Sun Cluster 3.1 8/05 Release Notes for Solaris OS

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Preface

The *Sun Cluster 3.1 8/05 Release Notes for Solaris OS* provides procedures for administering a Sun™ Cluster configuration on both SPARC® and x86 based systems.

Note – In this document, the term "x86" refers to the Intel 32-bit family of microprocessor chips and compatible microprocessor chips made by AMD.

This document is intended for experienced system administrators with extensive knowledge of Sun software and hardware. This document is not to be used as a planning or presales guide.

The instructions in this book assume knowledge of the Solaris™ operating system and expertise with the volume manager software used with Sun Cluster.

Note – Sun Cluster software runs on two platforms, SPARC and x86. The information in this document pertains to both platforms unless otherwise specified in a special chapter, section, note, bulleted item, figure, table, or example.

Using UNIX Commands

This document contains information on commands specific to administering a Sun Cluster configuration. This document might not contain complete information on basic UNIX® commands and procedures.

See one or more of the following for this information:

- Online documentation for the Solaris software

- Other software documentation that you received with your system
- Solaris operating system man pages

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 `.login` file. Use `ls -a` to list all files. `machine_name% you have mail.`
`AaBbCc123`	What you type, contrasted with onscreen computer output	`machine_name%` **`su`** `Password:`
aabbcc123	Placeholder: replace with a real name or value	The command to remove a file is `rm` *filename*.
AaBbCc123	Book titles, new terms, and terms to be emphasized	Read Chapter 6 in the *User's Guide*. Perform a *patch analysis*. Do *not* 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	`machine_name%`
C shell superuser prompt	`machine_name#`
Bourne shell and Korn 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
Overview	*Sun Cluster Overview for Solaris OS*
Concepts	*Sun Cluster Concepts Guide for Solaris OS*
Hardware installation and administration	*Sun Cluster 3.0-3.1 Hardware Administration Manual for Solaris OS*
	Individual hardware administration guides
Software installation	*Sun Cluster Software Installation Guide for Solaris OS*
Data service installation and administration	*Sun Cluster Data Services Planning and Administration Guide for Solaris OS*
	Individual data service guides
Data service development	*Sun Cluster Data Services Developer's Guide for Solaris OS*
System administration	*Sun Cluster System Administration Guide for Solaris OS*
Error messages	*Sun Cluster Error Messages Guide for Solaris OS*
Command and function references	*Sun Cluster Reference Manual for Solaris OS*

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

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

Documentation, Support, and Training

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

Getting Help

Contact your service provider if you have problems installing or using Sun Cluster. Provide the following information to your service provider.

- Your name and email address
- Your company name, address, and phone number
- The model and serial numbers of your systems
- The release number of the operating environment, for example Solaris 8
- The release number of Sun Cluster, for example, Sun Cluster 3.1 8/05

Use the following commands to gather information on your system for your service provider:

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

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

Sun Cluster 3.1 8/05 Release Notes for Solaris OS

This document provides the following information for Sun™ Cluster 3.1 8/05 software.

- "What's New in Sun Cluster 3.1 8/05 Software" on page 11
- "Compatibility Issues" on page 15
- "Commands Modified in This Release" on page 18
- "Product Name Changes" on page 18
- "Supported Products" on page 19
- "Known Issues and Bugs" on page 24
- "Patches and Required Firmware Levels" on page 48
- "Sun Cluster 3.1 8/05 Documentation" on page 50
- "Localization Issues" on page 55
- "Documentation Issues" on page 55

What's New in Sun Cluster 3.1 8/05 Software

This section provides information related to new features, functionality, and supported products in Sun Cluster 3.1 8/05 software. This section also provides information on any restrictions introduced in this release.

New Features and Functionality

This section describes each of the new features provided in Sun Cluster 3.1 8/05.

Improved Cluster Installation and Upgrade Functionality

This release introduces several enhancements to the installation and configuration of Sun Cluster software.

- The following menu options are added to the `scinstall` utility:
  - Typical-mode installation for the first node of a cluster, additional nodes of a cluster, and JumpStart installation setup
  - Single-node cluster installation
  - Cluster upgrade
- The `scinstall` utility can now automatically select and configure a quorum device as part of configuration processing. This optional feature is available for two-node clusters which use only SCSI shared storage devices that are qualified for use as a quorum device.
- The following file modifications are now automated as part of Sun Cluster configuration processing:

File Name	Entry Changes
`/etc/hostname.`*if*	An entry for each configured public-network adapter on the node is added, to enable single-adapter IPMP groups.
`/etc/inet/hosts`	An entry for each cluster node is added.
`/etc/inet/ntp.conf.cluster`	Unused private hostname entries are deleted.
`/etc/nsswitch.conf`	Most entries are modified to consult the local `files` database before performing remote server lookups.
`/etc/system`	The entry `exclude:lofs` is added.

This functionality is reflected in the installation and upgrade procedures in Chapter 2, "Installing and Configuring Sun Cluster Software," in *Sun Cluster Software Installation Guide for Solaris OS* and Chapter 5, "Upgrading Sun Cluster Software," in *Sun Cluster Software Installation Guide for Solaris OS*.

Support for Network Appliance Network-Attached Storage (NAS) Devices

Sun Cluster software supports Network Appliance NAS devices, for shared storage only, beginning with Sun Cluster 3.1 9/04 software. It supports NAS devices as quorum devices beginning with Sun Cluster 3.1 8/05 software. The Network Appliance NAS device can now be deployed as following with Sun Cluster:

- As a quorum device, with support for fencing.
- With Oracle RAC and with all Sun Cluster enabled applications except HA-NFS.

- With NFSv3 and NFSv4.
- Without any restriction on cluster size.

For information about installing and maintaining a NAS device in a Sun Cluster environment, see *Sun Cluster 3.1 With Network-Attached Storage Devices Manual for Solaris OS*. For information about using a Network Appliance NAS device as a quorum device, see "How to Add a Network Appliance Network-Attached Storage (NAS) Quorum Device" in *Sun Cluster System Administration Guide for Solaris OS*.

Simplified SunPlex Manager Interface

The information displayed in the initial data screen of the SunPlex Manager has been simplified. The initial screen now shows only the `Nodes` and `Resource Groups` tables. You can access the other tables by clicking on the appropriate item in the `Navigation Tree` in the left side of the browser window.

Support for Tagged VLAN to Share Network Adapters

Sun Cluster software supports tagged Virtual Local Area Networks (VLANs) to share an adapter between the private interconnect and the public network. For information about configuring a tagged VLAN adapter for the private interconnect, see "Cluster Interconnect" in *Sun Cluster Software Installation Guide for Solaris OS*.

Sun Cluster HA for Solaris Containers

The Sun Cluster HA for Solaris Containers data service enables applications to run in non-global zones under the control of Sun Cluster.

To enable applications to run in non-global zones under the control of Sun Cluster, Sun Cluster HA for Solaris Containers performs the following operations:

- The orderly booting and shutdown of a zone, enabling a non-global zone to run in failover configuration or a multiple-masters configuration
- The orderly startup, shutdown, and fault monitoring of an application within the zone by scripts or commands
- The orderly startup, shutdown, and fault monitoring of a Solaris Service Management Facility (SMF) service within the zone

If you plan to use this data service, you must write your own scripts or SMF manifests for applications that are to run in non-global zones.

The following restrictions apply to the Sun Cluster HA for Solaris Containers data service:

- The data service does *not* enable Sun Cluster software to run in a non-global zone.

- The data service does *not* enable existing data services to run in a non-global zone.
- The data service does *not* enable failover between non-global zones on the same node.

For more information about this data service, see *Sun Cluster Data Service for Solaris Containers Guide*.

Support for Solaris SMF Services

Sun Cluster software enables you to use Sun Cluster to make highly available an application that is integrated with the Solaris Service Management Facility (SMF). If you use Sun Cluster to make an SMF service highly available, restrictions apply to the use of the Solaris SMF. For more information, see "Enabling Solaris SMF Services to Run Under the Control of Sun Cluster" in *Sun Cluster Data Services Planning and Administration Guide for Solaris OS*.

Support for the AMD 64–Bit Platform

Sun Cluster software runs on the 64-bit family of microprocessor chips and compatible microprocessor chips that are made by AMD.

Support for Kerberos

Sun Cluster software supports the use of Kerberos with NFS. For more information, see "Securing Sun Cluster HA for NFS With Kerberos V5" in *Sun Cluster Data Service for NFS Guide for Solaris OS*.

Support for Oracle 10g and Oracle 10g Real Application Clusters on the SPARC Platform and x86 Platform

Sun Cluster software supports version 10g of Oracle and Oracle Real Application Clusters on the SPARC platform. Qualification of version 10g of Oracle and Oracle Real Application Clusters on the x86 platform is pending and is not yet supported. For more information, see the following documentation:

- *Sun Cluster Data Service for Oracle Guide for Solaris OS*
- *Sun Cluster Data Service for Oracle Real Application Clusters Guide for Solaris OS*

Restrictions

The following restrictions apply to the Sun Cluster 3.1 8/05 release:

- NFSv4 is not supported in the Sun Cluster 3.1 8/05 release.

For other known problems or restrictions, see "Known Issues and Bugs" on page 24.

Compatibility Issues

This section contains information on Sun Cluster compatibility issues such as features nearing end of life.

Additional Sun Cluster framework compatibility issues are documented in Chapter 1, "Planning the Sun Cluster Configuration," in *Sun Cluster Software Installation Guide for Solaris OS*.

Additional Sun Cluster upgrade compatibility issues are documented in "Overview of Upgrading a Sun Cluster Configuration" in *Sun Cluster Software Installation Guide for Solaris OS*.

For other known problems or restrictions, see "Known Issues and Bugs" on page 24.

Features Nearing End of Life

Solstice DiskSuite

Solstice DiskSuite software might not be supported in a future release of Sun Cluster software. If you use Solstice DiskSuite software, upgrade to the Solaris 9 or Solaris 10 OS, which will upgrade you automatically to Solaris Volume Manager software. For upgrade information, see *Solaris 9 9/04 Installation Guide* or *Solaris 10 Installation Guide: Solaris Live Upgrade and Upgrade Planning*.

Sun Fire Link

Sun Fire Link might not be supported in a future release of Sun Cluster software. If you use Sun Fire Link, use another interconnect technology that Sun Cluster software supports. For information about interconnect hardware that Sun Cluster software supports, see Chapter 3, "Installing Cluster Interconnect Hardware and Configuring VLANs," in *Sun Cluster 3.0-3.1 Hardware Administration Manual for Solaris OS*.

SunPlex Installer

SunPlex Installer might not be supported in a future release of Sun Cluster software. To establish a new Sun Cluster configuration, use the `scinstall` utility instead. The `scinstall` utility supports, through the command line interface, all functionality that SunPlex Installer provides.

SunPlex Manager/Configuration of IPMP Groups

The configuration of IPMP groups (add or remove) might not be included in a future release. This function is available through the Solaris `ifconfig(1M)` command. See the `ifconfig`(1M) man page for information on specific options.

SUNW.RGOffload

The `SUNW.RGOffload` resource type might not be available in future Sun Cluster releases. All functions provided by this resource type are available through the RG_affinities resource group property and its "negative affinity" option.

If you have currently configured a `SUNW.RGOffload` resource, perform the following actions to use the "negative affinity" option of the RG_affinities resource group property.

▼ How to Use the Negative Affinity Option of RG_affinities

Steps

1. **Remove the dependency of the critical resource on the `SUNW.RGOffload` resource.**

   ```
   # scrgadm -cj critical-rs -y Resource_dependencies=""
   ```

2. **Remove the `SUNW.RGOffload` resource and resource type.**

   ```
   # scrgadm -nj rgofl
   # scrgadm -rj rgofl
   # scrgadm -rt SUNW.RGOffload
   ```

3. **Change the non-critical resource group property to have a negative affinity towards the critical resource group (which contains critical-rs).**

   ```
   # scrgadm -c -g non-critical-rg -y RG_affinities=--critical-rg
   ```

Note – This example shows only a strong negative affinity. You may be able to set weak negative affinity, and other type of dependencies across online resource groups. Please refer to “Distributing Online Resource Groups Among Cluster Nodes” in *Sun Cluster Data Services Planning and Administration Guide for Solaris OS*for details on configuring online resource group dependencies feature.

