



Sun Cluster Data Service for Sybase ASE Guide for Solaris OS

SPARC Platform Edition

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Preface

Sun Cluster Data Service for Sybase ASE Guide for Solaris OS explains how to install and configure Sun™ Cluster HA for Sybase Adaptive Server Enterprise (ASE).

This document is intended for system administrators with extensive knowledge of Sun software and hardware. Do not use this document as a planning or presales guide. Before reading this document, you should have already determined your system requirements and purchased the appropriate equipment and software.

The instructions in this document assume knowledge of the Solaris™ Operating System (Solaris OS) and expertise with the volume manager software that is used with Sun Cluster.

UNIX Commands

This document contains information about commands that are specific to installing and configuring Sun Cluster data services. The document does *not* contain comprehensive information about basic UNIX® commands and procedures, such as shutting down the system, booting the system, and configuring devices. Information about basic UNIX commands and procedures is available from the following sources:

- Online documentation for the Solaris Operating System
- Solaris Operating System man pages
- Other software documentation that you received with your system

Typographic Conventions

The following table describes the typographic changes that are used in this book.

TABLE P-1 Typographic Conventions

Typeface or Symbol	Meaning	Example
AaBbCc123	The names of commands, files, and directories, and onscreen computer output	Edit your <code>.login</code> file. Use <code>ls -a</code> to list all files. <code>machine_name%</code> you have mail.
AaBbCc123	What you type, contrasted with onscreen computer output	<code>machine_name%</code> su Password:
<i>AaBbCc123</i>	Command-line placeholder: replace with a real name or value	The command to remove a file is <code>rm filename</code> .
<i>AaBbCc123</i>	Book titles, new terms, and terms to be emphasized	Read Chapter 6 in the <i>User's Guide</i> . Perform a <i>patch analysis</i> . Do <i>not</i> save the file. [Note that some emphasized items appear bold online.]

Shell Prompts in Command Examples

The following table shows the default system prompt and superuser prompt for the C shell, Bourne shell, and Korn shell.

TABLE P-2 Shell Prompts

Shell	Prompt
C shell prompt	<code>machine_name%</code>
C shell superuser prompt	<code>machine_name#</code>
Bourne shell and Korn shell prompt	<code>\$</code>

TABLE P-2 Shell Prompts (Continued)

Shell	Prompt
Bourne shell and Korn shell superuser prompt	#

Related Documentation

Information about related Sun Cluster topics is available in the documentation that is listed in the following table. All Sun Cluster documentation is available at <http://docs.sun.com>.

Topic	Documentation
Data service administration	<i>Sun Cluster Data Services Planning and Administration Guide for Solaris OS</i> Individual data service guides
Concepts	<i>Sun Cluster Concepts Guide for Solaris OS</i>
Overview	<i>Sun Cluster Overview for Solaris OS</i>
Software installation	<i>Sun Cluster Software Installation Guide for Solaris OS</i>
System administration	<i>Sun Cluster System Administration Guide for Solaris OS</i>
Hardware administration	<i>Sun Cluster 3.0-3.1 Hardware Administration Manual for Solaris OS</i> Individual hardware administration guides
Data service development	<i>Sun Cluster Data Services Developer's Guide for Solaris OS</i>
Error messages	<i>Sun Cluster Error Messages Guide for Solaris OS</i>
Command and function reference	<i>Sun Cluster Reference Manual for Solaris OS</i>

For a complete list of Sun Cluster documentation, see the release notes for your release of Sun Cluster at <http://docs.sun.com>.

Related Third-Party Web Site References

Third-party URLs that are referenced in this document provide additional related information.

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Documentation, Support, and Training

Sun Function	URL	Description
Documentation	http://www.sun.com/documentation/	Download PDF and HTML documents, and order printed documents
Support and Training	http://www.sun.com/supporttraining/	Obtain technical support, download patches, and learn about Sun courses

Getting Help

If you have problems installing or using Sun Cluster, contact your service provider and provide the following information:

- Your name and email address (if available)
- Your company name, address, and phone number
- The model and serial numbers of your systems
- The release number of the Solaris Operating System (for example, Solaris 8)
- The release number of Sun Cluster (for example, Sun Cluster 3.0)

Use the following commands to gather information about each node on your system for your service provider.

Command	Function
<code>prtconf -v</code>	Displays the size of the system memory and reports information about peripheral devices
<code>psrinfo -v</code>	Displays information about processors
<code>showrev -p</code>	Reports which patches are installed
<code>SPARC: prtdiag -v</code>	Displays system diagnostic information
<code>scinstall -pv</code>	Displays Sun Cluster release and package version information

Also have available the contents of the `/var/adm/messages` file.

Installing and Configuring Sun Cluster HA for Sybase ASE

This chapter explains how to configure and administer Sun Cluster HA for Sybase ASE on your Sun Cluster nodes.

This chapter contains the following sections.

