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## Sun Cluster 2.2 Release Notes

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## Sun Cluster 2.2 Release Notes

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This document provides information on the following topics.

- “New Features” on page 1
- “Supported Products” on page 2
- “Restrictions” on page 3
- “Changes From Previous Releases” on page 4
- “Licensing” on page 6
- “Installation and Upgrade Information” on page 6
- “Patches” on page 11
- “Sun Cluster Manager” on page 14
- “Known Problems” on page 18
- “Future Changes” on page 27

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### New Features

- Sun Cluster 2.2 runs in the Solaris™ 2.6 and Solaris 7 operating environments.
- Sun Cluster 2.2 is now fully internationalized and Year 2000 compliant.
- Solstice™ HA 1.3, Sun Cluster 2.0, and Sun Cluster 2.1 can be upgraded to Sun Cluster 2.2.
- Support for Tivoli, Lotus Notes, and Netscape™ LDAP data services has been added.

- A peripheral component interconnect (PCI) Scalable Coherent Interface (SCI) for the private network on Ultra™ Enterprise 250 and Ultra Enterprise 450 is now supported.
- Gigabit Ethernet for the public network is now supported.
- This release includes a new Java™-based GUI cluster monitor called Sun Cluster Manager (SCM). This GUI replaces the Cluster Monitor (clustmon) GUI in previous Sun Cluster releases. For more information on Sun Cluster Manager, see Section 2.5, “Monitoring Sun Cluster Servers With Sun Cluster Manager, in the *Sun Cluster 2.2 System Administration Guide*, or see the online help.

Additional information on Sun Cluster 2.2 can be found on the following web site:

<http://www.sun.com/clusters>

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## Supported Products

This section describes the software products supported with Sun Cluster 2.2.

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**Note** - For information about supported server platforms and storage devices, contact your Sun representative.

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## Volume Managers

Sun Cluster 2.2 supports the following volume managers.

Volume Manager	Release	Solaris Version
Cluster Volume Manager	2.2.1	2.6
Solstice DiskSuite™	4.2	2.6 and 7
Sun StorEdge Volume Manager™	2.6	2.6

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**Note** - You cannot use more than one volume manager simultaneously within a cluster. Use only one volume manager per cluster.

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# Data Services

Sun Cluster 2.2 supports the following data services.

Data Service	Release	Solaris Version
Informix-Online XPS	8.21	2.6
Oracle Parallel Server	7.3.4, 8.0.5	2.6
Sun Cluster HA for DNS	N/A	2.6 and 7
Sun Cluster HA for Informix	7.23, 7.30	7.23 on 2.6 7.30 on 2.6 and 7
Sun Cluster HA for Lotus	4.6, 4.6.1	2.6
Sun Cluster HA for Netscape	3.5	2.6
Sun Cluster HA for NFS™	N/A	2.6 and 7
Sun Cluster HA for Oracle	7.3.3, 7.3.4, 8.0.4, 8.0.5	2.6 and 7
Sun Cluster HA for SAP <sup>1</sup>	3.1h, 3.1i, 4.0b	2.6
Sun Cluster HA for Sybase	11.5	2.6 and 7
Sun Cluster HA for Tivoli	3.2	2.6

1. These versions of SAP with the Oracle database have been qualified with Sun Cluster HA for SAP on Sun Cluster 2.2. SAP with the Informix database has not yet been fully qualified with Sun Cluster HA for SAP on Sun Cluster 2.2. For the most current support information, see your service provider.

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## Restrictions

The following restrictions apply to Sun Cluster 2.2.

- Although the shared CCD is an optional feature for two-node clusters running SSVM, a shared CCD cannot be used in Solstice DiskSuite configurations.
- The `be` FastEthernet device driver has reached end of life and is not supported in the Solaris 7 operating environment. Due to this, the SPARCserver™ 1000 and SPARCcenter™ 2000, which use the `be` driver for the cluster interconnect, are not supported for Sun Cluster 2.2 with the Solaris 7 operating environment. These

servers are supported for Sun Cluster 2.2 with the Solaris 2.6 operating environment.

- Sun Cluster software must run in C locale. This applies to Sun Cluster daemons, Sun Cluster rc scripts, and the superuser environment. As a consequence, you should not configure the superuser environment or the default environment (/etc/default/init file) to anything other than C locale on all hosts in the cluster.
- Cross-mounting of Sun Cluster HA for NFS resources is not supported.
- The user-defined script *clustername.reconfig.user\_script* is not supported in Sun Cluster 2.2.
- The +D option to `scconf(1M)` cannot be used with Solstice DiskSuite.

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## Changes From Previous Releases

This section describes functionality and command changes from previous releases. See the associated man pages for more information.

### Command Changes

Sun Cluster 2.2 – The following Solstice HA 1.3 commands have been replaced in or removed from Sun Cluster 2.2:

	Solstice HA 1.3	Sun Cluster 2.2
Replaced	hainstall	scinstall
	hainetconfig	hadsconfig
	haremove	scinstall
	hasetup	scconf / scinstall
	hastart	scadmin startcluster (first node) scadmin startnode (remaining nodes)
	hastop	scadmin stopnode



	Solstice HA 1.3	Sun Cluster 2.2
Removed	hacheck	
	hafstab	
	halicense	
	haload	

The Sun Cluster 2.1 command `scinstall(1M)` has been changed for Sun Cluster 2.2. Refer to the `scinstall(1M)` man page for current syntax and usage.

Sun StorEdge Volume Manager (SSVM) – The following (1M) commands and options are supported only with SSVM. See the associated man pages for more information.