Solstice DiskSuite/Solaris Volume Manager GUI

DiskSuite Tool (Solstice DiskSuite `metatool`) and the Enhanced Storage module of Solaris Management Console (Solaris Volume Manager) are not compatible with Sun Cluster software. Use the command-line interface or Sun Cluster utilities to configure Solstice DiskSuite or Solaris Volume Manager software.

Non-Global Zones

Sun Cluster 3.1 8/05 software does not support non-global zones. All Sun Cluster software and software that is managed by the cluster must be installed only on the global zone of the node. Do not install cluster-related software on a non-global zone. In addition, all cluster-related software must be installed in a way that prevents propagation to a non-global zone that is later created on a cluster node. For more information, see "Adding a Package to the Global Zone Only" in *System Administration Guide: Solaris Containers-Resource Management and Solaris Zones*.

However, Sun Cluster 3.1 8/05 software does support applications that run in a non-global zone and that are managed by the Sun Cluster HA for Solaris Containers data service. See "Sun Cluster HA for Solaris Containers" on page 13 for more information.

Loopback File System (LOFS)

Sun Cluster 3.1 8/05 software does not support the use of LOFS under certain conditions. If you must enable LOFS on a cluster node, such as when you configure non-global zones under Sun Cluster HA for Solaris Containers, first determine whether the LOFS restrictions apply to your configuration. See "Cluster File Systems" in *Sun Cluster Software Installation Guide for Solaris OS* for more information about the restrictions and workarounds that permit the use of LOFS when the restricting conditions exist.

Upgrade to Solaris 10

Sun Cluster 3.1 8/05 software does not support upgrade to the original release of the Solaris 10 OS, which was distributed in March 2005. You must upgrade to a compatible version of Solaris 10. Contact your Sun service representative for more information.

Change to VxVM Installation Procedures

The `scvxinstall` command and Sun Cluster procedures have changed for installing VxVM software in a Sun Cluster configuration. See "Installing and Configuring VxVM Software" in *Sun Cluster Software Installation Guide for Solaris OS*.

Accessibility Features for People With Disabilities

To obtain accessibility features that have been released since the publishing of this media, consult Section 508 product assessments available from Sun upon request to determine which versions are best suited for deploying accessible solutions. Updated

versions of applications can be found at: `http://sun.com/software/javaenterprisesystem/get.html`. For information on Sun's commitment to accessibility, visit `http://sun.com/access`.

Commands Modified in This Release

This section describes changes to the Sun Cluster command interfaces that might cause user scripts to fail.

`scconf` Command

The `-q` option of the `scconf` command has been modified to distinguish between shared local quorum devices (scsi) and other types of quorum devices (including NetApp NAS devices). Use the `name` suboption to specify the name of the attached shared storage device when adding or removing a shared quorum device to or from the cluster. This suboption can also be used with the `change` form of the command to change the state of a quorum device. The `globaldev` suboption can still be used for scsi shared storage devices, but the `name` suboption must be used for all other types of shared storage devices. For more information about this change to `scconf` and working with quorum devices, see `scconf`(1M), `scconf_quorum_dev_netapp_nas`(1M), `scconf_quorum_dev_netapp_nas`(1M), and `scconf_quorum_dev_scsi`(1M).

Product Name Changes

This section provides information on product name changes for applications that Sun Cluster software supports. Depending on the Sun Cluster software release that you are running, your Sun Cluster documentation might not reflect the following product name changes.

Current Product Name	Former Product Name
Sun Java System Application Server	Sun ONE Application Server
Sun Java System Application Server EE (HADB)	Sun Java System HADB

Current Product Name	Former Product Name
Sun Java System Message Queue	Sun ONE Message Queue
Sun Java System Web Server	■ Sun ONE Web Server ■ iPlanet Web Server ■ Netscape™ HTTP

Supported Products

This section describes the supported software and memory requirements for Sun Cluster 3.1 8/05 software.

- **Solaris Operating System (OS)** – Sun Cluster 3.1 8/05 software requires the following minimum versions of the Solaris OS:
  - **Solaris 8** – Solaris 8 2/02
  - **Solaris 9** – Solaris 9 marketing release (May 2002)
  - **Solaris 10** –
    - *New installations*: Solaris 10 marketing release (March 2005)
    - *Upgrades:* Not supported. Contact your Sun service representative for support of upgrade to future releases of Solaris 10 software
- **Volume managers**
  - **On Solaris 8** – Solstice DiskSuite™ 4.2.1 and (SPARC only) VERITAS Volume Manager 3.5, 4.0, and 4.1. Also, VERITAS Volume Manager components delivered as part of Veritas Storage Foundation 4.0 and 4.1.
  - **On Solaris 9** – Solaris Volume Manager and (SPARC only) VERITAS Volume Manager 3.5, 4.0, and 4.1. Also, VERITAS Volume Manager components delivered as part of Veritas Storage Foundation 4.0 and 4.1.
  - **On Solaris 10** – Solaris Volume Manager and (SPARC only) VERITAS Volume Manager 4.0 and 4.1. Also, VERITAS Volume Manager components delivered as part of Veritas Storage Foundation 4.0 and 4.1.
- **File systems**
  - **On Solaris 8** – Solaris UFS, (SPARC only) Sun StorEdge QFS, and (SPARC only) VERITAS File System 3.5, 4.0, and 4.1. Also, VERITAS File System components delivered as part of Veritas Storage Foundation 4.0 and 4.1.
  - **On Solaris 9** – Solaris UFS, (SPARC only) Sun StorEdge QFS, and (SPARC only) VERITAS File System 3.5, 4.0, and 4.1. Also, VERITAS File System components delivered as part of Veritas Storage Foundation 4.0 and 4.1.
  - **On Solaris 10** – Solaris UFS, (SPARC only) Sun StorEdge QFS, and (SPARC only) VERITAS File System 4.0 and 4.1. Also, VERITAS File System components delivered as part of Veritas Storage Foundation 4.0 and 4.1.

- **Data services (agents)** – Contact your Sun sales representative for the complete list of supported data services and application versions. Specify the resource type names when you install the data services by using the `scinstall`(1M) utility. You should also specify the resource type names when you register the resource types associated with the data service by using the `scsetup`(1M) utility.

Note – Procedures for the version of Sun Cluster HA for Sun Java™ System Directory Server that uses Sun Java System Directory Server 5.0 and 5.1 are located in the *Sun Cluster 3.1 Data Service for Sun ONE Directory Server*. For later versions of Sun Java System Directory Server, see the Sun Java System Directory Server product documentation.

Note – All occurrences of "Sun One" in the names and descriptions of the data services for the Sun Java Enterprise System applications should be read as "Sun Java System." Example: "Sun Cluster Data Service for Sun One Application Server" should read "Sun Cluster Data Service for Sun Java System Application Server."

Note – The Sun Cluster HA for Oracle 3.0 data service can run on Sun Cluster 3.1 8/05 software only when used with the following versions of the Solaris OS:

- Solaris 8, 32-bit version
- Solaris 8, 64-bit version
- Solaris 9, 32-bit version

  The Sun Cluster HA for Oracle 3.0 data service *cannot* run on Sun Cluster 3.1 8/05 software when used with the 64-bit version of Solaris 9 OS.

Data Service	Sun Cluster Resource Type
Sun Cluster HA for Agfa IMPAX	`SUNW.gds`
Sun Cluster HA for Apache	`SUNW.apache`
Sun Cluster HA for Apache Tomcat	`SUNW.sctomcat`
Sun Cluster HA for BroadVision One-To-One Enterprise	`SUNW.bv`
Sun Cluster HA for DHCP	`SUNW.gds`
Sun Cluster HA for DNS	`SUNW.dns`

Data Service	Sun Cluster Resource Type
Sun Cluster HA for MySQL	SUNW.gds
Sun Cluster HA for NetBackup	SUNW.netbackup_master
Sun Cluster HA for NFS	SUNW.nfs
Sun Cluster Oracle Application Server	SUNW.gds
Sun Cluster HA for Oracle E-Business Suite	SUNW.gds
Sun Cluster HA for Oracle	SUNW.oracle_server
	SUNW.oracle_listener
Sun Cluster Support for Oracle Real Application Clusters	SUNW.rac_framework
	SUNW.rac_udlm
	SUNW.rac_svm
	SUNW.rac_cvm
	SUNW.rac_hwraid
	SUNW.oracle_rac_server
	SUNW.oracle_listener
Sun Cluster HA for Samba	SUNW.gds
Sun Cluster HA for SAP	SUNW.sap_ci
	SUNW.sap_ci_v2
	SUNW.sap_as
	SUNW.sap_as_v2
Sun Cluster HA for SAP liveCache	SUNW.sap_livecache
	SUNW.sap_xserver
Sun Cluster HA for SAP DB	SUNW.sapdb
	SUNW.sap_xserver
Sun Cluster HA for SAP Web Application Server	SUNW.sapenq
	SUNW.saprepl
	SUNW.sapscs
	SUNW.sapwebas
	SUNW.gds
Sun Cluster HA for Siebel	SUNW.sblgtwy
	SUNW.sblsrvr

Data Service	Sun Cluster Resource Type
Sun Cluster HA for Solaris Containers	SUNW.gds
Sun Cluster HA for N1 Grid Engine	SUNW.gds
Sun Cluster HA for Sun Java System Application Server supported versions before 8.1	SUNW.s1as
Sun Cluster HA for Sun Java System Application Server supported versions as of 8.1	SUNW.jsas SUNW.jsas-na
Sun Cluster HA for Sun Java System Application Server EE (supporting HADB versions before 4.4)	SUNW.hadb
Sun Cluster HA for Sun Java System Application Server EE (supporting HADB versions as of 4.4)	SUNW.hadb_ma
Sun Cluster HA for Sun Java System Message Queue	SUNW.s1mq
Sun Cluster HA for Sun Java System Web Server	SUNW.iws
Sun Cluster HA for SWIFTAlliance Access	SUNW.gds
Sun Cluster HA for SWIFTAlliance Gateway	SUNW.gds
Sun Cluster HA for Sybase ASE	SUNW.sybase
Sun Cluster HA for WebLogic Server	SUNW.wls
Sun Cluster HA for WebSphere MQ	SUNW.gds
Sun Cluster HA for WebSphere MQ Integrator	SUNW.gds

- **Memory Requirements** – Sun Cluster 3.1 8/05 software requires extra memory beyond what is configured for a node under a normal workload. The extra memory equals 128 Mbytes plus ten percent of the memory configured for a nonclustered system. For example, if a standalone node normally requires 1 Gbyte of memory, you need an extra 256 Mbytes to meet memory requirements.
- **RSMAPI** – Sun Cluster 3.1 8/05 software supports the Remote Shared Memory Application Programming Interface (RSMAPI) on RSM-capable interconnects, such as PCI-SCI.

Sun Cluster Security Hardening

Sun Cluster Security Hardening uses the Solaris operating system hardening techniques recommended by the Sun BluePrints™ program to achieve basic security hardening for clusters. The Solaris Security Toolkit automates the implementation of Sun Cluster Security Hardening.

The Sun Cluster Security Hardening documentation is available at `http://www.sun.com/blueprints/0203/817-1079.pdf`. You can also access the article from `http://www.sun.com/software/security/blueprints`. From this URL, scroll down to the Architecture heading to locate the article "Securing the Sun Cluster 3.x Software." The documentation describes how to secure Sun Cluster 3.1 deployments in a Solaris 8 and Solaris 9 environment. The description includes the use of the Solaris Security Toolkit and other best-practice security techniques recommended by Sun security experts.

