or you can download it from SPDC.

Run the following command on the machine for which the host ID is required:

```
lmutil lmhostid
```

Tools products may provide the host ID interactively. Alternatively, you can determine the host ID value using native operating system commands. See the SPDC FAQ titled "What's My Host ID" or Appendix A of the *FLEXnet Licensing End User Guide* for the exact commands for your platform.

On some platforms, the host ID is derived from the network adapter address. If your machine has multiple network adapters, `lmutil lmhostid` returns one host ID for each network adapter. The output may look similar to:

```
The FLEXlm host ID of this machine
is ""0013023c8251 0015c507ea90""
Only use ONE from the list of hostids.
```

Choose *one* of these host IDs. Sybase recommends that you use the value associated with the primary wired Ethernet adapter. Do not use values associated with internal loopback adapters. If you cannot determine which host ID to use from the `lmutil lmhostid` output, use the native operating system command to get additional details.

Note If your Windows machine does not have a network adapter, SySAM supports an alternate host ID based on the disk serial number.

To obtain this alternate host ID:

1   Enter `"lmutil lmhostid -vsn"`.

2   The output is returned as: `"DISK_SERIAL_NUM=hhhhhhh"` where `'hhhhhhh'` is the disk serial number.

3   Use the serial number of the disk where Sybase software will be used.

4   Use the complete output from the command which looks similar to `DISK_SERIAL_NUM=hhhhhhh` as the host ID value.

Generating licenses at SPDC

To generate your license, regardless of license model:

1   At the product download page, click the License Keys link.

2   The License Information page displays. Select the license you want to generate. Consider:

- The type of license you want to generate. See "License types" on page 15.

- If you are unsure what you have licensed, your company's purchase order should have the product name, edition, and license type.

3 Click the Generate button on the left side of the screen. Scroll to the bottom of the page, and click Select to Generate.

4 Step one of the SySAM License Generation wizard asks you to choose between a served license and an unserved license. If you are using a served license, continue with the steps in "Generating a served license" on page 23, and if you are using an unserved license, continue with the steps in "Generating an unserved license" on page 24.

Note Some Sybase products or license types do not give you a choice of license model to use, and therefore do not display this page. If this is the case, proceed with the SySAM License Generation wizard to generate your license.

❖ **Generating a served license**

1 Select served license and click Next.

2 Enter the number of licenses to generate and click Next.

3 Enter the server host ID and, optionally, the host name and port number.

- Sybase recommends that you provide the host name here to ease future license administration.

- A port number is not required unless you are using a three-node redundant cluster. A valid number is any unused port number between 0 and 64000. On UNIX, choose a port greater than 1024, since those less than 1024 are privileged port numbers. If no TCP/IP port number is specified, one of the default ports between 27000 and 27009 is used.

- To generate a license for a three-server redundant configuration, specify the host ID, host name, and port number for the three nodes of the cluster. The port number is not optional for this configuration and should be outside of the 27000 to 27009 range. See "Redundant license servers and load balancing" on page 12.

4 Click Generate.

5 Once you have generated the license, you can:

- Download the license file by clicking the Download License File button.

- Print a paper copy of the license by clicking the Print Friendly button.

- Return to the license information page to generate additional licenses.

6 Once you have generated all the licenses you need, save them to the *licenses* directory in your license server installation. See "Understanding the SySAM directory structure" on page 30.

Note You must save your license files with a *.lic* extension, or SySAM does not recognize them.

Sybase recommends that you set up the license server and required licenses before you install your SySAM-enabled Sybase product. See the installation guide for your product.

❖ **Generating an unserved license**

1 Select Unserved License and click Next.

2 Select the number of machines you want to license and click Next. You can generate licenses for a maximum of 10 machines at a time.

3 Enter the host ID, and optionally, the host name for each machine for which you want to generate a license.

For some license types, you must enter the number of CPUs for the machine where this license will be used.

4 Click Generate.

5 Once you have generated the license, you can:

- Download the license file by clicking the Download License File button.

- Print a paper copy of the license by clicking the Print Friendly button.

- Return to the license information page to generate additional licenses.

6 Once you have generated all the licenses you need, save them to the specific location required by your product. See the installation guide for your product for the precise location.

Note You must save your license files with a *.lic* extension, or SySAM does not recognize them.

Updating your Sybase licenses

Your licenses may need to be updated when:

- Your support contract is renewed. An updated license enables you to use the newest versions of products that become available during your support period.

- A new product version is added to your entitlement.

- You renew your software support with Sybase. Update your SySAM licenses to reflect the new support date.

Product updates and EBF entitlement checks

When product updates are made available only to customers with an active support plan, the product's licenses are encoded with information about the duration of the support plan. This information is stored in the license file and referred to as a date-based version.

If you have purchased a support contract that gives you access to product updates and EBFs, you can access those updates at any time during your support contract.

Note When you renew your support contract, you must generate and deploy a new license. This applies to both a served and an unserved license model.

For more information on date-based versioning, see Appendix B, "Installing Product Updates, EBFs, and Support Renewal."

Updating a license

Use the following steps to update your license.

❖ **Updating your license**

1 Log in to SPDC using the user name and password you received in your Welcome e-mail message.

2 Select the product family from the product list.

3 Select your product edition, version, and operating system from the product information page.

4   Click License Keys from the Product Download page.

5   Information about the licenses you have previously generated display on the license information page. If there are upgrades available for your license, an upgrade button with the license information displays.

6   Identify the license you want to upgrade, and click Upgrade.

7   A new license file is generated. Download the license file, and save to the location of your previous license files.

> **Note** After you have saved your new license files, back up your previous license files and then delete them.

8   For your new licenses to take effect, enter:

```
sysam reread
```

Or, instruct the license server to reread the license. See "Rereading the license file" on page 61.

Checking in your Sybase licenses for rehosting

You must check in your Sybase license when you want to move your license to a new machine, due to a failed machine or a hardware upgrade.

❖   **Checking in your license**

1   Log in to SPDC using the user name and password you received in your Welcome e-mail message.

2   Select the product family from the product list.

3   Select your product edition, version, and operating system from the product information page.

4   Click License Keys from the Product Download page.

5   Information about the licenses you have previously generated displays on the license information page.

6   Identify the license you want to check in, and click Check-in. You may then generate a new license and save it to a new machine.

Note There is a product-specific limit to how many times you can check in and rehost licenses. If you have reached your check-in limit for the year, the Check-in option does not appear; call Sybase Customer Service.

Buying Sybase software from Sybase resellers

If you have purchased Sybase software from a Sybase reseller, you may need to use a Web key to access SPDC:

1   When you purchase a Sybase product from a Sybase reseller product package may include a a Web key.

2   The Web key certificate contains the URL to access your Sybase product with a Web key. That URL takes you to SPDC at https://sybase.subscribenet.com/webkey.

3   The Web key certificate also contains an activation string to use as your login name at the SPDC login page.

4   You can register your identity with SPDC. Sybase recommends that you do this, but it is not required.

5   Once you have entered the information you want to register, click OK to enter SPDC. You are now logged in and can download products and create licenses.

CHAPTER 4   **License Server Administration**

If you have chosen a served license model, there are some additional tasks you must perform. This chapter outlines those tasks and provides information about optional tools and functions of the license server.

Using a license server on a different platform

Using a license server on a different platform allows you to:

- Install a SySAM license server on a machine with a platform different from machine where your Sybase software is installed.

- Install the SySAM license server independently from your licensed Sybase software.

A SySAM license server is supported on these platforms:

- HP-UX Itanium 64-bit

- HP-UX PA-RISC 64-bit

- IBM AIX 64-bit

- Linux on POWER 64-bit

- Linux x86 32-bit

- Linux x86-64 64-bit

- Sun Solaris SPARC 32 & 64-bit

- Sun Solaris x64 64-bit

- Windows x86 32-bit

❖ **Installing a license server on a platform different from your Sybase products:**

1   Choose a license server host. For information on how to do that, see "Choosing a license server host for a served license" on page 10.

2   Download and install the standalone server from the Sybase Web site at http://www.sybase.com/sysam

3   Select one of the two choices offered by the install program:

   a   Full – installs License Server, SySAM Utilities, and Unified Agent for SySAM.

   b   Custom – allows you to choose specific components to install.

4   If you have not already done so, obtain the required licenses from the Sybase Product Download Center (SPDC). See Chapter 3, "Getting and Using Your License," for information on how to obtain licenses from SPDC.

5   Copy the acquired licenses into the licenses directory of the license server.

Note Installation instructions are also available from the SySAM Standalone License Server Install Web site referenced in step 2.

See "Starting and stopping a license server" on page 31 for information on how to start and stop the license server. Refer to the remainder of this chapter for ongoing administration tasks.

Understanding the SySAM directory structure

SySAM programs and files are generally installed in a directory called *SYSAM-2_0* under the product installation directory.

The *SYSAM-2_0* directory has the following subdirectories:

* *bin* – stores license server binaries including lmgrd and *SYBASE*, utility programs, and the *sysam* wrapper script for SySAM administration.

* *log* – includes the license server debug log and report log files, named *SYBASE.log* and *SYBASE.rl* by default.

* *licenses* – stores license files with a *.lic* extension. The *licenses* folder also stores the *SYBASE.opt* options file which specifies license server settings and any license restrictions.

* *samreport* – Sybase recommends you use this installation location for the SAMreport reporting application. You must install SAMreport separately from your Sybase product. See the installation instructions in Chapter 6, "Using SAMreport for Asset Management."

Starting and stopping a license server

The license server has the following requirements:

* The commands to start and stop a license server must be executed on the machine on which the license server runs.

* You cannot start the license server until there is at least one served license copied into the licenses directory. You can get a served license from SPDC before starting the license server. See "Generating licenses at SPDC" on page 22.

- On any machine, you can have only one instance of a SYBASE license server daemon running.

> **Note** Some Sybase products use an earlier version of asset management technology, SySAM 1.0. You cannot run a SySAM 1.0 and a SySAM 2.0 license server on the same machine. You can serve your SySAM 1.0 licenses from a SySAM 2.0 license server as described in Appendix F, "Migrating the License Server from SySAM 1.0 to SySAM 2.0."

Manually starting a license server

To start the license server, issue the following command on the machine on which it will run:

```
sysam start
```

> **Note** On UNIX machines, Sybase recommends that you use a sybase user for installation and administration. If you are running as root, switch to a specific user account by entering `su sybase -c "sysam start"`.

Manually stopping a license server

To stop the license server, issue the following command on the machine on which it is running:

```
sysam stop
```

Starting and stopping SySAM as an automatic service

When you install a license server on Windows platforms, it is automatically configured to start as part of system start-up. On UNIX machines, you must configure this after the installation is complete. See the Appendix, "Configuring the License Server on UNIX Systems."

Determining license server status

To determine the status of the license server, execute:

```
sysam status
```

This reports whether the license server is running and lists the license files that are in use by the running server.

Monitoring license usage

To determine what licenses are available and where licenses are currently being used, execute:

```
sysam status -a
```

Execute this command on the license server host machine to determine status of a specific license server. You can also execute `sysam status -a` on the machine where the product is running, to determine the status of all license servers a product is using. This command also verifies that the license servers are correctly specified in the product's license file.

Registering new license files with the license server

You must register new licenses with your license server.