- `confccdssa`
- `scconf -q`
- `scconf -F`
- `scconf -S`
- `scadmin reldisks`
- `scadmin resdisks`

Solstice DiskSuite – The following changes apply to Solstice DiskSuite.

- The `reserve` option to the `scadmin(1M)` command is used only with Solstice DiskSuite.
- The `scdidadm(1M)` command is new for Solstice DiskSuite configurations. It is used to create mappings between disk ID instance numbers and remote paths to the disk, and to check disk ID major numbers.

```
“# su - oracle”“# su - oracle
”
```

```
# su - oracle
$ ogmsctl start

”
```

---

## Licensing

You will receive paper licenses for the Sun Cluster 2.2 framework, for each hardware platform on which Sun Cluster 2.2 will run. You will also receive paper licenses for each Sun Cluster data service, per node.

No licenses are required for Solstice DiskSuite or CVM. The SSVM product is bundled with its own license.

The Sun Cluster 2.2 framework does not enforce these licenses, but you should retain the paper licenses as proof of ownership when you need technical support or other support services. See <http://www.sun.com/licensing/> for more licensing information.

Contact your third party service provider for third party product licenses.

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## Installation and Upgrade Information

The Sun Cluster 2.2 release consists of four CD-ROMs:

- Sun Cluster 2.2 software
- Solstice DiskSuite 4.2 software and online (AnswerBook2™) documentation
- Cluster Volume Manager 2.2.1 software for customers running Oracle Parallel Server (OPS)
- Sun StorEdge Volume Manager 2.6 software

For more information about installing Solstice DiskSuite 4.2 software and documentation, see “Installing and Upgrading Solstice DiskSuite 4.2” on page 7.

For details about installing and configuring CVM, see the *Sun Cluster 2.2 Cluster Volume Manager Guide*.

For instructions on installing and configuring SSVM, see your Sun StorEdge Volume Manager documentation and the *Sun Cluster 2.2 Software Installation Guide*.

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**Note** - CVM 2.2.1 will be replaced by CVM 3.0. At that time, CVM 2.2.1 users will be required to upgrade to CVM 3.0 to retain support for their configurations.

---

# Changes to Installation Procedures

The Sun Cluster installation procedures have changed significantly from Solstice HA 1.3 and Sun Cluster 2.1. In Sun Cluster 2.2, the interactive command `scinstall(1M)` is used to install the software and to set up cluster components such as logical hosts and network interfaces.

The steps to install and configure Sun Cluster are grouped into three procedures:

**1. Preparing the administrative workstation and installing the client software.**

This entails installing the Solaris operating environment and Sun Cluster 2.2 client software on the administrative workstation.

**2. Installing the server software.**

This includes using the Cluster Console to install the Solaris operating environment and Sun Cluster 2.2 software on all cluster nodes; using `scinstall(1M)` to set up network interfaces, logical hosts, and quorum devices; and selecting data services and volume manager support packages.

**3. Configuring and bringing up the cluster.**

This includes setting up paths; installing patches; installing and configuring your volume manager, SCI, PNM backup groups, logical hosts, and data services; and bringing up the cluster.

See Chapter 3, "Installing and Configuring Sun Cluster Software, in the *Sun Cluster 2.2 Software Installation Guide* for the detailed procedures.

## Installing and Upgrading Solstice DiskSuite 4.2

Existing Solstice HA 1.3 customers must upgrade to Solstice DiskSuite 4.2 to use Sun Cluster 2.2. The Solstice DiskSuite 4.2 software and documentation is provided on a separate CD-ROM containing the following:

- Solstice DiskSuite 4.2 software.
- AnswerBook2 server.
- Solstice DiskSuite 4.2 AnswerBook™. The Solstice DiskSuite 4.2 AnswerBook contains all Solstice DiskSuite 4.2 user documentation, including the *Solstice DiskSuite 4.2 Installation and Product Notes* which describes how to install and configure Solstice DiskSuite 4.2.

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**Note** - The Solstice DiskSuite 4.2 documentation refers to Solaris Easy Access Server documentation, Solaris Web Start, and i386. This special edition of Solstice DiskSuite 4.2 for Sun Cluster 2.2 is completely standalone; disregard these references.

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## Accessing Solstice DiskSuite 4.2 Installation Instructions

To access Solstice DiskSuite 4.2 installation procedures, do these steps:

1. Open the README file contained on the Solstice DiskSuite 4.2 CD-ROM, using a browser to access the menu options that enable you to read an HTML file. For example, in Netscape, do the following:
  - a. From the Netscape browser menu bar, choose File>Open Page>Choose File. This opens the File Browser dialog box.
  - b. Choose the file /cdrom/cdrom0/README.html. The browser brings up the README.html file.
2. Install the AnswerBook2 server and the Solstice DiskSuite 4.2 AnswerBook using the README file instructions.
3. Access the Solstice DiskSuite 4.2 AnswerBook and follow the online instructions found in the *Solstice DiskSuite 4.2 Installation and Product Notes* to install Solstice DiskSuite.

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**Note** - The latest version of Patch 106627 is required for Solstice DiskSuite 4.2 running on either Solaris 2.6 or Solaris 7. The patch is available from all Sun service providers and from the SunSolve<sup>SM</sup> web site (<http://sunsolve.sun.com/>).

---

## Upgrading to Solstice DiskSuite 4.2

As part of the upgrade from earlier versions of Solstice DiskSuite, you are asked to add the SUNWmd package. In the following example, note that several files are shown with an asterisk, indicating that they are in conflict. When you answer *y* at each prompt, the new commands are installed, but the conflicting files are not overwritten.