TABLE 1 Data Services Supported by Sun Cluster Security Hardening

Data Service Agent	Application Version: Failover	Application Version: Scalable	Solaris Version
Sun Cluster HA for Apache	1.3.9	1.3.9	Solaris 8, Solaris 9 (version 1.3.9)
Sun Cluster HA for Apache Tomcat	3.3, 4.0, 4.1	3.3, 4.0, 4.1	Solaris 8, Solaris 9
Sun Cluster HA for DHCP	S8U7+	N/A	Solaris 8, Solaris 9
Sun Cluster HA for DNS	with OS	N/A	Solaris 8, Solaris 9
Sun Cluster HA for Sun Java System Messaging Server	6.0	4.1	Solaris 8
Sun Cluster HA for MySQL	3.23.54a - 4.0.15	N/A	Solaris 8, Solaris 9
Sun Cluster HA for NetBackup	3.4	N/A	Solaris 8
Sun Cluster HA for NFS	with OS	N/A	Solaris 8, Solaris 9
Sun Cluster HA for Oracle E-Business Suite	11.5.8	N/A	Solaris 8, Solaris 9
Sun Cluster HA for Oracle	8.1.7 and 9i (32 and 64 bit)	N/A	Solaris 8, Solaris 9 (HA Oracle 9iR2)
Sun Cluster Support for Oracle Real Application Clusters	8.1.7 and 9i (32 and 64 bit)	N/A	Solaris 8, Solaris 9
Sun Cluster HA for SAP	4.6D (32 and 64 bit) and 6.20	4.6D (32 and 64 bit) and 6.20	Solaris 8, Solaris 9
Sun Cluster HA for SWIFTAlliance Access	4.1, 5.0	N/A	Solaris 8
Sun Cluster HA for Samba	2.2.2, 2.2.7, 2.2.7a, 2.2.8, 2.2.8a	N/A	Solaris 8, Solaris 9
Sun Cluster HA for Siebel	7.5	N/A	Solaris 8
Sun Cluster HA for Solaris Containers	with OS	N/A	Solaris 10

TABLE 1 Data Services Supported by Sun Cluster Security Hardening *(Continued)*

Data Service Agent	Application Version: Failover	Application Version: Scalable	Solaris Version
Sun Cluster HA for Sun Java System Application Server	7.0, 7.0 update 1	N/A	Solaris 8,Solaris 9
Sun Cluster HA for Sun Java System Directory Server	4.12	N/A	Solaris 8, Solaris 9 (version 5.1)
Sun Cluster HA for Sun Java System Message Queue	3.0.1	N/A	Solaris 8, Solaris 9
Sun Cluster HA for Sun Java System Web Server	6.0	4.1	Solaris 8, Solaris 9 (version 4.1)
Sun Cluster HA for Sybase ASE	12.0 (32 bit)	N/A	Solaris 8
Sun Cluster HA for BEA WebLogic Server	7.0	N/A	Solaris 8, Solaris 9
Sun Cluster HA for WebSphere MQ	5.2, 5.3	N/A	Solaris 8, Solaris 9
Sun Cluster HA for WebSphere MQ Integrator	2.0.2, 2.1	N/A	Solaris 8, Solaris 9

Known Issues and Bugs

The following known issues and bugs affect the operation of the Sun Cluster 3.1 8/05 release.

`scvxinstall` Creates Incorrect `vfstab` Entries When Boot Device is Multipathed (4639243)

Problem Summary: `scvxinstall` creates incorrect `/etc/vfstab` entries when boot device is multipathed.

Workaround: Run `scvxinstall` and choose to encapsulate. When the following message appears, type Ctrl-C to abort the reboot:

```
This node will be re-booted in 20 seconds. Type Ctrl-C to abort.
```

Edit the `vfstab` entry so `/global/.devices` uses the `/dev/{r}dsk/cXtXdX` name instead of the `/dev/did/{r}dsk` name. This revised entry enables VxVM to recognize it as the root disk. Rerun `scvxinstall` and choose to encapsulate. The `vfstab` file has the necessary updates. Allow the reboot to occur. The encapsulation proceeds as normal.

▼ How to Correct `/etc/vfstab` Errors For a Multipathed Boot Device

Steps

1. **Run `scvxinstall` and choose to encapsulate.**

   The system displays the following message:

   ```
   This node will be re-booted in 20 seconds.  Type Ctrl-C to abort.
   ```

2. **Abort the reboot.**

   ```
   Ctrl-C
   ```

3. **Edit the `/etc/vfstab` entry so `/global/.devices` uses the `/dev/{r}dsk/c`*X*`t`*X*`d`*X* name instead of the `/dev/did/{r}dsk` name.**

   This revised entry enables VxVM to recognize it as the root disk.

4. **Rerun `scvxinstall` and choose to encapsulate.**

   The `/etc/vfstab` file has the necessary updates. Allow the reboot to occur. The encapsulation proceeds as normal.

SAP liveCache Stop Method Times Out (4836272)

Problem Summary: The Sun Cluster HA for SAP liveCache data service uses the `dbmcli` command to start and stop liveCache. If you are running Solaris 9, the network service might become unavailable when a cluster node's public network fails.

Workaround: Include one of the following entries for the `publickey` database in the `/etc/nsswitch.conf` files on each node that can be the primary for liveCache resources:

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

Adding one of the above entries, in addition to updates documented in *Sun Cluster Data Service for SAP liveCache Guide for Solaris OS*, ensures that the `su` command and the `dbmcli` command do not refer to the NIS/NIS+ name services. Bypassing the NIS/NIS+ name services ensures that the data service starts and stops correctly during a network failure.

`nsswitch.conf` Requirement Should Not Apply to `passwd` Database (4904975)

Problem Summary: The requirement for the `nsswitch.conf` file in "Preparing the Nodes and Disks" in *Sun Cluster Data Service for SAP liveCache Guide for Solaris OS* does not apply to the entry for the `passwd` database. If these requirements are met, the `su` command might hang on each node that can master the liveCache resource when the public network is down.

Workaround: On each node that can master the liveCache resource, ensure that the entry in the `/etc/nsswitch.conf` file for the `passwd` database is as follows:

```
passwd: files nis [TRYAGAIN=0]
```

`sccheck` Hangs (4944192)

Problem Summary: `sccheck` might hang if launched simultaneously from multiple nodes.

Workaround: Do not launch `sccheck` from any multi-console that passes commands to multiple nodes. `sccheck` runs can overlap, but should not be launched simultaneously.

Java Binaries Linked to Incorrect Java Version Cause HADB Agent to Malfunction (4968899)

Problem Summary: Currently, HADB data service does not use the `JAVA_HOME` environment variable. Therefore, HADB, when invoked from the HADB data service, takes Java binaries from `/usr/bin/`. The Java binaries in `/usr/bin/` need to be linked to the appropriate version of Java 1.4 and above for HADB data service to work properly.

Workaround: If you do not object to changing the default version available, perform the following procedure. As an example, this workaround assumes that the `/usr/j2se` directory is where you have the latest version of Java (such as 1.4 and above).

1. If you have a directory called `java/` in the `/usr/` directory, move it to a temporary location.
2. From the `/usr/` directory, link `/usr/bin/java` and all other Java-related binaries to the appropriate version of Java.

   ```
   # ln -s j2se java
   ```

If you do not want to change the default version available, assign the `JAVA_HOME` environment variable with the appropriate version of Java (J2SE 1.4 and above) in the `/opt/SUNWappserver7/SUNWhadb/4/bin/hadbm` script.

Adding a New Cluster Node Requires Cluster Reboot (4971299)

Problem Summary: When a node is added to the cluster that runs Sun Cluster Support for Oracle Real Application Clusters *and* uses the VxVM cluster feature, the cluster feature running on other nodes does not recognize the new node.

Workaround: A fix for this problem is expected to be made available by VERITAS in VxVM 3.5 MP4 and VxVM 4.0 MP2. The fix for VxVM 4.1 is currently available.

To correct the problem if a code fix is not yet available, restart the Oracle database and reboot the cluster nodes. This step synchronizes the Oracle UDLM and updates the VxVM cluster feature to recognize the added node.

Note – Do not install and configure Sun Cluster Support for Oracle Real Application Clusters on the new node until after you perform this step.

---

1. From a cluster node other than the node that you just added, shut down the Oracle Real Application Clusters database.
2. Reboot the same node on which you shut down the Oracle database.

   ```
   # scswitch -S -h thisnode
   # shutdown -g0 -y -i6
   ```

   Wait until the node is fully rebooted back into the cluster before you proceed to the next step.
3. Restart the Oracle database.
4. Repeat Step 1 through Step 3 on each remaining node that runs Sun Cluster Support for Oracle Real Application Clusters.
   - If a single node is capable of handling the Oracle database workload, you can perform these steps on multiple nodes simultaneously.
   - If more than one node is required to support the database workload, perform these steps on one node at a time.

HA-DB Reinitializes Without Spares (4973982)

Problem Summary: Due to bug 4974875, whenever autorecovery is performed, the database reinitializes itself without any spares. The mentioned bug has been fixed and integrated into HA-DB release 4.3. For HA-DB 4.2 and below releases, follow one of the procedures below to change the roles of the HA-DB nodes.

Workaround: Complete one of the following procedures to change the roles of the HA-DB nodes:

1. Identify the HA-DB nodes that have their roles changed after autorecovery is successful.

2. On all the nodes that you identified in Step 1, and one node at a time, disable the fault monitor for the HA-DB resource in question.

   ```
   # cladm noderole -db dbname -node nodeno -setrole role-before-auto_recovery
   ```

3. Enable the fault monitor for the HA-DB resource in question.

or

1. Identify the HA-DB nodes that have their roles changed after autorecovery is successful.
2. On all nodes that host the database, disable the fault monitor for the HA-DB resource in question.
3. On any one of the nodes, execute the command for each HA-DB node that needs its role changed.

   ```
   # cladm noderole -db dbname -node nodeno -setrole role-before-auto_recovery
   ```

pnmd Not Accessible by the Other Node During Rolling Upgrade (4997693)

Problem Summary: If rolling upgrade is not completed on all the nodes, the nodes that are not yet upgraded will not be able to see the IPMP groups on the upgraded nodes

Workaround: Finish upgrading all nodes on the cluster.

Date Field on Advanced Filter Panel Accepts Only mm/dd/yyyy Format (5075018)

Problem Summary: The date field on the Advanced Filter panel of SunPlex Manager accepts only mm/dd/yyyy format. However, in non-English locale environments, the date format is different from mm/dd/yyyy; and the return date format from the Calendar panel is other than mm/dd/yyyy format.

Workaround: Type the date range in the Advanced Filer panel in mm/dd/yyyy format. Do not use the Set... button to display the calendar and choose the date.

In the Japanese Locale, Error Messages From `scrgadm` Contain Junk Characters (5083147)

Problem Summary: In the Japanese locale, the error messages from `scrgadm` are not displayed correctly. The messages contain junk characters.

Workaround: Run the system locale in English to display the error messages in English.

The `/usr/cluster/lib/cmass/ipmpgroupmanager.sh` Script Unplumbs the IPv6 Interface (6174170)

Problem Summary: SunPlex Manager uses the `/usr/cluster/lib/cmass/ipmpgroupmanager.sh` to delete IPMP groups and adapters from IPMP groups. The script updates the `/etc/hostname6.`*adaptername* file correctly to just remove the group name, but runs the following `ifconfig` command to unplumb the IPv6 interface :

```
ifconfig adaptername inet6 unplumb
```

Workaround: Reboot the node to plumb up the interface. Alternatively, run the following `ifconfig` command on the node. This alternative workaround does not require the node to be rebooted.

```
ifconfig adaptername inet6 plumb up
```

The IPMP Group Page Should Populate the Adapter List Based on the IP Version Chosen by the User (6174805)

Problem Summary: The list of adapters displayed in the IPMP group pages is not dependent on the IP version chosen by the user. The page displays a list of all adapters that do not have groups configured. The list should be updated when the IP Version radio button is selected as follows :

- If `IPV4 only` is selected, no IPv4-and-IPv6 adapter and no IPv6-only adapter should be listed.
- If `IPV6 only` is selected, no IPv4-and-IPv6 adapter and no IPv4-only adapter should be listed.
- If `IPV4 and IPv6` is selected, no IPv6-only adapter and no IPv4-only adapter should be listed.

Workaround: After selecting the IP version, make sure you choose only the adapter from the list which is enabled for the selected IP version.

When Moving an Adapter from IPv4 and IPv6 to a IPv4 Only, the IPv4 Version is Not Removed (6179721)

Problem Summary: The adapter list that is displayed in the IPMP group pages is dependent on the IP version the user chooses. The current SunPlex Manager has a bug that always displays a complete list of adapters regardless of the IP version. SunPlex Manager should not let the user move an adapter which is enabled for both IPv4 and IPv6 to IPv4 only.