❖ **Registering a new license**

1   Generate your new licenses in SPDC and save them to *licenses* directory

2   Enter the following command on the machine on which your license server is running:

```
sysam reread
```

3   Your new licenses are registered with the license server.

Managing the license server debug log

By default, all license server status and error messages are written to the *SYBASE.log* debug log file in the *log* directory. This log file is used to diagnose issues with the license server. For information on messages written to this log file, see Appendix G, "The Debug Log File," of the *FLEXnet Licensing End User Guide.*

Over time, the debug log can become large and the value of older messages decreases. Sybase recommends that you periodically truncate the debug log file:

❖ **Truncating the debug log file**

1   On the license server machine, enter:

```
lmutil lmswitch -c license_directory_location SYBASE
tmp.log
```

2   Delete or archive *SYBASE.log*.

3   Enter:

```
lmutil lmswitch -c license_directory_location SYBASE
SYBASE.log
```

4   Delete the temporary file *tmp.log*.

Controlling license use with the options file

The options file (*SYBASE.opt*, in the *licenses* directory) allows the license administrator to control various licensing operating parameters and specify users for different licenses. License users are identified by their user name, host name, display, IP address, or project set with the LM_PROJECT environment variable.

A license administrator can use the options file to:

• *Control license usage:* For example, the following options file restricts the use of the Sybase Database Expert product, governed by the ASE_SDBE license, to the users Tom, Sam, and Harry:

```
GROUP dbe_group tom sam harry
INCLUDE ASE_SDBE GROUP dbe_group
```

- *Reserve licenses:* For example, to reserve a SQL Expert license with the license feature name ASE_SXP for the user joe, add the following line:

    ```
    RESERVE 1 ASE_SXP USER joe
    ```

    Note For products that have different editions and license types, you must identify the exact license by specifying the VENDOR_STRING as shown on the INCREMENT or UPGRADE line of the specific license.

    For example, to reserve an Enterprise Edition Adaptive Server license (license package name: ASE_EE, license attributes: PE=EE;LT=SR) for use on each of the machines *payrollsvr* and *accountsvr*:

    ```
    HOST_GROUP ase_ee_hosts payrollsvr accountsvr
    RESERVE 1 ASE_EE:VENDOR_STRING=SORT=100;PE=EE; \
    LT=SR HOST payrollsvr
    RESERVE 1 ASE_EE:VENDOR_STRING=SORT=100;PE=EE;LT=SR
    HOST accountsvr
    ```

    Note Separate RESERVE lines are required to reserve one license for each host. In the Adaptive Server example above, separate RESERVE lines were used to reserve one license for each host. If the HOST_GROUP was used with quantity two, then two licenses would have been reserved but any machine in the host group could use all of the reserved licenses.

- *Restrict the number of licenses available*: For example, to prevent accidental usage of overdraft licenses for Adaptive Server Enterprise, you can enforce that licenses are not normally allowed on overdraft, by adding the following line:

    ```
    MAX_OVERDRAFT ASE_CORE 0
    ```

    You can modify or remove this line when overdraft is required.

- *Enable a report and debug log file:* The default *SYBASE.opt* options file that is included in the *licenses* directory simply sets the location of the license server debug log and report log files and tells the license server to append to those files each time it is restarted. The default *SYBASE.opt* license file contains two lines similar to:

    ```
    REPORTLOG +SYBASE.rl
    DEBUGLOG +SYBASE.log
    ```

See the *FLEXnet Licensing End User Guide* for a description of the available options.

Enabling license usage reporting

Asset management reporting capabilities require a report log. You can enable the license server to write license usage information into a report log file.

The Sybase product installation automatically creates an options file with REPORTLOG enabled.

❖ **Enabling the report log**

1 Open the options file, *SYBASE.opt* in the *SySAM-2_0 licenses* directory.

2 Edit the options file to include the REPORTLOG directive. The following REPORTLOG directive can go anywhere in the options file:

    REPORTLOG +*file_name*

where *file_name* is the absolute file name of the report log file.

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

3 The license server reads the options file and obeys its directives at start-up or, if it is already running, when the sysam reread command is issued.

Over time, the report log can become large, so Sybase recommends that you periodically renew the report log. You can use the lmutil lmnewlog command to rotate and archive the log.

For example, to archive the report logs on a monthly basis:

    lmutil lmnewlog -c *license_directory_location* SYBASE
    SYBASE-2005.12.31.rl

The above example moves the contents of the *SYBASE.rl* report log file to a file called *SYBASE-2005.12.31.rl* and truncates and re-starts license usage reporting to *SYBASE.rl*. At the end of the next month, archive that month's license report using:

    lmutil lmnewlog -c *license_directory_location* SYBASE
    SYBASE-2006.01.31.rl

For more information on lmnewlog, see the *FLEXnet Licensing End User Guide*.

Using SySAM utilities

In addition to the FLEXnet licensing utility programs, SySAM provides the sysam script to simplify the more common licensing administration tasks.

The SySAM utility program, lmutil, has the following options to allow the license administrator to manage network licensing activities. You can obtain the parameters for each command by entering the -help argument. For example, to see a full list of parameters for all the lmutil options, enter:

```
lmutil -help
```

To see a list of parameters for lmborrow, enter:

```
lmutil lmborrow -help
```

- lmborrow – supports license borrowing. See Chapter 5, "Mobile Licensing."

- lmdiag – diagnoses license checkout problems. See "Product cannot check out license and starts in grace period" on page 70.

- lmdown – shuts down selected license daemons. See "Starting and stopping a license server" on page 31.

- lmhostid – reports the system host identifier for the machine on which the command is run.

- lminstall – converts license files to different formats.

    Note Sybase does not support this functionality.

- lmnewlog – moves the existing report log information to a new file name and starts a new report log file with the existing file name.

- lmpath – allows direct control over license file path settings. Sybase recommends that you place all license files in the license directory rather than scattering them and modifying the license server's search path.

- lmremove – releases a failed license to the pool of free licenses. If the product is still using the license, the product will re-obtain the license during its next heartbeat.

- 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 – tells the license server to start writing to a new debug log file. When you restart the license server, it uses the debug log file specified in the options file, so you must ensure the old log is renamed to avoid appending to it.

- lmswitchr – switches the report log to a new file name. Sybase recommends that you use lmnewlog to archive the report log instead.

- lmver – reports the FLEXnet licensing version of a library or binary file.

Note In addition, the sysam script located in the *bin* directory provides a wrapper for the most frequently used FLEXnet utilities. To display the help text, which provides complete instructions, enter:

```
sysam help
```

For more information on the lmutil utilities, see Chapter 7, "License Administration Tools," in the *FLEXnet Licensing End-User Guide*.

Configuring SySAM for redundancy

You can configure SySAM for redundancy by setting up a three-server redundant cluster or by specifying multiple license servers.

Setting up a three-server redundant cluster

You may want a three-server redundant configuration when the quantity of cold standby systems in your enterprise makes the use of unserved licenses unmanageable, or when the need for asset management precludes using unserved licenses.

The system is functional when any two of the three license server systems are running. Three-server redundancy provides fail-over protection *only*, not load balancing. The three machines hosting a license server should:

- Run the same operating system.

- Have excellent communications.

- Reside on the same subnet.

• Maintain identical copies of the license files, the lmgrd binary, and the SYBASE binary locally rather than on a file server.

> **Note** If you do not do this, you lose all the advantages of having redundant servers, since the file server holding these files becomes a single point of failure.

When you generate a license file for three-server redundancy at SPDC you must copy the file to the *licenses* directory of each of the three servers. The selection order for the master server is determined by the order in which you specify the servers at SPDC and can be seen by the order of the servers in the resultant license file. The same license file must be used by each license server and is headed with a SERVER line for each server. Each line contains the name of the server, its host ID and the port number on which it will listen. For example:

```
SERVER server_1 0123ABCD 27010
SERVER server_2 0456DCBA 27010
SERVER server_3 07890147 27010
VENDOR SYBASE
```

SySAM-enabled products must know that they will obtain licenses from a three-server redundant cluster so that they can fail-over to the new master server if the current master becomes unavailable. This can be achieved in one of the following ways:

• Sybase recommends that the license file used by the product is headed with 3 SERVER lines. The header must be identical to that of the license files on each server with the exception that the host ID field can be set to ANY. The following license file enables a product to use the three-server redundant cluster shown in the example above:

```
SERVER server_1 ANY 27010
SERVER server_2 ANY 27010
SERVER server_3 ANY 27010
USE_SERVER
```

• An alternative is to set the SYBASE_LICENSE_FILE or LM_LICENSE_FILE environment variables to a comma (",") separated list of port@hostname values to specify the three-server redundant cluster. For the example above, the environment variable would be set to:

```
27010@server_1,27010@server_2,27010@server_3
```

> **Note** When only two of the three license server machines are up, it is possible
> for the SySAM-enabled product to experience a time-out before connecting to
> the license server system. Specifically, if the first license server system in the
> license file is down, the product times out before attempting to connect to the
> second server system in the license file. This time-out is set to ten seconds, so
> there is a ten-second delay before the license is granted. If the first license
> server machine is to be down for a while, the order of the SERVER lines in the
> license file read by the SySAM-enabled product could be changed to avoid this
> time-out.

Specifying multiple license servers in the license search path

You can set up the product to look for licenses from multiple license servers in
one of the following ways:

- Using multiple license files to configure your product for redundancy

- Using environment variables to configure your product for redundancy

Using multiple license files to configure your product for redundancy

To use multiple license files, create a license file that includes the two lines
below. Create one of these files for each license server.

```
SERVER host ANY [port]
USE_SERVER
```

Where host is the *hostname* for the license server and *port* is the port number
on which the license server is listening. You need not specify the port number
if the license server is listening on the default port number range of 27000
through 27009.

For example, to have the product look for licenses from one of three servers
named: nyc, bos, and sfo, create three files in the default licenses directory of
the product as:

```
# nyc.lic
SERVER nyc ANY 29733
USE_SERVER

# bos.lic
```

```
SERVER bos ANY 29722
USE_SERVER

# sfo.lic
SERVER sfo ANY
USE_SERVER
```

When using such license files, the product loads the files using the directory sort order, so name the files according the preference of license servers to be used. For example, *1_bos.lic*, *2_nyc.lic*, *3_sfo.lic*

Using environment variables to configure your product for redundancy

To specify multiple license servers using environment variables, set the SYBASE_LICENSE_FILE or LM_LICENSE_FILE environment variable with the list of license servers. Separate each license server by a colon (":") on UNIX platforms and a semicolon (";") on Windows platforms. The license servers are specified as [port]@hostname, where the port number can be omitted if license server using the default port number range. For example, from a UNIX C shell, enter:

```
# setenv SYBASE_LICENSE_FILE 29722@bos:29733@nyc:@sfo
```

On Windows platforms, enter:

```
> set SYBASE_LICENSE_FILE=29722@bos;29733@nyc;@sfo
```

Mobile Licensing

This chapter describes mobile licensing options.

Topic	Page
Borrowing a license for mobile licensing	43

Mobile licensing allows you to use products that rely on served licenses when you will not be continuously connected to the license server.

If you are using an unserved model, you do not need to use mobile licensing because the product licenses have been installed on your machine.

For served licenses, if you have planned to be disconnected from the license server, you can enable mobile licensing.

Borrowing a license for mobile licensing

To obtain a license for mobile use, you can borrow a license from the license server.

Tool products generally provide GUI functionality to borrow and return licenses. See your product documentation for instructions.You can also use the SySAM utility program, lmutil, to borrow a license.

❖ **Borrowing a license using lmborrow**

1   Before disconnecting from the network, shut down your Sybase product.

2   Run the lmutil program on the machine the licenses are required for:

```
lmutil lmborrow SYBASE borrow-end-date [borrow-
end-time]
```

where *borrow-end-date* is the day you want to return the license, and *borrow-end-time* is the time you want to return your license.