---

**Caution** - Do *not* remove the old SUNWmd package before adding the new one. Doing so will make all data inaccessible.

---

```
# pkgadd -d . SUNWmd
Processing package instance <SUNWmd> from
</net/sag/export/umbundled/Solstice/disksuite/disksuite_4_2_seas/sparc>
Solstice DiskSuite
(sparc) 4.2,REV=1998.02.09.12.47.28
Copyright 1998 Sun Microsystems, Inc. All rights reserved.
## Executing checkinstall script.
This is an upgrade. Conflict approval questions may be displayed.
The listed files are the ones that will be upgraded. Please answer ``y``
to these questions if they are presented.
Using </> as the package base directory.
## Processing package information.
## Processing system information.
    26 package pathnames are already properly installed.
## Verifying package dependencies.
## Verifying disk space requirements.
## Checking for conflicts with packages already installed.
The following files are already installed on the system and are
```

(continued)

```

being used by another package:
../etc/init.d/SUNWmd.init
/etc/init.d/SUNWmd.sync
/etc/opt/SUNWmd/lock
/etc/opt/SUNWmd/md.cf
/etc/opt/SUNWmd/md.ctlrmap
* /etc/opt/SUNWmd/md.tab
/etc/opt/SUNWmd/mddb.cf
/kernel/drv/md
* /kernel/drv/md.conf
/kernel/misc/md_hotspares
/usr/opt/SUNWmd/man/man7/md.7
/usr/opt/SUNWmd/sbin/growfs
/usr/opt/SUNWmd/sbin/metaclear
/usr/opt/SUNWmd/sbin/metadb
/usr/opt/SUNWmd/sbin/metadetch
/usr/opt/SUNWmd/sbin/metahs
/usr/opt/SUNWmd/sbin/metainit
/usr/opt/SUNWmd/sbin/metaoffline
/usr/opt/SUNWmd/sbin/metaonline
/usr/opt/SUNWmd/sbin/metaparam
/usr/opt/SUNWmd/sbin/metarename
/usr/opt/SUNWmd/sbin/metareplace
/usr/opt/SUNWmd/sbin/metaroot
/usr/opt/SUNWmd/sbin/metaset
/usr/opt/SUNWmd/sbin/metastat
/usr/opt/SUNWmd/sbin/metasync
/usr/opt/SUNWmd/sbin/metattach
/usr/opt/SUNWmd/sbin/rpc.metad
/usr/opt/SUNWmd/sbin/rpc.metamhd

```

\* - conflicts with a file which does not belong to any package.  
Do you want to install these conflicting files [y,n,?,q] y

## Configuring Mediators When Migrating From Solstice HA 1.3 to Sun Cluster 2.2

This section is only relevant to clusters that were originally set up under Solstice HA 1.3 using Solstice DiskSuite mediators (two-string configurations). It describes changes that are automatically made to a mediator configuration when you upgrade from Solstice HA 1.3 to Sun Cluster 2.2. There is no direct user impact, but you should note the changes in any configuration information you keep on the cluster.

The Solstice HA 1.3-to-Sun Cluster 2.2 upgrade procedure documented in the *Sun Cluster 2.2 Software Installation Guide* changes the Solstice HA 1.3 mediator configuration. The original Solstice HA 1.3 mediator configuration resembles the following:

Mediator Host(s)	Aliases
ha-red	ha-red-priv1, ha-red-priv2
ha-green	ha-green-priv1, ha-green-priv2

After running the Sun Cluster 2.2 upgrade procedure, this configuration is converted to one similar to the following:

Mediator Host(s)	Aliases
ha-red	204.152.65.34
ha-green	204.152.65.33

---

**Note** - In Solstice HA 1.3, the hosts referred to the private links by physical names, whereas in Sun Cluster 2.2, the private link IP addresses are used.

---

For more information about configuring mediators for Sun Cluster 2.2, see Chapter 9, "Using Dual-String Mediators, in the *Sun Cluster 2.2 System Administration Guide*.

## Sun Cluster HA for SAP Upgrade Issues

Before performing an upgrade to Sun Cluster 2.2 from Solstice HA 1.3 or Sun Cluster 2.1, note these SAP-related issues.

- On each node, if you customized `hasap_start_all_instances` or `hasap_stop_all_instances` scripts in Solstice HA 1.3 or Sun Cluster 2.1, save them to a safe location before beginning the upgrade to Sun Cluster 2.2. Restore the scripts after completing the upgrade. Do this to prevent loss of your customizations when Sun Cluster 2.2 removes the old scripts.
- The configuration parameters implemented in Sun Cluster 2.2 are different from those implemented in Solstice HA 1.3 and Sun Cluster 2.1. Therefore, after upgrading to Sun Cluster 2.2, you must reconfigure Sun Cluster HA for SAP by running the `hadsconfig(1M)` command.

Before starting the upgrade, view the existing configuration and note the current configuration variables.

- For Solstice HA 1.3, use the `hainetconfig(1M)` command to view the configuration.

- For Sun Cluster 2.1, use the `hadsconfig(1M)` command to view the configuration.

After upgrading to Sun Cluster 2.2, use the `hadsconfig(1M)` command to re-create the instance.

- In Sun Cluster 2.2, the `hareg -n` command shuts down the entire Sun Cluster HA for SAP data service, including all instances and fault monitors. In previous releases, the `hareg -n` command, when used with Sun Cluster HA for SAP, shuts down only the fault monitors.

