SYBASE®

Installation Guide

OpenSwitch™

15.1

[UNIX]

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Contents

About This Book

Audience

This book is for anyone responsible for installing and configuring the OpenSwitch™ runtime environment.

How to use this book

This book describes how to install OpenSwitch, which allows you to transparently transfer incoming client connections to any Sybase® server product. OpenSwitch is placed between client connections (such as isql, or any application developed using Open Client™, ODBC, or jConnect™ for JDBC™ libraries) and two or more Adaptive Servers®.

This document contains these chapters:

- Chapter 1, “Before You Begin,” describes the system requirements and pre-installation tasks in OpenSwitch before you begin to install.
- Chapter 2, “Installing OpenSwitch,” provides instructions for installing and uninstalling OpenSwitch.
- Chapter 3, “Configuring OpenSwitch,” describes how to configure an OpenSwitch server using the configuration GUI, or manually using a text editor.
- Chapter 4, “Post-Installation Tasks,” provides instructions for post-installation tasks, and describes how to start OpenSwitch. This chapter also describes how to uninstall OpenSwitch.
- Appendix A, “Troubleshooting,” describes problems you may encounter during installation, and possible solutions to those problems.

Related documents

The OpenSwitch documentation set consists of:

- *OpenSwitch Release Bulletin* – contains last-minute information that was too late to be included in the books.

  A more recent version of the release bulletin may be available on the World Wide Web. To check for critical product or document information that was added after the release of the product CD, use the Sybase Product Manuals at http://www.sybase.com/support/manuals/.

- *OpenSwitch Installation Guide* for your platform (this book) – describes system requirements and provides installation and configuration procedures for OpenSwitch software.
- *OpenSwitch New Features Guide* – describes the new and updated features in OpenSwitch.
- *OpenSwitch Administration Guide* – explains how to administer OpenSwitch and how to reconfigure the product after installation.
- *OpenSwitch Coordination Module Reference Manual* – describes how to develop and use OpenSwitch coordination modules.
- *OpenSwitch Error Message Guide* – explains how to troubleshoot problems that you may encounter when using OpenSwitch, and provides explanations of error messages.
- OpenSwitch Manager online help – describes the tasks you can perform in OpenSwitch Manager.
- *Sybase Software Asset Management Users Guide* – describes Sybase asset management configuration concepts and tasks.
- *FLEXnet Licensing 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 Users Guide* – this Macrovision manual explains how to use SAMreport, a report generator that helps you monitor the usage of applications that use FLEXnet Licensing.

Other sources of information

Use the Sybase Getting Started CD, the SyBooks™ CD, and the Sybase Product Manuals Web site to learn more about your product:

- The Getting Started CD contains release bulletins and installation guides in PDF format, and may also contain other documents or updated information not included on the SyBooks CD. It is included with your software. To read or print documents on the Getting Started CD, you need Adobe Acrobat Reader, which you can download at no charge from the Adobe Web site using a link provided on the CD.
- The SyBooks CD contains product manuals and is included with your software. The Eclipse-based SyBooks browser allows you to access the manuals in an easy-to-use, HTML-based format.

Some documentation may be provided in PDF format, which you can access through the PDF directory on the SyBooks CD. To read or print the PDF files, you need Adobe Acrobat Reader.

Refer to the *SyBooks Installation Guide* on the Getting Started CD, or the *README.txt* file on the SyBooks CD for instructions on installing and starting SyBooks.

- The Sybase Product Manuals Web site is an online version of the SyBooks CD that you can access using a standard Web browser. In addition to product manuals, you will find links to EBFs/Maintenance, Technical Documents, Case Management, Solved Cases, newsgroups, and the Sybase Developer Network.

  To access the Sybase Product Manuals Web site, go to Product Manuals at http://www.sybase.com/support/manuals/.

Sybase certifications on the Web

Technical documentation at the Sybase Web site is updated frequently.

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

1. Point your Web browser to Technical Documents at http://www.sybase.com/support/techdocs/.
2. 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.

Conventions

The formatting conventions used in this manual are:

Formatting example	To indicate
command names and method names	When used in descriptive text, this font indicates keywords such as: • Command names used in descriptive text • C++ and Java method or class names used in descriptive text • Java package names used in descriptive text
myCounter variable `Server.log` *myfile.txt*	Italic font indicates: • Program variables • Parts of input text that must be substituted • File names
sybase/bin	Directory names appearing in text display in lowercase unless the system is case sensitive. A forward slash ("/") indicates generic directory information. A backslash ("\") applies to Windows users only.

Formatting example	To indicate
File | Save	Menu names and menu items display in plain text. The vertical bar indicates how to navigate menu selections. For example, File | Save indicates "select Save from the File menu."
`create table` `table created`	Monospace font indicates: • Information that you enter on a command line or as program text • Example output fragments

Accessibility features

This document is available in an HTML version that is specialized for accessibility. You can navigate the HTML with an adaptive technology such as a screen reader, or view it with a screen enlarger.

OpenSwitch version 15.1 and the HTML documentation have been tested for compliance with U.S. government Section 508 Accessibility requirements. Documents that comply with Section 508 generally also meet non-U.S. accessibility guidelines, such as the World Wide Web Consortium (W3C) guidelines for Web sites.

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

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

If you need help

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

CHAPTER 1

Before You Begin

This chapter provides information about the system and licensing requirements for installing OpenSwitch™. It also lists other pre-installation tasks you must perform before installing OpenSwitch. OpenSwitch now implements Sybase Software Asset Management (SySAM) version 2.0 for licensing management.

Overview

Before you install OpenSwitch:

1 Read the OpenSwitch installation guide for your platform and the OpenSwitch release bulletin.

  The release bulletin contains last-minute information about installing and upgrading OpenSwitch software. You can obtain the release bulletin on the Product Manuals Web page at http://www.sybase.com/support/manuals.

2 Plan and deploy the type of SySAM configuration you want to install using the information in "SySAM licensing requirements" on page 2.

3 Verify that you meet the system and disk space requirements using the information in "System requirements" on page 6. Install required operating system patches.

4 Perform "Pre-installation tasks" on page 6.

5 If you are upgrading from an earlier version of OpenSwitch, perform the tasks described in "Upgrading to a newer version" on page 10.

SySAM licensing requirements

OpenSwitch version 15.1 includes a new Sybase Software Asset Management System (SySAM) 2.0 implementation to perform license administration and asset management tasks.

Sybase recommends that you obtain your license files from the Sybase Product Download Center (SPDC) at https://sybase.subscribenet.com before you begin installation. Accessing SPDC requires a separate login and password — authorized users automatically receive SPDC login and password information via e-mail.

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

For more information about how SySAM components work, licensing and concepts, and other related license details, see the *Sybase Software Asset Management Users Guide* on the Product Manuals Web page at http://www.sybase.com/support/manuals.

License availability and grace periods

If OpenSwitch cannot obtain a license, the product does not run. A license is unavailable if it cannot be checked out, or if it cannot be issued during a grace period. Licenses may be unavailable during start-up or a heartbeat check.

When SySAM detects a checkout failure, the event is logged in the OpenSwitch error log, which you can use to diagnose any unexpected licensing failures. After the initial checkout failure, periodic events are logged during a grace period.

If a license is not available, OpenSwitch evaluates whether to issue a license for a grace period. There are three types of grace periods:

- Install time – when you configure a new OpenSwitch, you have 30 days to activate and configure the appropriate license.
- Runtime – a runtime grace period is evaluated when one of these conditions occurs:
    - A license was not checked out at start-up, but there is a history of successfully using the requested license on this machine.

- A license that was successfully checked out at start-up becomes unavailable at a later time.

If OpenSwitch encounters either situation, it enters into a 30-day runtime grace period. If the problem is not resolved within 30 days, OpenSwitch stops running; however, users are allowed to save any work and exit. If the problem that causes the license to be unavailable is fixed during the runtime grace period, OpenSwitch automatically picks up the available license and operates normally.

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

See "License availability and product grace period," in Chapter 2, "Understanding Licensing Concepts and Models" in the *Sybase Software Asset Management Users Guide*.

Deploying SySAM

Before you install OpenSwitch, plan the type of SySAM license configuration you want to use. Depending on your configuration choice, you may need to perform additional pre-installation tasks.

You can set up a local license file or a license server. See "Choosing a license model," in Chapter 2, "Understanding Licensing Concepts and Models" in the *Sybase Software Asset Management Users Guide*.

Note There can only be 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, migrate the existing license server to SySAM 2.0. A migrated license server can serve licenses for both SySAM 1.0- and SySAM 2.0-enabled products.

For instructions on migrating a license server, see Appendix F of the *Sybase Software Asset Management Users Guide*.

Use the commands described in Chapter 4, "License Server Administration," in the *Sybase Software Asset Management Users Guide* to administer your SySAM license server. The GUI plug-in for SySAM license server administration for OpenSwitch is not available on Sybase Central™.

SySAM standalone license server

You can use the SySAM license install program from the CD or download and extract the install program from the Sybase SySAM Standalone License Server download page at http://www.sybase.com/sysam/server.