Workaround: The user should not attempt to move an adapter configured for both IPv4 and IPv6 to IPv4 only.

Configuration of Sun Java System Administration Server Fails if `SUNWasvr` Package is Not Installed (6196005)

Problem Summary: An attempt to configure the data service for Sun Java System Administration Server fails if the Sun Java System Administration Server is not installed. The attempt fails because the `SUNW.mps` resource type requires that the `/etc/mps/admin/v5.2/cluster/SUNW.mps` directory exists. This directory exists only if the `SUNWasvr` package is installed.

Workaround: To correct this problem, complete the following procedure.

▼ How to Install the `SUNWasvr` Package

Steps

1. **Log in as root or assume an equivalent role on a cluster node.**
2. **Determine whether the `SUNWasvr` package is installed.**

   ```
   # pkginfo SUNWasvr
   ```

3. **If the `SUNWasvr` package is not installed, install the package from the Sun Cluster CD-ROM by completing the following step:**
   a. **Insert the Sun Cluster 2 of 2 CD-ROM into the appropriate drive.**
   b. **Go to the directory that contains the `SUNWasvr` package.**

      ```
      # cd /cdrom/cdrom0/Solaris_sparc/Product/administration_svr/Packages
      ```

   c. **Type the command to install the package.**

      ```
      # pkgadd -d . SUNWasvr
      ```

d. Remove the CD-ROM from the drive.

Change to `startd/duration` Does Not Become Effective Immediately (6196325)

Problem Summary: As of Solaris 10, the Sun Cluster HA for NFS data service sets the property `/startd/duration` to `transient` for the Service Management Facility (SMF) services `/network/nfs/server`, `/network/nfs/status`, and `/network/nfs/nlockmgr`. The intention of this property setting is to cause SMF not to restart these services in the event of any failure. A bug in SMF causes SMF to restart `/network/nfs/status` and `/network/nfs/nlockmgr` after the first failure despite this property setting.

Workaround: For Sun Cluster HA for NFS to run correctly, run the following command on all nodes after creating the *first* Sun Cluster HA for NFS resource and before bringing the Sun Cluster HA for NFS resource online.

```
# pkill -9 -x 'startd|lockd'
```

If you are booting Sun Cluster for the first time, run the above command on all the potential primary nodes, after creating the *first* Sun Cluster HA for NFS resource and before bringing the Sun Cluster HA for NFS resource online.

`scinstall` Does Not Copy All Common Agent Container Security Files (6203133)

Problem Summary: When a node is added to a cluster, the `scinstall` utility checks for the presence of Network Security Services (NSS) files on the node that you are adding. These files and security keys are required by the common agent container. If the NSS files exist, the utility copies the common agent container security files from the sponsoring node to the added node. But if the sponsoring node does not have the NSS security keys installed, the copy fails and `scinstall` processing quits.

Workaround: Perform the following procedure to install NSS software, recreate the security keys, and restart the common agent container on the existing cluster nodes.

▼ How to Install NSS Software When Adding a Node to a Cluster

Perform the following procedure on all existing cluster nodes as superuser or a role that permits the appropriate access.

Before You Begin

Have available the Sun Cluster 1 of 2 CD-ROM. The NSS packages are located at `/cdrom/cdrom0/Solaris_`*arch*`/Product/shared_components/Packages/`, where *arch* is `sparc` or `x86` and where *ver* is `8` for Solaris 8, `9` for Solaris 9, or `10` for Solaris 10.

Steps

1. **On each node, stop the Sun Web Console agent.**

   ```
   # /usr/sbin/smcwebserver stop
   ```

2. **On each node, stop the security file agent.**

   ```
   # /opt/SUNWcacao/bin/cacaoadm stop
   ```

3. **On each node, determine whether NSS packages are installed and, if so, what version.**

   ```
   # cat /var/sadm/pkg/SUNWtls/pkginfo | grep SUNW_PRODVERS
   SUNW_PRODVERS=3.9.4
   ```

4. **If a version earlier than 3.9.4 is installed, remove the existing NSS packages.**

   # **pkgrm** *packages*

   The following table lists the applicable packages for each hardware platform.

Hardware Platform	NSS Package Names
SPARC	`SUNWtls SUNWtlsu SUNWtlsx`
x86	`SUNWtls SUNWtlsu`

5. **On each node, if you removed NSS packages or none were installed, install the latest NSS packages from the Sun Cluster 1 of 2 CD-ROM.**

   - **For the Solaris 8 or Solaris 9 OS, use the following command:**

     # **pkgadd -d .** *packages*

   - **For the Solaris 10 OS, use the following command:**

     # **pkgadd -G -d .** *packages*

6. **Change to a directory that does *not* reside on the CD-ROM and eject the CD-ROM.**

   ```
   # eject cdrom
   ```

7. **On each node, create the NSS security keys.**

   ```
   # /opt/SUNWcacao/bin/cacaoadm create-keys
   ```

8. **On each node, start the security file agent.**

   ```
   # /opt/SUNWcacao/bin/cacaoadm start
   ```

9. **On each node, start the Sun Web Console agent.**

   ```
   # /usr/sbin/smcwebserver start
   ```

10. **On the node that you are adding to the cluster, restart the `scinstall` utility and follow procedures to install the new node.**

Deleting a Public Interface Group Which has IPv4 and IPv6 Adapters Sometimes Fails From SunPlex Manager (6209229)

Problem Summary: Deleting a public interface group which has both IPv4 and IPv6 enabled adapters sometimes fails when trying to delete the IPv6 adapter from the group. The following error message is displayed :

```
ifparse: Operation netmask not supported for inet6
/sbin/ifparse
/usr/cluster/lib/cmass/ipmpgroupmanager.sh[8]:
/etc/hostname.adaptname.tmpnumber: cannot open
```

Workaround: Edit the `/etc/hostname6.`*adaptername* file to include the following lines:

```
plumb
up
-standby
```

Run the following command on the cluster node :

`ifconfig` *adaptername* **`inet6 plumb up -standby`**

Memory Leak During Rebooting Patch (Node) Procedure (Bug 6210440)

Problem Summary: Sun Cluster software hangs when attempting to perform a rolling upgrade from Sun Cluster 3.1 9/04 software to Sun Cluster 3.1 8/05 software due to a memory problem triggered when the first upgraded node is rebooted in cluster mode.

Workaround: If you are running Sun Cluster 3.1 9/04 software or the patch equivalent (revision 09 or higher) and want to perform a Rebooting Patch procedure to upgrade to Sun Cluster 3.1 8/05 software or the patch equivalent (revision 12), you must complete the following steps *before* you upgrade your cluster or apply this core patch.

▼ How to Prepare for an Upgrade to Sun Cluster 3.1 8/05 Software

Steps

1. **Choose the type of patch installation procedure that is appropriate to your availability requirements:**

   - Rebooting Patch (Node)
   - Rebooting Patch (Cluster and Firmware)

   These patch installation procedures are provided in Chapter 8, "Patching Sun Cluster Software and Firmware," in *Sun Cluster System Administration Guide for Solaris OS*.

2. **Apply one of the following patches depending on the operating system you are using:**

   - 117909-11 Sun Cluster 3.1 Core Patch for SunOS 5.9 X86
   - 117950-11 Sun Cluster 3.1 Core Patch for Solaris 8
   - 117949-11 Sun Cluster 3.1 Core Patch for Solaris 9

   You *must* complete the entire patch installation procedure *before* upgrading to Sun Cluster 3.1 8/05 software or the patch equivalent (revision 12).

Zone Install and Zone Boot Does Not Work After Sun Cluster Install (6211453)

Problem Summary: Sun Cluster software installation adds `exclude: lofs` to `/etc/system`. Because `lofs` is critical to the function of zones, both `zone install` and `zone boot` fail.

Workaround: Before attempting to create any zones, perform the following procedure.

▼ How to Run Zone Install and Zone Boot After a Sun Cluster Installation

Steps

1. **If you are running Sun Cluster HA for NFS, exclude from the automounter map all files that are part of the highly available local file system that is exported by the NFS server.**

2. **On each cluster node, edit the `/etc/system` file to remove any `exclude: lofs` lines.**

3. **Reboot the cluster.**

Solaris 10 Requires Additional Steps to Recover From the Failure of a Cluster File System to Mount at Boot Time (6211485)

Problem Summary: The Solaris 10 OS requires different recovery procedures than previous versions of the Solaris OS when a cluster file system fails to mount at boot time. Rather than present a login prompt, the `mountgfsys` service might fail and put the node into the maintenance state. The output messages are similar to the following:

```
WARNING - Unable to globally mount all filesystems.
Check logs for error messages and correct the problems.

May 18 14:06:58 pkaffa1 svc.startd[8]: system/cluster/mountgfsys:default misconfigured

May 18 14:06:59 pkaffa1 Cluster.CCR: /usr/cluster/bin/scgdevs:
Filesystem /global/.devices/node@1 is not available in /etc/mnttab.
```

Workaround: After you repair the mount problem for the cluster file system, you must manually bring the `mountgfsys` service back online. Run the following commands to bring the `mountgfsys` service online and to synchronize the global devices namespace:

```
# svcadm clear svc:/system/cluster/mountgfsys:default
# svcadm clear svc:/system/cluster/gdevsync:default
```

Boot processing will now continue.

Unsupported Upgrade to the Solaris 10 OS Corrupts the `/etc/path_to_inst` File (6216447)

Problem Summary: Sun Cluster 3.1 8/05 software does not support upgrade to the March 2005 release of the Solaris 10 OS. An attempt to upgrade to that release might corrupt the `/etc/path_to_inst` file. This file corruption would prevent the node from booting successfully. The corrupted file would appear similar to the following, in that it contains duplicate entries for some of the same device names except that the physical device name contains the prefix `/node@`*nodeid*:

```
...
"/node@nodeid/physical_device_name" instance_number "driver_binding_name"
...
"/physical_device_name" instance_number "driver_binding_name"
```

In addition, some key Solaris services might fail to start, including networking and file-system mounting, and messages might print on the console which state that the service is misconfigured.

Workaround: Use the following procedure.

▼ How to Recover From a Corrupted /etc/path_to_inst File

The following procedure describes how to recover from an upgrade to Solaris 10 software that results in a corrupted /etc/path_to_inst file.

Note – This procedure does not attempt to correct any other problem that can be associated with upgrading a Sun Cluster configuration to the March 2005 release of the Solaris 10 OS.

Perform this procedure on each node that was upgraded to the March 2005 release of the Solaris 10 OS.

Before You Begin

If a node cannot boot, boot the node from the network or from a CD-ROM. Once the node is up, run the fsck command and mount the local file system in a partition such as /a. In Step 2, use the name of the local-file-system mount in the path to the /etc directory.

Steps

1. **Become superuser or an equivalent role on the node.**
2. **Change to the /etc directory.**

   ```
   # cd /etc
   ```

3. **Determine whether the path_to_inst file is corrupted.**

   The following characteristics are present if the path_to_inst file is corrupted:

   - The file includes a block of entries that contain /node@*nodeid* at the beginning of physical device names.
   - Some of the same entries are listed again but without the /node@*nodeid* prefix.

   If the file is not of this format, then some other problem exists. Do not continue this procedure. Contact your Sun service representative if you need assistance.

4. **If the path_to_inst file is corrupted as described in Step 3, run the following commands.**

   ```
   # cp path_to_inst path_to_inst.bak
   # sed -n -e "/^#/p" -e "s,node@./,,p" path_to_inst.bak > path_to_inst
   ```

5. **Inspect the path_to_inst file to ensure that the file is repaired.**

   A repaired file will reflect the following changes:

   - The /node@*nodeid* prefix is removed from all physical device names.
   - There are no duplicate entries for any physical device name.