- “Sun Cluster HA for Sybase ASE Overview” on page 11
- “Overview of Installing and Configuring Sun Cluster HA for Sybase ASE” on page 12
- “Preparing to Install Sun Cluster HA for Sybase ASE” on page 13
- “Installing the Sybase ASE Software” on page 13
- “Configuring Sybase ASE Database Access and Creating the Sybase ASE Database Environment” on page 18
- “Installing the Sun Cluster HA for Sybase ASE Packages” on page 22
- “Registering and Configuring Sun Cluster HA for Sybase ASE” on page 25
- “Verifying the Sun Cluster HA for Sybase ASE Installation and Configuration” on page 28
- “Sun Cluster HA for Sybase ASE Logging and Security Issues” on page 30
- “Tuning the Sun Cluster HA for Sybase ASE Fault Monitor” on page 31

Sun Cluster HA for Sybase ASE Overview

Sun Cluster HA for Sybase ASE provides fault monitoring and automatic failover for the Sybase ASE application.

You must configure Sun Cluster HA for Sybase ASE as a failover data service.

For general information about data services, resource groups, resources, and other related topics, see:

- *Sun Cluster Concepts Guide for Solaris OS*
- Chapter 1, “Planning for Sun Cluster Data Services,” in *Sun Cluster Data Services Planning and Administration Guide for Solaris OS*

Overview of Installing and Configuring Sun Cluster HA for Sybase ASE

The following table summarizes the tasks for installing and configuring Sun Cluster HA for Sybase ASE and provides cross-references to detailed instructions for performing these tasks. Perform the tasks in the order that they are listed in the table.

TABLE 1 Tasks for Installing and Configuring Sun Cluster HA for Sybase ASE

Task	Instructions
Prepare to install Sun Cluster HA for Sybase ASE	“Preparing to Install Sun Cluster HA for Sybase ASE” on page 13
Install the Sybase ASE software	“Installing the Sybase ASE Software” on page 13
Configure Sybase ASE database access and create the Sybase ASE database environment	“Configuring Sybase ASE Database Access and Creating the Sybase ASE Database Environment” on page 18
Install the Sun Cluster HA for Sybase ASE package	“Installing the Sun Cluster HA for Sybase ASE Packages” on page 22
Register Sun Cluster HA for Sybase ASE resource types and configure resource groups and resources	“Registering and Configuring Sun Cluster HA for Sybase ASE” on page 25
Verify the Sun Cluster HA for Sybase ASE installation	“Verifying the Sun Cluster HA for Sybase ASE Installation and Configuration” on page 28
Tune the Sun Cluster HA for Sybase ASE fault monitor	“Tuning the Sun Cluster HA for Sybase ASE Fault Monitor” on page 31

Preparing to Install Sun Cluster HA for Sybase ASE

To prepare your nodes for the Sun Cluster HA for Sybase ASE installation, select an installation location for the following files.

- **Sybase ASE application files.** These files include Sybase ASE binaries and libraries. You can install these files on either the local file system or the cluster file system.

For information about the advantages and disadvantages of placing the Sybase ASE binaries on the local file system instead of the cluster file system, see “Configuration Guidelines for Sun Cluster Data Services” in *Sun Cluster Data Services Planning and Administration Guide for Solaris OS*.

- **Sybase ASE configuration files.** These files include the `interfaces` file, `config` file, and environment file. You can install these files on the local file system (with links), the highly available local file system, or on the cluster file system.
- **Database data files.** These files include Sybase device files. You must install these files on the highly available local file system or the cluster file system as either raw devices or regular files.

Installing the Sybase ASE Software

Use the procedures in this section to complete the following tasks.

- Preparing the nodes for the installation of the Sybase ASE Software
- Installing the Sybase ASE software
- Verifying the Sybase ASE installation

Note – Before you configure Sun Cluster HA for Sybase ASE, use the procedures that the *Sun Cluster Software Installation Guide for Solaris OS* describes to configure the Sun Cluster software on each node.

▼ How to Prepare the Nodes for the Installation of the Sybase ASE Software



Caution – Perform all of the steps in this procedure on all of the nodes. If you do not perform all of the steps on all of the nodes, the Sybase ASE installation will be incomplete, and Sun Cluster HA for Sybase ASE will fail during startup.

Note – Consult the Sybase ASE documentation before you perform this procedure.

- Steps**
1. **Become superuser on all of the nodes.**
 2. **Configure the `/etc/nsswitch.conf` file as follows so that Sun Cluster HA for Sybase ASE starts and stops correctly if a switchover or failover occurs.**

On each node that can master the logical host that runs Sun Cluster HA for Sybase ASE, include the following entries in the `/etc/nsswitch.conf` file.

```
passwd:    files nis [TRYAGAIN=0]
publickey: files nis [TRYAGAIN=0]
project:   files nis [TRYAGAIN=0]
group:     files
```

Sun Cluster HA for Sybase ASE uses the `su user` command to start and stop the database node.

The network information name service might become unavailable when a cluster node's public network fails. Adding the preceding entries ensures that the `su(1M)` command does not refer to the NIS/NIS+ name services if the network information name service is unavailable.

3. **Configure the cluster file system for Sun Cluster HA for Sybase ASE.**

If raw devices contain the databases, configure the global devices for raw-device access. For information about how to configure global devices, see *Sun Cluster Software Installation Guide for Solaris OS*.