❖ **Installing a new license server**

1 Mount the CD.

- On HP-UX:

```
/etc/mount -F cdfs -o ro, rr device_name /cdrom
```

where:

- *device_name* – is the CD drive.
- */cdrom* – is the directory where the CD is to be mounted.

- On IBM AIX:

```
/usr/sbin/mount -v 'cdrfs' -r device_name /cdrom
```

where:

- *device_name* – is the CD drive.
- */cdrom* – is the directory where the CD is to be mounted.

Note The location of the mount command is site-specific, and might be different than what is shown in these instructions. If you cannot mount the CD drive using the path shown, consult your operating system documentation or contact your operating system administrator.

- On Linux and Linux on POWER:

```
$ mount -t iso9660 /dev/cdrom /mnt/cdrom
```

- On Solaris:

The operating system mounts the CD automatically.

2 Launch the Sybase installer program:

```
./setup
```

3 The Welcome Window displays. Click Next.

4 Accept the license agreement.

5 Enter or select the destination directory.

6 Select the custom installation.

7 Select only SySAM Network License Server for installation.

8 Unselect other components, to install the Net License Server only.

9 Click OK to install SySAM licensing tools.

10 Obtain the host ID for the machine on which the new license server will run:

- Go to *$SYBASE/SYSAM-2_0/bin* where *$SYBASE* is the Sybase installation directory and *SYSAM-2_0* is the directory for *SYSAM-2_0*.
- Enter:

```
./lmutil lmhostid
```

Note If your machine has multiple network adapters, lmutil lmhostid returns host IDs associated with each adapter. Choose one of the IDs. Do not use IDs for removable network adapters.

- Save the host ID to use at the Sybase Product Download Center.

11 Go to the Sybase Product Download Center (SPDC) at https://sybase.subscribenet.com.

12 Select the license you want to install. See Chapter 3, "Getting and Using Your License," in the *Sybase Software Asset Management Users Guide*.

13 Copy the license file to *$SYBASE/SYSAM-2_0/licenses* on the network license server machine.

Note You can set the SYBASE_LICENSE_FILE environment variable to specify additional Sybase license sources. By default, the Sybase license file is in *$SYBASE/SYSAM-2_0/licenses*.

Similarly, you can set LM_LICENSE_FILE environment variable to specify multiple vendor licenses sources.

14 Start the SySAM network license server.

- Go to:

  $SYBASE/SYSAM-2_0/bin

- Enter:

```
./sysam start
```

15 Validate that the license daemon is running:

```
./sysam status
```

See Chapter 4, “License Server Administration,” in the *Sybase Software Asset Management Users Guide* for more details.

Pre-installation tasks

Before you install OpenSwitch, follow the tasks described in this section.

System requirements

This section provides information about OpenSwitch system requirements.

System space requirements

OpenSwitch requires a minimum of 256 MB RAM and approximately 450 MB hard disk space.

Temporary space requirements

Verify that you have 100MB free space in your temporary directory.

If you do not have enough space in the default temporary directory set by the installer (*/tmp*), redirect to a temporary directory set by you.

Note The temporary directory to which you are redirecting must exist before you issue the command to redirect it.

To redirect your temporary directory when using *setup*, enter:

```
./setup -is:tempdir /work/tmp
```

where */work/tmp* is the directory of your choice.

Operating systems and patches

Table 1-1 shows the system hardware and software requirements for OpenSwitch 15.1.

Table 1-1: System requirements for OpenSwitch 15.1

Hardware	Operating system	Supported protocols
HP 9000 Server family, PA-RISC 2 chip	HP-UX 11i v1 (11.11)	TCP
IBM RISC System/6000	AIX 5.2	TCP
Sun Solaris (SPARC)	Solaris 2.8	TCP
Linux x86	Red Hat Enterprise AS release 3.0	TCP
IBM Linux on POWER	Red Hat Enterprise AS release 3.0	TCP

If your operating system requires patches, install them before you install OpenSwitch components. To determine which patches have been installed on your system, see “Viewing installed patches” on page 7.

Note Do not use a patch that is earlier than the version suggested for your operating system. If a patch has been superseded by a new patch, use the most recent one. See the release bulletin for your platform the latest information about required system patches.

Viewing installed patches

Use these commands to find out which patches are installed on your system:

- On HP-UX:

```
/usr/sbin/swlist -l product | fgrep PH
```

- On IBM AIX:

```
/usr/bin/lslpp -h
```

- On Linux and Linux on POWER:

```
/bin/rpm -q -a
```

- On Sun Solaris:

```
/usr/bin/showrev -p
```

Installing Visual Age xlc compiler runtime libraries

These instructions are for Linux on POWER users only.

Warning! You cannot install Linux on POWER without the following procedure.

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

OpenSwitch is compiled and linked with Visual Age compiler xlc version 7.0. Before installing OpenSwitch, you must install the runtime libraries for the Visual Age compiler.

1 Confirm that the runtime libraries are installed:

```
rpm -q vacpp.rte-7.0.0-0
```

If this command returns `vacpp.rte-7.0.0-0`, Visual Age runtime packages are installed, and you can proceed with the OpenSwitch installation tasks. See “Installing OpenSwitch” on page 14.

If the command returns the message that `vacpp.rte-7.0.0-0` is not installed, install the Visual Age runtime packages.

2 Go to the IBM website at http://www-1.ibm.com/support/docview.wss?uid=swg24007906.

Follow the instructions on the Web page to download and install the packages on your system. Select the installation package for Red Hat 3.0 operating systems from the download table. When installation of xlc Version 7.0 runtime libraries is complete, you may proceed with the installation of OpenSwitch. See “Installing OpenSwitch” on page 14.

3 After installing the xlc runtime libraries, verify that LD_LIBRARY_PATH is set to include the xlc runtime library path.

Installation directory structure

Most OpenSwitch components are installed in their own subdirectories, with the executable program, installation and configuration tools, and display-related files needed by the component. The naming convention for subdirectories includes a component identifier, such as OpenSwitch (for OpenSwitch) or OCS (for Open Client™ and Open Server™), and the software release version, such as 15_1.

OpenSwitch 15.1 includes a new versions of many OpenSwitch components. Other Sybase products may contain earlier versions of the same components. See “Compatibility with other Sybase products” on page 13 and “Installing OpenSwitch and other Sybase products on the same machine” on page 13 for more details.

Shared components are installed separately from component subdirectories in *$SYBASE/shared*. For example, the OpenSwitch subdirectory is *$SYBASE/OpenSwitch-15_1*. However, Open Client is installed in *$SYBASE/OCS-15_0*. The OpenSwitch Manager plug-in for Sybase Central, *oswplugin.jar* and its associated files are installed in *$SYBASE/OSWP*.

Administrative tasks

This section describes administrative tasks that you must complete before you begin the installation process.

1 Create the “sybase” user account and make sure it has read, write, and execute permissions. See “Creating the “sybase” user account” for more information.

2 Verify that the directory location for the Sybase installation has sufficient space.

3 Verify that your network software is configured.

   Sybase software uses network software, even if OpenSwitch and Sybase client applications are installed on a machine that is not connected to a network.

Creating the “sybase” user account

One user (typically the Sybase System Administrator, who has read, write, and execute privileges) should perform all installation, configuration, and upgrade tasks.

To create a Sybase System Administrator account, choose an existing account, or create a new account and assign a user ID, group ID, and password for it. This account is sometimes called the “sybase” user account. See your operating system documentation for instructions on creating a new user account.

If you have already installed other Sybase software, the “sybase” user probably already exists. Verify that you can log in to the machine using this account.

Upgrading to a newer version

If you have an earlier version of OpenSwitch installed on your machine, Sybase recommends that you uninstall it before you install a later version of OpenSwitch. See “Uninstalling OpenSwitch” on page 25. After the uninstallation procedure, the installer does not remove the files in these locations:

Table 1-2: Files and directories remaining after uninstall on UNIX

File name	Location
libtcl.cfg	*$SYBASE/OCS-15_0/config*
• *OpenSwitch_ServerName.cfg* • *OpenSwitch_ServerName_rcm.cfg*	*$SYBASE/OpenSwitch-15_0/config*
• *osw.err* • *oswConfig.log* • *OpenSwitch_ServerName.log* • *OpenSwitch_ServerName_rcm.log*	*$SYBASE/OpenSwitch-15_0/logs*
• *oswInstall.log* • *oswUninstall.log*	*$SYBASE*
• *SYBASE.csh* • *SYBASE.sh* • *SYBASE.env*	*$SYBASE*
interfaces	*$SYBASE*

Sybase recommends that you make a backup copy of these files after the uninstallation.

Limitations

Every connection requires two file descriptors—one for the client connection and one for the connection to the Adaptive Server® Enterprise. An additional connection is required to allow the administrative thread to log in. If you are using cached connections, you must also consider the number of cached connections. Sybase recommends that you configure 100 additional file descriptors for overhead such as Open Client/Server™ shared libraries, character set and locale files, and connection monitor (CMON) threads.

For example, to calculate the minimum number of file descriptors needed for 1000 connections with 50 cached connections:

1000 * 2 + 1 + 50 + 100 for a total of 2151 file descriptors per process.

Note Set the CONNECTIONS parameter to a lesser value than the maximum number of file descriptors (see the UNIX ulimit -Ha command) to prevent OpenSwitch from attempting to use more descriptors than are available to it.