For example, to borrow a license until 1 p.m. on August 20th, 2005:

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

> **Note** You need to renew your "lease" on your borrowed license before the
> lease expires, to continue to use the product remotely for a longer time.

3   Restart your product; any licenses are now borrowed for your mobile use.

4   If you intend to use other SySAM-enabled products but do not want to
    borrow licenses for them, you must clear the borrow state before starting
    those products by issuing:

```
lmutil lmborrow -clear
```

5   Disconnect from the network.

> **Note** The maximum period you can borrow the license is restricted as an
> attribute of the license. Typically, this period is 30 days.

Determine the status of borrowed licenses by entering:

```
lmutil lmborrow -status
```

❖   **Returning a borrowed license early**

1   Connect to the network.

2   Shut down your Sybase product.

3   Return each borrowed license by entering:

```
lmutil lmborrow -return
[-c location_of_license_file] name_of_license
```

Using SAMreport for Asset Management

This chapter describes the SAMreport utility, which generates reports that list the license use of FLEXnet-licensed applications.

SAMreport overview

SAMreport reports license activity recorded in the FLEXnet report logs, and selected criteria that include product and feature name, user, date and time, and display or host.

The reports provided by SAMreport belong to three report families:

- Summary reports – summarize usage information about each feature used from the license server.

- Raw reports – show individual usage detail in text format.

- Server reports – provide details about a given license server.

SAMreport options

You can access these types of reports.

Summary Reports:

- 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 –compares 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 Reports:

- Server Coverage – documents the time during which the license server was serving licenses.

Raw Reports:

- 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.

SAMreport system requirements

- SAMreport version 3.6 is supported on the following platforms:

  - Windows x86

  - Linux x86

  - Solaris Sparc

  - HP-UX PA-RISC

  - IBM AIX

- SAMreport requires at least 128MB of physical memory.

- SAMreport was designed for a display setting of 800x600 pixels or greater.

  On Windows, select Start | Settings | Control Panel. Click Display, the click Settings, and check that the Desktop area is 800x600 or higher. Click OK, then select File | Close the Control Panel.

- You must have Internet Explorer 6.0 or Mozilla 1.4 to view the SAMreport HTML documentation.

  You must have the Adobe Acrobat Reader installed to view the PDF documentation. You can download the Acrobat Reader for free from the Adobe Web site at http://www.adobe.com.

- You can be logged in as any user when installing SAMreport.

  If you are installing on Windows NT/2000/XP/2003, Start | Programs does not contain a SAMreport menu item unless you install the software while logged in as an Administrator. You can start SAMreport from Windows Explorer, and does not require a Start menu item to function properly.

- If you are using an X-server to display SAMreport on a machine different from where SAMreport is running, both machines must have current operating system patches installed for your version of Java.

- Sybase recommends that you do not use an X-emulator to display SAMreport on a Windows machine.

Java Runtime Environment (JRE) requirements

JRE version 1.4.x is required to run SAMreport. For information on the JRE requirements for your platform, and download and installation instructions, see Appendix C, "Installing Java Runtime Environment for SAMreport."

To install the appropriate JRE for your platform:

1   Install any operating system patches required for the JRE.

2   Run the Java installer.

3   Agree to the Java license agreement by selecting Yes when prompted.

4   Sybase recommends you install Java in the default installation location, by clicking Next when prompted.

Installing SAMreport

The SAMreport install program is typically supplied on the Sybase product installation media in the *samreport* directory. See your product installation guide for the exact location. The System requirements and installation instructions are provided in a file named *install_unix.html* (for UNIX) or *install_win.html* (for Windows).

To install SAMreport on UNIX platforms:

1   Change to the *samreport* directory of the installation media.

2   Run the *bin* file for your platform. Use console mode if your display supports only characters. To run in GUI mode, enter:

```
samreport-3_4-<platform>.bin
```

To run in console mode, enter:

```
samreport-3_4-<platform>.bin -console
```

3   If the installer does not find a JRE installed on your system, specify the location where JRE 1.4 is installed using `"-is:javahome <JAVA HOME DIR>"`. For example:

```
samreport-3_4-<platform>.bin -is:javahome JAVA HOME
DIR
```

Note If the install program cannot use the JRE you have previously installed, install a new JRE. See Appendix C, "Installing Java Runtime Environment for SAMreport."

---

4   The InstallShield Wizard Welcome Screen displays. Click Next.

5   Choose an installation location.

Sybase recommends that you install SAMreport i*n $SYBASE/SYSAM-2_0/samreport* directory. SAMreport is installed in a v3.6 directory under the specified directory. Click Next to continue with the installation.

6   Choose a license file location. The installation does not continue until it finds the specified license file.

Browse to the directory where you launched the SAMreport installer. Highlight the license file named *SAMreport_SYBASE.lic* and click Open.

The installer copies the specified file into *SAMreport_home/machine/license/license.dat*.

7   Specify the JRE directory. If the installer does not find the JRE that you installed, you are prompted to enter the location of that JRE directory. When you have finished, click Next.

8   The installation directory and space requirements displays Click Next to install SAMreport.

9   Click Finish when the installation has completed.

10 You may need to set the following environment variable each time you launch SAMreport:

   • C shell:

        setenv GPLATFORM <platform name>

   • Bourne shell:

        export GPLATFORM=<platform name>

   where <*platform name*> is "sun4_u5" for Solaris or "i86_r6" for Linux or "hp700_u11" for HP-UX or "ppc_u4" for AIX.

To install SAMreport on Windows platforms:

1   Double-click *samreport-3_4-i86_n3.exe* in the *samreport* directory on the installation media.

2   The Welcome screen displays. Click Next.

3   Choose an installation location. Sybase recommends you install SAMreport in *%SYBASE%\SYSAM-2_0\samreport* directory. SAMreport is installed in a v3.6 directory under the specified directory.

   Click Next to continue with the installation.

4   Choose a license file location.The installation does not continue until it finds the specified license file.

   Browse to the directory from where you launched the SAMreport installer. Highlight the license file named *SAMreport_SYBASE.lic* and click Open. The installer copies the specified file into *SAMreport_home/machine/license/license.dat.*

5   If the installer does not find the JRE that you installed, you are prompted to enter the location of that JRE directory. Click Next.

6   The installation directory and space requirements are displayed. Click Next to begin installing SAMreport.

7   The installer creates Start menu entries for SAMreport.

8   Click Finish to complete the installation.

Starting and stopping SAMreport

To start SAMreport:

1   Change to the SAMreport installation directory. The report utility is located in the *v3.6* directory under the *samreport* directory. You must be in the *v3.6* directory before proceeding.

2   Enter:

        report

3   *On Windows platforms*, you can also select Start | Programs | SAMreport | SAMreport.

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

Accessing the report log files

SAMreport must have access to the report logs created by the license server for which you want the report. You must manually copy these reports to the appropriate directory or provide remote access to them.

The license server must be enabled to produce report logs. Configure this using the license server option file. See "Enabling license usage reporting" on page 36. The report logs are enabled in the installation by the Sybase installer.

Appendix A of the *SAMreport User's Guide* discusses how to manage report logs, including scripts to automate collection of such logs.

The Sybase Central™ SySAM plug-in provides a GUI interface to manage collection of report log files from a single client machine. See Chapter 7, "GUI Administration for SySAM."

Uninstalling SAMreport

1   Exit SAMreport.

2   Run the uninstall program.

On UNIX platforms, enter:

SAMreport_home/_uninst/uninstaller.bin.

On Windows platforms, enter:

SAMreport_home_uninst\uninstaller.exe

3   The InstallShield wizard starts. Click Next on the Welcome screen.

4   On the screen that displays summary information, click Next.

5   Click Finish to exit the InstallShield wizard.

6   Check the SAMreport version directory and its subdirectories and move any files you want to save, including the *license.dat* file.

7   Delete the remaining SAMreport files.

8   Do not remove your Java installation unless you no longer need it for SAMreport or any other Java application you may have installed.

CHAPTER 7   GUI Administration for SySAM

About the SySAM plug-in for Sybase Central

**Note** The SySAM Unified Agent, and the SySAM plug-in is not included with all SySAM-enabled products.

The SySAM plug-in is a GUI tool you can use to manage local and remote license servers. It is integrated with Sybase Central, which enables you to manage various Sybase servers from one console. When used in conjunction with Unified Agent Framework (UAF), the SySAM plug-in allows full administration of remote license servers.

With the SySAM plug-in and Unified Agent, you can:

• Monitor license server status

• Get license server information

• Maintain licenses on the license server

• Perform license server diagnostics

Note The SySAM plug-in works only with a license server. It does not work with unserved licenses.

Figure 7-1: SySAM plug-in and UAF components
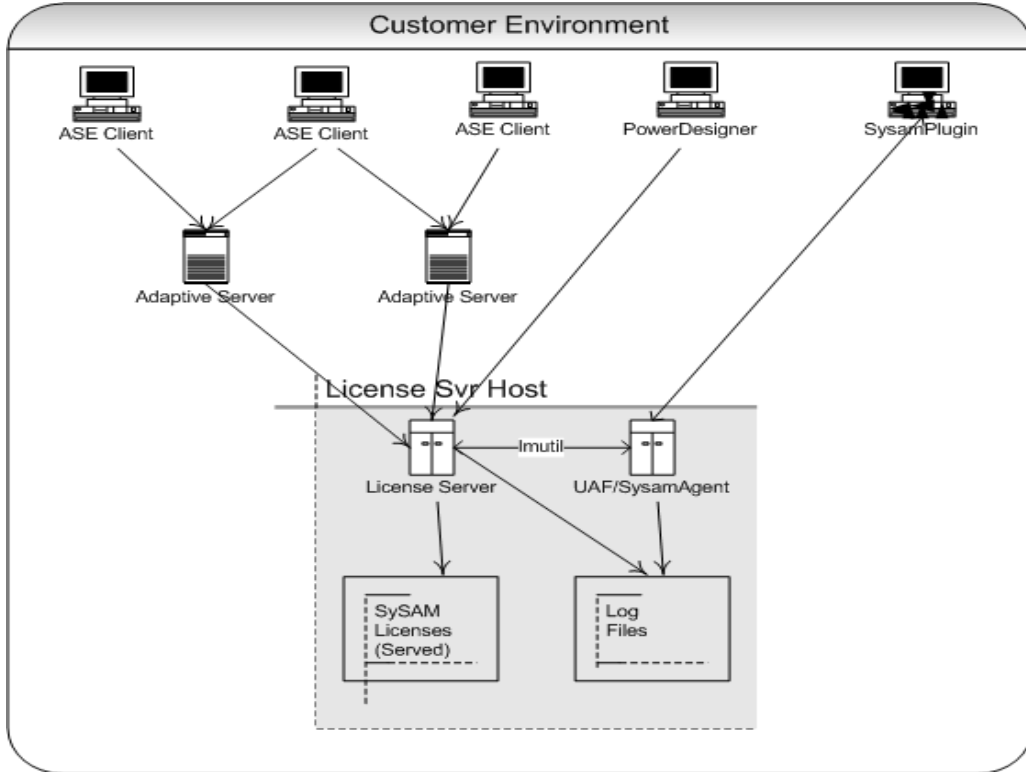
Installing the license server, SySAM Agent plug-in, and the SySAM Sybase Central plug-in

The license server, SySAM Agent plug-in, and the SySAM Sybase Central plug-in are not included in the Typical install option of the Sybase installer. To install them, select either the Full install option, or select the following items from the Custom installation:

- SySAM Agent plug-in under SySAM. This plug-in must be installed on the same machine as the license server.