Additionally, before turning on the Sun Cluster HA for SAP data service using `hareg -y`, you must stop the SAP central instance. Otherwise, the Sun Cluster HA for SAP data service will not be able to start and monitor the instance properly.

---

## Patches

All patches are available through SunSolve. Always install the latest version of each patch. For the most current patch information, access the SunSolve web site at <http://sunsolve.sun.com/>.

### Patches for Sun Cluster 2.2 on Solaris 7

Sun Cluster 2.2 in the Solaris 7 operating environment requires the following patches.

TABLE 1-1 Solaris 7 Patches for Sun Cluster 2.2

Required/ Recommended	Patch Number	Minimum Level	Description
Required for Solstice DiskSuite	106627	01	Mediators
Required	107388	01	Sun Cluster Manager

### Patches for Sun Cluster 2.2 on Solaris 2.6

The following patches have been tested successfully with Sun Cluster 2.2 in the Solaris 2.6 operating environment (SunOS™ 5.6).

**TABLE 1-2 Solaris Patches for Sun Cluster 2.2**

<b>Required/ Recommended</b>	<b>Patch Number</b>	<b>Minimum Level</b>	<b>Description</b>
Required	105181	04	SunOS 5.6: Kernel update patch
Recommended	105210	05	SunOS 5.6: libc & watchmalloc patch
Recommended	105216	03	SunOS 5.6: /usr/sbin/rpcbind patch
Recommended	105284	05	Motif 1.2.7 Runtime library patch
Required for A5000	105356	04	SunOS 5.6: /kernel/drv/ssd patch
Required for A5000	105357	01	SunOS 5.6: /kernel/drv/ses patch
Required for A5000	105375	05	SunOS 5.6: sf & social driver patch
Recommended	105379	03	SunOS 5.6: /kernel/misc/nfssrv patch
Recommended	105393	01	SunOS 5.6: /usr/bin/at patch
	105395	02	SunOS 5.6: /usr/lib/sendmail patch
	105401	08	SunOS 5.6: libnsl and NIS+ commands patch
	105407	01	SunOS 5.6: /usr/bin/volrmmount patch
	105464	01	OpenWindows™ 3.6: multiple xterm fixes
Required	105490	02	SunOS 5.6: linker patch
Required for QFE 2.1	105541	05	Sun QFE 2.1: QFE driver
	105552	02	SunOS 5.6: /usr/sbin/ rpc.nisd_resolv patch
	105558	01	CDE 1.2: dtpad patch
	105562	01	SunOS 5.6: chkey and keylogin patch
	105566	05	CDE 1.2: Calendar Manager patch



TABLE 1-2 Solaris Patches for Sun Cluster 2.2 (continued)

Required/ Recommended	Patch Number	Minimum Level	Description
Required for E450	105580	06	SunOS 5.6: /kernel/drv/glm patch
Required for D1000	105600	05	SunOS 5.6: /kernel/drv/isp patch
	105615	03	SunOS 5.6: /usr/lib/nfs/mountd patch
	105621	02	SunOS 5.6: libbsm patch
	105642	03	SunOS 5.6: prtdiag patch
	105665	01	SunOS 5.6: /usr/bin/login patch
	105669	02	CDE 1.2: libDtSvc patch
Required for E10000	105684	04	SSP 3.1: OBP to support PCI probing & DR PCI attach/detach
	105720	03	SunOS 5.6: /kernel/fs/nfs patch
	105741	02	SunOS 5.6: /kernel/drv/ecpp patch
	105755	03	SunOS 5.6: in.named & libresolv patch
Required	105786	04	SunOS 5.6: /kernel/drv/ip patch
Required	105795	05	SunOS 5.6: /kernel/drv/hme patch
Required	105797	02	SunOS 5.6: /kernel/drv/sd patch
	105800	03	SunOS 5.6: /usr/bin/admintool Year 2000 patch
	105837	02	CDE 1.2: dtappgather patch
	105926	01	SunOS 5.6: /usr/sbin/static/tar patch
	106040	03	SunOS 5.6: X Input & Output Method patch
	106049	01	SunOS 5.6: security in.telnetd BANNER
	106125	02	SunOS 5.6: Patch for patchadd and patchrm

TABLE 1-2 Solaris Patches for Sun Cluster 2.2 (continued)

Required/ Recommended	Patch Number	Minimum Level	Description
Required for A5000	106129	02	Hardware, 9GB Disks: Downloads
	106172	02	SunOS 5.6: /kernel/drv/fas patch
	106193	03	SunOS 5.6: Year 2000 sysid unzip patch
	106222	01	OpenWindows 3.6: filemgr (ff.core) fixes
	106226	01	SunOS 5.6: /usr/sbin/format patch
	106235	01	SunOS 5.6: lp patch
	106242	01	CDE 1.2: libDtHelp.so.1 fixes
	106257	04	SunOS 5.6: /usr/lib/libpam.so.1 patch
	106271	04	SunOS 5.6: /usr/lib/security/ pam_unix.so.1 patch
	106301	01	SunOS 5.6: /usr/sbin/in.ftpd patch
	106448	01	SunOS 5.6: /usr/sbin/ping patch
Required for QFE 2.2	106532	01	SUN QFE 2.2: Patch for Solaris 2.6 QFE driver
Required for Solstice DiskSuite	106627	01	Mediators
Required for A1000 or A3x00	106707	01	RM 6.1.1, A1000/A3x00 Support for Sun Cluster 2.1 FCS
Required	107388	01	Sun Cluster Manager

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## Sun Cluster Manager

This section describes how to use Sun Cluster Manager (SCM).