If you use the Solstice DiskSuite™/Solaris Volume Manager software, configure the Sybase ASE software to use UNIX file system (UFS) logging on mirrored metadevices or raw-mirrored metadevices. For information about how to configure raw-mirrored metadevices, see the Solstice DiskSuite/Solaris Volume Manager documentation.
4. **Prepare the `SYBASE_HOME` directory on a local or multihost disk.**

Note – If you install the Sybase ASE binaries on a local disk, use a separate disk if possible. Installing the Sybase ASE binaries on a separate disk prevents the binaries from being overwritten during reinstallation of the operating system.

5. **On each node, create an entry for the database administrator (DBA) group in the `/etc/group` file, and add potential users to the group.**

Verify that the `root` and `sybase` users are members of the `dba` group, and add entries as necessary for other DBA users. Ensure that group IDs are the same on all of the nodes that run Sun Cluster HA for Sybase ASE, as the following example illustrates.

```
dba:*:520:root,sybase
```

You can create group entries in a network name service. If you create entries this way, also add your entries to the local `/etc/group` file to eliminate dependency on the network name service.

6. **On each node, create an entry for the Sybase system administrator.**

The following command updates the `/etc/passwd` and `/etc/shadow` files with an entry for the Sybase system administrator.

```
# useradd -u 120 -g dba -d /Sybase-home sybase
```

Ensure that the `sybase` user entry is the same on all of the nodes that run Sun Cluster HA for Sybase ASE.

▼ How to Install the Sybase ASE Software

- Steps**
1. **Become superuser on a cluster member.**
 2. **If you plan to install the Sybase ASE software on the cluster file system, start the Sun Cluster software and become the owner of the disk device group.**
If you plan to install the Sybase ASE software at another location, omit this step.
For more information about installation locations, see [“Preparing to Install Sun Cluster HA for Sybase ASE”](#) on page 13.
 3. **Create a failover resource group to hold the network and application resources.**

```
# scrgadm -a -g resource-group [-h nodelist]
```

`-g resource-group` Specifies the name of the resource group. This name can be your choice but must be unique for resource groups within the cluster.

`-h nodelist` Specifies an optional, comma-separated list of physical node names or IDs that identify potential masters. The order here

determines the order in which the Resource Group Manager (RGM) considers primary nodes during failover.

Note – Use the `-h` option to specify the order of the node list. If all of the nodes in the cluster are potential masters, you do not need to use the `-h` option.

4. **Verify that you have added all of the network resources that Sun Cluster HA for Sybase ASE uses to either the `/etc/inet/hosts` file or to your name service (NIS, NIS+) database.**
5. **Add a network resource (logical host name or shared address) to the failover resource group.**

```
# scrgadm -a -L -g resource-group -l logical-hostname [-n netiflist]
```

`-l logical-hostname` Specifies a network resource. The network resource is the logical host name or shared address (IP address) that clients use to access Sun Cluster HA for Sybase ASE.

`-n netiflist` Specifies an optional, comma-separated list that identifies the IP Networking Multipathing groups that are on each node. Each element in *netiflist* must be in the form of `netif@node`. `netif` can be given as an IP Networking Multipathing group name, such as `sc_ipmp0`. The node can be identified by the node name or node ID, such as `sc_ipmp0@1` or `sc_ipmp@phys-schost-1`.

Note – Sun Cluster does not support the use of the adapter name for `netif`.

6. **Run the `scswitch(1M)` command to complete the following tasks.**

- Enabling the resource and fault monitoring
- Moving the resource group into a managed state
- Bringing the resource group online

```
# scswitch -z -g resource-group
```

7. **On the node that masters the resource group that you just created, log in as `sybase`.**

The installation of the Sybase binaries must be performed on the node where the corresponding logical host is running.

8. **Install the Sybase ASE software.**

Regardless of where you install the Sybase ASE software, modify each node's `/etc/system` files as you would in standard Sybase ASE installation procedures. For instructions about how to install the Sybase ASE software, refer to the Sybase installation and configuration guides.

9. For every Sybase ASE server, specify the host name that is associated with a network resource.

If you do not specify a host name that is associated with a network resource, Sybase ASE starts *only* on the node where the Sybase ASE software was installed.

Some versions of Sybase ASE, such as 12.5, prompt you for the host name. Other versions of Sybase ASE, such as 12.5.1, use the physical host name. If your version of Sybase ASE uses the physical host name, you must change the physical host name to specify a network resource.

- If the Sybase ASE installer prompts you for the host name, type the host name in response to the prompt.
- Otherwise, modify the `interfaces` file to change the physical host name to a host name that is associated with a network resource.

Next Steps After you install the Sybase ASE software, go to [“How to Verify the Sybase ASE Installation”](#) on page 17.

▼ How to Verify the Sybase ASE Installation

- Steps**
1. Verify that the `sybase` user and the `dba` group own the `$SYBASE_HOME` directory and `$SYBASE_HOME` children directories.
 2. Run the `scstat(1M)` command to verify that the Sun Cluster software functions correctly.

Next Steps After you verify the Sybase ASE installation, go to [“Configuring Sybase ASE Database Access and Creating the Sybase ASE Database Environment”](#) on page 18.

Configuring Sybase ASE Database Access and Creating the Sybase ASE Database Environment

Configuring Sybase ASE database access and creating the Sybase ASE Database Environment involves the following tasks.