If several short-lived applications, such as Web applications, are continuously connecting to OpenSwitch, Sybase recommends that you observe the TIMED_WAIT state through netstat. The default TIMED_WAIT limit is 2MSL (maximum segment lifetime), which is four minutes. The default limit can result in the maximum file descriptors per process being exceeded as the sockets are held until the 2MSL limit is reached. You can either increase the maximum number of file descriptors per process or reduce the 2MSL limit in the TCP configuration.

For instructions on increasing the file descriptor limit or reducing the 2MSL limit in the TCP configuration, see your operating system vendor documentation.

OpenSwitch uses 30 threads for internal functions. Therefore, you should set the maximum threads per process to at least 30 + maximum OpenSwitch users + 20 (for any additional overhead). For example, if you plan to have 1200 connections at any given time, increase the maximum threads per process to at least 1229.

HP-UX

On HP-UX, set the maxusers and max_thread_procs to the maximum value that HP allows.

Updating maxusers to a value greater than the maximum number of desired OpenSwitch users automatically increases other machine-wide limits, such as nkthread, nproc, nfile, and ninode. Changing nproc changes nkthread.

To see what maxusers and max_thread_procs are currently set to, at a command prompt, enter:

```
/usr/sbin/kmtune
```

Check with the operating system vendor for any limits on threads, process size, open files, and memory allocation per process.

Other configurable parameters are:

- maxfiles – maximum number of files that can be opened at one time.
- maxuproc – number of processes per user.

- maxdsize – size of data segment.

Note If you get memory allocation failures, increase the maxdsize parameter.

Sun Solaris

On Solaris, increase rlim_fd_max to a value greater than the number of users that you intend to run through OpenSwitch according to the file descriptor calculations in the first paragraph of “Limitations” on page 10.

To see what rlim_fd_max is currently set to, at a command prompt, enter:

```
cat/etc/system
```

Other configurable parameters are:

- maxusers
- max_nprocs
- maxuprc

Linux and Linux on POWER

Increase the maximum threads per process to a value greater than the number of connections you expect to be connected at any given time. The value is PTHREAD_THREADS_MAX and is located in */usr/include/bits/local_lim.h*.

This requires you to rebuild your kernel. Consult your Linux documentation for more information.

Localization

Chinese, French, German, Japanese, Korean, Polish, Portuguese, Spanish, and Thai versions of OpenSwitch use the US_ENGLISH version of localization files, such as *oswitch.lcu* and *rcm.loc*.

CHAPTER 2

Installing OpenSwitch

This chapter provides instructions for installing OpenSwitch 15.1.

Overview

Before you begin with your installation, verify that you meet the system requirements and you have completed the pre-installation tasks.

You can either install in GUI mode or in console mode. After installation, OpenSwitch components are installed in the directory you specify. By default, OpenSwitch is installed in */opt/sybase* directory. See "Reviewing the installation" on page 22 for the lists of installed components.

Compatibility with other Sybase products

To ensure high availability in a production environment, Sybase strongly recommends that you install OpenSwitch on a host other than where Adaptive Server and Replication Server® are installed.

Installing OpenSwitch and other Sybase products on the same machine

OpenSwitch version 15.1 requires Open Client/Open Server version 15.0. If you are installing OpenSwitch on the same machine as other Sybase products (such as Adaptive Server Enterprise, Open Client/Open Server, or Replication Server), Sybase recommends that you install OpenSwitch in a separate directory.

Installing OpenSwitch

You can install from the CD, or download and extract the OpenSwitch install image from the SPDC Web site at http://sybase.subscribenet.com.

You can use:

- GUI mode – to install OpenSwitch components using a graphical user interface. This is the default installation mode. See “Installing in GUI mode” on page 15.
- Console mode – to install OpenSwitch components using a command line interface. See “Installing in console mode” on page 21.

Redirecting to a GUI display

On UNIX platforms with a character-based terminal, you can install or uninstall the product either through a console interface, or through a graphical user interface (GUI) by redirecting the display to a Windows-based terminal to run the installer.

❖ **Redirecting the GUI display**

1 Select a terminal that has window-display capabilities (for example, xterm), and verify that the host on which you are installing OpenSwitch can connect to the selected terminal.

2 Set the DISPLAY environment variable to point to a Windows-based terminal before running the installer with the following, where *gui_terminal_host* is the name of the machine to which you are redirecting the GUI display.

For the Bash, the Bourne, or the Korn shell, enter:

```
DISPLAY=gui_terminal_host:0.0; export DISPLAY
```

For the C shell, enter:

```
setenv DISPLAY gui_terminal_host:0.0
```

3 If the window-based terminal belongs to another host, from the GUI host, execute:

```
xhost +install_host
```

This allows the installing host to display the GUI.

4 Verify that the display setting is working by executing this command from the installing host:

```
xclock
```

An xclock image should appear on the window-based terminal. If it does not, check the above settings, or try another GUI terminal.

5 From the location of the installation CD, install the software.

Installing in GUI mode

Use the instructions in this section to perform a new installation of OpenSwitch in GUI mode.

1 Mount and install the CD.

- On HP-UX:

  1 Log in as "root."

  2 Mount the CD:

```
/etc/mount -F cdfs -o ro, rr device_name /cdrom
```

  where:

  - *device_name* – is the CD drive.
  - */cdrom* – is the directory where the CD is to be mounted.

  3 Start the installer:

```
cd /cdrom
./setup
```

- On IBM AIX:

  1 Mount the CD:

```
/usr/sbin/mount -v 'cdrfs' -r device_name /cdrom
```

  where:

  - *device_name* – is the CD drive.

- */cdrom* – is the directory where the CD is to be mounted.

Note The location of the mount command is site-specific, and might be different than what is shown in these instructions. If you cannot mount the CD drive using the path shown, consult your operating system documentation or contact your operating system administrator.

2 Start the installer:

```
cd /device_lname/cdrom
./setup
```

- On Linux and Linux on POWER:

  1 The CD mounts automatically if the automounter is running. Otherwise, enter:

  ```
  $mount/dev/cdrom/mnt/cdrom
  ```

  2 Start the installer:

  ```
  /cdrom/setup
  ```

- On Sun Solaris:

  - The operating system automatically starts the installer.

    If the installer does not start automatically:

    - Enter the following commands to access the CD drive and start the installer:

      ```
      cd /cdrom/cdrom0
      ./setup
      ```

    - If a window appears after you insert the CD, go to */cdrom/cdrom0* and double-click *setup* to start the installer.

Note If you get CD-reading errors, check your operating system kernel to make sure the ISO 9660 option is turned on.

2 If you downloaded the product from SPDC, go to the directory where you extracted the install image and start the installer:

```
./setup
```

Note On HP-UX, log out as “root” and log back on as “sybase” before starting the installer.

3 Click Next and choose your geographic location in the license and copyright agreement windows.

   a Select the geographical location where the software is being installed. The license agreement for that region displays.

   b Read the license agreement and select “I agree to the terms of the Sybase license for the install location specified.” You must agree to the license and copyright before you can continue.

   c Click Next.

4 In the Destination window:

   a Enter or select the directory where you want to install the product.

   You can:

   - Accept the default installation directory; or
   - Enter the name of the root directory where you want to install OpenSwitch; or
   - Click the Browse button to select the installation location.

   b Click Next.

   c If you enter a directory that does not exist, click Yes at the prompt to create the directory.

   If the installation directory you selected exists, and contains a prior installation, InstallShield prompts you with the following message:

```
You have chosen to install into an existing directory. Any older
versions of the products you choose to install that are detected in
this directory will be replaced.

Do you want to continue with installation into this directory?
```

   Click Yes to install on top of the previous installation.

5 Select the type of installation to perform.

Note If you are installing in a high availability environment, see "Compatibility with other Sybase products" on page 13 before selecting the installation type.

- If you choose Typical, InstallShield installs the default components. This is recommended for most users.

  The default components to be installed are:

  - OpenSwitch components
  - Connectivity – Open Client and Common Connectivity Components
  - Language Modules
  - Sybase Software Asset Management – SySAM License Server and SySAM License Utilities
  - Shared
  - OpenSwitch Administration Tools – Sybase Central and OpenSwitch Manager

- If you choose Custom, select the components to install. Select this option only if you have a good knowledge of the interdependencies of Sybase and OpenSwitch products.

6 Click Next.

7 The Summary window displays:

- The installation directory
- The features to be installed
- The total size of the installation

Click Next to continue with the installation, or click Back to change the feature selection.

8 A progress bar shows the progress of the installation. When the installation completes, a message indicating successful installation is displayed.

Note If you are installing into an existing Adaptive Server Enterprise 15.0 installation directory, you may be asked if you want to overwrite certain Open Client/Server files.

If an existing file is newer or has the same date, select No. If an existing file is older, select Yes.

On successful installation, InstallShield displays the following message:

```
"The InstallShield Wizard has successfully installed OpenSwitch suite.
Choose Next to continue the wizard."
```

Click Next. The SySAM License Server window opens.

9 The Sybase Software Asset Management License Server window allows you to specify where OpenSwitch will find its licenses. Where you choose to store your license depends upon whether you have selected a served or unserved license model.