# Monitoring Sun Cluster Servers With SCM

SCM provides a single interface to many of Sun Cluster's command line monitoring features. SCM consists of two parts: SCM server software, and the SCM Graphical User Interface (GUI). The SCM server runs on each node in the cluster. The SCM GUI runs in a Java Development Kit (JDK™) 1.1-compliant browser such as HotJava™. The HotJava browser can be running on any machine, including the cluster nodes. The SCM GUI reports information on:

- SCM-monitored alarms
- `syslog` messages on each cluster node
- Cluster resources, including parallel data services, logical hosts, registered HA services, cluster nodes, and volume manager types

---

**Note** - Refer to the Patch 107388-01 README for complete information on SCM.

---

## Running the SCM GUI in a HotJava Browser

The following set of procedures outline what you need to do to run SCM in a HotJava browser with your system configuration.

---

**Note** - If you choose to use the HotJava browser shipped with your Solaris 2.6 or Solaris 7 operating environment, there may be problems with the HotJava browser. See "Running SCM With the HotJava Browser" on page 21, for more information. If you choose to use a later version of the HotJava browser, refer to the appropriate procedure depending on your software needs.

---

You may need to determine if you have the correct version of the following:

- JDK packages `SUNWjvrt` and `SUNWjvjit` version 1.1.6 (or later) on the system running the HotJava browser.
- HotJava 1.1.4 (or later).

---

**Note** - The Solaris 2.6 operating environment requires installation of JDK 1.1.6 (or later) and HotJava 1.1.4 (or later). The Solaris 7 operating environment requires installation of HotJava 1.1.4 (or later).

---

You need to determine whether you want to:

- Run the HotJava browser on a cluster node.
  - If you choose this option, you will have to restart HotJava on a different node, if the node running HotJava crashes.
- Install a web server on each node in the cluster for running SCM.

If you choose this option, you will need to type an appropriate URL for another node into the HotJava browser if you see the `Lost Connection` dialog.

Depending on what you decide, refer to the appropriate procedure.

## ▼ How to Download the JDK

Type the following from the console prompt on the server in your cluster:

```
# java -versio
java version ``1.1.6''
```

If the system displays a lower version of `java`, follow the instructions download the JDK version 1.1.6 (or later) software from the following URL:

<http://www.sun.com/solaris/java>

## ▼ How to Download HotJava

From the machine running the HotJava browser, select `About HotJava` from the `Help` menu.

If the browser displays a version lower than 1.1.4, or if you do not have a HotJava browser, follow the instructions to download the HotJava version 1.1.4 (or later) software from the following URL:

<http://java.sun.com/products/hotjava/index.html>

## ▼ How to Run the SCM Applet in a HotJava Browser From a Cluster Node

1. **Run your HotJava browser on a node in the cluster.**
2. **Remotely display it on an X windows workstation.**
3. **Set the applet security preferences in your HotJava browser:**
4. **Choose Applet Security from Preferences on the Edit menu.**
5. **Click Medium Security as the Default setting for Unsigned applets.**
6. **When you are ready to begin monitoring the cluster with SCM, type the appropriate URL.**

```
file:/opt/SUNWcluster/scmgr/index.html
```

7. Click OK on dialog boxes that ask for permission to access certain files, ports, and so forth from the remote display workstation to the cluster node where the browser is started.

---

**Note** - It might take HotJava some time to download and run the applet. No status information will appear during this time.

---

Refer to the online help for complete information on menu navigation, tasks, and reference.

## ▼ How to Set Up a Web Server to Run With SCM

If you choose, you can install a web server on the cluster nodes to run with SCM.

1. Install a web server on all nodes in the cluster.

---

**Note** - If you are running the Sun Cluster HA for Netscape HTTP service and an HTTP server on SCM, you need to configure the HTTP servers to listen on different ports. Otherwise there will be a port conflict between the two.

---

2. Follow the web server's configuration procedure to make sure that SCM's `index.html` file is accessible to the clients.

The client applet for SCM is in the `index.html` file in the `/opt/SUNWcluster/scmgr` directory. For example, go to your HTTP server's document root and create a link to the `/opt/SUNWcluster/scmgr` directory.

3. Run your HotJava browser from your workstation.
4. Set the applet security preferences in your HotJava browser:
  - a. Choose Applet Security from Preferences on the Edit menu.
  - b. Click Medium Security as the Default setting for Unsigned applets.
5. When you are ready to begin monitoring the cluster with SCM, type the appropriate URL.

For example, if you had created a link from the web server's `document_root` directory to the `/opt/SUNWcluster/scmgr` directory, you would type the following URL:

```
http://clusternode/scmgr/index.html
```

6. Click OK on dialog boxes that ask for permission to access certain files, ports, and so forth to the cluster node where the browser is started.

---

**Note** - It might take HotJava some time to download and run the applet. No status information will appear during this time.

---

Refer to the online help for complete information on menu navigation, tasks, and reference.

## SCM Online Help System

SCM provides online help information on menu navigation, tasks, and reference.

### ▼ How to Display SCM Online Help

To display the Help window from SCM, select Help Contents from the Help menu.

Alternatively, click on the Help icon (question mark) in the tool bar above the folder.