1. Configuring Sybase ASE database access with the volume manager that you are using:
 - If you are using Solstice DiskSuite/Solaris Volume Manager, see “How to Configure Sybase ASE Database Access With Solstice DiskSuite/Solaris Volume Manager” on page 18.
 - If you are using VERITAS Volume Manager (VxVM), see “How to Configure Sybase ASE Database Access With VERITAS Volume Manager” on page 19.
2. Creating the Sybase ASE database environment

▼ How to Configure Sybase ASE Database Access With Solstice DiskSuite/Solaris Volume Manager

- Steps**
1. **Configure the disk devices for the Solstice DiskSuite/Solaris Volume Manager software to use.**

For information about how to configure Solstice DiskSuite/Solaris Volume Manager, see *Sun Cluster Software Installation Guide for Solaris OS*.

2. **If you use raw devices to contain the databases, run the following commands to change each raw-mirrored metadevice’s owner, group, and mode.**

If you do not use raw devices, do not perform this step.

- a. **If you create raw devices, run the following commands for each device on each node that can master the Sybase ASE resource group.**

```
# chown sybase /dev/md/metaset/rdisk/dn
# chgrp dba /dev/md/metaset/rdisk/dn
# chmod 600 /dev/md/metaset/rdisk/dn
```

metaset Specifies the name of the disk set

/rdisk/dn Specifies the name of the raw disk device within the *metaset* disk set

- b. Verify that the changes are effective.

```
# ls -lL /dev/md/metaset/rdisk/dn
```

Next Steps Go to [“How to Create the Sybase ASE Database Environment”](#) on page 20.

▼ How to Configure Sybase ASE Database Access With VERITAS Volume Manager

- Steps** 1. Configure the disk devices for the VxVM software to use.

For information about how to configure VERITAS Volume Manager, see *Sun Cluster Software Installation Guide for Solaris OS*.

2. If you use raw devices to contain the databases, run the following commands on the current disk-group primary to change each device’s owner, group, and mode.

If you do not use raw devices, do not perform this step.

- a. If you create raw devices, run the following command for each raw device.

```
# vxedit -g diskgroup set user=sybase group=dba mode=0600 volume
```

`-g resource-group` Specifies the name of the resource group. This name can be your choice but must be unique for resource groups within the cluster.

`-h nodelist` Specifies an optional comma-separated list of physical node names or IDs that identify potential masters. The order here determines the order in which the nodes are considered as primary during failover.

- b. Verify that the changes are effective.

```
# ls -lL /dev/vx/rdsk/diskgroup/volume
```

- c. Reregister the disk device group with the cluster to keep the VxVM namespace consistent throughout the cluster.

```
# scconf -c -D name=diskgroup
```

Next Steps Go to [“How to Create the Sybase ASE Database Environment”](#) on page 20.

▼ How to Create the Sybase ASE Database Environment

The Sybase ASE database environment consists of the following servers:

- Data server
- Backup server
- Monitor server
- Text server
- XP server

Creating the Sybase ASE database environment involves configuring these servers.

Before You Begin

Ensure that you have completed the following tasks.

- Establish a highly available IP address and name, that is, a network resource that operates at installation time.
- Locate device paths for all of the Sybase ASE devices—including the master device and system devices—in the highly available local file system or cluster file system. Configure device paths as one of the following file types.
 - Regular files
 - Raw devices
 - Files that the Solstice DiskSuite/Solaris Volume Manager software or the VxVM software manages
- Locate the Sybase ASE server logs in either the cluster file system or the local file system.
- Ensure that the password for the Sybase ASE system administrator account is correctly specified.

Sun Cluster HA for Sybase ASE must be able to start and monitor the monitor server. To meet this requirement, ensure that the password for the Sybase ASE system administrator account (*sa*) is specified in the file `RUN_monitor-server`, where *monitor-server* is the name of the Sybase ASE monitor server. This name is defined during the Sybase ASE installation. For more information, see your Sybase ASE documentation.

If you do not set the required password in the `RUN_monitor-server` file, the Sun Cluster HA for Sybase ASE data service cannot start the monitor service. If no password is set for the *sa* account, you do not need to modify the `RUN_monitor-server` file.

- Create an `interfaces` file for the cluster.

The entire cluster must contain only one copy of the `interfaces` file. The `$$SYBASE` directory contains the `interfaces` file. If you plan to maintain per-node file copies, ensure the file contents are identical.

All of the clients that connect to Sybase ASE servers connect with Sybase OpenClient libraries and utilities. When you configure the Sybase ASE software, in the `interfaces` file, enter information about the network resource and various ports. All of the clients use this connection information to connect to the Sybase ASE servers.

Steps 1. **Run the GUI-based utility `srvbuild` to create the Sybase ASE database.**

This utility is contained in the `$SYBASE/ASE_<major-version>/bin` directory, where *major-version* is the major version of Sybase ASE that you are using. For example, if you are using Sybase ASE version 12.5.1, *major-version* is 12-5.

For information about the `srvbuild` utility, see the Sybase ASE document *Installing Sybase Adaptive Server Enterprise on Sun Solaris 2.x (SPARC)*.

2. **To verify successful database installation, ensure that all of the servers start correctly.**

Run the `ps(1)` command to verify the operation of all of the servers. Sybase ASE server logs indicate any errors that have occurred.