Note For more information about served and unserved licenses, see "Choosing a license model," in Chapter 2,"Understanding Licensing Concepts and Models" in the *Sybase Software Asset Management Users Guide*.

You must specify whether the licenses will be obtained from a license server.

If you answer Yes, enter the following information:

- Host name – the name of the machine where the license manager is running
- Port number – if you have used a non-default port number

If you answer No, you will be using unserved licenses. You will be reminded to download and install the license file after you have finished the installation.

Note When you download the license file, copy it to *$SYBASE/SYSAM-2_0/licenses*.

10 The Sybase Software Asset Management Notification window prompts you to configure your server for e-mail notification. When configuration is enabled, you will receive information about license management events requiring attention.

Provide the following information:

- SMTP server host name
- SMTP server port number
- E-mail Return Address
- Recipient e-mail addresses
- Message severity that triggers e-mail messages

11 When the installation is successful and you click Next, the configuration tool window opens.

- To configure OpenSwitch now, click Next. Proceed to Chapter 3, “Configuring OpenSwitch.”
- If you do not want to configure OpenSwitch now, click Cancel. A prompt asks you to confirm that you want to terminate the configuration. Click Yes. Both the installer and configuration tool windows close.

  To configure the product later, see Chapter 3, “Configuring OpenSwitch.”

  If the installation was unsuccessful, use a text editor to open the installation log file, *oswInstall.log*, in the *$SYBASE* directory and troubleshoot what may have gone wrong.

12 Perform any post-installation steps. See Chapter 4, “Post-Installation Tasks,” for instructions.

❖ **Verifying the installation**

You can verify whether the installation and configuration processes were successful. This procedure, however, does not verify whether OpenSwitch is running with your Adaptive Server. See "Verifying client connections" on page 49 for instructions.

Note You cannot start OpenSwitch until it has been both installed and configured.

- At the command prompt:

```
ps | grep OSwitch
```

You are now ready to start OpenSwitch. See "Starting OpenSwitch" on page 48.

Installing in console mode

The steps for installing components in console mode are the same as those described in "Installing in GUI mode" on page 15, except that you run InstallShield from the command line.

1 Mount and install the CD.

See "Installing in GUI mode" on page 15.

If you have downloaded the install image from SPDC, extract the downloaded file to a temporary directory.

2 Start the installation program:

```
./setup -is:javaconsole -console
```

InstallShield starts and displays the welcome message.

3 The flow of the installation is identical to a regular GUI installation, except that the display is written to a terminal window and responses are entered using the keyboard. Follow the remaining prompts to install the OpenSwitch product.

4 When the installation is successful, InstallShield displays:

```
"The InstallShield Wizard has successfully installed OpenSwitch suite.
Choose Next to continue the wizard."
```

Select Next. The SySAM License Server setup appears. Follow the remaining prompts to complete SySAM license setup. See step 9 to step 10 of “Installing in GUI mode” on page 15.

5 When the installation is successful and you select Next, the configuration tool setup appears.

- To configure OpenSwitch now, select Next. Proceed to Chapter 3, “Configuring OpenSwitch.”
- If you do not want to configure OpenSwitch now, select Cancel to exit the configuration process. To configure the product later, see Chapter 3, “Configuring OpenSwitch.”

Reviewing the installation

OpenSwitch components are, by default, installed in */opt/sybase*. If you have selected Typical during installation, InstallShield installs the default components in */opt/sybase* directory. Table 2-1 on page 23 provides a brief description of the default components installed.

Table 2-1: Installed components description

Installed components	Description
Character Sets	Installed into the *charsets* directory. Provides character sets available for use with OpenSwitch.
Collation Sequences	Installed into the *collate* directory. Provides the collation sequences available for use with OpenSwitch.
Initialization	Installed into the *config* directory. Files in this directory are: *objectid.dat*, *mnemonic.dat*, and *trusted.txt.installed*.
Language Modules	Installed into the *locales* directory. Provides system messages and date/time format.
Connectivity	Installed into the *OCS-15_0* directory. Provides the Open Server and Open Client connectivity libraries for use with OpenSwitch. The subdirectories in this directory are: • *bin* • *config* • *devbin* • *devlib* • *include* • *lib* • *lib3p* • *sample*

Installed components	Description
OpenSwitch Server	Installed into the *OpenSwitch-15_1* directory. Contains the configuration, logs, properties, and executable files. The subdirectories in this directory are: • *bin* – contains OpenSwitch server binary and start-up scripts. • *CFG-1_0* – contains libraries and start-up scripts for launching the GUI standalone configurator tool. • *config* – contains OpenSwitch server configuration file and its sample configuration file. • *devbin* – contains OpenSwitch debug server binary. • *devlib* – contains OpenSwitch debug libraries. • *include* – contains header files for coordination module. • *lib* – contains OpenSwitch libraries. • *logs* – contains the OpenSwitch configuration error log files. • *META-INF* • *sample* – contains OpenSwitch coordination module sample. • *sysam* – contains Sybase Licensing API property file. • *ThirdParyLegal* – lists the third-party download terns and conditions.
OpenSwitch Manager plug-in	Installed into *OSWP* directory. This plug-in contains the management software for managing Sybase servers and its associated servers.
shared	The *shared* directory contains components and libraries that are shared by several other components. • Sybase Central – Sybase Central is a Java-based framework used by the system management tools. In earlier versions, this component was placed into a top-level directory rather than in a shared directory. • JRE – the Java Runtime Environment (JRE) is a runtime Java virtual machine used to execute Java-based programs such as Sybase Central.

Installed components	Description
Sybase Software Asset Management (SySAM)	Installed into the *SYSAM-2_0* directory. This directory contains the license files and the license server-related files only.
Uninstaller	Installed into the *uninstall* directory. The uninstaller is created by the InstallShield during the installation process. Contains the uninstallation scripts and executable files.
Log files	• *oswInstall.log* – a text file that records the installation process. • *oswUninstall.log* – a text file that records the uninstallation process. These files are generated by InstallShield and uninstaller processes.
Environment variables setting scripts	• *SYBASE.csh* – environment variable setting script for C shell. • *SYBASE.sh* – environment variable setting script for Bash, Bourne, or Korn shell. • *SYBASE.env* – environment variable batch file. These files are created by InstallShield that you can later use to reset environment variables. See "Updating environment variables" on page 47.
	• *interfaces* • *interf.sample* – sample *interfaces* file.
	vpd.properties – lists the OpenSwitch components that are currently installed. This is created by the InstallShield. **Warning!** Do not modify or remove *vpd.properties*. Modifying or removing this file prevents InstallShield from accurately managing installed component versions when you install or uninstall Sybase software subsequent to this installation.

Uninstalling OpenSwitch

InstallShield includes an uninstall feature that removes the OpenSwitch components you have installed.

You can invoke the uninstall procedure using either the GUI or console methods. Sybase recommends that you use the GUI method.

Before uninstalling OpenSwitch, shut down the OpenSwitch server if it is running.

1 Log in to OpenSwitch as "admin" using isql.

2 At a command prompt, enter:

```
rp_shutdown
```

❖ **Uninstalling OpenSwitch in GUI mode**

1 **Note** Before you begin, redirect the GUI display. See "Redirecting to a GUI display" on page 14.

Go to *$SYBASE/uninstall/OSWSuite* directory, and launch the uninstaller:

```
./uninstall
```

2 If you have other Sybase products installed, select the OpenSwitch components to uninstall.

If you installed OpenSwitch in a directory that has no other Sybase products, accept the default selections and click Next.

3 When the Uninstall Summary window displays, verify that the selections are correct and click Next.

Note If the selections are not correct, click Back and reselect the components to uninstall.

A message displays "Uninstalling Sybase OpenSwitch Suite."

4 When the message displays that OpenSwitch was successfully uninstalled, click Finish to close the uninstaller.

5 If there are no other Sybase products installed in the directory where OpenSwitch was installed, manually remove any remaining OpenSwitch files and directories after running the uninstallation process.

Table 2-2 on page 27 lists the files remaining after the uninstallation process if you have uninstalled all features.

Table 2-2: Files and directories remaining after uninstall on UNIX

File Name	Location
libtcl.cfg	*$SYBASE/OCS-15_0/config*
• *OpenSwitch_ServerName.cfg* • *OpenSwitch_ServerName_rcm.cfg* **Note** The *OpenSwitch_ServerName_rcm.cfg* is created when you configure the replication coordination module (RCM).	*$SYBASE/OpenSwitch-15_1/config*
• *osw.err* • *oswConfig.log* • *OpenSwitch_ServerName.log* • *OpenSwitch_ServerName_rcm.log* **Note** The *OpenSwitch_ServerName_rcm.log* is created when you configure the RCM.	*$SYBASE/OpenSwitch-15_1/logs*
• *OpenSwitch_ServerName.properties* • *sysam.properties.template*	*$SYBASE/OpenSwitch-15_1/sysam*
OSWPlugin.jpr	*$SYBASE/OSWP/bin*
.scRepository	*$SYBASE/shared/sybcentral43*
• *oswInstall.log* • *oswUninstall.log*	*$SYBASE*
• *SYBASE.csh* • *SYBASE.sh* • *SYBASE.env*	*$SYBASE*
interfaces	*$SYBASE*

❖ **Uninstalling OpenSwitch in console mode**

1 Go to *$SYBASE/uninstall/OSWSuite*.

2 At the command prompt, enter:

```
./uninstall -is:javaconsole -console
```

The uninstall program starts.