- SySAM plug-in

Starting the SySAM plug-in with Sybase Central

The SySAM plug-in is located on either the client or the server machine. It has two tabs:

- License servers – which includes information about all the license managers.

- Utilities – which includes tools to use within the plug-in.

The SySAM plug-in binary and executable are stored at *$SYBASE/SYSAM-2_0/SYSAMP*.

❖ **Starting the SySAM plug-in from Sybase Central on Windows**

1   Select Start | Programs | Sybase | Sybase Central v4.3.

2   Click Sybase Central v4.3.

3   Sybase Central starts.

❖ **Starting the SySAM plug-in from Sybase Central on UNIX**

1   Go to *$SYBASE*. Source *SYBASE.csh* to define the required environment variables.

2   Go to *shared/sybcentral43*.

3   Call *scjview.sh*, which is the script to start Sybase Central on UNIX platforms.

4   Sybase Central starts.

Registering the SySAM plug-in

You must register the SySAM plug-in before you can use it. Normally, the SySAM plug-in is registered by the installer. If it is registered, the SySAM plug-in icon is visible when you open Sybase Central.

❖ **Registering the SySAM plug-in manually on UNIX machines**

If the SySAM plug-in does not start automatically, you must manually register the plug-in.

1   Go to the SySAM folder at *$SYBASE/SYSAM-2_0*.

2   Go to *SYSAMP/bin*.

3   Run command *registerSYSAMP*.

Now when you launch Sybase Central, you can use the SySAM plug-in.

Starting the Unified Agent for SySAM

This section explains how to start the Unified Agent for SySAM on various platforms.

Windows platforms

1   Go to Start | Settings | Control Panel | Administrative Tools.

2   Open Services.

3   Start the Unified Agent by right-clicking on the Sybase Unified Agent icon, and select Start.

4   The status is now Started.

UNIX platforms

1   To start the agent, go to *$SYBASE/ua/bin*.

2   Run command *./agent* to start the Unified Agent for the SySAM server.

Starting Unified Agent as a service on UNIX platforms

A UNIX service runs automatically in the background after the machine is started. On UNIX and Linux platforms, a shell script, *agentd*, is available in *$SYBASE_UA/bin*.

❖   **Installing the agent as a service**

1   Copy the *agentd* into the */etc/init.d* directory.

2   Make two soft links in the directory */etc/rcX.d* (where *X* is the run level,
for example, 3) that link to */etc/init.d/agentd: SXXagentd* and *KXXagentd*
(where *XX* is a two digit number, for example, 88). One is for starting the
service and the other is for stopping the service.

Note Different UNIX systems might have slightly different directory
structures.

Starting and stopping Unified Agent as an automatic service

When you install Unified Agent on Windows platforms, it is automatically
configured to start as part of system start up. On UNIX platforms, configure
this after installation.

See the *Agent Management Console / Unified Agent User's Guide*.

Connecting to the license server

To access the SySAM monitoring and administrative tools, you must connect
to the SySAM server. Use the SySAM plug-in to connect to the SySAM server
as follows:

1   In Sybase Central, go to Tools | Connect.

If SySAM is not the only plug-in registered in Sybase Central, a New
Connection dialog displays. Select SySAM from the list of registered
plug-ins and click OK.

2   Alternately, in the Server Name, enter the host name, port, and agent port
of the SySAM server you want to use. Port, and agent port are optional,
but if you do make entries in these fields, use a colon-separated list.

The host is the machine name where your SySAM server is located. For
example: `ABC-XP::9999`. Using host `ABC-XP`, and agent port number
`9999`.

3   Click Settings, and verify that you have a Jini or UDP server available, and
that it is the Server Discovery method you want to use.

Jini network technology provides a simple infrastructure for delivering services in a network and for creating spontaneous interaction between programs that use these services regardless of their hardware and software implementation.

User Datagram Protocol (UDP) is a communications protocol for the Internet network layer, transport layer, and session layer, which makes it possible to send a datagram message from one computer to an application running in another computer.

For more information on the Jini and UDP servers, see the *Agent Management Console / Unified Agent User's Guide*.

4   If you do not have an available server, click Add. If you do have an available server, click Cancel, and skip to step 6.

5   Specify the host and port number for the Jini server you want to add, or select the UDP server which does not require additional information.

6   Click OK.

7   Click Find for a list of available SySAM Servers. These servers are monitored by Unified Agents that support the Jini and UDP protocols.

8   Click Connect.

9   You are now connected to the SySAM server and can view the host ID, version, and platform of the SySAM server to which you are connected.

Searching for additional servers

You must configure your search to look for additional servers.

❖   **Searching for additional servers**

1   Open the Connection dialog.

2   Select the Server Discovery tab from the Settings button.

3   Select Add to add a new setting.

4   Edit or remove existing settings using the Edit and Remove buttons.

5   The settings are used in the order in which they are listed, so you may want to rearrange them using the Up and Down buttons.

6   Optionally, you can create filters to customize the server attributes for discovery. For example, you can create filters to look for specific names, hosts, versions, platforms, and so on.

7   When you have finished customizing the server attributes, click Connect in the Connect dialog box to connect to the server.

Connecting the license server

You can connect to a specific license server.

❖   **Designating a license manager server**

1   Double-click the Connect icon button at the top of Sybase Central; the connection dialog displays.

2   Enter the host name, port, and agent port information.

Host is the machine name where your SySAM server is located. For example: `ABC-XP::9999`.

3   Click OK.

Once you have designated a license manager server, Sybase Central tries to connect with an anonymous login. If the connection fails, you do not have enough privileges to start and stop server operations and a login authentication dialog displays.

Administration tasks

This section contain information about administration tasks you can perform using the GUI.

Note If you are allowing the license content to be written to the server, you must have uaAgentadmin or uaPluginAdmin privileges.

❖   **Displaying the License Feature folder**

The License Feature folder displays information about the licenses that are installed on the license server.

1   Select the license server icon.

2   Double click License Features folder on the Details panel.

3   The License Features folder contains license information individual
features and about packages that comprise more than one feature. Each
package and feature has a viewable Properties page that displays its
license information.

❖   **Viewing the Properties page**

1   Select the package or feature.

2   Right-click and select Properties.

❖   **Starting or stopping your server**

If your server is running, the Stop menu displays from the server icon. If your
server is stopped, the Start menu displays from the server icon.

1   Right-click the server icon.

2   Select Start or Stop.

3   A confirmation dialog displays. Click Yes.

❖   **Restarting the license server**

1   Right-click the server icon.s

2   Select Restart.

3   A confirmation dialog displays. Verify that you want to restart the server
and click Yes.

❖   **Pinging the license server**

When you ping the server, you are retrieving the latest status information about
whether the SySAM server is running, down, or unknown.

1   Right-click the server icon.

2   Select Ping.

3   A confirmation dialog displays. Verify you have selected the desired
server to ping and click Yes.

4   A progress dialog displays, and when the process has completed, results
display.

❖   **Viewing the license server properties**

1   Right-click on the server icon.

2   Select Properties.

Viewing and editing the license server file

To save a copy of a license file to the client machine and edit its contents:

1   Right-click on the SySAM server name and select Get License Files. Alternately, select File | Get Licenses Files.

2   Choose a license file from the drop-down list.

3   The Save as dialog displays. You are saving a snapshot of the license file, and the name of the newly created license file is appended with the `year:month:day:hour:minute`. Click OK.

4   The saved license file opens for you to view or edit.

Note Do not save license files in the licenses directory of a local license server.

To get the license files from the client machine and overwrite the license information on the server side:

1   Right-click the server icon.

2   Select Save License File.

3   Choose a license from the drop-down list which displays all the licenses available on the server.

4   A dialog titled "Retrieve content from file" displays. It lists the licenses on the client machine. Select the license file with which you wish to overwrite the license file on the server machine. Click OK.

Rereading the license file

When you obtain new licenses, or modify an existing one, you must update your license file. These changes are not immediately registered by a running license server. They are registered when the license server restarts. To register the changes without restarting the license server, you can instruct the license server to reread the license files:

1   Right-click the server icon.

2   Select Reread from the drop-down list.

3   A confirmation dialog displays. Confirm the server on which you want to reread the license files. You will be rereading all of the license files available to that server. Click Yes.

4   A progress dialog displays.

5   A message displays indicating whether the reread was successful, and if
     there was anything noted in the rereading.

Getting the license server log files

The license server options file controls various operating parameters of the
license server. For example, you can control where the log files are created or
control access to licenses served by this license server. The report log is used
by SAMreport for license feature usage and analysis. See Chapter 6, "Using
SAMreport for Asset Management." The debug log captures license usage
data for user information and debugging purposes.

To retrieve either log:

1   Right-click the SySAM server name and select Get Log Files. Alternately,
     select File | Get Log Files.

2   Click the log you want to view.

3   The Save As dialog displays. You are saving a snapshot of the log file, and
     it is appended with the `year:month:day:hour:minute`. Click OK to
     save your log file.

4   If you are retrieving the debug log, a saved version displays.

Viewing and editing the options file

The option file indicates the location where the report log and the debug log are
located. See "Controlling license use with the options file" on page 34 and the
FLEXNet Licensing End User's Guide.

❖   **Retrieving the option file**

1   Right-click the SySAM server name and select Get Option Files.
     Alternately, go to File | Get Option Files.

2   Click the option file you want to view.

3   The Save As dialog displays. You are saving a snapshot of the option file,
     and it is appended with the `year:month:day:hour:minute`.

4   The saved version of the option file displays.

❖ **Overwriting server option files with client option files**

1   Right-click the server icon.

2   Select Save Option File.

3   Choose the option file to be overwritten.

4   The Retrieve Content from File dialog displays. This dialog displays option files on the client machine. Select the option file you want to use to overwrite the option file on the server machine. Click OK.

Archiving the log report

When report logs, which are used by SAMreport, become too large, you may want to start a new report log. You can move the large one to a new file.

1   Right-click the server icon.

2   Select Archive Log Report.

3   A confirmation dialog displays. Verify the server for which you are archiving the report log and click Yes.

4   The progress bar displays as the log is saved to *$SYBASE/SYSAM-2_0/log* on the license server. The file name of the archived report log is prepended with `year:month:day:hour:minute`.

Diagnostic

The Diagnostic function of the SySAM plug-in allows you to diagnose license checkout problems. You can review the diagnostic output to determine reasons for failure.

Note Perform the diagnostic function from the same machine from where the SySAM-enabled product cannot check out a license.

To get diagnostics on all licenses served by the license server:

1   Right-click the SySAM server.

2   Select Diagnostic.

3   In the right pane of Sybase Central, right-click on the license feature.

4   Click Yes in the confirmation dialog.

To get diagnostics on a particular feature:

1   Select SySAM server.

2   Double-click License Features.

3   In the right pane of Sybase Central, right-click a feature (not a feature package).

4   Select Diagnostic.

> **Note** This operation can take a long time on a license server with many licenses.

❖ **Disconnecting from the license server**

1   Right-click the SySAM server icon you want to disconnect.

2   Select Disconnect.

3   Click Yes in the confirmation dialog.

❖ **Starting SySAM plug-in utilities**

The SySAM plug-in includes utilities to manage and monitor your Sybase product. Start these utilities by double-clicking on their names or icons. Alternately:

1   Go to Tools | SySAM.

2   Select the utility you want to launch.

Accessing SySAM plug-in properties

To configure the SySAM agent plug-in properties, use the following procedures.