3. **Set the password for the Sybase ASE system administrator account.**

For details about changing the `sa` login password, see *Sybase Adaptive Server Enterprise System Administration Guide*.

4. **Create a new Sybase ASE account for fault monitoring.**

This account enables the fault monitor to perform the following tasks.

- Supporting queries to system tables
- Creating and updating user tables

Note – Do not use the `sa` account for these purposes.

The following example shows how to create a new Sybase ASE account for fault monitoring.

```
# isql -Usa -Psybase -Sasedb
1> use master
2> go
1> create database sc3xdb
2>go
1> sp_addlogin dbmon, dbmonp, sc3xdb
2> go
1> use sc3xdb
2> go
1> sp_changedbowner dbmon
2> go
1> sp_modifylogin dbmon, defdb, sc3xdb
2> go
```

```
1> exit
```

For more information, see [“Tuning the Sun Cluster HA for Sybase ASE Fault Monitor”](#) on page 31.

5. Update the stop file with the sa password.

Because the stop file contains the sa password, protect the file with the appropriate permissions, and place the file in a directory that the system administrator chooses. Enable only the *sybase* user to read, write, and execute the stop file.

For more information about the stop file, see [“Sun Cluster HA for Sybase ASE Security Issues”](#) on page 30.

Next Steps After you create the Sybase ASE database environment, go to [“Installing the Sun Cluster HA for Sybase ASE Packages”](#) on page 22.

Installing the Sun Cluster HA for Sybase ASE Packages

If you did not install the Sun Cluster HA for Sybase ASE packages during your initial Sun Cluster installation, perform this procedure to install the packages. Perform this procedure on each cluster node where you are installing the Sun Cluster HA for Sybase ASE packages. To complete this procedure, you need the Sun Cluster Agents CD-ROM.

If you are installing more than one data service simultaneously, perform the procedure in [“Installing the Software”](#) in *Sun Cluster Software Installation Guide for Solaris OS*.

Install the Sun Cluster HA for Sybase ASE packages by using one of the following installation tools:

- The Web Start program
- The `scinstall` utility

Note – If you are using Solaris 10, install these packages *only* in the global zone. To ensure that these packages are not propagated to any local zones that are created after you install the packages, use the `scinstall` utility to install these packages. Do *not* use the Web Start program.

▼ How to Install the Sun Cluster HA for Sybase ASE Packages by Using the Web Start Program

You can run the Web Start program with a command-line interface (CLI) or with a graphical user interface (GUI). The content and sequence of instructions in the CLI and the GUI are similar. For more information about the Web Start program, see the `installer(1M)` man page.

- Steps**
1. **On the cluster node where you are installing the Sun Cluster HA for Sybase ASE packages, become superuser.**
 2. **(Optional) If you intend to run the Web Start program with a GUI, ensure that your `DISPLAY` environment variable is set.**
 3. **Insert the Sun Cluster Agents CD-ROM into the CD-ROM drive.**

If the Volume Management daemon `vold(1M)` is running and configured to manage CD-ROM devices, it automatically mounts the CD-ROM on the `/cdrom/cdrom0` directory.
 4. **Change to the Sun Cluster HA for Sybase ASE component directory of the CD-ROM.**

The Web Start program for the Sun Cluster HA for Sybase ASE data service resides in this directory.

```
# cd /cdrom/cdrom0/components/SunCluster_HA_Sybase_3.1
```
 5. **Start the Web Start program.**

```
# ./installer
```
 6. **When you are prompted, select the type of installation.**
 - To install only the C locale, select Typical.
 - To install other locales, select Custom.
 7. **Follow the instructions on the screen to install the Sun Cluster HA for Sybase ASE packages on the node.**

After the installation is finished, the Web Start program provides an installation summary. This summary enables you to view logs that the Web Start program created during the installation. These logs are located in the `/var/sadm/install/logs` directory.
 8. **Exit the Web Start program.**
 9. **Remove the Sun Cluster Agents CD-ROM from the CD-ROM drive.**
 - a. **To ensure that the CD-ROM is not being used, change to a directory that does *not* reside on the CD-ROM.**

- b. Eject the CD-ROM.

```
# eject cdrom
```

Next Steps Go to “Registering and Configuring Sun Cluster HA for Sybase ASE” on page 25.

▼ How to Install Sun Cluster HA for Sybase ASE Packages by Using the `scinstall` Utility

Steps 1. Insert the Sun Cluster Agents CD-ROM into the CD-ROM drive.

2. Run the `scinstall` utility with no options.

This step starts the `scinstall` utility in interactive mode.

Note – Do not use the `-s` option of `scinstall` to specify a noninteractive installation of all data services.

3. Choose the menu option, Add Support for New Data Service to This Cluster Node.

The `scinstall` utility prompts you for additional information.

4. Provide the path to the Sun Cluster Agents CD-ROM.

The utility refers to the CD as the “data services cd.”

5. Specify the data service to install.

The `scinstall` utility lists the data service that you selected and asks you to confirm your choice.

6. Exit the `scinstall` utility.

7. Remove the CD from the drive.

Next Steps Go to “Registering and Configuring Sun Cluster HA for Sybase ASE” on page 25.

Registering and Configuring Sun Cluster HA for Sybase ASE

Register and configure Sun Cluster HA for Sybase ASE as a failover data service.