3 Follow the remaining prompts to complete the uninstallation procedure.

CHAPTER 3

Configuring OpenSwitch

This chapter describes how to configure OpenSwitch once the product is installed. You can configure OpenSwitch during or after installation using the GUI configuration tool or a text editor.

Overview

OpenSwitch 15.1 includes a configuration tool that has a graphical user interface (GUI). Access the configuration tool directly from the OpenSwitch installation program, or by starting the tool as a standalone application after installation.

After the installer successfully downloads OpenSwitch files to your system, the program asks if you want to configure the newly installed products. If you answer “yes,” the configuration tool starts. If you answer “no,” you exit the installer and run the configuration tool later as a standalone application. You can also use the configuration tool to reconfigure OpenSwitch.

Planning the configuration

Before configuring OpenSwitch, plan your implementation. Several configurations are possible, depending on whether you use Replication Server, whether the Replication Server is configured for warm standby, and whether your Adaptive Servers are configured for failover.

Verify that you have the appropriate software installed as shown in Table 3-1 on page 30, before you start OpenSwitch configuration.

Table 3-1: OpenSwitch configuration requirements

Name	Software requirements
Simple	• 1 OpenSwitch. • 1 coordination module (CM) — optional. • 2 Adaptive Servers.
High availability, warm standby	• 1 OpenSwitch server. • 1 replication coordination module (RCM) configured to coordinate failover through the OpenSwitch server. • 2 Adaptive Servers configured for high availability. • 1 Replication Server configured for warm standby.
Redundant high availability, warm standby	• 2 OpenSwitch servers (1 primary and 1 secondary). OpenSwitch servers in this configuration do not communicate with each other, unlike a mutually aware configuration. • 2 RCMs configured to coordinate failover through the OpenSwitch server. • 2 Adaptive Servers configured for high availability. • 1 Replication Server configured for warm standby.
Mutually aware	• 2 mutually aware companion OpenSwitches. Both mutually aware OpenSwitch servers within the same cluster regard each other as companions and are both aware of each other's state and the state of the other servers. • 2 CMs or 2 RCMs (optional). • 2 Adaptive Servers, which may be configured for high availability.

See the *OpenSwitch Administration Guide* and the *OpenSwitch Coordination Module Reference Manual* for details about possible OpenSwitch configurations.

See the Replication Server documentation for information about using warm standby. See the Adaptive Server Enterprise documentation for information about high availability failover.

Note When you install and configure the secondary companion OpenSwitch in a mutually-aware implementation, you must use the same Adaptive Server name that you provided in the primary companion OpenSwitch server configuration. If you do not do this, OpenSwitch cannot connect to your Adaptive Servers.

Configuring OpenSwitch using the GUI tool

The standalone configuration tool requires a JRE version of 1.4 or later; verify that JAVA_HOME is set to a JRE version of 1.4 or later.

Run the configuration utility for each OpenSwitch that you install; for example, in a mutually aware implementation, you will have two separate OpenSwitch installations and you must run the configuration tool for both installations.

When you run the configuration utility in a multiple OpenSwitch environment, keep in mind which OpenSwitch you are configuring; that is, the primary or secondary OpenSwitch.

❖ Starting the configuration tool

When the installation is successful, click Next, then click Next again when asked if you want to configure OpenSwitch. The configuration tool starts automatically.

If you did not configure OpenSwitch during installation, use this procedure to start the configuration tool.

Note Before you launch the configuration tool, redirect the GUI display. See "Redirecting to a GUI display" on page 14.

---

1 Go to the *$SYBASE* directory and source the *SYBASE.csh* or *SYBASE.sh* file. For the C shell, enter:

```
source SYBASE.csh
```

For the Bash, the Bourne, or the Korn shell, enter:

```
. ./SYBASE.sh
```

2 Set the JAVA_HOME environment variable. For example:

```
setenv JAVA_HOME $SYBASE/uninstall/OSWSuite/JRE-1_4
```

3 Enter:

```
$OPENSWITCH/CFG-1_0/bin/oswcfg.sh
```

❖ Configuring OpenSwitch

1 The first configuration window displays the directory where OpenSwitch is installed. Click Next.

2 Complete the options in the OpenSwitch Components section:

Option	Required?	Description
Server Name	Yes	Enter the name of this OpenSwitch server; as many as 32 alphanumeric characters.
Host Name	Yes	This option is automatically set for you to the name of the machine where OpenSwitch is installed. Accept the default.
Port Number	Yes	Enter the port number on which the OpenSwitch server listens for incoming connections. The port number can be any numeric value from 1025 to 65535, and cannot be in use by another process.

3 In the Coordination Module section, select:

- Custom Coordination Module – if you are going to use a coordination module (CM) in your OpenSwitch installation.
- Replication Coordination Module – if you are going to use a replication coordination module (RCM) in your OpenSwitch installation.

Note See "Planning the configuration" on page 29 for additional software required when you use an RCM.

- None – if you are not going to use a CM or RCM.

4 Complete the options in the Authorization section:

Option	Required?	Description
Admin User Name	Yes	Enter `sa` (the recommended OpenSwitch administrator's user name) or another login name for the administrative user. An administrative user has no outgoing connection to the remote Adaptive Server and is intended to perform only administrative tasks.
Admin Password	Yes	Enter `sa` (the recommended OpenSwitch administrator's password) or another password for the administrative user name. **Warning!** For security, change the password to something other than "sa."
Coord. User Name	No	If you are not using CMs, leave this option blank. If you are using CMs, enter `switch_coord` (the recommended coordination module user name). This name must be different than the Admin User Name value.

Option	Required?	Description
Coord. Password	No	If you are not using CMs, leave this option blank. If you are using CMs, enter `switch_coord` (the recommended coordination module password). This password must be different than the password for the Admin User Name.

5 Answer the questions in the Other Information section:

- Encrypt User Names and Passwords? – to encrypt all user names and passwords in OpenSwitch (and in RCM, if configured).
- Use Mutual Aware Support? – if you are going to implement a mutually-aware setup. See the *OpenSwitch Administration Guide* for information about this feature.

Note See "Planning the configuration" on page 29 for additional software required by this feature.

- Is This the Primary Companion OpenSwitch? – available only when "Use Mutual Aware Support" is selected. If this OpenSwitch server is the primary companion (that is, the primary OpenSwitch server responsible for updating the Adaptive Server OpenSwitch configuration table and for switching over the direction of the Replication Server when failover occurs, if an RCM is used) in a mutually-aware implementation.

6 Click Next to save the entries and continue.

7 If you did not select "Use Mutual Aware Support" in step 5, go to step 9.

If you selected "Use Mutual Aware Support" in step 5, complete the Companion OpenSwitch Components options that display in the Mutual Aware Support dialog box:

Option	Required?	Description
Server Name	Yes	Enter the name of the companion OpenSwitch (primary or secondary) in the OpenSwitch cluster. If you select "Is This the Primary Companion OpenSwitch?" enter the server name of the secondary OpenSwitch. If you did not select "Is This the Primary Companion OpenSwitch?" enter the server name of the primary OpenSwitch.
Host Name	Yes	Enter the name of the machine on which the companion OpenSwitch is installed.
Port Number	Yes	Enter number of the port on which the companion OpenSwitch listens.

Option	Required?	Description
Admin User Name	Yes	Enter the user name that the administrator uses to log in to the companion OpenSwitch.
Admin Password	Yes	Enter the password for the administrator login used to connect to the companion OpenSwitch.
Cluster Name	Yes	Enter the logical name of the cluster where the two OpenSwitch servers reside in a mutually-aware configuration. **Warning!** The Cluster Name value must be the same for both mutually-aware OpenSwitch servers.

8 Click Next to save the entries and continue.

9 When the Data Server Maintenance dialog box displays, complete the options in the Config Level Connection Monitor (CMON) section.

Note The OpenSwitch Connection Monitor (CMON) thread monitors Adaptive Servers and asynchronously notifies threads as soon as connectivity to the remote server is lost.

Option	Required?	Description
User Name	Yes	The login used by the CMON thread to connect to the back-end server. This must be an existing, valid login on each Adaptive Server. Verify that this user has basic privileges.
Password	Yes	Enter the password for the user name you just entered.

10 Complete the options in the Data Server Components section to add a data server for each Adaptive Server in your OpenSwitch implementation.

Option	Required?	Description
Server Name	Yes	Enter the name of the primary or secondary data server. **Note** In a mutually-aware implementation, you must use the same name for an Adaptive Server when you install the Adaptive Server and when you reference the name here for both the primary and secondary OpenSwitch server configuration. Specifically, the name of an Adaptive Server (for example, A1), must be "A1" in the SERVER section of both the primary and secondary OpenSwitch server configuration files and must be A1 in the *sql.ini* or *interfaces* file.
Host Name	Yes	Enter the name of the machine on which the data server is installed.
Port Number	Yes	Enter the port number of the data server.

