



Sun Cluster Data Service for Sybase ASE Guide for Solaris OS

SPARC Platform Edition



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Part No: 819-2991-11
May 2007, Revision A

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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 book assume knowledge of the Solaris™ Operating System (Solaris OS) and expertise with the volume-manager software that is used with Sun Cluster software.

Using 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 conventions that are used in this book.

TABLE P-1 Typographic Conventions

Typeface	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% you have mail.</code>
AaBbCc123	What you type, contrasted with onscreen computer output	<code>machine_name% su</code> Password:
<i>aabbcc123</i>	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> . A <i>cache</i> is a copy that is stored locally. Do <i>not</i> save the file. Note: Some emphasized items appear bold online.

Shell Prompts in Command Examples

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

TABLE P-2 Shell Prompts

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

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 3.1 - 3.2 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

The Sun web site provides information about the following additional resources:

- [Documentation \(http://www.sun.com/documentation/\)](http://www.sun.com/documentation/)
- [Support \(http://www.sun.com/support/\)](http://www.sun.com/support/)
- [Training \(http://www.sun.com/training/\)](http://www.sun.com/training/)

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 number and serial number of your systems
- The release number of the Solaris Operating System (for example, Solaris 10)
- The release number of Sun Cluster (for example, Sun Cluster 3.2)

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>/usr/cluster/bin/clnode show-rev</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 9
- “Overview of Installing and Configuring Sun Cluster HA for Sybase ASE” on page 10
- “Preparing to Install Sun Cluster HA for Sybase ASE” on page 11
- “Installing the Sybase ASE Software” on page 11
- “Configuring Sybase ASE Database Access and Creating the Sybase ASE Database Environment” on page 15
- “Installing the Sun Cluster HA for Sybase ASE Packages” on page 19
- “Registering and Configuring Sun Cluster HA for Sybase ASE” on page 21
- “Verifying the Sun Cluster HA for Sybase ASE Installation and Configuration” on page 24
- “Sun Cluster HA for Sybase ASE Logging and Security Issues” on page 25
- “Tuning the Sun Cluster HA for Sybase ASE Fault Monitor” on page 26

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.

Note – If you are using the Solaris 10 OS, install and configure this data service to run only in the global zone. At publication of this document, this data service is not supported in non-global zones. For updated information about supported configurations of this data service, contact your Sun service representative.

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 11
Install the Sybase ASE software	“Installing the Sybase ASE Software” on page 11
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 15
Install the Sun Cluster HA for Sybase ASE package	“Installing the Sun Cluster HA for Sybase ASE Packages” on page 19
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 21
Verify the Sun Cluster HA for Sybase ASE installation	“Verifying the Sun Cluster HA for Sybase ASE Installation and Configuration” on page 24
Tune the Sun Cluster HA for Sybase ASE fault monitor	“Tuning the Sun Cluster HA for Sybase ASE Fault Monitor” on page 26

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.

- 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 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 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

1 On a cluster member, become superuser or assume a role that provides `solaris.cluster.modify` and `solaris.cluster.admin` RBAC authorizations.

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 11](#).

3 Create a failover resource group to hold the network and application resources.

```
# clresourcegroup create [-n node] resource-group
```

`-n node` 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.

`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.

Note – Use the `-n` 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 `-n` 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.

```
# clreslogicalhostname create -g resource-group logical_host
```

`logical_host` Specifies an optional resource name of your choice.

6 Run the `clresourcegroup(1CL)` 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

```
# clresourcegroup online -M 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 14.

▼ How to Verify the Sybase ASE Installation

- **Verify that the *sybase* user and the *dba* group own the `$SYBASE_HOME` directory and `$SYBASE_HOME` children directories.**

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 15.

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 Solaris Volume Manager, see [“How to Configure Sybase ASE Database Access With Solaris Volume Manager”](#) on page 15.
 - If you are using VERITAS Volume Manager (VxVM), see [“How to Configure Sybase ASE Database Access With VERITAS Volume Manager”](#) on page 16.
2. Creating the Sybase ASE database environment

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

1 Configure the disk devices for the Solaris Volume Manager software to use.

For information about how to configure 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

/rdsk/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 16.

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

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
```

b. Verify that the changes are effective.

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

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

```
# cldevicegroup create -t VxVM diskgroup
```

Next Steps Go to [“How to Create the Sybase ASE Database Environment”](#) on page 16.

▼ 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 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.

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 26.

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 26.

Next Steps After you create the Sybase ASE database environment, go to [“Installing the Sun Cluster HA for Sybase ASE Packages”](#) on page 19.

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. To install the packages, use the Sun Java Enterprise System Common Installer.

▼ How to Install the Sun Cluster HA for Sybase ASE Packages

Perform this procedure on each cluster node where you are installing the Sun Cluster HA for Sybase ASE packages.

You can run the Sun Java Enterprise System Common Installer 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.

Note – Install the packages for this data service in the global zone.

Before You Begin Ensure that you have the Sun Java™ Availability Suite DVD-ROM.

If you intend to run the Sun Java Enterprise System Common Installer with a GUI, ensure that your DISPLAY environment variable is set.