❖ **Viewing SySAM plug-in properties**

1   Right-click the license manager server.

2   Select Properties.

3   View the settings for the server status.

4   Select properties.

5   You can view the utility description, command, and options. Options are additional inputs you want to append after the command.

The General tab of the SySAM Plug-in Properties dialog allows you to configure how frequently the server status should be checked, or whether it should be checked at all. The default setting is 5 minutes.

❖   **Getting a status update of a server**

1   Click on SySAM.

2   Select a License Manager server.

3   Click F5 or View, then select Refresh Folder.

You can activate any utility by double-clicking on it, or by accessing its shortcut from Tools menu.

From the Utility properties page, you can alter the descriptions, commands, and options for these utilities. You can restore defaults only for Sybase utilities. You cannot alter the descriptions for Sybase utilities, but you can alter the descriptions for third-party utilities.

❖   **Displaying the Utility properties page**

1   Select SySAM.

2   Select the Utilities tab from the right pane.

3   Right-click on any utility.

Troubleshooting

If SySAM 2.0 related errors are not addressed in a timely fashion, the licensed Sybase product may cease to function. This chapter lists the information that you should gather before contacting Sybase Technical Support. This chapter also includes information about troubleshooting the most common SySAM 2.0 related errors and includes generic SySAM troubleshooting tips. See your product documentation for product specific information.and troubleshooting suggestions to help you resolve problems that can occur.

For the most up to date troubleshooting information, see the SySAM FAQ at http://www.sybase.com/sysam.

Where to look for SySAM-related product errors

Typically, server products list problems in an error log, and optionally allow you to configure e-mail notifications. GUI tools present messages in a status window or a pop-up.

See your product documentation for information about precisely how your Sybase product reports SySAM error messages.

Additionally, each product may support a command or menu option such as Help | About to display the current license status.

Where to look for license server errors

If you are using a served license model, the license server's debug log provides information about any license check-out issues.

By default, all license server status and error messages are written to the *SYBASE.log* debug log file in the *log* directory. See Appendix G, "The Debug Log File," in the *FLEXnet Licensing End User Guide* for information about typical messages written to this log file.

Installation warnings: unable to find a suitable license

If this is a first installation of your product, required licenses may not be available during the installation. You can ignore the warning, because the product continues to work for the initial installation grace period. You must configure the licenses prior to the end of this grace period.

If the warning appears despite the licenses being configured, complete the installation and see "Product cannot check out license and starts in grace period" on page 70.

If you are updating a prior installation, check to see if your license authorizes you to install this update. Installing an update is not authorized by the license may render the product unusable. If you are installing an update that is authorized by the license, see "Product cannot check out license and starts in grace period" on page 70 before you install the update.

License server executables and scripts not installed

The license server component is not selected for installation by default. To install the license server, see the installation guide for your product.

Alternatively, download a standalone SySAM license server installation program from the Sybase Web site at http://www.sybase.com/sysam.

License server does not start

The most common cause for the license server failing to start is that there are no served licenses in the server. In order for license server to start, there needs to be at least one served license in the *licenses* directory. When you install a new license server, there are no served licenses in the licenses directory and the license server does not start until you activate a license from SPDC and copy it into the *licenses* directory.

Other causes for license server not to start include:

- The license activated from SPDC was an unserved license. Examine the license files. Served licenses always start with a SERVER header. If you do not see a line starting with SERVER at the top of the license, you are using an unserved license which does not work with the license server.

- If you are using a specific port number for the license, that port number may already be in use. Use netstat -a to verify that the port number is free. If not, free the port or use a different port number for the license server.

- The host name recorded in the SERVER header does not match the actual host name. The host name is recorded next to the SERVER keyword. If it does not match, correct the host name in the license file or set it to this_host which is a keyword that works with any host name.

- The licenses copied may be activated for a different machine. Examine the host ID recorded in the line. It is recorded next to the host name in the SERVER header. It must match the host ID for the machine where the license server will be running.

License server does not recognize the license files

If the license server refuses to serve the licenses, this may be because:

- The license was activated for a different machine or activated using incorrect host ID. Examine the host ID recorded in the license with the host ID for the machine. If they are mismatched, check-in and regenerate the license with the correct host ID.

- The license has been altered. None of the fields in the generated license can be altered. The license is rejected if you change other information. If the license is being created by typing a paper copy, verify if there were any errors entering the license. You can also download a new copy of the activated license from SPDC.

- If the host ID for your platform is based on the network adapter identification, verify that you have used an ID associated with a valid NIC. IDs associated with loopback adapters are not valid. If the ID associated with a removable network adapter was used, ensure that the adapter is attached to the computer.

Product does not start with license check out error

If the required license cannot be checked out by the product, it determines whether the license can be issued in grace mode. If a grace period cannot be given, the license is not granted. If the base license required for the product is not granted, then the product does not start.

Product cannot check out license and starts in grace period

To debug issues with checking out a license:

1 Execute the `sysam diag feature_name` command from the SYSAM-2_0 *bin* directory, where *feature_name* is the SySAM feature name that fails to check out. For information on the feature name used by each product and its optional features, see the SySAM information on the Sybase Web site at http://www.sybase.com/sysam.

2   If the diag command shows no licenses available for check-out, this may be due to one of the following reasons.

If you are using a served model:

•   Verify that the license server is running and reachable from the machine you are using. Use sysam status to verify that you are connected to the license server. If you cannot access the license server, try starting the license server.

•   If the license server is running, use sysam status -f feature_name to determine whether the license server is serving a license for the given feature. If not, obtain the correct licenses from SPDC.

•   All licenses on the license server may be in use. If sysam status -f feature_name indicates that no licenses are available, obtain additional licenses or shut down existing instances of the product to free up licenses.

If you are using an unserved model:

•   The license for the given feature may not be copied in the local licenses directory. Obtain the correct licenses from SPDC and copy them to the local licenses directory.

•   The license may have been activated for a different machine or activated with incorrect host ID. Check in and reactivate the license with the correct host ID.

•   The available licenses are for a different operating system or architecture. Obtain license for the correct platform from SPDC.

•   If you are running in a terminal server environment, unserved licenses cannot be used. Set up served licenses for a terminal server environment.

3   The available license may not authorize use of this version of the product. Check the version number in the license against the version being installed.

4   If the diag command shows the license for the given feature is available for check out, your product may not be able to check out the license because the product has been configured as a specific edition or with a specific license type. For example, if the product is configured to look for an Enterprise Edition license but only a Developer Edition license is available, or if the product is configured as a served license but only a per-CPU license is available.

Product is in grace period after fixing a license problem

Your product performs license checks periodically, and the license status is not immediately updated. The license status is updated only after the next heartbeat cycle is completed. This may take a few minutes to hours depending on the product.

Product cannot find a license for an optional feature

Execute `sysam diag feature_name` to ensure that license for the optional feature exists and can be checked out from the machine where the product is running. If the feature exists, but cannot be checked out by the product, this could be because:

- The optional feature is for a different edition.

- If your product or feature supports active and standby licensing, active or standby flags do not match for base product and the optional feature license.

Determine the product edition and active and standby status of the configured product and see if the available license matches this. Obtain correct licenses or adjust product configuration to fix this.

Product does not select the correct license

When the product looks for a license, it does so in the following locations:

- Any saved values in the registry on Windows platforms, or the *.flexlmrc* file on UNIX platforms. Use `lmpath -status` to view the saved values.

- The values set for SYBASE_LICENSE_FILE and LM_LICENSE_FILE environment variables.

- All license files (any file with a *.lic* extension) in the licenses directory under the SYSAM-2_0 directory.

All of the above locations are searched in the order specified until a suitable license is found. When a directory is specified, license files in that directory are loaded in the directory sort order.

The first license that matches the feature name, version, edition, and license type filter is used. This license may not be what you were expecting to use. Adjust the above locations to control this.

Fixing SySAM issues before your product's grace period expires

The length of the grace period allowed depends on the individual product policy. The date and time when awarded grace expires is noted in the products error log server products and on the Help | About dialog for tools products. The products may additionally support a specific command to query current license status.

Calling Sybase technical support

If you call Sybase technical support for SySAM related issues, have the following information:

- The Sybase product being used, its version, and its build number.

- Any optionally licensed features enabled.

- The products error log or debug log output (if the product produces one).

- Current license status by executing product specific command to obtain the status.

- Licenses saved in the Licenses folder.

- The value of SYBASE_LICENSE_FILE and LM_LICENSE_FILE environment variables, if they have been defined.

- Contents of the *$HOME/.flexlmrc* file on UNIX machines

If you are using a served license model:

- The licenses saved in the licenses directory of the license server.

- The license server log file.

- The version of the license server software.

Determining your license server version

To determine your license manager daemon version, enter:

```
lmgrd -v
```

To determine your Sybase vendor daemon version, enter:

```
SYBASE -v
```

The version of your license manager daemon must be greater than or equal to the version of your Sybase vendor daemon.

License File Content

This chapter contains information about the content of the license file.

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License overview

Each INCREMENT or UPGRADE line in a license file represents a license for a product or a licensable option of a product. An INCREMENT line showing fields used by Sybase product licenses is annotated below:

Figure A-1: License content
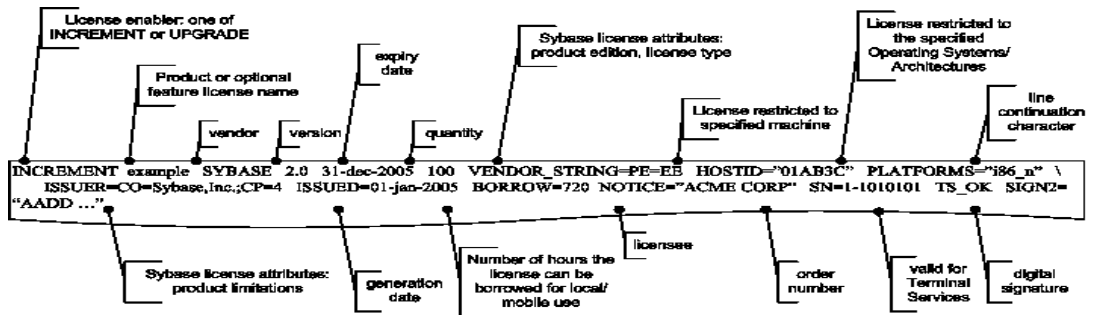
For information on the feature name used by each product and its optional features see the SySAM information on the Sybase Web site at http://www.sybase.com/sysam.

Served and unserved licenses differ in that an unserved license always has uncounted quantity and always contains a Host ID field.

Served license

A served license file begins with SERVER and VENDOR lines, followed by the INCREMENT and UPGRADE lines. For example:

```
SERVER license_server_host 0123ABCD
VENDOR SYBASE
INCREMENT prodeg SYBASE 2.0 31-dec-2005 1 \
      PLATFORMS="i86_n" ISSUED=01-jan-2005 \
      BORROW=720 NOTICE="ACME CORP" SN=1-1010 \
      TS_OK SIGN2= "AADD …."
```

The SERVER line contains the host ID (0123ABCD) of the license server machine (*license_server_host*), and the digital signature of the INCREMENT line is encoded using that host ID, so this license can be served only from that machine. The INCREMENT line does not contain a host ID so the license can be served to any machine that can access this license server.

The served license example above shows one license to run one copy of version 2.0 or lower of the prodeg product on the Windows operating system (i86_n) until December 31st, 2005. The product can be used on any machine and the license can be borrowed from the license server for 720 hours of mobile use at a time.