Option	Required?	Description
Create Mutual Aware Cluster Table in This Data Server?	No	This selection is available only when you select "Use Mutual Aware Support?" When you use mutually-aware support, OpenSwitch can create a configuration table in Adaptive Server that is updated with server and pool status and is used as another resource to keep the two mutually-aware OpenSwitch servers in sync. To create an OpenSwitch configuration table in this Adaptive Server, select this option. Both OpenSwitch servers in a mutually-aware configuration can access this table. See the *OpenSwitch Administration Guide* for details about this feature.
Use Different CMON User Name & Password?	No	To use a different CMON user name and password for this data server, select this option, then enter the user name and password in the next two fields. If you do not select this option, the data server you add uses the CMON user name and password that you entered previously.
CMON User Name	No	Enter the CMON user name that is used to log in to this data server.
CMON Password	No	Enter the CMON password that is used to log in to this data server.
Server Name, If Clustered	No	Enter the name of the companion data server if this is Adaptive Server is enabled for high availability. This name is entered under the "hafailover" entry in the *sql.ini* or *interfaces* file for this data server.
Port Number, If Clustered	No	Enter the port number of the companion data server if this is an high availability Adaptive Server

11 Click Add Data Server, then click OK when the confirmation message displays.

12 Repeat steps 10 and 11 for the other data servers in your OpenSwitch configuration. (OpenSwitch requires at least two data servers.)

Note To remove a data server, enter the data server's name and click Remove Data Server. You can only remove a data server that was added using this dialog box.

13 Click Next to save the entries and continue. The Pool Maintenance dialog box displays.

You must create at least one pool. The options on this window allow you to add or remove pools and to add or remove data servers from a specified pool.

Note A pool is a logical group of servers within OpenSwitch. A pool can contain zero or more servers that are treated as a self-contained failover group, so all connections within the group fail over only to servers defined within the group. See Chapter 2, "Concepts and Procedures," in the *OpenSwitch Administration Guide* for more information about pools.

14 Complete the options in the Add Pool section:

a Enter a pool name and click Add Pool.

b Click OK when the confirmation message displays.

c Repeat this process until you have created the necessary pools for your implementation.

Note To remove an existing pool, enter the pool's name and click Remove Pool. You can only remove a pool that was added using this dialog box.

15 Add each data server to a pool:

a Complete these options:

- Pool Name – select the pool to which you are adding a data server. You can only add a data server to a pool that you have added in this dialog box.
- Server Name – select the data server that you want to add to the selected pool. You can only add data servers that were added using the Data Server Maintenance dialog box.

b Click Add Data Server To the Pool, then click OK when the confirmation message displays.

c Repeat step 15 for each data server in your implementation.

Note The order in which you add a data server to a pool is important, because the first server that you add becomes the primary data server for the pool, and the second server that you add becomes the secondary—or backup—data server for the pool.

If you are using a mutually-aware environment, you should add two pools, and then add the data servers to each of the pools in reverse order. For example, if you have added POOL1 and POOL2, add ASE1 followed by ASE2 to POOL1, and ASE2 followed by ASE1 to POOL2.

To remove a data server from a pool, select the pool, select the data server, and click Remove Data Server From Pool.

16 Click Next to save your entries and continue.

17 If you did not select "Replication Coordination Module" in the second configuration window, go to step 26.

If you selected "Replication Coordination Module" in the second configuration window, the Replication Coordination Module dialog box displays.

Note The replication coordination module (RCM) is an OpenSwitch coordination module that coordinates the failover of a high availability, warm standby environment. The term "failover" in this document refers, in the general sense, to automatically switching to a redundant or standby server when the currently active server fails or terminates abnormally. It does not refer to Sybase Failover, which is a specific feature of Adaptive Server Enterprise.

A redundant high availability, warm standby environment includes:

- A Replication Server configured for warm standby replication
- Two Adaptive Servers and corresponding databases
- Two OpenSwitch servers
- Two RCM instances configured to coordinate failover through the OpenSwitch servers

See the *OpenSwitch Coordination Module Reference Manual* for requirements and instructions on using a redundant high availability, warm standby environment.

Complete the options in the Replication Coordination Module (RCM) section or accept the defaults:

Option	Required?	Description
Name	Yes	The name of the RCM. The default value is *OpenSwitch_ServerName_rcm*.
RCM Path	Yes	The location of the OpenSwitch installation directory for the RCM. The default location is *$OPENSWITCH/bin/rcm.exe*.
Config File	Yes	The location of the RCM configuration file. The default location is *$OPENSWITCH/config/OpenSwitch_ServerName_rcm.cfg*.
Log File	Yes	The location of the RCM log file. The default location is *$OPENSWITCH/logs/OpenSwitch_ServerName_rcm.log*.
Is This a Secondary RCM?	Required only if this RCM is a secondary RCM in a mutually-aware or redundant setup.	Select this option if this RCM is a secondary RCM in a mutually-aware setup.
Is This a Redundant Environment Setup?	Required only if this is a redundant RCM environment	**Note** This option is enabled only if you did not select mutually-aware support on the first configuration screen. You are automatically assumed to have a redundant environment setup if you selected mutually-aware support and are using RCM. Select this option if this is a redundant RCM environment.

18 Complete the options in the Replication Server section:

Option	Required?	Description
Server Name	Yes	The name of the Replication Server that controls the warm standby environment. Enter any valid alphanumeric name up to 32 characters.
Host Name	Yes	The host of the Replication Server that controls the warm standby environment. Enter any valid alphanumeric name.
Port Number	Yes	Enter the port number of the Replication Server.
User Name	Yes	Enter user name that is used to log in to the Replication Server. This user should have permission to execute Replication Server commands like switch_active, suspend log transfer from all, and so on.
Password	No.	Enter the password for the user name that is used to log in to the Replication Server. The password displays in the field as asterisks.

19 Enter the logical connection name. This should be in the form ***logical dataserver.logical database*** and must be already configured in the warm standby Replication Server environment; for example, "`lds.ldb`".

20 Click Next to save your entries and close the dialog box.

If you did not select "Is This a Redundant Environment Setup?" in the Replication Coordination Module dialog box, go to step 26.

If you selected "Is This a Redundant Environment Setup?" in the Replication Coordination Module dialog box, the Primary OpenSwitch Information window or the Secondary OpenSwitch Information window opens, depending on whether this is a secondary RCM setup.

Note The information from this dialog box is saved to the *interfaces* file and required for the redundant environment setup (two OpenSwitch servers, two RCMs, and two Adaptive Servers) to work properly.

21 When the {Primary | Secondary} OpenSwitch Information window displays, complete the options in the OpenSwitch Components section. Enter the information or accept the defaults:

- If this is a secondary RCM setup, the default information is for the primary OpenSwitch.

  Warning! If the primary OpenSwitch is not up and running, a warning displays. At the end of the configuration, the secondary RCM does not start, but the RCM configuration file is created. The secondary RCM cannot start if the primary OpenSwitch is not running.

- If this is not a secondary RCM setup, the default information is for the secondary OpenSwitch.

Option	Required?	Description
Server Name	Yes	The name of the primary or secondary OpenSwitch.
Host Name	Yes	The name of the machine on which the primary or secondary OpenSwitch is installed.
Port Number	Yes	Enter the port number of the primary or secondary OpenSwitch server.

22 Click Next to continue.

23 When the RCM Warm Standby Configuration window opens, complete the options in the Active Data Server Configuration section.

Note This window determines which data server is the active data server and which is the standby data server in the Replication Server warm standby environment.

Option	Required?	Description
Server Name	Yes	Select the name of the active data server in the warm standby environment. This server cannot be the same server as the one you select for the standby data server in the next section. **Note** You must have already added this data server in step 10, in the Data Server Maintenance dialog box, Data Server Components section.
User Name	Yes	The user name used by the RCM to log in to the active data server. This user must have permission to execute commands like use database, sp_start_rep_agent, and so on.
Password	No	Enter the password for the user name you entered. The password displays in the field as asterisks.

24 Complete the options in the Standby Data Server Configuration section.

Option	Required?	Description
Server Name	Yes	Select the name of the standby data server in the warm standby environment. This server cannot be the same server as the one you selected for the active data server in the previous section. **Note** You must have added this data server in step 10, in the Data Server Maintenance dialog box, Data Server Components section.
User Name	Yes	The user name used by the RCM to log in to the standby data server. This user must have permission to execute commands like use database, sp_start_rep_agent, and so on.
Password	No	Enter the password for the user name you entered. The password displays in the field as asterisks.

25 Select the name of the application pool in the RCM environment, then click Next to continue.

26 When the Failure Action dialog box displays, complete the options, or click Next to go to the next configuration dialog box. Some options are required only if you selected “Use Mutual Aware Support.”