Setting Sun Cluster HA for Sybase ASE Extension Properties

The section that follows contains instructions for registering and configuring resources. These instructions explain how to set *only* extension properties that Sun Cluster HA for Sybase ASE requires you to set. For information about all Sun Cluster HA for Sybase ASE extension properties, see [Appendix A](#). You can update some extension properties dynamically. You can update other properties, however, only when you create or disable a resource. The Tunable entry indicates when you can update a property.

To set an extension property of a resource, include the following option in the `scrgadm(1M)` command that creates or modifies the resource:

`-x property=value`

`-x property` Identifies the extension property that you are setting

`value` Specifies the value to which you are setting the extension property

You can also use the procedures in Chapter 2, “Administering Data Service Resources,” in *Sun Cluster Data Services Planning and Administration Guide for Solaris OS* to configure resources after the resources are created.

▼ How to Register and Configure Sun Cluster HA for Sybase ASE

This procedure describes how to use the `scrgadm(1M)` command to register and configure Sun Cluster HA for Sybase ASE.

This procedure includes creating the `SUNW.HASStoragePlus` resource type. This resource type synchronizes actions between `HASStorage` and Sun Cluster HA for Sybase ASE and enables you to use a highly available local file system. Sun Cluster HA for Sybase ASE is disk intensive, and therefore you should configure the `SUNW.HASStoragePlus` resource type.

For more information about the `SUNW.HAStoragePlus` resource type, see the following documentation:

- `SUNW.HAStoragePlus(5)` man page
- “Relationship Between Resource Groups and Disk Device Groups” in *Sun Cluster Data Services Planning and Administration Guide for Solaris OS*

Note – Other options also enable you to register and configure the data service. For details about these options, see “Tools for Data Service Resource Administration” in *Sun Cluster Data Services Planning and Administration Guide for Solaris OS*.

To perform this procedure, you must have the following information.

- The names of the cluster nodes that master the data service.
- The network resource that clients use to access the data service. You typically configure the IP address when you install the cluster. For information about planning the Sun Cluster environment and the installation of the Solaris software, see Chapter 1, “Planning the Sun Cluster Configuration,” in *Sun Cluster Software Installation Guide for Solaris OS*.
- The path to the Sybase ASE application installation.

Note – Perform the following steps on one cluster member.

- Steps**
1. Become superuser on a cluster member.
 2. Run the `scrgadm` command to register resource types for Sun Cluster HA for Sybase ASE.

```
# scrgadm -a -t SUNW.sybase
-a                Adds the resource type for the data service
-t SUNW.sybase    Specifies the resource type name that is predefined for your
                  data service
```

3. Register the `SUNW.HAStoragePlus` resource type with the cluster.

```
# scrgadm -a -t SUNW.HAStoragePlus
```

4. Create the resource `sybase-hastp-rs` of type `SUNW.HAStoragePlus`.

```
# scrgadm -a -j sybase-hastp-rs -g sybase-rg -t SUNW.HAStoragePlus \
-x GlobalDevicePaths=sybase-device-group1,/dev/global/dsk/d1 \
-x FilesystemMountPoints=/global/sybase-inst \
-x AffinityOn=TRUE
```

Note – AffinityOn must be set to TRUE and the local file system must reside on global disk groups to be failover.

5. Run the `scrgadm` command to complete the following tasks and bring the resource group `sybase-rg` online on a cluster node.

- Moving the resource group into a managed state
- Bringing the resource group online

This node becomes the primary for device group `sybase-set1` and raw device `/dev/global/dsk/d1`. Device groups that are associated with file systems such as `/global/sybase-inst` are also made primaries on this node.

```
# scrgadm -Z -g sybase-rg
```

6. Create Sybase ASE application resources in the failover resource group.

```
# scrgadm -a -j resource -g resource-group \  
-t SUNW.sybase \  
-x Environment_File=environment-file-path \  
-x Adaptive_Server_Name=adaptive-server-name \  
-x Backup_Server_Name=backup-server-name \  
-x Text_Server_Name=text-server-name \  
-x Monitor_Server_Name=monitor-server-name \  
-x Adaptive_Server_Log_File=log-file-path \  
-x Stop_File=stop-file-path \  
-x Connect_string=user/passwd \  
-y resource_dependencies=storageplus-resource
```

`-j resource`

Specifies the resource name to add.

`-g resource-group`

Specifies the resource group name into which the RGM places the resources.

`-t SUNW.sybase`

Specifies the resource type to add.

`-x Environment_File=environment-file`

Sets the name of the environment file.

`-x Adaptive_Server_Name=adaptive-server-name`

Sets the name of the adaptive server.

`-x Backup_Server_Name=backup-server-name`

Sets the name of the backup server.

`-x Text_Server_Name=text-server-name`

Sets the name of the text server.

`-x Monitor_Server_Name=monitor-server-name`

Sets the name of the monitor server.

- x `Adaptive_Server_Log_File=log-file-path`
Sets the path to the log file for the adaptive server.
- x `Stop_File=stop-file-path`
Sets the path to the stop file.
- x `Connect_string=user/passwd`
Specifies the user name and password that the fault monitor uses to connect to the database.

You do not have to specify extension properties that have default values. For more information, see [“Setting Sun Cluster HA for Sybase ASE Extension Properties”](#) on page 25.