Unserved licenses

An unserved license file contains an INCREMENT line only. For example:

```
INCREMENT prodeg SYBASE 2.0 31-dec-2005 uncounted \
      HOSTID=0BABE1 PLATFORMS="i86_n" \
      ISSUED=01-jan-2005 NOTICE="ACME CORP" \
      SN=1-1 SIGN2= "AADD …."
```

The unserved example above shows a license to run version 2.0 or lower of the `prodeg` product on the Windows machine until December 31, 2005. The product can be run only on a machine with a host identifier of `0BABE1`. The machine containing the correct host identifier cannot be a terminal server, because there is no `TS_OK` field.

Two special host ID values which are also used are `HOSTID=ANY`, and `HOSTID=DEMO` which signify that the product can run on any machine and no host identifier checks are performed

License packages

Sybase groups some licensable options into packages to reflect alternate product bundling or simply for ease of license deployment. For example:

```
PACKAGE PD_STUE SYBASE COMPONENTS="PD_SHELL \
        PD_CDM PD_PDM PD_OOM \
        PD_ILM PD_BPM PD_RQM PD_FRM PD_XSM PD_RMG" \
        ISSUED=01-jan-2004 SIGN2="13BD ......."
INCREMENT PD_STUE SYBASE 12.00000 permanent 2 ......
```

In the example above, two, version 12.0, licenses are provided for all of the PowerDesigner components in the `PD_STUE` package.

Sybase license attributes

SySAM-enabled products may specify license attributes in the `VENDOR_STRING` and `ISSUER` fields to identify certain properties of the license, such as product edition, type of license and any limitations imposed (such as maximum disk space or memory to be used). For example:

```
INCREMENT ASE_EE SYBASE 2000.12310 permanent \
        1 HOSTID=0123ABCD \
        VENDOR_STRING=PE=EE;LT=CP \
        PLATFORMS="hp700_u hp64_u" \
        ISSUER="CO=Sybase, Inc.;V=15.0;AS=S;MP=365;CP=2"\
        ISSUED=31-dec-2000 BORROW=720 NOTICE="ACME Corp" \
        SN=500500065-2021 TS_OK SIGN2="18E7 B0E8 EEBB \
        E760 253C 0709 1287 F128 6871 4C28 0204 8F5D \
        D6C9 7998 A2DF 1CA1 EDE6 D98C 526E D8D9 F64E \
```

```
A836 9781 AC6F F360 2FCE 03B9 3702 A626 BF95
```

The example above signifies that the license type is a per-CPU license
(`LT=CP`), and that the product is Adaptive Server, with a product edition of
Enterprise Edition (`PE=EE`), and license for standby use (`AS=S`). The license
can be used to run a maximum of two engines or processes on a machine with
a maximum of 2 CPUs (`CP=2`), and was purchased with a maintenance contract
of one year (`MP=365`).

Warning! You must understand licensing concepts in order to correctly license
your product. For more information about licensing concepts, see "Sybase
product licensing concepts" on page 13.

One significant difference between the `ASE_EE` license shown above and the
previous `prodeg` license example is the value of the license version field. The
`prodeg` license version matched the version of the product to be licensed. Both
had a value of 2.0. The `ASE_EE` license version is actually a date value,
`2000.12310`, or December 31st, 2000. This is because the Adaptive Server
product uses "date-based versioning" and requests licenses based on its build
date rather than its version number. See Appendix B, "Installing Product
Updates, EBFs, and Support Renewal."

A three-server redundancy license

A three-server redundancy license file begins with three `SERVER` lines, and a
`VENDOR` line, followed by the `INCREMENT` and `UPGRADE` lines. For example:

```
SERVER license_server_host_1 0123ABCD 27010
SERVER license_server_host_2 0456DCBA 27010
SERVER license_server_host_3 07890147 27010
VENDOR SYBASE

INCREMENT prodeg SYBASE 2.0 31-dec-2005 1 \
     PLATFORMS="i86_n" ISSUED=01-jan-2005 \
     BORROW=720 NOTICE="ACME CORP" SN=1-1010 \
     TS_OK SIGN2= "AADD …."
```

The three-server redundancy license is the same as a normal server license,
except the three server lines indicate that three servers have been set up for
redundancy. License files must be identical on all three servers.

Installing Product Updates, EBFs, and Support Renewal

When product updates are made available only to customers with an appropriate support plan, the licenses are encoded with information about the duration of the support plan. This information is stored in the license file and is referred to as "date-based versioning."

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Working with date-based versioning

When you generate a license for a product that uses date based versioning, the license version is created with the date that is the later of:

• The license purchase date.

• The date the customer's support plan ends.

For example, two customers are named Acme and Backme. Each customer purchases version 3.0 of ProductX on January 1st, 2005. However, Backme also purchases support for the product until the end of 2005. The licenses generated for Acme and Backme have different versions:

For Acme:

```
INCREMENT ProductX SYBASE 2005.01010 ...\
      NOTICE="Acme" …
```

For Backme:

```
INCREMENT ProductX SYBASE 2005.12310 ...\
      NOTICE="Backme" …MP=365…
```

Acme can use any version of ProductX built before January 1st, 2005. Backme can similarly use any version of ProductX built before January 1st, 2005 but can also use any maintenance releases or EBFs for ProductX built before December 31st, 2005.

ProductX uses its build date as the version when requesting licenses, so an EBF built on March 19th, 2005 requests a license version greater or equal to `2005.0319`. This request is satisfied by the license generated by Backme. Acme does not have a valid license for this request.

If Backme renews their support contract for ProductX until the end of 2006, they must generate and deploy new licenses with the new end-of-support date. These licenses differ from those seen previously because they are an upgrade of the license from the old version to the new version. Such licenses look similar to:

```
UPGRADE ProductX SYBASE 2005.12310 2006.12310 ...
```

Note The `UPGRADE` line is exactly the same as an `INCREMENT` line with the exception that the version of the license to be upgraded precedes the license version field.

Installing Java Runtime Environment for SAMreport

This appendix provides information about the JRE requirements for your platform.

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Note You may already have JREs installed as part of previous product installations. If SAMreport reports an error because it cannot use any of these JREs at installation or run-time, use this appendix to install the recommended JRE.

Solaris platforms

SAMreport has been tested and approved on Solaris JRE 1.4.2_04.

Note If you are running SAMreport on Solaris v8, Sybase recommends that you use the Common Desktop Environment (CDE) window manager, rather than OpenWindows.

Before downloading the JRE, check the following:

1 To determine the version of the operating system, enter:

    showrev

2 To determine which patches are installed, enter:

```
showrev -p
```

3   If you already have Java installed, determine the Java version number by entering:

```
<pathname to Java>/bin/java -version
```

or

```
<pathname to Java>/bin/jre -version
```

Downloading the JRE

The Solaris JRE 1.4.2_04 runs with Solaris 2.7, 8, 9 / SunOS 5.7, 5.8, 5.9.

Download Solaris JRE 1.4.2_04 from the Sun Developer Network archive at http://java.sun.com/products/archive/j2se/1.4.2_04/index.html.

1   Click the link for J2SE v1.4.2_04 JRE download.

2   Read the license agreement, click the Accept, then click Continue.

3   Look for the link for the Solaris SPARC 32-bit self-extracting file.

4   Note the file size of the installer.

5   Click the file download link.

6   Download the installer to a temporary location on your machine.

7   Run the installer.

Note You must download applicable system patches from the Sun Developer Network at http://java.sun.com/products/archive/j2se/1.4.2_04/index.html.

HP-UX platforms

SAMreport has been tested and approved on HP-UX v11 using JRE 1.4.1.05. Check that you have the necessary HP-UX operating system patches installed.

Before downloading the JRE, check the following:

1   To determine the version of the operating system, enter:

```
uname -r or uname -a
```

2   To determine which patches are installed, log in as root and enter:

```
/usr/sbin//swlist -l product
```

3   If you already have Java installed, determine the Java version number by entering:

```
pathname_to_Java/bin/java -version
```

or

```
pathname_to_Java/bin/jre -version
```

Downloading the JRE

JRE version 1.4.1.05 is supported on HP-UX v11.

Download JRE version 1.4.1.05 from the HP Web site at http://www.hp.com/products1/unix/java/java2/sdkrte14/downloads/license_rte_1.4.1.05.html.

1   Accept license terms and register.

2   Follow the installation instructions.

Note You must download applicable system patches from the HP Web site at http://h18012.www1.hp.com/java/patches/index.html.

Linux platforms

SAMreport has been tested and approved on Intel Linux Red Hat 7.2 using JRE 1.4.1_03 from Sun.

Before downloading the JRE, check the following:

1   To determine the operating system version, enter:

```
uname -r or uname -a
```

2   If you already have Java installed, determine the Java version number by entering:

```
<pathname to Java>/bin/java -version
```

or

```
<pathname to Java>/bin/jre -version
```

Downloading the JRE

JRE 1.4.1_03 is supported on Linux 7.2 through 8.0.

Download the JRE from the Sun Developers Network at
http://java.sun.com/products/archive/j2se/1.4.1_03/index.html.

1   Click the JRE Download button.

2   Read the license agreement, click Accept, then click Continue.

3   Look for the link for the Linux RPM or self-extracting file.

4   Note the file size of the installer.

5   Click the file download link.

6   Download the installer to a temporary location on your machine.

7   Run the installer.

Note No operating system patches are required.

IBM AIX platforms

SAMreport has been tested and approved on JRE 1.4.1 (AIX 5.1). Consult with
your system administrator or IBM Support if you require assistance, as some
patch levels require you to upgrade the operating system via CD-ROM before
applying patches.

Before downloading the JRE/JDK, check the following on your operating sys-
tem:

1   To determine the operating system version, enter:

```
uname -a
```

2   To determine which operating system patches are installed, enter:

```
lslpp -ah bos.rte.libc
```

3   If you already have Java installed, determine the Java version number by enter:

```
lslpp -L | grep Java
```

if Java was installed as part of the operating system. Or enter:

```
pathname_to_Java/bin/jre -version
```

Or:

```
pathname_to_Java/bin/java -version
```

Downloading the JRE

JRE version 1.4.x is supported on IBM AIX version 5.1. Download JRE 1.4.x from the IBM Web site at
http://www.ibm.com/developerworks/java/jdk/aix/service.html.

1   Download the Java SDK you want by clicking on the appropriate link in the top (blue colored) row of the IBM table. Before you can download code, you will need an IBM Registration ID.

2   Register or log in with your existing IBM ID.

3   Accept the license agreement.

4   Select *jre142.tar* from the IBM Runtime Environment table.

5   Download the file to where you want the JRE installed.

6   Use the tar command to unpack the file.

Windows platforms

SAMreport has been tested and approved with the Windows JRE 1.4.2_04.

Before downloading the JRE, check the following on your operating system:

1   Check the build level of your operating system by selecting Start | Control Panel | System.

2   If you already have Java installed, determine the Java version number using MS-DOS Prompt:

```
<pathname to Java>\bin\java -version
```

Downloading the JRE

JRE 1.4.2_04 is supported on Windows 98, NT, 2000, XP, and 2003.

Download JRE 1.4.2_04 from the Sun Developer Network at
http://java.sun.com/products/archive/j2se/1.4.2_04/index.html.