6. **Ensure that the permissions of the `path_to_inst` file are read only.**

```
# ls -l /etc/path_to_inst
-r--r--r--   1 root     root        2946 Aug  8  2005 path_to_inst
```

7. **Perform a reconfiguration reboot into non-cluster mode.**

```
# reboot -- -rx
```

8. **After you repair all affected cluster nodes, go to "How to Upgrade Dependency Software Before a Nonrolling Upgrade" in** *Sun Cluster Software Installation Guide for Solaris OS* **to continue the upgrade process.**

CMM Reconfiguration Callback Timed Out; Node Aborting (6217017)

Problem Summary: On x86 clusters with `ce` transports, a node under heavy load could be halted by CMM as a result of a split-brain.

Workaround: For x86 clusters using the PCI Gigaswift Ethernet card on the private network, add the following to `/etc/system`:

```
set ce:ce_tx_ring_size=8192
```

Nodes Might Panic When a Node Joins or Leaves a Cluster With More Than Two Nodes, Running Solaris 10, and Using Hitachi Storage (6227074)

Problem Summary: On clusters with more than two nodes, running Solaris 10, and using Hitachi storage, all of the cluster nodes might panic when a node joins or leaves the cluster.

Workaround: No current workaround exists. If you encounter this problem, contact your Sun Service provider about acquiring a patch.

Java ES 2005Q1 `installer` Does Not Install Application Server 8.1 EE Completely (6229510)

Problem Summary: Application Server Enterprise Edition 8.1 cannot be installed by the Java ES 2005Q1 `installer` if the `Configure Later` option is selected. Selecting the `Configure Later` option installs the Platform Edition and not the Enterprise Edition.

Workaround: While installing the Application Server Enterprise Edition 8.1 using the Java ES `installer`, use the `Configure Now` option to install. Selecting the `Configure Later` option installs the Platform Edition only.

`scvxinstall` Causes `rpcbind` to Restart (6237044)

Problem Summary: Restart of the bind SMF service can impact Solaris Volume Manager operation. Installation of Veritas 4.1 VxVM packages causes the SMF bind service to be restarted.

Workaround: Reboot Solaris Volume Manager after either restarting the bind SMF service or after installing VxVM 4.1 on a S10 host.

```
svcadm restart svc:/network/rpc/scadmd:default
```

On a System Using Solaris 10, Sun Cluster Data Services Cannot be Installed After Sun Cluster is Installed Using the Java ES `installer` (6237159)

Problem Summary: This problem occurs only on systems using Solaris 10. If the user uses the Java ES `installer` on the Sun Cluster Agents CD-ROM to install Sun Cluster data services after the Sun Cluster core has been installed, the `installer` fails with the following messages :

```
The installer has determined that you must manually remove incompatible versions
of the following components before proceeding:

[Sun Cluster 3.1 8/05, Sun Cluster 3.1 8/05, Sun Cluster 3.1 8/05]

After you remove these components, go back.
Component                       Required By ...

1. Sun Cluster 3.1 8/05     HA Sun Java System Message Queue : HA Sun Java
                            System Message Queue
2. Sun Cluster 3.1 8/05     HA Sun Java System Application Server : HA Sun Java
                                    System Application Server
3. Sun Cluster 3.1 8/05     HA/Scalable Sun Java System Web Server : HA/Scalable
                                    Sun Java System Web Server
4. Select this option to go back to the component list. This process might take
                                    a few moments while the installer rechecks your
                                    system for installed components.

Select a component to see the details. Press 4 to go back the product list
[4] {"<" goes back, "!" exits}
```

Workaround: On a system using Solaris 10, install the Sun Cluster data service manually by using `pkgadd` or `scinstall`. If the Sun Cluster data service has a dependency on shared components, install the shared components manually by using `pkgadd`. The following link lists the shared components for each product:

`http://docs.sun.com/source/819-0062/preparing.html#wp28178`

`/usr/sbin/smcwebserver: ... j2se/opt/javahelp/lib: does not exist` Error Message (6238302)

Problem Summary: During startup of Sun Web Console, the following message might be displayed.

```
/usr/sbin/smcwebserver:../../../../j2se/opt/javahelp/lib: does not exist
```

Workaround: The message is safe to ignore. You can manually add a link in `/usr/j2se/opt` to point to the correct Java Help 2.0 by entering the following:

```
# ln -s /usr/jdk/packages/javax.help-2.0 /usr/j2se/opt/javahelp
```

Node Panic After OS Upgrade to Solaris 10 From Sun Cluster 3.1 4/04 on Solaris 9 (6245238)

Problem Summary: After upgrading from the Solaris 9 OS to the Solaris 10 OS on a cluster that runs Sun Cluster 3.1 4/04 software or earlier, booting the node into noncluster mode results in the node panicking.

Workaround: Install one of the following patches *before* you upgrade from Solaris 9 to Solaris 10 software.

- SPARC based systems: 117949-09 or higher
- x86 based systems: 117909-09 or higher

SunPlex Installer is Not Creating Resources in Resource Groups (6250327)

Problem Summary: When using SunPlex Installer to configure Sun Cluster HA for Apache and Sun Cluster HA for NFS data services as part of Sun Cluster installation, SunPlex Installer does not create the necessary device groups and resources in the resource groups.

Workaround: Do not use SunPlex Installer to install and configure data services. Instead, follow procedures in the *Sun Cluster Software Installation Guide for Solaris OS* and the *Sun Cluster Data Service for Apache Guide for Solaris OS* or *Sun Cluster Data Service for NFS Guide for Solaris OS* manuals to install and configure these data services.

HA-NFS Changes to Support NFSv4 Fix for 6244819 (6251676)

Problem Summary: NFSv4 is not supported in Sun Cluster 3.1 8/05.

Workaround: Solaris 10 introduces a new version of NFS protocol, NFSv4. This is the default protocol for Solaris 10 clients and server. The Sun Cluster 3.1 8/05 release supports Solaris 10, however it does not support use of NFSv4 protocol with Sun Cluster HA for NFS service on the cluster to achieve high-availability for NFS server. To make sure no NFS client can use NFSv4 protocol to talk to NFS server on Sun Cluster software, edit the `/etc/default/nfs` file to change the line `NFS_SERVER_VERSMAX=4` to `NFS_SERVER_VERSMAX=3`. This would make sure that only NFSv3 protocol is used by the clients of Sun Cluster HA for NFS service on the cluster.

NOTE: Use of Solaris 10 cluster nodes as NFSv4 clients is not affected by this restriction and the above mentioned workaround. The cluster nodes can act as NFSv4 clients.

`metaset` Command Fails After the `rpcbind` Service is Restarted (6252216)

Problem Summary: The `metaset` command fails after the `rpcbind` service is restarted.

Workaround: Ensure that you are not performing any configuration operations on your Sun Cluster system, then kill the `rpc.metad` process using the following command:

```
# pkill -9 rpc.metad
```

Node Panic Due to `metaclust` Return Step Error: RPC: Program not Registered (6256220)

Problem Summary: When shutting down the cluster, some of the nodes may panic due to the order in which services are stopped on the nodes. If the RPC service is stopped before the RAC framework is stopped, errors may result when the SVM resource attempts to reconfigure. This results in an error being reported back to the RAC framework resulting in a node panic. This problem has been observed with Sun Cluster running the RAC framework with the SVM storage option. There should be no impact to Sun Cluster functionality.

Workaround: The panic is by design and can safely be ignored, although clean-up of the saved core files should be performed to reclaim filesystem space.

NIS Address Resolution Hangs and Causes Failure to Fail Over (6257112)

Problem Summary: In the Solaris 10 OS, the `/etc/nsswitch.conf` file has been modified to include NIS in the `ipnodes` entry.

```
ipnodes:    files nis [NOTFOUND=return]
```

This causes the address resolution to hang if NIS becomes inaccessible, either due to a NIS problem or due to failure of all public network adapters. This problem eventually causes failover resources or shared address resources to fail to fail over.

Workaround: Complete the following before you create logical host or shared address resources:

1. Change the `ipnodes` entry in the `/etc/nsswitch.conf` file from `[NOTFOUND=return]` to `[TRYAGAIN=0]`.

   ```
   ipnodes:    files nis [TRYAGAIN=0]
   ```

2. Ensure that all IP addresses for logical hosts and shared addresses are added to the `/etc/inet/ipnodes` file, in addition to the `/etc/inet/hosts` file.

`scinstall` Fails to Upgrade the Sun Cluster Data Service for Sun Java System Application Server EE (6263451)

Problem Summary: While attempting to update the Sun Cluster Data Service for Sun Java System Application Server EE from 3.1 9/04 to 3.1 8/05, `scinstall` does not remove the package for `j2ee` and displays the following message:

```
Skipping "SUNWscswa" - already installed
```

Sun Cluster Data Service for Sun Java System Application Server EE is not upgraded.

Workaround: Manually remove and add the `sap_j2ee` package using the following commands :

```
# # pkgrm SUNWscswa
# pkgadd [-d device] SUNWscswa
```

`scnas`: NAS Filesystem did not get Mounted During Bootup (6268260)

Problem Summary: The NFS file system cannot be checked for viability prior to a failover or `scswitch` being used to locate the data service to the node. If a node doesn't have the NFS filesystem, a switch/failover to that node will result in a failure of the data service that requires manual intervention. A mechanism like HAStoragePlus is needed to check the viability of the filesystem prior to attempting the fail/switchover to that node.

Workaround: File systems using NAS filers (with entries in `/etc/vfstab`) are mounted outside Sun Cluster software control, and this means that Sun Cluster software is unaware of any problems. Should the file system become unavailable, some data services, such as Sun Cluster HA for Oracle, will fail when data service methods, such as `START` or `STOP`, are executed.

Failure of these methods may lead to several possibilities:

- The data services resource, such as HA-Oracle, may go into the `STOP_FAILED` state, if the application (Oracle) binaries are not available.
- The data service may continuously attempt to fail over to alternate nodes until it is able to start successfully or startup attempts have failed on all possible nodes.

Perform one of the following procedures to avoid the above problems:

- Place the application binaries on either a failover or cluster file system. Then configure a HAStoragePlus resource to represent this file system and record a dependency of the application upon this resource. The system will not attempt to start the application when the file system is not available.
- Place the application binaries on the local root file system. If the local root file system does not work, the node will not be able to join the cluster, and the system will not attempt to start the application on that node.

HADB Fault Monitor Will Not Restart the `ma` Process (6269813)

Problem Summary: The Sun Cluster data service does not restart the `ma` process when the data service is killed or exits abruptly.

Workaround: This is the expected behavior and the data services is not affected.

rgmd Dumps Core During Rolling Upgrade (6271037)

Problem Summary: Attempting to delete a resource during a rolling upgrade before all nodes are running the new software might cause one of the nodes to panic. Do not delete a resource until all nodes have the new software installed.

Workaround: During a rolling upgrade, do not delete an RGM resource until all nodes have the new software installed.

HADB Database Fails to Restart After Shut Down and Boot of Cluster (6276868)

Problem Summary: The HADB database fails to restart after the cluster nodes are rebooted. The user will not be able to access the database.

Workaround: Restart one of your management data services by completing the following procedure. If the following procedure does not resolve the problem, delete the database and recreate it.

▼ Restarting a Management Data Service

Steps

1. **On the node to be shut down, type the following command. The `-h` option should not include the node name on which you want the management agent to be stopped.**

   ```
   scswitch -z -g hadb resource grp -h node1, node2...
   ```

2. **Switch the resource group back to the original node.**

   `scswitch –Z –g` *hadb resource grp*

3. **Check the status of the database. Wait until the database comes to the "stopped" state.**

   `hadbm status -n` *database*

4. **Start the database.**

   `hadbm start` *database*

`SUNW.iim` Has Size 0 After Adding `SUNWiimsc` Package (6277593)

Problem Summary: The `SUNWiimsc` package in `sun_cluster_agents` is invalid. After adding this package, `SUNW.iim` in `/opt/SUNWiim/cluster` has size 0.

Workaround: Replace the `SUNW.iim` package and register again by completing the following steps.