Option	Required?	Description
Connection Monitor Failure – Action to Take	No	Select the action to perform when there is failure in the Connection Monitor: • DEFAULT – starts the CMON thread in the next available server in that pool. • CUSTOM – runs a user-defined custom script. • MANUAL – runs a manual script to notify the system administrator that some manual action is required. • CUSTOM_MANUAL – run a custom script. The manual script runs if the custom script fails. See the *OpenSwitch Administration Guide* for more information.
Network Failure – Action to Take	Only if "Use Mutual Aware Support" is selected	Select the action to perform when there is network failure: • DEFAULT – the primary companion OpenSwitch is shut down and all-clients connected to the primary companion OpenSwitch are reconnected to the secondary companion OpenSwitch in the same cluster. Configuration changes (including server and pool status changes) are permitted. • CUSTOM – run a custom script. • MANUAL – run a manual script. • CUSTOM_MANUAL – run a custom script. The manual script runs if the custom script fails. See the *OpenSwitch Administration Guide* for more information.
Companion Failure – Action to Take	Only if "Use Mutual Aware Support" is selected	Select the action to perform when the companion in a mutually-aware implementation fails: • DEFAULT – mark the companion server as unreachable, start a timer to ping it from time to time, and act as if the primary OpenSwitch is the only server. Once the connection to the companion is reestablished, the two OpenSwitch servers synchronize their configurations • CUSTOM – run a custom script. • MANUAL – run a manual script. • CUSTOM_MANUAL – run a custom script. The manual script runs if the custom script fails. See the *OpenSwitch Administration Guide* for more information.

Option	Required?	Description
Data Server Failure – Action to Take	Only if "Use Mutual Aware Support" is selected	Select the action to perform when a data server fails: • DEFAULT – mark the Adaptive Server as not running and initiate a failover process. • CUSTOM – run a custom script. • MANUAL – run a manual script. • CUSTOM_MANUAL – run a custom script. The manual script runs if the custom script fails. See the *OpenSwitch Administration Guide* for more information.
User Action: • Custom Script • Manual Script	Yes, but only when any of the previous options in this dialog box are set to something other than "Default"	Enter the name of the custom script to execute if one of the previous options is set to CUSTOM or CUSTOM_MANUAL. Enter the name of the script to execute when one of the previous options is set to MANUAL or CUSTOM_MANUAL. See the *OpenSwitch Administration Guide* for more information.

27 Click Next to continue.

28 The Summary window appears, with the following button options:

- Back – returns you to the previous screens to make any modifications in the screens.
- Finish – begins the final configuration process, and displays a progress bar while the OpenSwitch server is being configured. Selecting Finish disables the Back button, and changes the Cancel button to an Exit button.
- Cancel – allows you to stop the configuration process. Once the Cancel button changes into an Exit button and you have finished the configuration process, select Exit to exit out of the Configurator utility.

When the Summary window appears, click Finish. A progress bar displays as the OpenSwitch server is being configured.

29 When a message displays indicating that the configuration was successful, click OK, then click Exit to exit the configuration tool and close the installer window.

If the configuration was not successful, use a text editor to view the configuration log (*osw.err*), which is located in the OpenSwitch *logs* directory.

Note OpenSwitch does not provide any localized messages besides English. However, you can still use OpenSwitch in a different language environment, because the installer copies the English messages to all the different language *locales* directory during the installation. Therefore, when you execute OpenSwitch in a non-English environment, the messages returned to the client is in English.

Configuring OpenSwitch manually

These instructions describe how to configure OpenSwitch manually by editing the *interfaces* file and the OpenSwitch configuration file.

1 In a UNIX system, go to the *$SYBASE* directory and source the *SYBASE.csh* or *SYBASE.sh* file. For the C shell, enter:

```
source SYBASE.csh
```

For the Bash, the Bourne, or the Korn shell, enter:

```
. ./SYBASE.sh
```

❖ Setting up the *interfaces* file

1 Verify that the *interfaces* file exists in the *$SYBASE* directory. If it does not, create it by copying from *interf.sample*. Go to the *$SYBASE* directory, and enter:

```
cp interf.sample interfaces
```

2 Open the *interfaces* file in a text editor and modify or add entries to provide the server names and port numbers for each OpenSwitch server and each Adaptive Server in your installation. For example, if you installed two OpenSwitch servers and two Adaptive Servers, you must provide the server name, host name, and port number for each server. In addition, if you are implementing mutually-aware support, you must include the server name, host name, and port number for the companion OpenSwitch server as the last line in the other OpenSwitch server's entry.

Enter the information in this format:

```
servername
        master tcp ether hostname port
        query tcp ether hostname port
        query tcp ether hostname port
```

Note The second "query" line is necessary only for mutually-aware OpenSwitch servers. See the *OpenSwitch Administration Guide* for details about this feature.

- *servername* – enter the name of the OpenSwitch server or Adaptive Server.
- `master tcp ether` ***`hostname port`*** – enter the name of the machine where the server is running, and the port number from which the server is started.
- `query tcp ether` ***`hostname port`*** – (first "query" line) enter the name of the machine where the server is running, and the port number from which the server is started.

  For mutually-aware OpenSwitch servers only:

- `query tcp ether` ***`hostname port`*** – (second "query" line) enter the name of the machine where the mutually-aware companion OpenSwitch server is running, and the port number from which that server is started.

For example, if you install one OpenSwitch server (no mutually-aware support) and two Adaptive Servers all on the same machine, the entries in the *interfaces* file would look similar to this:

```
OSWITCH1
        master tcp ether dev2 4000
        query tcp ether dev2 4000

ASESRV1
        master tcp ether dev2 5000
        query tcp ether dev2 5000

ASESRV2
        master tcp ether dev2 5001
        query tcp ether dev2 5001
```

If you install two OpenSwitch servers that are mutually-aware on one machine and two Adaptive Servers each on a different machine, the entries in the *interfaces* file would look similar to this:

```
OSW1
       master tcp ether dev2 5000
       query tcp ether dev2 5000
       query tcp ether dev2 5005

OSW2
       master tcp ether dev2 5005
       query tcp ether dev2 5005
       query tcp ether dev2 5000

ASE1
       master tcp ether dev1 7000
       query tcp ether dev1 7000

ASE2
       master tcp ether dev3 8000
       query tcp ether dev3 8000
```

3 Save the *interfaces* file and close the text editor.

❖ **Setting up the OpenSwitch configuration file and logs directory**

1 Create a new OpenSwitch configuration file by going to *$OPENSWITCH/config* and copying the *sample.cfg* file by entering:

```
cp sample.cfg cfg_file
```

where *cfg_file* is the name of your server configuration, for example, *OpenSwitch_ServerName.cfg*.

2 Use a text editor to set the values in the configuration file you just created. See the tables in “Configuring OpenSwitch using the GUI tool” on page 31 for definitions of the values you should provide.

3 Save the file and close the text editor.

4 Go to *$OPENSWITCH* and create a *logs* directory:

```
mkdir logs
```

Post configuration

The configuration tool creates several files.

Table 3-2: UNIX configuration files

File name	Location
interfaces	*$SYBASE*
OpenSwitch_ServerName.cfg	*$SYBASE/OpenSwitch-15_1/config*
OpenSwitch_ServerName_rcm.cfg	*$SYBASE/OpenSwitch-15_1/config*
oswConfig.log	*$SYBASE/OpenSwitch-15_1/logs*
osw.err	*$SYBASE/OpenSwitch-15_1/logs*

After creating these configuration files, the configured OpenSwitch starts automatically.

Reconfiguration

When you reconfigure an OpenSwitch server, the existing *interfaces* file is copied to a backup file and appended with an *.001* extension (for example, *interfaces.001*) and saved in *logs* directory. Similarly, the OpenSwitch configuration file is copied to *OpenSwitch_ServerName.cfg.001* and the RCM config file is copied to *OpenSwitch_ServerName_rcm.cfg.001* and saved in the *config* directory.

CHAPTER 4

Post-Installation Tasks

This chapter describes the tasks you perform after installing and configuring OpenSwitch version 15.1.

Updating environment variables

After you install OpenSwitch, you may need to update the environment variables. OpenSwitch supplies shell files to do this. These files are created at the end of the installation process under the root installation directory.

Go to the *$SYBASE* directory, and from a C shell, enter:

```
source SYBASE.csh
```

From a Bash, a Bourne, or a Korn shell, enter:

```
. ./SYBASE.sh
```

To run the coordination module sample in *$OPENSWITCH/sample*, ensure the *$OPENSWITCH/lib* and *$SYBASE/$SYBASE_OCS/lib* are included in the environment variable shown for your platform:

- Sun Solaris, Linux, and Linux on POWER – LD_LIBRARY_PATH
- HP-UX – SHLIB_PATH
- IBM AIX – LIBPATH

Table 4-1 on page 48 describes the environment variables included in *SYBASE.sh*, *SYBASE.csh*, and *SYBASE.env* files.

Table 4-1: Environment variables for UNIX

Environment variable	Description
Linux, Linux on POWER: $LD_LIBRARY_PATH *Sun Solaris:* $LD_LIBRARY_PATH *IBM AIX:* $LIBPATH *HP-UX:* $SHLIB_PATH	The subdirectory path to the Open Client and Open Server runtime library files.
$PATH	The directory path to OpenSwitch files.
$SYBASE	The home directory where you install all Sybase products.
$SYBASE_OCS	The subdirectory path to Open Client files.
$SYBASE_JRE	The subdirectory in which the Java Runtime Environment (JRE). OpenSwitch Manager Sybase Central plug-in uses this JRE for its runtime needs.
$OPENSWITCH	The subdirectory path to OpenSwitch.
$SCROOT	The subdirectory path to Sybase Central.
$SYBROOT	The parent directory of $SCROOT. If Sybase Central is installed in the same directory as OpenSwitch, $SYBASE and $SYBROOT are the same.