1   Click the link for J2SE v1.4.2_04 JRE download.

2   Read the license agreement, click Accept, and click Continue.

3   Look for the link for the Windows Offline Installation file.

4   Note the file size of the installer.

5   Click the file download link.

6   Download the installer to a temporary location on your machine.

7   Run the installer.

APPENDIX D Configuring the License Server on UNIX Systems

To start your license server as an automatic service on UNIX machines:

1   Using an account with "root" privileges, log on to the machine where you installed the SySAM software.

2   Create a script for the system to use during start-up and shutdown. The main purpose of such a script is to avoid running the license server with root privileges as these are not required.

    The following *example* script assumes that the license manager will be run as the user *sybase*, and was installed into */opt/sybase*. Change these to match your specific installation:

```
#!/bin/sh
#
SYBUSER=sybase
SYBASE=/opt/sybase
SYSAM=$SYBASE/SYSAM-2_0
case "$1" in
      'start')
             su $SYBUSER -c "echo `date` starting
lmgrd
>> $SYSAM/log/boot.log"
             nohup su $SYBUSER -c "umask 022;
 $SYSAM/bin/sysam start >> $SYBASE/log/boot.log"
             ;;
      'stop')
             su $SYBUSER -c "echo `date` stopping
lmgrd
>> $SYSAM/log/boot.log"
          su $SYBUSER -c "$SYSAM/bin/sysam stop
-q
>> $SYSAM/log/boot.log"
             ;;
      *)
             echo "Usage: $0 { start | stop }"
             exit 1
```

```
                    ;;
    esac
    exit 0
```

3   Save the script to a file name appropriate for your operating system.

    For Solaris, use:

    /etc/init.d/sysam.boot

    For Red Hat Linux and IBM, use:

    /etc/rc.d/init.d/sysam.boot

    For HP, use:

    /sbin/init.d/sysam.boot

4   Change the permissions, ownership, and group for the script. For example,
    assuming the script was stored as */etc/init.d/sysam.boot* enter:

```
    chmod 744 /etc/init.d/sysam.boot
    chown root /etc/init.d/sysam.boot
    chgrp sys /etc/init.d/sysam.boot
```

5   Create an appropriately named link to start the license manager during
    start-up (typically, S + run number + script name):

    For Solaris:

```
    ln -s /etc/init.d/sysam.boot /etc/rc3.d/S70sysam
```

    For Red Hat Linux and IBM:

```
    ln -s /etc/rc.d/init.d/sysam.boot
     /etc/rc.d/rc3.d/S70sysam
```

    For HP:

```
    ln -s /sbin/init.d/sysam.boot /sbin/rc3.d/S070sysam
```

    Note Choose the run number (70 in the example above) such that it is
    higher than that of subsystems required by SySAM such as networking
    services and lower than the run number of any SySAM-enabled products
    that require SySAM.

6   Create an appropriately named link to stop the License Manager during
    shutdown (typically, K + run number + script name):

    For Solaris:

```
ln -s /etc/init.d/sysam.boot /etc/rc2.d/K02sysam
```

For Red Hat Linux and IBM:

```
ln -s /etc/rc.d/init.d/sysam.boot
 /etc/rc.d/rc2.d/K02sysam
```

For HP:

```
ln -s /sbin/init.d/sysam.boot /sbin/rc2.d/K002sysam
```

Note The run number (02 above) should be chosen such that it is lower than that of subsystems required by SySAM such as networking services and higher than the run number of any SySAM enabled products that require SySAM.

APPENDIX E   **Error Messages**

This appendix contains information about common error messages you may encounter with SySAM.

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Successful licensing message

Message 131252 is an informational message that is reported when a license is obtained.

```
Checked out license for quantity feature
(license_version / license_expiry /
license_identifier)
```

For example:

```
Checked out license for 1 ASE_CORE
(2005.1231/permanent/1343 09DD 6920 420A).
```

Overdraft licensing message

Warning message 131251 displays if you have exceeded the number of available licenses and have obtained a license on overdraft:

```
The total number of available licenses for feature has
been exceeded by overdraft_amount and license usage is
now in overdraft.
```

For example:

```
The total number of available licenses for ASE_CORE has
been exceeded by 1 and license usage is now in
overdraft.
```

See "Overdraft licenses" on page 15.

License awarded in grace

Warning message 131254 displays when a license cannot be obtained and is issued in a grace period:

```
Checked out grace license for quantity feature
(version_requested) will expire license_expiry_date
```

For example:

```
Checked out graced license for 1
ASE_CORE (2005.0425) will expire Thu May 25 16:11:31
2006.
```

Note In the above example, the highlighted version `2005.0425` is the version requested by the product *not* the *license_version* because no license has been obtained.

Heartbeat license verification failure

Warning message 131240 displays when the heartbeat license verification has failed.

```
License verification failed for checked out feature.
License will be graced until grace_expiry_date.
```

For example:

```
License verification failed for checked out ASE_CORE.
License will be graced until Wed May 24 17:02:39 2006.
```

The above warning message is followed by a number of messages indicating the cause of the failure.

Expiration consequence messages

Warning message 131274 notifies you of the consequences of a grace period or license expiration when the license is for the product itself.

```
WARNING: product will shut down on expiry_date, unless
a suitable feature license is obtained before that date.
```

For example:

```
WARNING: ASE will shutdown on Thu May
25 16:11:31 2006, unless a suitable ASE_CORE license is
obtained before that date.
```

Warning message 131275 notifies you of the consequences of a grace period or license expiration when the license is for a product feature.

```
WARNING: product functionality that requires the
feature license will be disabled on expiry_date, unless
a suitable feature license is obtained before that date.
```

For example:

```
WARNING: ASE functionality that requires the
ASE_ENCRYPTION license will be disabled on Thu May 25
16:11:31 2006, unless a suitable ASE_ENCRYPTION license
is obtained before that date.
```

Periodic notification messages

Warning message 131250 indicate that you are functioning in a grace period and that your license will expire.

```
License for feature will expire license_expiry_date.
```

For example:

```
License for 1 ASE_CORE (2005.0425) will expire Thu May
25 16:11:31 2006.
```

Grace expiration message

Error message 131231 indicates that your product cannot obtain a license and the grace period has expired.

```
License for feature could not be checked out within the
grace period and has now expired.
```

For example:

```
License for ASE_CORE could not be checked out within the
grace period and has now expired.
```

Cause of failure message

Error message 131239 indicates the cause of a failure, and is followed by additional details.

```
Failed to obtain quantity license(s) for
feature feature from License Server host.
```

If the license server is not known, a more general message is given:

```
Failed to obtain quantity license(s) for feature feature
from license file(s) or server(s).
```

Failure detail messages

When you see any of the above failure notification messages, you also receive messages similar to the following, which indicate the cause of the failure. These messages all start with the specific error, for example, `Cannot connect to license server system`, then proceed with a possible cause, the name of the feature license, and finish with the name of the license server and the location of the license files. The FLEXnet licensing error number is reported. See the *FLEXnet User Guide*, Appendix E, "FLEXnet Licensing Error Codes" for the full list of error message numbers and their meaning.

```
Cannot connect to license server system. The license
server manager (lmgrd) has not been started yet, the
wrong port@host or license file is being used, or the
port or hostname in the license file has been changed.
Feature:       feature
Server name: license_server
License path:
<License files that were used when trying to check-out
the license or to locate the license server>
FLEXnet Licensing error:-15,570 For further
information, refer to the FLEXnet Licensing End User
Guide, available at
http://www.sybase.com/support/manuals
```

APPENDIX F   **Migrating the License Server from SySAM 1.0 to SySAM 2.0**

Migrating the license server to SySAM 2.0

There can be only one instance of a SySAM license server running on a given machine. To set up a SySAM 2.0 license server on a machine that is already running a SySAM 1.0 license server, you must migrate the old license server to 2.0. A migrated license server can serve licenses for both SySAM 1.0- and SySAM 2.0-enabled products.

1 Shut down the SySAM 1.0 license server.

2 Install the SySAM 2.0 license server using your product installation media. Use the same port number used by the old license server.

   On UNIX platforms, configure the license server to be started and stopped as part of the system start-up and shutdown, and remove any startup scripts that were used on the SySAM 1.0 license server.

3 Copy the SySAM 1.0 license file into the SySAM 2.0 licenses directory. All SySAM 1.0 licenses were typically contained in one file named *license.dat* that is located in the *SYSAM-1_0* licenses directory. Copy this file as *license.lic* into the *SYSAM-2_0* licenses directory. The extension of the file name has been changed from *dat* to *lic*.

4   Install any new SySAM 2.0 licenses in the licenses directory.

Note The license server reads only files with a *.lic* extension.

---

5   Restart the license server or issue the `sysam reread` command to have
     the license server pick up the new licenses.

6   The new SySAM 2.0 server can now serve licenses for the old SySAM-
     1.0-enabled products as well as new SySAM-2.0-enabled products.

Consolidating multiple license servers

If you have multiple SySAM 1.0 license servers serving individual instances of
your product, you may want to consolidate them into one server. See Chapter
2, "Understanding Licensing Concepts and Models," for information on
selecting the appropriate configuration for your environment.

1   Select a machine to be the consolidated license server host.

2   If this host already runs a SySAM 1.0 license server, follow the procedure
     detailed above.

     Otherwise, install the SySAM 2.0 license server using the product
     installation media. On UNIX platforms, configure the license server to be
     started and stopped as part of the system start-up and shutdown.

3   Shut down the individual license servers.

     On UNIX platforms, remove references from system start-up directories,
     if the license server was configured to be automatically started.

4   Collect the licenses that were being served from these individual license
     servers and deploy them to the new consolidated license server. To do this,
     create a new license file that includes the contents from all of the
     individual licenses on each of the old license servers. Discard the license
     header from each file when creating this collection. The license header is
     the first three lines that start with SERVER, VENDOR and USE_SERVER.

5   Add the following header to this consolidated license file and save it in the
     licenses directory with any name, but with a *.lic* extension.

```
SERVER this_host ANY port
VENDOR SYBASE
USE_SERVER
```

where *port* is the port number on which the license server will be listening. If you do not specify a port number, the license server uses a default port in the 27000 through 27009 range.

6   Delete the old licenses from the retired license servers and point the products using the old license servers to the new license server. To do this, replace the contents of the *license.dat* file on each of these machines with the following two lines:

```
SERVER server_host ANY port
USE_SERVER
```

where *server_host* is the *hostname* of the consolidated license server, and *port* is the port number on which the license server is listening. Do not specify the port number if the license server is using the default port numbers.

APPENDIX G   **Typical Deployment Scenarios**

This section illustrates some typical deployment scenarios and provides a suggested SySAM setup that will best serve each deployment scenario. You can mix and match the configurations described with other variations to best suit your needs.

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Small configuration

This setup assumes that you are using a limited number of Sybase products. The simplest setup in such situations is to use unserved licenses. Unserved licenses simplify the initial setup and ongoing monitoring, but you cannot utilize functionality such as asset management.