▼ How to Install the Correct `SUNW.iim` Package

Steps

1. **Copy the correct `SUNW.iim` from the CD-ROM.**

   ```
   # cp 2of2_CD/Solaris_arch/Product/sun_cluster_agents/Solaris_os
   /Packages/SUNWiimsc/reloc/SUNWiim/cluster/SUNW.iim /opt/SUNWiim/Cluster/SUNW.iim
   ```

2. **Remove any existing `SUNW.iim` registration.**

   ```
   # rm /usr/cluster/lib/rgm/rtreg/SUNW.iim
   ```

3. **Register the data service with Sun Cluster**

   ```
   sh 2of2_CD/Solaris_arch/Product/sun_cluster_agents/
   Solaris_os/Packages/SUNWiimsc/install/postinstall
   ```

Adding a New IPMP Group Through SunPlex Manager Sometimes Fails (6278059)

Problem Summary: Trying to add a new IPMP group using SunPlex Manger sometimes fails with the following message.

```
An error was encountered by the system. If you were performing an action
when this occurred, review the current system state prior to proceeding.
```

Workaround: Perform one of the following procedures depending on the version of IP you are running.

▼ Adding a New IPMP Group Through SunPlex Manager When You are Using IPv4

Steps

1. **Enter the following command:**

   ```
   ifconfig interface inet plumb group groupname [addif address deprecated]
   netmask + broadcast + up -failover
   ```

2. **If a test address has been provided, update the `/etc/hostname.`*interface* file to add the following:**

   ```
   group groupname addif address netmask + broadcast + deprecated -failover up
   ```

3. **If a test address has not been provided, update the `/etc/hostname.`*interface* file to add the following:**

   ```
   group.groupname netmask + broadcast -failover up
   ```

▼ Adding a New IPMP Group Through SunPlex Manager When You are Using IPv6

Steps

1. **Entering the following command:**

   `ifconfig` *interface* `inet6 plumb up group` *groupname*

2. **Update the `/etc/hostname6.`*interface* file to add the following entries:**

   `group` *groupname* `plumb up`

3. **If the `/etc/hostname6.`*interface* file does not already exist, create the file and add the entries mentioned above.**

HADB Resource Keeps Restarting After Panicking One of the Cluster Nodes (6278435)

Problem Summary: After bringing the resource online and panicking one of the nodes in the cluster (for example, `shutdown` or `uadmin`), the resource keeps restarting on the other nodes. The user will not be able to issue any management commands.

Workaround: To prevent this problem, log onto a single node as root or a role with equivalent access privileges and increase the `probe_timeout` of the resource to a value of 600 seconds, using the following command:

`scrgadm -c -j` *hadb resource* **`-x Probe_timeout=600`**

To verify your change, shutdown one of the cluster nodes and check to make sure the resource does not go into the degraded state.

On Solaris 10, Scalable Services do not Work When Both the Public Networks and Sun Cluster Transports use `bge`(7D)-driven Adapters (6278520)

Problem Summary: The load balancing feature of Sun Cluster scalable services does not work on Solaris 10 systems when both the public networks and Sun Cluster transports use `bge`-driven adapters. Platforms with built-in NICs that use `bge` include Sun Fire V210, V240, and V250.

Failover data services are not affected by this bug.

Workaround: Do not configure public networking and cluster transports to both use `bge`-driven adapters.

Cannot See the System Log from SunPlex Manager When the Default Locale is set to Multibyte Locale (6281445)

Problem Summary: When the SunPlex Manager default locale is set to multibyte locale, you cannot see the system log.

Workaround: Set the default locale to C or view the syslog (`/var/adm/messages`) manually through a command line shell

Cannot Bring Node Agent Online Using `scswitch` on Node1 (6283646)

Problem Summary: The instances and node agents must be configured to listen on the failover IP address/hostname. When the node agents and Sun Java System Application Server instances are created, the physical node hostname is set by default. The HTTP IP Address and the client-hostname is changed in the `domain.xml`. But Domain Admin Server is not restarted so the changes do not take effect. Therefore, the node agents come up only on the physical node where they were configured, but not on the other node.

Workaround: Change the `client-hostname` property in the Node Agent section of `domain.xml` to listen on the failover IP and restart the Domain Admin Server for the changes to take effect.

SunPlex Manager and Cacao 1.1 Only Support JDK 1.5.0_03 (6288183)

Problem Summary: When using SunPlex Manager in Sun Cluster 3.1 8/05 with Cacao 1.1, only JDK 1.5.0_03 is supported.

Workaround: Manually install JDK 1.5 by completing the following procedure.

▼ How to Manually Install JDK 1.5

Steps

1. **Add JDK 1.5 from JES 4 shared components directory (See JES 4 RN for instructions).**
2. **Stop cacao.**

```
# /opt/SUNWcacao/bin/cacaoadm stop
```

3. **Start cacao.**

```
# /opt/SUNWcacao/bin/cacaoadm start
```

After Installing SC3.1 (8/05) Patch 117949–14 on Solaris 9 and Patch 117950–14 on Solaris 8 Java VM Errors Occur During Boot (6291206)

Problem Summary: This bug is seen on a Sun Cluster system running 3.1 (9/04) plus patches that is upgraded to Sun Cluster (8/05) by applying patch 117949-14 on a system running Solaris 9 or patch 117950-14 on a system running Solaris 8. The following error message displays once the machine boots :

```
# An unexpected error has been detected by HotSpot Virtual Machine:
#
#  SIGSEGV (0xb) at pc=0xfaa90a88, pid=3102, tid=1
#
# Java VM: Java HotSpot(TM) Client VM (1.5.0_01-b07 mixed mode, sharing)
# Problematic frame:
# C  [libcmas_common.so+0xa88]  newStringArray+0x70
#
# An error report file with more information is saved as /tmp/hs_err_pid3102.log
#
# If you would like to submit a bug report, please visit:
#   http://java.sun.com/webapps/bugreport/crash.jsp
#
```

Workaround: When upgrading from Sun Cluster 3.1 (9/04) to Sun Cluster 3.1 (8/05), install the SPM patch in addition to the core patch by entering the following command.

On a system running Solaris 8, run the following command after applying core patch 117950-14:

```
patchadd patchdir/118626-04
```

On a system running Solaris 9, run the following command after patch 117949-14 has been applied:

```
patchadd patchdir/118627-04
```

Directory Server and Administration Server Resource Registration Sometimes Fails (6298187)

Problem Summary: The resource registration sometimes fails for Directory Server and Administration Server. The system will display the following message:

```
Registration file not found for "SUNW.mps" in /usr/cluster/lib/rgm/rtreg
```

Workaround: Register the missing file from the `pkg` location directly by entering one of the following commands:

- For Directory Server, enter the following command from the `pkg` location:

```
- scrgadm -a -t SUNW.dsldap -f /etc/ds/v5.2/cluster/SUNW.dsldap
```

- For Administration Server, enter the following command from the `pkg` location:

```
- scrgadm -a -t SUNW.mps -f /etc/mps/admin/v5.2/cluster/SUNW.mps
```

Solaris 10 Cluster Nodes May Fail to Communicate With Machines That Have Both IPv4 and IPv6 Address Mappings (6306113)

Problem Summary: If a Sun Cluster node running Solaris 10 does not have IPv6 interfaces configured for public networking (for example, not for cluster interconnects), it cannot access machines that have both an IPv4 and IPv6 address mapping in a name service, such as NIS. Applications such as telnet and traceroot that choose the IPv6 address over IPv4 will see their packets getting sent to the cluster transport adaptors and dropped.

Workaround: Use one of the following workarounds depending on the configuration or your cluster.

- If IPv6 is not required to run on the cluster, then remove the `nis` entry in the `ipnodes` line in `/etc/nsswitch.conf`. For example, change the `ipnodes` line to the following:

```
ipnodes files # Work Around for CR 6306113
```

- If IPv6 is required, but no scalable service is running on the cluster, add the following line to `/etc/system` and reboot all nodes.

```
set clcomm:ifk_disable_v6=1
```

- If IPv6 scalable service is running, make sure all cluster nodes have an IPv6 network interface configured for public networking (non-cluster use). See `ifconfig`(1M)) and *System Administration Guide: IP Services*for how to deploy IPv6 with Solaris.

Patches and Required Firmware Levels

This section provides information about patches for Sun Cluster configurations. If you are upgrading to Sun Cluster 3.1 8/05, see "How to Prepare for an Upgrade to Sun Cluster 3.1 8/05 Software" on page 34.

Note – You must be a registered SunSolve™ user to view and download the required patches for the Sun Cluster product. If you do not have a SunSolve account, contact your Sun service representative or sales engineer, or register online at http://sunsolve.sun.com.

PatchPro

PatchPro is a patch-management tool designed to ease the selection and download of patches required for installation or maintenance of Sun Cluster software. PatchPro provides a Sun Cluster-specific Interactive Mode tool to make the installation of patches easier and an Expert Mode tool to maintain your configuration with the latest set of patches. Expert Mode is especially useful for those who want to get all of the latest patches, not just the high availability and security patches.

To access the PatchPro tool for Sun Cluster software, go to http://www.sun.com/PatchPro/, click on "Sun Cluster," then choose either Interactive Mode or Expert Mode. Follow the instructions in the PatchPro tool to describe your cluster configuration and download the patches.

SunSolve Online

The SunSolve™ Online Web site provides 24-hour access to the most up-to-date information regarding patches, software, and firmware for Sun products. Access the SunSolve Online site at http://sunsolve.sun.com for the most current matrixes of supported software, firmware, and patch revisions.

Sun Cluster 3.1 8/05 third-party patch information is provided through SunSolve Info Docs. This Info Doc page provides third-party patch information for specific hardware that you intend to use in a Sun Cluster 3.1 environment. To locate this Info Doc, log on to SunSolve and access the Simple Search selection from the top of the main page. From the Simple Search page, click on the Info Docs box and type **`Sun Cluster 3.x Third-Party Patches`** in the search criteria box.

Before you install Sun Cluster 3.1 8/05 software and apply patches to a cluster component (Solaris OS, Sun Cluster software, volume manager software, data services software, or disk hardware), review each `README` file that accompanies the patches that you retrieved. All cluster nodes must have the same patch level for proper cluster operation.

For specific patch procedures and tips on administering patches, see Chapter 8, "Patching Sun Cluster Software and Firmware," in *Sun Cluster System Administration Guide for Solaris OS*.

Sun Cluster 3.1 8/05 Documentation

The Sun Cluster 3.1 8/05 user documentation set consists of the following collections:

- *Sun Cluster 3.1 8/05 Release Notes Collection for Solaris OS*
- *Sun Cluster 3.1 8/05 Software Collection for Solaris OS (SPARC Platform Edition)*
- *Sun Cluster 3.1 8/05 Software Collection for Solaris OS (x86 Platform Edition)*
- *Sun Cluster 3.0–3.1 Hardware Collection for Solaris OS (SPARC Platform Edition)*
- *Sun Cluster 3.0–3.1 Hardware Collection for Solaris OS (x86 Platform Edition)*
- *Sun Cluster 3.1 8/05 Reference Collection for Solaris OS*

The Sun Cluster 3.1 8/05 user documentation is available in PDF and HTML format on the SPARC and x86 versions of the Sun Cluster 3.1 8/05 CD-ROM. For more information, see the `Solaris_`*arch*`/Product/sun_cluster/index.html` file on the SPARC or x86 versions of the Sun Cluster 3.1 8/05 CD-ROM, where *arch* is `sparc` or `x86`. This `index.html` file enables you to read the PDF and HTML manuals directly from the CD-ROM and to access instructions to install the documentation packages.

Note – The `SUNWsdocs` package must be installed before you install any Sun Cluster documentation packages. You can use `pkgadd` to install the `SUNWsdocs` package. The `SUNWsdocs` package is located in the `Solaris_`*arch*`/Product/sun_cluster/Solaris_`*ver*`/Packages/` directory of the Sun Cluster 3.1 8/05 CD-ROM, where *arch* is `sparc` or `x86`, and *ver* is either `8` for Solaris 8, `9` for Solaris 9, or `10` for Solaris 10. The `SUNWsdocs` package is also automatically installed when you run the `installer` program from the Solaris 10 Documentation CD-ROM.