If necessary, you can run online help in a separate browser by typing the following URL:

```
file:/opt/SUNWcluster/scmgr/help/locale/en/main.howtotopics.html
```

For example, if you had created a link from the web server's `document_root` directory to the `/opt/SUNWcluster/scmgr` directory, you would type the following URL:

```
http://clusternode/scmgr/help/locale/en/main.howtotopics.html
```

## Online Help Browser Display

When you finish viewing the online help, close its HotJava browser. Selecting online help again brings up a new browser and loads the help.

---

## Known Problems

The following known problems affect the operation of Sun Cluster 2.2.

## Framework Bugs

4185966 – A bad trap following loss of heartbeat might result in the SCI module causing node panic.

4202413 – The cluster aborts when a majority of nodes halt simultaneously. If the volume manager is CVM or SSVM, this can be avoided by selecting a single direct-attached disk as a quorum disk when configuring the cluster.

4202418 – An SCI heartbeat-alive check failure might cause node failure.

4213128 – In Solstice DiskSuite configurations in which a logical host has multiple disksets, takeover of the logical host fails because the `hactl(1M)` utility does not parse the diskset names correctly. This bug compromises fault monitoring in certain scenarios. The workaround involves replacing the file `/opt/SUNWcluster/ha/nfs/have_maj_util` with a modified file. The modified file is available through your service provider.

## Administrative Command Bugs

4209264 – The `scconf -F` command does not always mirror the administrative file system across controllers. Use `vxprint` to display the volumes; if the administrative file system is not mirrored across controllers, manually create a mirror of that volume on a different controller.

4210684 – Installing and configuring a cluster by using `scinstall(1M)` command-line options in conjunction with its configuration menus does not work. In addition, when using `scinstall(1M)` command-line options to remove the server software, the cluster network packages are not removed. To perform these tasks, run the `scinstall(1M)` command interactively (without options).

4210191 – When all public network connections fail on a node with Solstice DiskSuite, the node aborts from the cluster and panics with the following panic string:

```
Failfast timeout - unit ``abort_thread``
```

4213927 – The `pnmset(1M)` command fails in some cases due to `ping(1M)` timeout after an `ifconfig(1M)` operation on some gigabit Ethernet cards. Work around the problem by configuring the `/etc/pnmconfig` file manually. See the `pnmconfig(4M)` man page for more information.

## Data Service Bugs

4210065 – In Solstice DiskSuite configurations in which a logical host has multiple disksets, the Sun Cluster HA for NFS shell script

`/opt/SUNWcluster/ha/nfs/fdl_enum_probe_disks` reports an error. This causes fault monitoring of the disksets to fail. The workaround involves replacing the file `/opt/SUNWcluster/ha/nfs/fdl_enum_probe_disks` with a modified file. The modified file is available through your service provider.

4210646 – The Sun Cluster HA for Oracle fault monitor does not restart Oracle correctly if the character set is non-USASCII. This is commonly the case when Oracle is installed during SAP installation. To correct this, you must establish the following link so that NLS data files specified by the fault monitor's `ORA_NLS33` environment variable will be found by Oracle during startup. Create this link on all cluster nodes:

```
# ln -s /opt/SUNWcluster /SUNWcluster
```

## SCM Bugs

4207695 – In SCM, the Previous button on the `syslog` page is enabled even when the `syslog` is empty. Using the Previous button in this case will have no effect.

4207726 – SCM does not detect the loss of a public network until after network connection is reestablished.

4208089 – SCM does not display the correct current status for the Sun Cluster HA for Oracle data service. When an Oracle instance is stopped with the command `haoracle stop`, the instance is put into maintenance mode, and no message is posted to `syslog`. While an instance is in maintenance mode, it is not monitored by Sun Cluster. SCM interprets this state as unknown.

4211950 – If a logical host is put into maintenance mode, SCM displays the node as waiting to be given up. Manually refresh the screen to show the correct state.

4212030 – When the NFS service is off, the NFS service on some logical hosts may be displayed as OK.

4212623 – When a cluster node leaves a cluster, the private and public networks will no longer reflect the correct state, and should therefore be ignored.

4212691 – There are some cases when all nodes that own a logical host are not part of the cluster. In this case, the logical host is also down. SCM displays these logical hosts as up.

## Other Known Issues

The following issues apply to Sun Cluster 2.2.



## Running SCM With the HotJava Browser

If you choose to use the HotJava browser shipped with your Solaris 2.6 or Solaris 7 operating environment to run SCM, there may be problems such as:

- Using the menus - For example, after making your menu selection, the menu selection can remain visible on the browser.
- Use of swap space - If you choose to use the HotJava browser with SCM, you should have at least 40 MBytes of free swap space. If you find that swap space gets low, restarting the HotJava browser can help.
- Can't access online help - When running this version of HotJava on a cluster node and displaying it remotely, online help may freeze when attempting to access online help.

## Timeout Values

After configuring each logical host with the `scinstall(1M)` or `scconf(1M)` commands, you might need to use the `scconf clustername -l` command to set the timeout values for the logical host. The timeout value is site-dependent; it is tied to the number of logical hosts, spindles, and file systems.

Refer to the `scconf(1M)` man page for details. For procedures for setting timeout values, refer to Section 3.14, "Configuring Timeouts for Cluster Transition Steps, in the *Sun Cluster 2.2 System Administration Guide*.

## Encapsulated Root Disks

If you are running SSVM with an encapsulated root disk, you *must* unencapsulate the root disk before installing Sun Cluster 2.2. After you install Sun Cluster 2.2, encapsulate the disk again. You also must unencapsulate the root disk before changing the major numbers.

Refer to your SSVM documentation for the procedures to encapsulate and unencapsulate the root disk.