7. Enable the resource and fault monitoring.

Note – Sybase start logs print to the console when the Sybase servers start. If you do not want these messages to print to the console, update the appropriate RUN files to redirect these messages to another file.

```
# scswitch -Z -g resource-group
```

Next Steps After you register and configure Sun Cluster HA for Sybase ASE, go to [“Verifying the Sun Cluster HA for Sybase ASE Installation and Configuration”](#) on page 28.

Verifying the Sun Cluster HA for Sybase ASE Installation and Configuration

These checks ensure that all of the nodes that run Sun Cluster HA for Sybase ASE can start the Sybase ASE data server. These checks also ensure that other nodes in the configuration can access the Sybase ASE data server. Perform these checks to isolate any problems with starting the Sybase ASE software from Sun Cluster HA for Sybase ASE.

▼ How to Verify the Sun Cluster HA for Sybase ASE Installation and Configuration

- Steps**
1. Log in to the node that masters the Sybase ASE resource group.
 2. Set the Sybase ASE environment variables.

The environment variables are the variables that you specify with the `Environment_file` extension property. For information about setting these environment variables, see [Appendix A](#).

3. Verify that the Sun Cluster HA for Sybase ASE resource is online.

```
# scstat -g
```

4. Inspect the Sybase ASE logs to determine the cause of any errors that have occurred.
5. Confirm that you can connect to the data server and execute the following test command.

```
# isql -S adaptive-server -U sa -P password
```

```
isql> sp_help
isql> go
isql> quit
```

6. Kill the process for the Sybase ASE data server.

The Sun Cluster software restarts the process.

7. Switch the resource group that contains the Sybase ASE resource to another cluster member.

```
# scswitch -z -g resource-group -h node
```

8. Log in to the node that now contains the resource group.

9. Repeat [Step 3](#) and [Step 5](#).

Note – Sybase ASE client connections cannot survive a Sun Cluster HA for Sybase ASE switchover. If a switchover occurs, the existing client connections to Sybase ASE terminate, and clients must reestablish their connections. After a switchover, the time that is required to replay the Sybase ASE transaction log determines Sun Cluster HA for Sybase ASE recovery time.

Location of Sun Cluster HA for Sybase ASE Log Files

Each instance of the Sun Cluster HA for Sybase ASE data service maintains log files in the `/opt/SUNWscsyb/log` directory.

These files contain information about actions that the Sun Cluster HA for Sybase ASE data service performs. Refer to these files to obtain diagnostic information for troubleshooting your configuration or to monitor the behavior of the Sun Cluster HA for Sybase ASE data service.

See also “Sun Cluster HA for Sybase ASE Logging Issues” on page 30.

Sun Cluster HA for Sybase ASE Logging and Security Issues

The following sections contain information about Sun Cluster HA for Sybase ASE logging and security issues.

Sun Cluster HA for Sybase ASE Logging Issues

Sun Cluster HA for Sybase ASE logs messages to the file `message_log` in the `/opt/SUNWscsyb/log` directory. Although this file cannot exceed 512 Kbytes, Sun Cluster HA for Sybase ASE does not delete old log files. The number of log files, therefore, can grow to a large number.

Sun Cluster HA for Sybase ASE writes all of the error messages in the `syslog` file. Sun Cluster HA for Sybase ASE also logs fault monitor history to the file `restart_history` in the `log` directory. These files can also grow to a large number.

As part of your regular file maintenance, check the following log files and remove files that you no longer need.

- `syslog`
- `message_log`
- `restart_history`

Sun Cluster HA for Sybase ASE Security Issues

Sun Cluster HA for Sybase ASE requires that you embed the system administrator's password in a stop file. The `/opt/SUNWscsyb/bin` directory contains the template for the stop file, `sybase_stop_servers`. Sun Cluster HA for Sybase ASE uses this file to log in to the Sybase ASE environment and to stop the Sybase ASE servers.

Enable the `sybase` user to execute the stop file, but protect the file from general access. Give read, write, and execute privileges to only the following users.

- `sybase` user
- `sybase` group

Tuning the Sun Cluster HA for Sybase ASE Fault Monitor

The Sun Cluster HA for Sybase ASE fault monitor queries the Sybase ASE server to determine server health.

Note – The Sun Cluster HA for Sybase ASE fault monitor monitors only the Adaptive server. The fault monitor does not monitor auxiliary servers.

The Sun Cluster HA for Sybase ASE fault monitor is contained in the resource that represents Sybase ASE. You create this resource when you register and configure Sun Cluster HA for Sybase ASE. For more information, see [“Registering and Configuring Sun Cluster HA for Sybase ASE”](#) on page 25.

System properties and extension properties of this resource control the behavior of the fault monitor. The default values of these properties determine the preset behavior of the fault monitor. The preset behavior should be suitable for most Sun Cluster installations. Therefore, you should tune the Sun Cluster HA for Sybase ASE fault monitor *only* if you need to modify this preset behavior.