- 1 **On the cluster node where you are installing the data service packages, become superuser.**
- 2 **Load the Sun Java Availability Suite DVD-ROM into the DVD-ROM drive.**

If the Volume Management daemon `vol(1M)` is running and configured to manage DVD-ROM devices, the daemon automatically mounts the DVD-ROM on the `/cdrom` directory.
- 3 **Change to the Sun Java Enterprise System Common Installer directory of the DVD-ROM.**
 - **If you are installing the data service packages on the SPARC® platform, type the following command:**

```
# cd /cdrom/cdrom0/Solaris_sparc
```
 - **If you are installing the data service packages on the x86 platform, type the following command:**

```
# cd /cdrom/cdrom0/Solaris_x86
```

4 Start the Sun Java Enterprise System Common Installer.

```
# ./installer
```

5 When you are prompted, accept the license agreement.

If any Sun Java Enterprise System components are installed, you are prompted to select whether to upgrade the components or install new software.

6 From the list of Sun Cluster agents under Availability Services, select the data service for Sybase ASE.

7 If you require support for languages other than English, select the option to install multilingual packages.

English language support is always installed.

8 When prompted whether to configure the data service now or later, choose Configure Later.

Choose Configure Later to perform the configuration after the installation.

9 Follow the instructions on the screen to install the data service packages on the node.

The Sun Java Enterprise System Common Installer displays the status of the installation. When the installation is complete, the wizard displays an installation summary and the installation logs.

10 (GUI only) If you do not want to register the product and receive product updates, deselect the Product Registration option.

The Product Registration option is not available with the CLI. If you are running the Sun Java Enterprise System Common Installer with the CLI, omit this step

11 Exit the Sun Java Enterprise System Common Installer.

12 Unload the Sun Java Availability Suite DVD-ROM from the DVD-ROM drive.

a. To ensure that the DVD-ROM is not being used, change to a directory that does *not* reside on the DVD-ROM.

b. Eject the DVD-ROM.

```
# eject cdrom
```

Next Steps See “[Registering and Configuring Sun Cluster HA for Sybase ASE](#)” on page 21 to register Sun Cluster HA for Sybase ASE and configure the cluster for the data service.

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 `clresource(1CL)` command that creates or modifies the resource:

`-p property=value`

`-p 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 Sun Cluster maintenance commands 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.HASStoragePlus` resource type, see the following documentation:

- `SUNW.HASStoragePlus(5)` man page

- “Relationship Between Resource Groups and 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.

- 1 On a cluster member, become superuser or assume a role that provides `solaris.cluster.modify` and `solaris.cluster.admin` RBAC authorizations.**
- 2 Run the `clresourcetype` command to register resource types for Sun Cluster HA for Sybase ASE.**

```
# clresourcetype register SUNW.sybase
```

- 3 Register the `SUNW.HASStoragePlus` resource type with the cluster.**

```
# clresourcetype register SUNW.HASStoragePlus
```

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

```
# clresource create -g sybase-rg -t SUNW.HASStoragePlus \
-p GlobalDevicePaths=sybase-device-group1,/dev/global/dsk/dl \
-p FilesystemMountPoints=/global/sybase-inst \
-p AffinityOn=TRUE sybase-hastp-rs
```

The resource is created in the enabled state.

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

- 5 Run the `clresourcegroup` 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.

```
# clresourcegroup online -M sybase-rg
```

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

```
# clresource create -g resource-group \  
-t SUNW.sybase \  
-p Environment_File=environment-file-path \  
-p Adaptive_Server_Name=adaptive-server-name \  
-p Backup_Server_Name=backup-server-name \  
-p Text_Server_Name=text-server-name \  
-p Monitor_Server_Name=monitor-server-name \  
-p Adaptive_Server_Log_File=log-file-path \  
-p Stop_File=stop-file-path \  
-p Connect_string=user/passwd \  
-p resource_dependencies=storageplus-resource \  
-p Wait_for_Online=TRUE \  
-p DB_Wait_List=db1, db2, ... resource
```

```
-g resource-group
```

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

```
-t SUNW.sybase
```

Specifies the resource type to add.

```
-p Environment_File=environment-file
```

Sets the name of the environment file.

```
-p Adaptive_Server_Name=adaptive-server-name
```

Sets the name of the adaptive server.

```
-p Backup_Server_Name=backup-server-name
```

Sets the name of the backup server.

```
-p Text_Server_Name=text-server-name
```

Sets the name of the text server.

```
-p Monitor_Server_Name=monitor-server-name
```

Sets the name of the monitor server.

```
-p Adaptive_Server_Log_File=log-file-path
```

Sets the path to the log file for the adaptive server.

```
-p Stop_File=stop-file-path
```

Sets the path to the stop file.

-p `Connect_string=user/passwd`
 Specifies the user name and password that the fault monitor uses to connect to the database.

-p `Wait_for_Online=TRUE`
 Specifies whether the `START` method has to wait for the database to be brought online before exiting.

-p `DB_Wait_List=db1, db2, ...`
 Specifies the list of databases that need to be online before the resource can be brought online. The valid values are either an empty list (“ ”), `ALL`, or a list of databases.

resource

Specifies the resource name to add.

The resource is created in the enabled state.

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 21.

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 24.

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

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.

```
# clresource status
```


- 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.**

```
# clresourcegroup switch -n node resource-group
```
- 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 26.

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 21.

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 21](#)
- [“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.

Obtaining Core Files for Troubleshooting

To facilitate troubleshooting of unexplained DBMS timeouts, you can enable the fault monitor to create a core file when a probe timeout occurs. The contents of the core file relate to the fault monitor process. The fault monitor creates the core file in the `/` directory. To enable the fault monitor to create a core file, use the `coreadm` command to enable set-id core dumps. For more information, see the `coreadm(1M)` man page.

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

DB_Wait_List

List of databases that need to be online before the resource can be brought online.

Default: Null

Range: None

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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