## SNMP Default Port

As part of the client software installation, the `SUNWcsnmp` package is installed to provide simple network management protocol (SNMP) support for Sun Cluster. The default port used by Sun Cluster SNMP is the same as the default port number used by Solaris SNMP; both use Port 161. Once the `SUNWcsnmp` package is installed, you must change the Sun Cluster SNMP port number using the procedure described in Section D.6, "Configuring the Cluster SNMP Agent Port, in the *Sun Cluster 2.2 System Administration Guide*.

## Installation Directory for Sun Cluster HA for Informix

The `INFORMIX_ESQL` Embedded Language Runtime Facility product must be installed in the `/var/opt/informix` directory on Sun Cluster servers. This is required even if Informix server binaries are installed on the physical host.

## Lotus and Netscape Message Servers

You can set up Lotus Domino servers as HTTP, POP3, IMAP, NNTP, or LDAP servers. Lotus Domino will start server tasks for all of these types. However, do not set up instances of any Netscape message servers on a logical host that is potentially mastered by the node on which Lotus Domino is installed.

## Lotus and Netscape Port Numbers

Within a cluster, do not configure Netscape services with the same port number as the one used by the Lotus Domino server. The following port numbers are used by default by the Lotus Domino server:

HTTP	Port 80
POP3	Port 110
IMAP	Port 143
LDAP	Port 389
NNTP	Port 119

## Failover/Switchover When Logical Host File System Is Busy

If a failover or switchover occurs while a logical host's file system is busy, the logical host fails over only partially; some of the disk group remains on the original target physical host. Do *not* attempt a switchover if a logical host's file system is busy. Also, do not access any host's file system locally, because file locking does not work correctly when both NFS locks and local locks are present.

## SSP Password Must Be Correct

If an incorrect password is used for the System Service Processor (SSP) on an Ultra Enterprise 10000, the system will behave unpredictably and might crash.

## Harmless Error When Stopping a Node

When you stop a node, the following error message might be displayed:

```
in.rdiscd[517]: setsockopt (IP_DROP_MEMBERSHIP): Cannot assign requested address
```

The error is caused by a timing issue between the `in.rdiscd` daemon and the IP module. It is harmless and can be ignored safely.

## Harmless Error by NFS `lockd` Daemon

For Sun Cluster HA for NFS running on Solaris 7, if the `lockd` daemon is killed before the `statd` daemon is fully running, the following error message is displayed:

```
WARNING: lockd: cannot contact statd (error 4), continuing.
```

This error message can be ignored safely.

## Directory Permissions and Ownership of `$ORACLE_HOME`

If the Sun Cluster HA for Oracle fault monitor displays errors like those shown below, make sure that the `$ORACLE_HOME` directory permissions are set to 755 and that the directory is owned by the Oracle administrative user with group ID `dba`.

```
Feb 16 17:13:13 ID[SUNWcluster.ha.haoracle_fmon.2520]: hahost1:HA1:  
DBMS Error: connecting to database: ORA-12546: TNS:permission denied  
Feb 16 17:12:13 ID[SUNWcluster.ha.haoracle_fmon.2050]: hahost1:HA1:  
RDBMS error, but HA-RDBMS Oracle will take no action for this error code
```

## Displaying `LOG_DB_WARNING` Messages for the SAP Probe

The Sun Cluster HA for SAP parameter `LOG_DB_WARNING` determines whether warning messages should be displayed if the Sun Cluster HA for SAP probe cannot connect to the database. When `LOG_DB_WARNING` is set to `-y` and the probe cannot connect to the database, a message is logged at the warning level in the `local0` facility. By default, the `syslogd(1M)` daemon does not display these messages to `/dev/console` or to `/var/adm/messages`. To see these warnings, you must modify the `/etc/syslog.conf` file to display messages of `local0.warning` priority. For example:

```
...
*.err;kern.notice;auth.notice;local0.warning /dev/console
*.err;kern.debug;daemon.notice;mail.crit;local0.warning /var/adm/messages
...
```

After modifying the file, you must restart `syslogd(1M)`. See the `syslog.conf(1M)` and `syslogd(1M)` man pages for more information.

## Nodelock Freeze After Cluster Panic

In a cluster with more than two nodes and with direct-attached storage, a problem occurs if the last node in the cluster panics or exits the cluster unusually (without performing the `stopnode` transition). In such a case, all nodes have been removed from the cluster and the cluster no longer exists, but because the last node left the cluster in an unusual manner, it still holds the nodelock. A subsequent invocation of the `scadmin startcluster` command will fail to acquire the nodelock.

To work around this problem, manually clear the nodelock before restarting the cluster.

Use the following procedure to manually clear the nodelock and restart the cluster, after the cluster has aborted completely.

### 1. As root, display the cluster configuration.

```
# scconf clustername -p
```

Look for this line in the output:

```
clustername Locking TC/SSP, port : A.B.C.D, E
```

- If *E* is a positive number, the nodelock is on Terminal Concentrator *A.B.C.D* and Port *E*. Proceed to Step 2 on page 24.
  - If *E* is -1, the lock is on an SSP. Proceed to Step 3 on page 25.
- ### 2. For a nodelock on a Terminal Concentrator (TC), perform the following steps (otherwise, proceed to Step 3 on page 25).
- a. Start a telnet connection to Terminal Concentrator *tc-name*.

```
$ telnet tc-name
Trying 192.9.75.51...
Connected to tc-name.
Escape character is '^]'.
```

Enter Return to continue.