Tuning the Sun Cluster HA for Sybase ASE fault monitor involves the following tasks:

- Setting the interval between fault monitor probes
- Setting the timeout for fault monitor probes
- Defining the criteria for persistent faults
- Specifying the failover behavior of a resource

Perform these tasks when you register and configure Sun Cluster HA for Sybase ASE. For more information, see the following sections:

- [“Registering and Configuring Sun Cluster HA for Sybase ASE”](#) on page 25
- [“Tuning Fault Monitors for Sun Cluster Data Services”](#) in *Sun Cluster Data Services Planning and Administration Guide for Solaris OS*

The Sun Cluster HA for Sybase ASE fault monitor consists of the following processes.

- Main fault-monitor process
- Database-client fault probe

Main Fault-Monitor Process

The fault monitor process diagnoses errors and checks statistics. The monitor labels an operation successful if the following conditions occur.

- The database is online.
- The activity check returns no errors.
- The test transaction returns no errors.

If an operation fails, the main process checks the action table for an action to perform and then performs the predetermined action. If an operation fails, the main process can perform the following actions.

1. Restarting the resource on the current node
2. Restarting the resource group on the current node
3. Failing over the resource group to the next node on the resource group's node list

These actions execute external programs as separate processes in the background.

The server fault monitor also scans the `Adaptive_Server_Log` file and corrects any errors that the scan identifies.

Database-Client Fault Probe

The database-client fault probe performs activity checks and test transactions. The extension property `Connect_string` specifies an account that performs all of the database operations. The extension property `Probe_timeout` sets the time-out value that the probe uses to determine the time that has elapsed in a successful database probe.

Sun Cluster HA for Sybase ASE Extension Properties

For details about system-defined properties, see the `r_properties(5)` man page and the `rg_properties(5)` man page.

The `SUNW.sybase` resource type represents the Sybase ASE application in a Sun Cluster configuration. The extension properties of this resource type are as follows:

`Adaptive_Server_Log_File`

The path to the log file for the adaptive server. Sun Cluster HA for Sybase ASE continually reads this property for error monitoring.

Default: None

Range: Minimum=1

Tunable: When disabled

`Adaptive_Server_Name`

The name of the data server. Sun Cluster HA for Sybase ASE uses this property to locate the RUN server in the `$SYBASE/$ASE/install` directory.

Default: None

Range: Minimum=1

Tunable: Any time

`Backup_Server_Name`

The name of the backup server. Sun Cluster HA for Sybase ASE uses this property to locate the RUN server in the `$SYBASE/$ASE/install` directory. If you do not set this property, Sun Cluster HA for Sybase ASE will not manage the server.

Default: Null

Range: None

Tunable: When disabled

Connect_cycle

Number of fault-monitor probe cycles before Sun Cluster HA for Sybase ASE establishes a new connection.

Default: 5

Range: 1 – 100

Tunable: Any time

Connect_string

String of format *userid/password*, which specifies the database user's user ID and password. Sun Cluster HA for Sybase ASE uses this property for database probes. When you set up the Sun Cluster HA for Sybase ASE data service, define the database user ID and password before you enable the server resource and the server resource's fault monitor. Do *not* use the *sa* account for the database user. You must set this property, even if you do not set the *Monitor_Server_Name* property.

Default: None

Range: Minimum=1

Tunable: Any time

Debug_level

Debug level for writing to the Sun Cluster HA for Sybase ASE log.

Default: 1

Range: 0 – 100

Tunable: Any time

Environment_File

File that contains all of the Sybase ASE environment variables. Sun Cluster HA for Sybase ASE requires that you define the variables *SYBASE*, *SYBASE_ASE*, and *SYBASE_OCS*. Other variables that you define are passed as environment variables to the Sybase server.

The definition of each environment variable must conform to the following format:

variable=value

Each environment variable that you define must also be specified, one per line in the *Environment_File*.

Typically, users use the *SYBASE.sh* environment file that is created by the Sybase installation.

Note – The value of this property is independent of the shell that is being used by the *sybase* user. Specifically, the *sybase* user can have *csh* as its default shell.

Default: None

Range: Minimum=1

Tunable: When disabled

Monitor_Server_Name

The name of the monitor server. Sun Cluster HA for Sybase ASE uses this property to locate the RUN server in the `$(SYBASE)/$(ASE)/install` directory. If you do not set this property, Sun Cluster HA for Sybase ASE will not manage the server.

Default: Null

Range: None

Tunable: When disabled

Probe_timeout

Timeout value for the fault monitor probe.

Default: 60 seconds

Range: 1 – 99999 seconds

Tunable: Any time

Stop_File

The absolute path to the script that the `STOP` method executes to stop the Sybase ASE servers. This file stores the password of the Sybase ASE system administrator (`sa`). Protect the path so that only the user and group that are associated with the Sybase ASE installation can access the file. The Sun Cluster HA for Sybase ASE package includes the `sybase_stop_servers` template. You must replace the existing password.

Default: None

Range: Minimum=1

Tunable: Any time

Text_Server_Name

The name of the text server. The Sun Cluster HA for Sybase ASE data service uses this property to locate the RUN server in the `$(SYBASE)/$(ASE)/install` directory. If you do not set this property, the Sun Cluster HA for Sybase ASE data service will not manage the server.

Default: Null

Range: None

Tunable: When disabled

Wait_for_online

Whether the START method waits for the database to be brought online before exiting.

Default: TRUE

Range: TRUE – FALSE

Tunable: Any time

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