Figure G-1: Small configuration
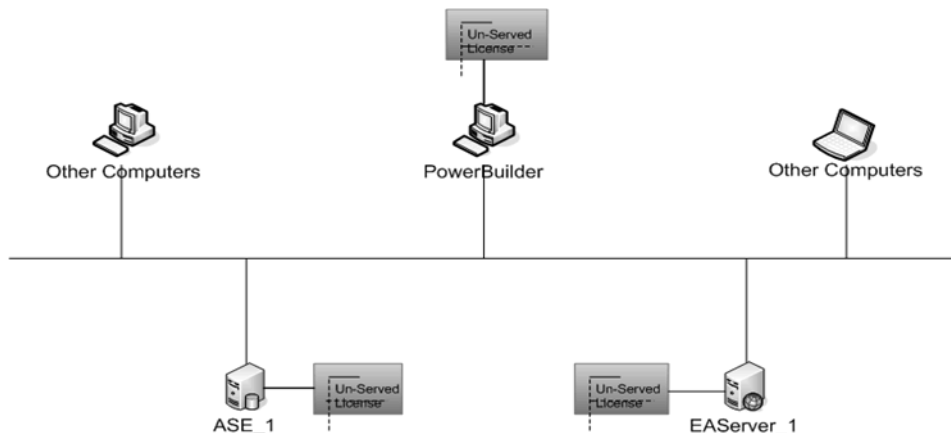
Figure G-1 depicts a small installation. In this setup, you have one Adaptive Server database, one EAServer application server, and one PowerBuilder application using SySAM. Each instance of these products obtains their licenses from a local unserved license file. The license for each instance of, or each Sybase product must be individually activated.

Single site configuration with multiple Sybase products

This setup assumes you have a single site with multiple Sybase products in use and you require asset management capabilities. Typically, a served license model with one license server serving all Sybase licenses best suits such a configuration. The overhead of maintaining the license server is compensated by the asset management functionality provided and reduced ongoing license maintenance activities.

Figure G-2: Single license server
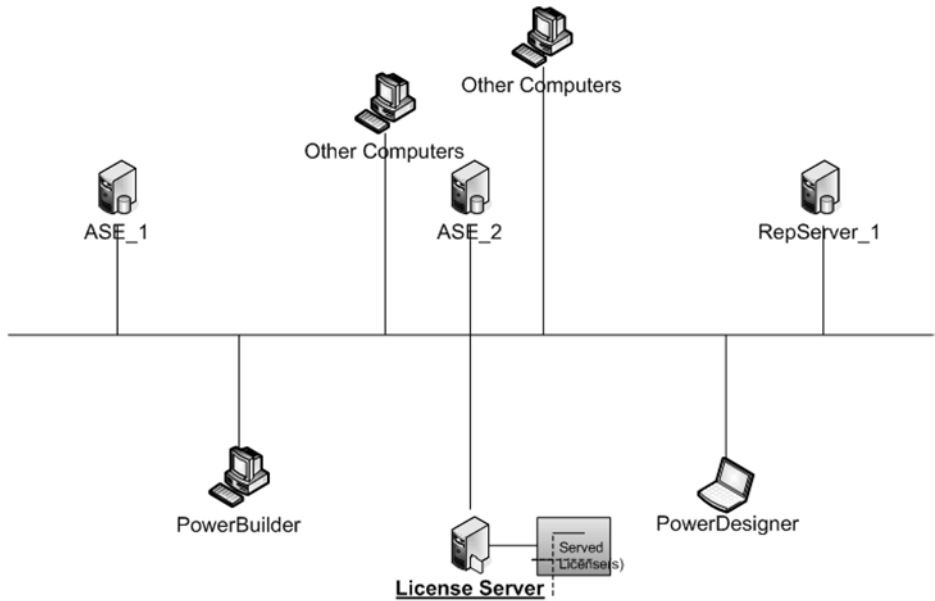
Figure G-2 depicts a single site with multiple products. A single license server is setup with SySAM licenses for all Sybase products in use. Each instance of Sybase product contacts the license server to obtain its licenses.

You can set up the license server on a separate machine, but because of the small amount of resources used by the license server, in most situations the license server can be hosted on an existing machine.

You can also consider an unserved license model as alternative configuration.

Multiple sites configuration with multiple Sybase products

This setup assumes you have multiple sites using multiple Sybase products. You could setup a license server at each major site for this configuration. Setting up a license server at each major site removes dependency on the network availability and latency between various sites. This configuration can also provide load balancing.

Figure G-3: Multiple sites and license servers
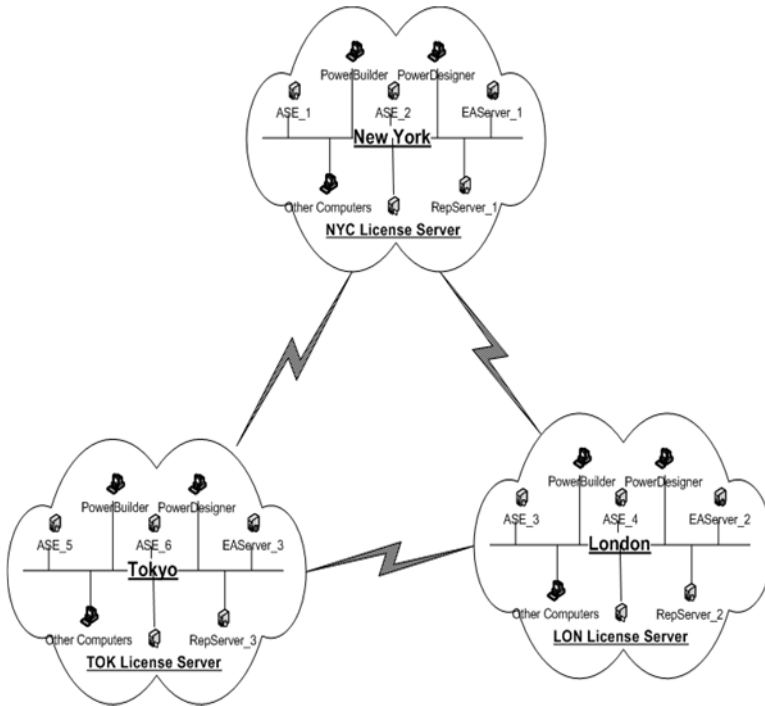
Figure G-3 depicts a multiple site, multiple product configuration. In this example, your organization has three major sites in New York, London and Tokyo. Each site uses multiple instances of multiple Sybase products. A license server is setup at each site and individual product instances obtain licenses from the local license server.

Products can be configured to look up remote license servers if the required license is not found on the local license server, or if the local license server is not running. If you would like to share a limited number of "floating" licenses across all sites while using the local license server for other licenses, you can setup the floating licenses on the license server where they will be used most. At rest of the sites, set up license search paths with the redundancy provided by this setup is limited to the number of unused licenses including overdraft licenses remaining on each license server.

You can also consider alternate configurations. If the network communication between two sites is very reliable with minimal latency, consider sharing the license server between two sites. Smaller remote sites may share a license server with a bigger site that provides the most reliable network connection, even though it may not be, physically, the closest site.

Multiple sites with security considerations and remote users

This setup is an extension to the multiple site case explained above. It also addresses additional considerations including security within your network, remote users, and DMZs. This setup uses a mix of license models and servers to meet your needs. Individual components of this deployment can be applied to any of the previous scenarios.

Figure G-4: Complex, multiple site installations
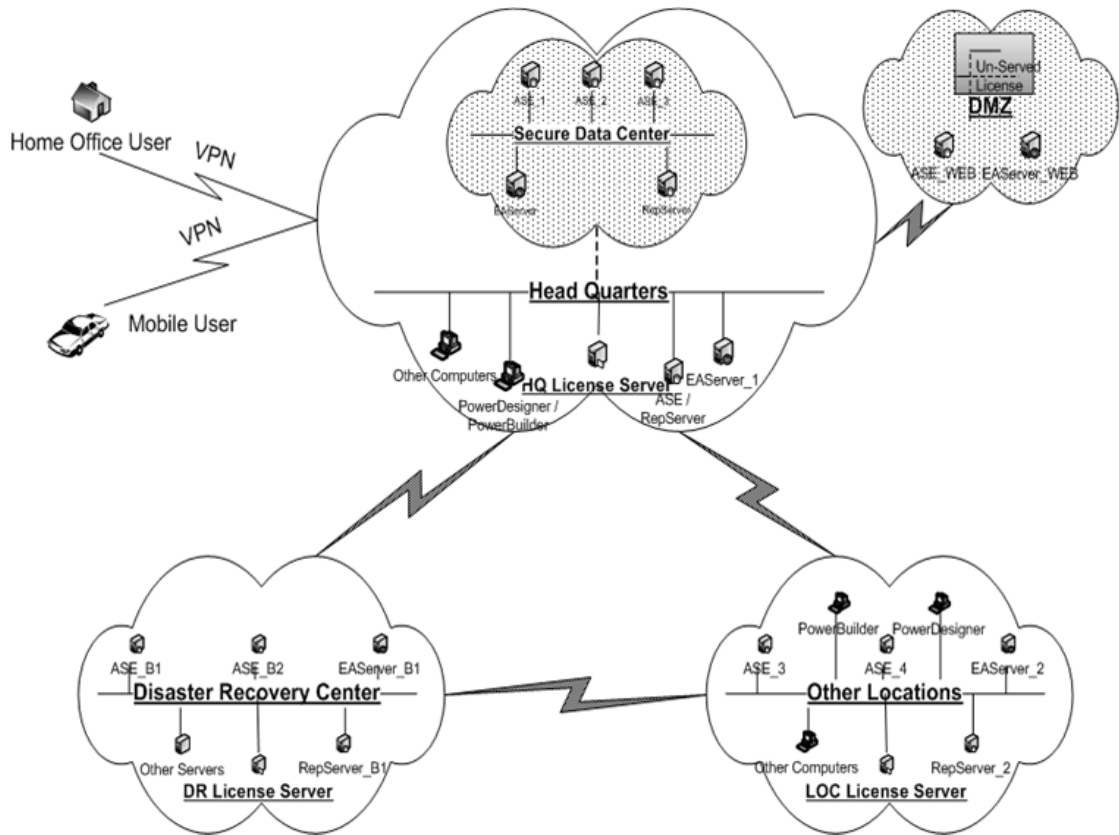
Figure G-4 depicts a multiple site, with multiple product setup with additional security requirements. In this example:

- The Headquarter network includes both development and production installations.

- The production installations are setup within a secure sub-net within the network.

- The database and application servers that serve the Web are setup in the DMZ.

- Home office and mobile users access the software remotely through VPN.

- A disaster recovery center is setup at a remote location.

- There are other secondary sites for the organization.

In this example, we setup a single license server for Headquarters. It serves the development, production and remote users' needs. While the license server is shared for development and production needs, available licenses can be demarcated based on intended deployment.

•   The production subnet security policies are relaxed to allow connections to the license server host and port.

•   The VPN policies are setup to allow connection to license server host and port.

If your security policies do not permit the production subnet to access a license server outside the subnet, you must setup a separate license server inside the subnet.

Note Use a fixed port for the license manager, lmgrd, and SYBASE vendor demon in such situations. Firewall and VPN policies must accommodate both lmgrd and SYBASE port numbers. This means that SERVER lines and VENDOR lines in all license files must specify the port numbers chosen for the license manager and SYBASE daemon processes. For example, a license server running on machine server_1 with the license manager daemon, lmgrd, listening on port 27001 and the SYBASE vendor daemon listening on port 27100 would use a license file headed with the following 2 lines:

```
SERVER server_1 ANY 27001
VENDOR SYBASE PORT=27100
```

Unserved licenses are setup on the DMZ to serve licenses to product instances using the Web. This reduces the need to setup another license server or open up additional traffic through the firewall.

Sybase recommends that you use a separate license server for your disaster recovery site. This ensures availability of the license server in case of a major catastrophe at the primary site.

If your disaster recovery setup includes cold-standby servers, you must set up the license servers in a three-node redundant cluster. This reduces the possibility of a license server not being available when a cold-standby server is attempting to come on line. Such redundancy for license servers is typically not needed unless you are using cold-standby systems.

Each secondary or remote site can have its own license server as described in the previous example.

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