In addition, the docs.sun.com[SM] web site enables you to access Sun Cluster documentation on the Web. You can browse the `docs.sun.com` archive or search for a specific book title or subject at the following Web site:

http://docs.sun.com

Sun Cluster 3.1 8/05 Software Collection for Solaris OS (SPARC Platform Edition)

- Software Manuals
- Individual Data Service Manuals

TABLE 2 Sun Cluster 3.1 8/05 Software Collection for Solaris OS (SPARC Platform Edition): Software Manuals

Part Number	Book Title
819-0421	*Sun Cluster Concepts Guide for Solaris OS*
819-0579	*Sun Cluster Overview for Solaris OS*
819-0420	*Sun Cluster Software Installation Guide for Solaris OS*
819-0580	*Sun Cluster System Administration Guide for Solaris OS*
819-0581	*Sun Cluster Data Services Developer's Guide for Solaris OS*
819-0427	*Sun Cluster Error Messages Guide for Solaris OS*
819-0582	*Sun Cluster Reference Manual for Solaris OS*
819-0703	*Sun Cluster Data Services Planning and Administration Guide for Solaris OS*

TABLE 3 Sun Cluster 3.1 8/05 Software Collection for Solaris OS (SPARC Platform Edition): Individual Data Service Manuals

Part Number	Book Title
819-1250	*Sun Cluster Data Service for Agfa IMPAX Guide for Solaris OS*
817-6998	*Sun Cluster Data Service for Apache Guide for Solaris OS*
819-1085	*Sun Cluster Data Service for Apache Tomcat Guide for Solaris OS*
819-0691	*Sun Cluster Data Service for BroadVision One-To-One Enterprise Guide for Solaris OS*
819-1082	*Sun Cluster Data Service for DHCP Guide for Solaris OS*
819-0692	*Sun Cluster Data Service for DNS Guide for Solaris OS*
819-1088	*Sun Cluster Data Service for MySQL Guide for Solaris OS*
819-1247	*Sun Cluster Data Service for N1 Grid Service Provisioning System for Solaris OS*
819-0693	*Sun Cluster Data Service for NetBackup Guide for Solaris OS*
817-6999	*Sun Cluster Data Service for NFS Guide for Solaris OS*
819-1248	*Sun Cluster Data Service for Oracle Application Server Guide for Solaris OS*
819-1087	*Sun Cluster Data Service for Oracle E-Business Suite Guide for Solaris OS*
819-0694	*Sun Cluster Data Service for Oracle Guide for Solaris OS*
819-0583	*Sun Cluster Data Service for Oracle Real Application Clusters Guide for Solaris OS*
819-1081	*Sun Cluster Data Service for Samba Guide for Solaris OS*

TABLE 3 Sun Cluster 3.1 8/05 Software Collection for Solaris OS (SPARC Platform Edition): Individual Data Service Manuals *(Continued)*

Part Number	Book Title
819-0695	*Sun Cluster Data Service for SAP DB Guide for Solaris OS*
819-0696	*Sun Cluster Data Service for SAP Guide for Solaris OS*
819-0697	*Sun Cluster Data Service for SAP liveCache Guide for Solaris OS*
819-0698	*Sun Cluster Data Service for SAP Web Application Server Guide for Solaris OS*
819-0699	*Sun Cluster Data Service for Siebel Guide for Solaris OS*
819-2664	*Sun Cluster Data Service for Solaris Containers Guide*
819-1089	*Sun Cluster Data Service for Sun Grid Engine Guide for Solaris OS*
817-7000	*Sun Cluster Data Service for Sun Java System Application Server Guide for Solaris OS*
819-0700	*Sun Cluster Data Service for Sun Java System Application Server EE (HADB) Guide for Solaris OS*
817-7002	*Sun Cluster Data Service for Sun Java System Message Queue Guide for Solaris OS*
817-7003	*Sun Cluster Data Service for Sun Java System Web Server Guide for Solaris OS*
819-1086	*Sun Cluster Data Service for SWIFTAlliance Access Guide for Solaris OS*
819-1249	*Sun Cluster Data Service for SWIFTAlliance Gateway Guide for Solaris OS*
819-0701	*Sun Cluster Data Service for Sybase ASE Guide for Solaris OS*
819-0702	*Sun Cluster Data Service for WebLogic Server Guide for Solaris OS*
819-1084	*Sun Cluster Data Service for WebSphere MQ Integrator Guide for Solaris OS*
819-1083	*Sun Cluster Data Service for WebSphere MQ Guide for Solaris OS*

Sun Cluster 3.1 8/05 Software Collection for Solaris OS (x86 Platform Edition)

- Software Manuals
- Individual Data Service Manuals

TABLE 4 Sun Cluster 3.1 8/05 Software Collection for Solaris OS (x86 Platform Edition): Software Manuals

Part Number	Book Title
819-0421	*Sun Cluster Concepts Guide for Solaris OS*

TABLE 4 Sun Cluster 3.1 8/05 Software Collection for Solaris OS (x86 Platform Edition): Software Manuals *(Continued)*

Part Number	Book Title
819-0579	*Sun Cluster Overview for Solaris OS*
819-0420	*Sun Cluster Software Installation Guide for Solaris OS*
819-0580	*Sun Cluster System Administration Guide for Solaris OS*
819-0581	*Sun Cluster Data Services Developer's Guide for Solaris OS*
819-0427	*Sun Cluster Error Messages Guide for Solaris OS*
817819-0582	*Sun Cluster Reference Manual for Solaris OS*
819-0703	*Sun Cluster Data Services Planning and Administration Guide for Solaris OS*

TABLE 5 Sun Cluster 3.1 8/05 Software Collection for Solaris OS (x86 Platform Edition): Individual Data Service Manuals

Part Number	Book Title
817-6998	*Sun Cluster Data Service for Apache Tomcat Guide for Solaris OS*
819-1082	*Sun Cluster Data Service for DHCP Guide for Solaris OS*
819-0692	*Sun Cluster Data Service for DNS Guide for Solaris OS*
819-1088	*Sun Cluster Data Service for MySQL Guide for Solaris OS*
817-6999	*Sun Cluster Data Service for NFS Guide for Solaris OS*
819-1081	*Sun Cluster Data Service for Samba Guide for Solaris OS*
819-2664	*Sun Cluster Data Service for Solaris Containers Guide*
817-7000	*Sun Cluster Data Service for Sun Java System Application Server Guide for Solaris OS*
817-7002	*Sun Cluster Data Service for Sun Java System Message Queue Guide for Solaris OS*
817-7003	*Sun Cluster Data Service for Sun Java System Web Server Guide for Solaris OS*

Sun Cluster 3.x Hardware Collection for Solaris OS (SPARC Platform Edition)

TABLE 6 Sun Cluster 3.x Hardware Collection for Solaris OS (SPARC Platform Edition)

Part Number	Book Title
817–0168	*Sun Cluster 3.0-3.1 Hardware Administration Manual for Solaris OS*

TABLE 6 Sun Cluster 3.x Hardware Collection for Solaris OS (SPARC Platform Edition) *(Continued)*

Part Number	Book Title
817–0180	*Sun Cluster 3.0-3.1 With Sun StorEdge 3310 SCSI RAID Array Manual for Solaris OS*
817–1673	*Sun Cluster 3.0-3.1 With Sun StorEdge 3510 or 3511 FC RAID Array Manual for Solaris OS*
817–0179	*Sun Cluster 3.0-3.1 With Sun StorEdge 3900 Series or Sun StorEdge 6900 Series System Manual*
817–1701	*Sun Cluster 3.0-3.1 With Sun StorEdge 6120 Array Manual for Solaris OS*
817–1702	*Sun Cluster 3.0-3.1 With Sun StorEdge 6320 System Manual for Solaris OS*
817–6747	*Sun Cluster 3.x With Sun StorEdge 6920 System Manual for Solaris OS*
817–0177	*Sun Cluster 3.0-3.1 With Sun StorEdge 9900 Series Storage Device Manual*
817–5682	*Sun Cluster 3.0-3.1 With StorEdge A1000 Array, Netra st A1000 Array, or StorEdge A3500 System Manual*
817–0174	*Sun Cluster 3.0-3.1 With Sun StorEdge A3500FC System Manual for Solaris OS*
817–5683	*Sun Cluster 3.0-3.1 With Fibre Channel JBOD Storage Device Manual*
817–5681	*Sun Cluster 3.0-3.1 With SCSI JBOD Storage Device Manual for Solaris OS*
817–0176	*Sun Cluster 3.0-3.1 With Sun StorEdge T3 or T3+ Array Manual for Solaris OS*
817-7899	*Sun Cluster 3.0-3.1 With Sun StorEdge 6130 Array Manual for Solaris OS*
817-7957	*Sun Cluster 3.1 With Network-Attached Storage Devices Manual for Solaris OS*

Sun Cluster 3.x Hardware Collection for Solaris OS (x86 Platform Edition)

TABLE 7 Sun Cluster 3.x Hardware Collection for Solaris OS (x86 Platform Edition)

Part Number	Book Title
817–0168	*Sun Cluster 3.0-3.1 Hardware Administration Manual for Solaris OS*
817–0180	*Sun Cluster 3.0-3.1 With Sun StorEdge 3310 SCSI RAID Array Manual for Solaris OS*
817-7957	*Sun Cluster 3.1 With Network-Attached Storage Devices Manual for Solaris OS*

Localization Issues

- `cdrom.sc_agents_sparc/installer` provides seven language selections for all data-service agents, although non-Java Enterprise System agents support Japanese and Simplified Chinese only. `cdrom.sc_agents_sparc/components/`*data-service*`/installer` does provide the correct language selection.
- Restrictions for language selection in SunPlex Manager:
  - If you want to use Simplified Chinese as your language selection in SunPlex Manager, choose `zh-cn`, instead of `zh` in your browser. Otherwise, SunPlex Manager displays in English.
  - If you want to use Traditional Chinese as your language selection in SunPlex Manager, choose `zh-tw` in your browser. If you choose `zh-hk`, SunPlex Manager displays in English.

Documentation Issues

This section discusses known errors or omissions for documentation, online help, or man pages and steps to correct these problems.

All Sun Cluster 3.1 8/05 Books

The Preface of all of the Sun Cluster 3.1 8/05 books provides a website for Support and Training. This website has been changed to the following websites:

- Support: `http://www.sun.com/support/`
- Training: `http://www.sun.com/training/`

Software Installation Guide

This section discusses errors and omissions from the *Sun Cluster Software Installation Guide for Solaris OS*.

Implied Support of Java ES Applications on Non-Global Zones

"How to Install Data-Service Software Packages (pkgadd)" in *Sun Cluster Software Installation Guide for Solaris OS* describes how to install Sun Java System data services on a cluster that runs the Solaris 10 OS. The procedure uses the `pkgadd -G` command to install these data services only in the global zone. The `-G` option ensures that the packages are not propagated to any existing non-global zone or to a non-global zone that is created later.

If the system contains a non-global zone, certain Sun Java Enterprise System (Java ES) applications and other Java ES components might not be supported. This restriction would apply if the non-global zone exists at the time of installation or if the zone is configured afterwards. The use of the `pkgadd -G` command to install data services for such applications does not override this restriction. If the Java ES application cannot coexist with non-global zones, you cannot use a data service for that application on a cluster that has non-global zones.

See "Solaris 10 Zones" in *Sun Java Enterprise System 2005Q5 Installation Guide* for information about Java ES support of Solaris zones.

Resetting Quorum Devices From SCSI-2 to SCSI-3 Brings the Node Down

Performing the procedure "How to Update SCSI Reservations After Adding a Node" in *Sun Cluster Software Installation Guide for Solaris OS* as documented might cause the node to panic. To prevent a node panic during this procedure, run the `scgdevs` command after you remove all quorum devices but before you configure new quorum devices.

Incorrect Release Date for the First Update of the Solaris 10 OS

In Chapter 5, "Upgrading Sun Cluster Software," in *Sun Cluster Software Installation Guide for Solaris OS*, upgrade guidelines and procedures refer to the first update release of the Solaris 10 OS as Solaris 10 10/05. The date of this release is incorrect. At publication time of this document, the expected release date of the first update of the Solaris 10 OS is unknown. Additionally, support of upgrade to this future release is not yet determined. Contact your Sun service representative concerning support of upgrade to future releases of Solaris 10 software.

Manually Install Shared Components When Java ES Applications Are Installed on a Cluster File System (6270408)

Java ES application binaries can be installed on a cluster file system instead of on each cluster node. For Solaris 10 cluster configurations, when you install the data service (agent) by using `pkgadd`, you must also use `pkgadd` to manually install the Java ES shared components that the application requires.