Starting OpenSwitch

OpenSwitch starts automatically after installation and configuration. If you did not configure OpenSwitch during installation, go to Chapter 3, “Configuring OpenSwitch.”

If you shut down OpenSwitch, restart it:

1 Go to the *$SYBASE* directory, and for the C shell, enter:

```
source SYBASE.csh
```

For the Bash, the Bourne, or the Korn shell, enter:

```
. ./SYBASE.sh
```

2 Go to *$OPENSWITCH/bin*, and enter the following, where -c specifies the name of OpenSwitch configuration file to use during start-up:

```
./OpenSwitch -c ../config/OpenSwitch_ServerName.cfg
```

You can configure OpenSwitch to use encrypted user names and passwords for the user name and password entries that are in the OpenSwitch configuration file.

See Chapter 4, "Starting and Stopping OpenSwitch and RCMs," in the *OpenSwitch Administration Guide* for information about using encrypted user names and passwords, and a list of command line options you can use to adjust the behavior of OpenSwitch.

Verifying client connections

You can perform a test to confirm that your Open Switch is running, and that it can accept client connections.

❖ **Confirming that OpenSwitch can accept client connections**

1 Go to the *$SYBASE* directory, and from a C shell, enter:

```
source SYBASE.csh
```

From a Bash, a Bourne, or a Korn shell, enter:

```
. ./SYBASE.sh
```

2 Verify that the Adaptive Server you configured to use with OpenSwitch is running. At the command prompt, enter:

```
isql -Uusername -Ppassword -SServer_name
```

where *Server_name* is the name of the Adaptive Server.

The connection is established if Adaptive Server is up and running.

3 Use isql to log in to OpenSwitch as an administrator:

```
isql -UAdministrator_UserName -PAdministrator_Password -SOpenSwitch_ServerNname
```

where:

- *Administrator_Username* – is the OpenSwitch administrator user name specified in the OpenSwitch configuration file.
- *Administrator_Password* – is the OpenSwitch administrator password specified in the OpenSwitch configuration file.
- *OpenSwitch_ServerName* – is the name of the OpenSwitch server specified in the OpenSwitch configuration file.

4 To check the connection using rp_set TEXTSIZE command, enter:

```
1> rp_set TEXTSIZE
2> go
```

You should see:

```
parameter      value
-----------------------------------------------
TEXTSIZE       1048576

(1 row affected)
(return status = 0)
```

The connection to OpenSwitch is established successfully.

5 Use isql to log in to OpenSwitch as a regular client connection:

```
isql -UUsername -PPassword -SOpenSwitch_ServerName
```

where:

- *Username* – is the client user name.
- *Password* – is the client password.
- *OpenSwitch_ServerName* – is the name of the OpenSwitch server as specified in the OpenSwitch configuration file.

6 To view the Adaptive Server version information in which OpenSwitch is connected to, issue the select *@@version* command:

```
1> select @@version
2> go
```

You should see:

```
Adaptive Server Enterprise/12.5.2/EBF 11799/P/Linux
Intel/Enterprise Linux/ase1252/1831/32-bit/OPT/Fri
Apr 9 02:53:50 2004
```

Connecting to OpenSwitch Manager through Sybase Central

Sybase Central is a graphical management tool for Sybase products. It implements the Sybase enterprise management strategy, which calls for a single management console, seamlessly integrated across all server and middleware products. It connects to and manages Sybase products that are running on any Sybase-supported platform. OpenSwitch Manager is a *plug-in* to Sybase Central.

After installing Sybase Central, the installation process installs and registers the OpenSwitch Manager plug-in to Sybase Central.

Connecting to Sybase Central

Note Before you launch OpenSwitch Manager, redirect the GUI display. See "Redirecting to a GUI display" on page 14.

Use any of these methods to start Sybase Central:

- Navigate to *$SYBASE/shared/sybcentral43* and run *scjview.sh*.
- Navigate to *$SYBASE/OSWP/bin* and run *oswplugin.sh*.

See the Sybase Central online help for more information. Select Help | Sybase Central or press the F1 key to access the online help.

To view the activities of plug-ins that you register in Sybase Central, select Tools | Log Viewer.

Registering OpenSwitch Manager plug-in

If you need to register the plug-in manually for any reason, follow this procedure:

Note Before you launch Sybase Central GUI tool, redirect the GUI display. See "Redirecting to a GUI display" on page 14.

❖ **Manually registering the OpenSwitch Manager plug-in**

1 Start Sybase Central and select the Sybase Central icon.

2 Select Tools | Plug-ins.

3 Select Register from the buttons on the left side of the Sybase Central Plug-ins window.

4 You can,

- Register a Plug-in by Specifying a Plug-in Registration File or,
- Register a Plug-in by Specifying a JAR or Class File.

Select one of these options and browse to the location of the plug-in files.

Select the file corresponding to the option you choose and click Next.

Table 4-2: Plug-in file locations

Option	Plug-in file and location
Register a Plug-in by Specifying a Plug-in Registration File	*$SYBASE/OSWP/bin/OSWPlugin.jpr*
Register a Plug-in by Specifying a JAR or Class File	*$SYBASE/OSWP/lib/OSWPlugin.jar*

5 Use the default settings in the Register a Plug-In dialog box and select Next.

6 Select Next. You can specify additional directory paths to add to the class path when Sybase Central loads the OSWM plug-in.

7 Click Finish to return to the Sybase Central Plug-ins window.

8 Select Close to return to the Sybase Central window. You see the icon for OSWM under the Sybase Central icon. OpenSwitch servers that you connect to and the resources that belong to each server display in a tree structure below OSWM.

You can select Unregister in the Sybase Central Plug-ins window to remove the plug-in. You must register the plug-in again if you want to use OpenSwitch Manager. You can select Properties in the Sybase Central Plug-ins window to change the settings for the plug-in.

See Chapter 3, “OpenSwitch Manager,” in the *OpenSwitch Administration Guide* to use Sybase Central and OpenSwitch Manager to connect to your OpenSwitch servers and manage your OpenSwitch environment.

SAMreport

SAMreport is a SySAM 2.0 license reporting tool used in conjunction with the SySAM2.0 license server. SAMreport reports license use based on license activity recorded in the FLEXnet report logs, and on 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 textual format.
- Server reports – provide details about a given license server.

For more information on SAMreport, see Chapter 6, “Using SAMreport for Asset Management,” in the *Sybase Software Asset Management Users Guide* and the *Sybase SAMreport Users Guide*.

APPENDIX A

Troubleshooting

These troubleshooting solutions cover some of the most frequently encountered problems during OpenSwitch installation.

To troubleshoot SySAM 2.0 problems, see Chapter 8, "Troubleshooting," in the *Sybase Software Asset Management Users Guide*.

Uninstaller GUI

Problem: The uninstaller GUI does not display

Solution:

1 Verify that your Java version is 1.4 or later:

```
path to_java_bin/java -version
```

For example, if your Java executable is located in */usr/bin/*, enter:

```
/usr/bin/java -version
```

2 Go to *$SYBASE*, and from the C shell, enter:

```
source SYBASE.csh
./uninstall/OSWSuite/uninstall -is:javahome JAVA_HOME location
```

From a Bash, a Bourne, or a Korn shell, enter:

```
 . ./SYBASE.sh
./uninstall/OSWSuite/uninstall -is:javahome JAVA_HOME location
```

where JAVA_HOME is the absolute path to your *jdk/jre* home.

File system error message

Problem: Error message says the file system does not have enough space.

Solution: Verify that you have 100MB free space in your temporary directory.

If you do not have enough space in the default temporary directory set by the installer (*/tmp*), redirect to a temporary directory set by you.

Note The temporary directory to which you are redirecting must exist before you issue the command to redirect it.

To redirect your temporary directory when using *setup*, enter:

```
./setup -is:tempdir /work/tmp
```

where */work/tmp* is the directory of your choice.

Java or language error messages

Problem: “JVM or Java not found” and “wrong version of Java” error messages display, or the installer does not display in the language your machine is set to display.

Solution: Execute *./setup* with the error log redirection option by entering:

```
./setup -is:log absolute_path_to_log_file
```

This redirects the installer log to the specified log file. When the installer exits, you can edit the file to find out what the cause of the failure is (usually JVM or temporary directory problems).

See the above instructions for redirecting your temporary directory.

False network failure detection in a mutual-aware setup

Problem: If you use mutually-aware support, and you cannot find *ping* in the path of the environment used to start the OpenSwitch server, error messages such "`Host of` ***`ASE_name`*** `not responding`" and "`forceCloseSocket`" are added to the error log at start-up.

Solution:

1 Log in as the administrator, and shut down any OpenSwitch server by executing rp_shutdown.

2 Modify the OpenSwitch configuration file to set "PING_BINARY" to the absolute path of the system ping command.

3 Restart the OpenSwitch server manually with the steps described in "Starting OpenSwitch" on page 48.

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