**b. Specify `-cli` (command line interface).**

```
Enter Annex port name or number: cli
```

**c. Log in as root.**

**d. Run the `admin` command.**

```
annex# admin
```

**e. Reset Port *E*.**

```
admin : reset E
```

**f. Close the telnet connection**

```
annex# hangup
```

**g. Proceed to Step 4.**

**3. For a nodelock on a System Service Processor (SSP), perform the following steps.**

**a. Connect to the SSP.**

```
$ telnet ssp-name
```

**b. Log in as user *ssp*.**

**c. Display information on the *clustername.lock* file by using the following command (this file is a symbolic link to */proc/csh.pid*).**

```
$ ls -l /var/tmp/clustername.lock
```

**d. Search for the process *csh.pid*.**

```
$ ps -ef | grep csh.pid
```

**e. If the *csh.pid* process exists in the *ps -ef* output, kill the process by using the following command.**

```
$ kill -9 csh.pid
```

**f. Delete the *clustername.lock* file.**

```
$ rm -f /var/tmp/clustername.lock
```

**g. Log out of the SSP.**

**4. Restart the cluster.**

```
$ scadmin startcluster
```

## Setting Up the `/etc/nsswitch.conf` Files With DBMS Data Services

The following applies to configurations using Sun Cluster HA for Oracle, Sun Cluster HA for Informix, or Sun Cluster HA for Sybase.

The *Sun Cluster 2.2 Software Installation Guide* contains erroneous information about how to set up the `/etc/nsswitch.conf` files for these DBMS data services. In order for the data services to start and stop correctly in case of switchovers or failovers, the `/etc/nsswitch.conf` files *must* be set up as follows.

On each node that can master the logical host running the DBMS data service, the `/etc/nsswitch.conf` file must have one of the following entries for `group`.

```
group:
  group:    files
  group:    files [NOTFOUND=return] nis
  group:    files [NOTFOUND=return] nisplus
```

The DBMS data services use the `su user` command when starting and stopping the database node. The above settings will ensure that the `su user` command does not refer to NIS/NIS+ when the network information name service is not available due to failure of the public network on the cluster node.

---

## Future Changes

This section describes Sun Cluster features that might be changed or discontinued after Sun Cluster 2.2.

### Commands to Be Replaced or Made Obsolete

The following commands might be changed or discontinued after Sun Cluster 2.2.

Commands with options or interfaces to be changed:

- `scconf(1M)`
- `scinstall(1M)`
- `scswitch(1M)`

Commands to be renamed:

- `hastat(1M)` will be renamed `scstat(1M)`

- `haswitch(1M)` will be renamed `scswitch(1M)`

**Commands to be removed:**

- `ccdadm(1M)`
- `ccdctl(1M)`
- `ccdinstall(1M)`
- `cconsole(1)`
- `ccp(1)`
- `chosts(1)`
- `confccdssa(1M)`
- `cports(1)`
- `crlogin(1)`
- `ctelnet(1)`
- `db_check(1M)`
- `finddevices(1M)`
- `get_ci_status(1M)`
- `get_node_status(1M)`
- `ha_fault_mon_config(1M)`
- `hadsconfig(1M)`
- `hainformix(1M)`
- `hainformix_support(4)`
- `haoracle(1M)`
- `haoracle_support(4)`
- `hareg(1M)`
- `hasybase(1M)`
- `hasybase_support(4)`
- `scadmin(1M)`
- `sm_config(1M)`
- `sma_configd(1M)`

## Future Changes to API Features

This section describes elements in the data service API for Sun Cluster 2.2 that might change or might not be available in releases following Sun Cluster 2.2.



## Changes to API Commands or Command Options

The following API commands and command options might change in future Sun Cluster releases.

- Some fields in structures returned from `ha_get_calls(3HA)` functions will be NULL.
  - `ha_get_calls` returning `names_on_subnets` in an `ha_network_host_t` structure contained in an `ha_physical_host_t` structure:

```
typedef struct ha_network_host {
    char *node_name;
    char **names_on_subnets ;
} ha_network_host_t ;
```

The `names_on_subnets` field will be NULL.

- `ha_get_calls` returning `ha_logical_host_t` structure:

```
typedef struct ha_logical_host {
    ha_network_host_t neth;
    ha_physical_host_t **physical_hosts
    char *pathprefix;
    char *vfstab_file
} ha_logical_host_t;
```

The `vfstab_file` field will be NULL.

- The `ha_getonoff(1M)` function of `ha_get_calls(3HA)` will change and will always return TRUE.

```
ha_getonoff(han_handle_t handle, char *service_name, boolean_t *ison);
```

## API Commands or Command Options That Might Become Obsolete

The following commands and command options might not be available in future Sun Cluster releases.

- `haget(1M)` query on `names_on_subnets`

```
# haget -f names_on_subnets -h physical_host
```

- `haget(1M)` query on `vfstab_file`

```
# haget -f vfstab_file -h logical_hostname
```

- `-r` reconfiguration option to `hactl(1M)`

```
hactl -r ...
```

- The cluster reconfiguration process described in the `hareg(1M)` man page might change in future releases. The reconfiguration process might no longer be a lock step process. You should not develop highly available data services that depend on the steps occurring in lock step.

## Internal Programs to be Retired in Future Releases

The Sun Cluster implementation contains many programs that are used internally by the implementation and are not intended for use by customers. Any program that does not have a man page in the Sun Cluster 2.2 release falls into this category. These programs will not exist in their current form in subsequent releases of the product. Some examples include `clustm`, `scccd`, and `ccdmatch`.