See the *Sun Java Enterprise System 2005Q5 Installation Guide* for the list of shared components that each Java ES application requires and the package list for each shared component product.

Incorrect Commands to Check Product Versions (6288988)

In "How to Upgrade Dependency Software Before a Nonrolling Upgrade" in *Sun Cluster Software Installation Guide for Solaris OS* and "How to Upgrade Dependency Software Before a Rolling Upgrade" in *Sun Cluster Software Installation Guide for Solaris OS*, the instructions to check the version level of two of the shared components contain an error.

Step 2b, Apache Tomcat

Incorrect:

```
# patchadd -p | grep 114016
```

Correct:

```
# showrev -p | grep 114016
```

Step 5a, Explorer

Incorrect:

```
# pkginfo -l SUNWexplo | grep SUNW_PRODVERS
```

Correct:

```
# pkginfo -l SUNWexplo | grep VERSION
```

Rolling Upgrade

Rolling Upgrade might not be supported in a future release of Sun Cluster software. In that case, other procedures will be provided designed to limit Sun Cluster outages during software upgrade.

SunPlex Manager Online Help

This section discusses errors and omissions in SunPlex Manager online help.

Sun Cluster HA for Oracle

In the online help file that is titled "Sun Cluster HA for Oracle," in the section titled "Before Starting," a note is incorrect.

Incorrect:

If no entries exist for `shmsys` and `semsys` in `/etc/system`, default values for these variables are automatically inserted in`/etc/system`. The system must then be rebooted. Check Oracle installation documentation to verify that these values are correct for your database.

Correct:

If no entries exist for the `shmsys` and `semsys` variables in the `/etc/system` file when you install the Oracle data service, you can open `/etc/system` and insert default values for these variables. You must then reboot the system. Check Oracle installation documentation to verify that the values that you insert are correct for your database.

SunPlex Manager Icons and Conventions

In the online help file that is titled "SPM Icons and Conventions", two descriptions given in the "Other labels" section are incorrect.

Incorrect:

TABLE 8 Other labels

Label	Meaning
	Primary resource group of the failover type
	Secondary resource group of the failover type

Correct:

TABLE 9 Other labels

Label	Meaning
	Primary node for the resource
	Secondary node for the resource

Sun Cluster Concepts Guide

This section discusses errors and omissions from the *Sun Cluster Concepts Guide for Solaris OS*.

In Chapter 3, the section on "Using the Cluster Interconnect for Data Service Traffic" should read as follows:

A cluster must have multiple network connections between nodes, forming the cluster interconnect. The clustering software uses multiple interconnects both for high availability and to improve performance. For both internal and external traffic (for example, file system data or scalable services data), messages are striped across all available interconnects.

The cluster interconnect is also available to applications, for highly available communication between nodes. For example, a distributed application might have components running on different nodes that need to communicate. By using the cluster interconnect rather than the public transport, these connections can withstand the failure of an individual link.

To use the cluster interconnect for communication between nodes, an application must use the private hostnames configured when the cluster was installed. For example, if the private hostname for node 1 is `clusternode1-priv`, use that name to communicate over the cluster interconnect to node 1. TCP sockets opened using this name are routed over the cluster interconnect and can be transparently rerouted in the event of network failure. Application communication between any two nodes is striped over all interconnects. The traffic for a given TCP connection flows on one interconnect at any point. Different TCP connections are striped across all interconnects. Additionally, UDP traffic is always striped across all interconnects.

Note that because the private hostnames can be configured during installation, the cluster interconnect can use any name chosen at that time. The actual name can be obtained from `scha_cluster_get(3HA)` with the `scha_privatelink_hostname_node` argument.

System Administration Guide

This section describes errors and omissions in the *Sun Cluster System Administration Guide for Solaris OS*.

How to Remove a Sun Cluster Patch

The Rebooting Patch (Node) "How to Apply a Rebooting Patch (Node)" in *Sun Cluster System Administration Guide for Solaris OS* procedure is not-reversible as a per-node procedure. Similarly, rolling downgrade of Sun Cluster releases is not supported. To remove a Sun Cluster patch or update release, you must re-apply the previous patch or update release by following the "How to Apply a Rebooting Patch (Cluster and Firmware)" in *Sun Cluster System Administration Guide for Solaris OS*.

Sun Cluster Data Service for NFS Guide for Solaris OS

Sun Cluster Data Service for NFS Guide for Solaris OS omits some restrictions that apply to the use of Sun Cluster HA for NFS with NFS v3.

If you are using Sun Cluster HA for NFS, do *not* use the cluster nodes as NFS v3 clients of external NFS servers. This restriction applies even when the external NFS server is a network-attached storage (NAS) device. If you configure your cluster nodes this way, locks that the cluster nodes might have set on the external NFS servers are lost.

This restriction does not apply to NFS v4 clients. You can use NFS v4 to mount external NFS servers.

Sun Cluster Data Service for SAP Web Application Server Guide for Solaris OS

This section describes omissions in *Sun Cluster Data Service for SAP Web Application Server Guide for Solaris OS*.

Referring to SAP Notes for Changing Host Names

When changing any reference to the host name of the system, refer to the corresponding SAP notes. The SAP notes contain the most recent information about changing host names. *Sun Cluster Data Service for SAP Web Application Server Guide for Solaris OS* omits specific references to these SAP notes.

The following sections explain how to change the host name.

- "How to Install and Configure the SAP Web Application Server and the SAP J2EE Engine" in *Sun Cluster Data Service for SAP Web Application Server Guide for Solaris OS*
- "How to Modify the Installation for a Scalable SAP Web Application Server Component" in *Sun Cluster Data Service for SAP Web Application Server Guide for Solaris OS*

Installing the SAP J2EE Engine as a Scalable Resource

The section "How to Install and Configure the SAP Web Application Server and the SAP J2EE Engine" in *Sun Cluster Data Service for SAP Web Application Server Guide for Solaris OS* omits instructions for installing the SAP J2EE engine when you plan to configure it as a scalable resource. Step 2 and Step 7 of the procedure in this section are incomplete.

Correct Step 2:

If you are using the SAP J2EE engine, install the SAP J2EE engine software.

Refer to the SAP installation documentation.

- If you plan to configure the SAP J2EE engine as a failover resource, install the SAP J2EE engine software on the same node where you installed the SAP Web Application Server software in Step 1.
- If you plan to configure the SAP J2EE engine as a scalable resource, install the SAP J2EE engine software on each node that can master the scalable resource. Install the SAP J2EE dialog instance with the same SAP system number on each node. This number is the value of `SAPSYSTEM` in the SAP profile.

Correct Step 7:

If you are using the SAP J2EE engine, modify the `loghost` script to return host names for the SAP J2EE engine.

Modify the script `loghost`, which was created in Step 6, to return either the logical host names or the physical host names for each instance of the SAP J2EE engine.

- If you plan to configure the SAP J2EE engine as a failover resource, modify the script to return the *logical host names*. The following commands provide an example of the modification of this script.

```
if [ "$1" = "JC00" ]; then
    echo loghost-4;
fi
if [ "$1" = "SCS02" ]; then
    echo loghost-5;
fi
if [ "$1" = "J02" ]; then
```

```
    echo loghost-6;
fi
```

- If you plan to configure the SAP J2EE engine as a scalable resource, modify the script to return the *physical host names*. The following commands provide an example of the modification of this script.

```
if [ "$1" = "J03" ]; then
    echo `hostname`;
fi
```

Sun Cluster Data Service for Solaris Containers Guide

This section describes errors and omissions in *Sun Cluster Data Service for Solaris Containers Guide*.

Information Missing From Configuration Restrictions

"Configuration Restrictions" in *Sun Cluster Data Service for Solaris Containers Guide* omits the restriction that applies to the `autoboot` property of a failover zone or a multiple-masters zone.

When creating a failover zone or a multiple-masters zone, ensure that the zone's `autoboot` property is set to `false`. Setting a zone's `autoboot` property to `false` prevents the zone from being booted when the global zone is booted. The Sun Cluster HA for Solaris Containers data service can manage a zone only if the zone is booted under the control of the data service.

Information Missing From Configuration Requirements

"Configuration Requirements" in *Sun Cluster Data Service for Solaris Containers Guide* omits the requirement that applies to the loopback file system (LOFS).

Ensure that the loopback file system (LOFS) is enabled.

The Sun Cluster installation tools disable the LOFS. If you are using Sun Cluster HA for Solaris Containers to manage a zone, enable the LOFS after installing and configuration the Sun Cluster framework. To enable the LOFS, delete the following line from the `/etc/system` file:

```
exclude: lofs
```

Errors in the Procedure for Installing and Configuring a Zone

The procedure "How to Install and Configure a Zone" in *Sun Cluster Data Service for Solaris Containers Guide* contains the following errors:

- Step 6 omits to mention that the step is to be performed on all cluster nodes *except* the node where the zone was installed and configured in the preceding steps.
- Step 6d specifies an incorrect destination directory for the *zone*`.xml` file. Also, the command in this step omits the dot from the name of the *zone*`.xml` file. The step and the command should read as follows:

  Copy the *zone*`.xml` file to the `/etc/zones` directory on the node.

  `#` **`rcp`** *zone-install-node*`:/etc/zones/`*zone*`.xml .`

Erroneous Code Samples

The sample code in the following sections is incorrect:

- "Writing a Zone Script" in *Sun Cluster Data Service for Solaris Containers Guide*
- "Writing an SMF Service Probe" in *Sun Cluster Data Service for Solaris Containers Guide*

The correct code for both sections is as follows:

```
# cat /var/tmp/probe-apache2
#!/usr/bin/ksh
if echo "GET; exit" | mconnect -p 80 > /dev/null 2>&1
then
    exit 0
else
    exit 100
fi
```

Sun Cluster 3.1 With Network-Attached Storage Devices Manual for Solaris OS

This section discusses errors and omissions from the *Sun Cluster 3.1 With Network-Attached Storage Devices Manual for Solaris OS*

Installing a Network Appliance NAS Device in a Sun Cluster Environment

The NetApp NAS unit must be connected directly to a network which has direct connections to all the cluster nodes.

When you set up a NetApp NAS filer, you must complete the following steps in addition to those found in "Installing a Network Appliance NAS Device in a Sun Cluster Environment" in *Sun Cluster 3.1 With Network-Attached Storage Devices Manual for Solaris OS*.

▼ How to Install a Network Appliance NAS Device in a Sun Cluster Environment

Steps

1. **Add the NetApp NAS filer name to `/etc/inet/hosts`.**

   Add a hostname-to-address mapping for the filer in the `/etc/inet/hosts` file on all cluster nodes. For example:

   ```
   netapp-123 192.168.11.123
   ```

2. **Add the filer (NAS subset) netmasks to `/etc/inet/netmasks`.**

   Add an entry to the `/etc/inet/netmasks` file on all cluster nodes for the subnet the filer is on. For example:

   ```
   192.168.11.0 255.255.255.0
   ```

3. **Verify that the `hosts` and `netmasks` entries in `/etc/nsswitch.conf` file on all cluster nodes have `files` appearing before `nis` and `dns`. If they are not, edit the corresponding line in `/etc/nsswitch.conf` by moving `files` before `nis` and `dns`.**

Man Pages

This section discusses errors and omissions from the Sun Cluster man pages.

Sun Cluster 3.0 Data Service Man Pages

To display Sun Cluster 3.0 data service man pages, install the latest patches for the Sun Cluster 3.0 data services that you installed on Sun Cluster 3.1 8/05 software. See "Patches and Required Firmware Levels" on page 48 for more information.

After you have applied the patch, access the Sun Cluster 3.0 data service man pages by issuing the `man -M` command with the full man page path as the argument. The following example opens the Apache man page.

```
% man -M /opt/SUNWscapc/man SUNW.apache
```

Consider modifying your `MANPATH` to enable access to Sun Cluster 3.0 data service man pages without specifying the full path. The following example describes command input for adding the Apache man page path to your `MANPATH` and displaying the Apache man page.

```
% MANPATH=/opt/SUNWscapc/man:$MANPATH; export MANPATH
% man SUNW.apache
```