



Sun Cluster 3.1 4/04 Release Notes for Solaris OS

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Sun Cluster 3.1 4/04 Release Notes for Solaris OS

This document provides the following information for Sun™ Cluster 3.1 4/04 software.

- “What’s New in Sun Cluster 3.1 Software” on page 5
- “Known Issues and Bugs” on page 17
- “Patches and Required Firmware Levels” on page 25
- “Sun Cluster 3.1 Documentation” on page 26
- “Documentation Issues” on page 30

What’s New in Sun Cluster 3.1 Software

This section provides information related to new features, functionality, and supported products in Sun Cluster 3.1 software.

New Features and Functionality

Support for Solaris (x86 Platform Edition)

Sun Cluster is now available for use on Solaris™ Operating System (x86 Platform Edition). You can now use Sun Cluster 3.1 4/04 software on a Sun Fire™ V65x server that is running Update 6 of Solaris 9 Operating System (x86 Platform Edition).

Enhancements to Resource Types

The following resource types are enhanced in Sun Cluster 3.1:

- `SUNW.oracle_listener` (see *Sun Cluster Data Service for Oracle Guide for Solaris OS*)
- `SUNW.sap_xserver` (see *Sun Cluster Data Service for SAP liveCache Guide for Solaris OS*)

For general information about upgrading a resource type, see “Upgrading a Resource Type” in *Sun Cluster Data Services Planning and Administration Guide for Solaris OS*

New Supported Data Services (SPARC Platform Edition)

Sun Cluster 3.1 4/04 (SPARC Platform Edition) supports the following data services:

- HA Java System Application Server EE 7.0
- HA SAP DB 7.4
- HA Oracle 10G

New Supported Data Services (Solaris x86 Platform Edition)

Sun Cluster 3.1 4/04 (x86 Platform Edition) supports the following data services:

- HA NFS (Solaris 9 12/03)
- HA DNS (Solaris 9 12/03)
- HA Samba 2.2.8a and 3.0
- HA Java System Directory Server 5.2.1 Agent
- HA Java System Web Server 6.1
- HA Java System Application Server EE 7.0 U3
- HA Java System Message Queue 3.5
- HA DHCP
- HA MySQL
- Scalable Java System Web Server

Supported Products

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

- **Operating environment and patches** – Supported Solaris versions and patches are available at the following URL:
<http://sunsolve.sun.com>
 For more details, see “Patches and Required Firmware Levels” on page 25.
- **Volume managers**
 - **On Solaris 8** – Solstice DiskSuite™ 4.2.1 and VERITAS Volume Manager 3.5.

- **On Solaris 9** – Solaris Volume Manager and VERITAS Volume Manager 3.5.
- **File systems**
 - **On Solaris 8** – Solaris UFS and VERITAS File System 3.4 and 3.5.
 - **On Solaris 9** – Solaris UFS and VERITAS File System 3.5.
- **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 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 (plus Netscape HTTP, versions 4.11, 4.12, 4.13, and 4.16) are located in the *Sun Cluster 3.1 Data Service for Sun ONE Directory Server Guide*. For later versions of Sun Java System Directory Server, previously known as Sun™ Open Net Environment (Sun ONE) 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 JES 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."

TABLE 1-1 Supported Data Services for Sun Cluster 3.1 Software

Data Service	Sun Cluster Resource Type
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
Sun Cluster HA for MySQL	SUNW.gds
Sun Cluster HA for NetBackup	SUNW.netbackup_master
Sun Cluster HA for NFS	SUNW.nfs
Sun Cluster HA for Oracle E-Business Suite	SUNW.gds

TABLE 1-1 Supported Data Services for Sun Cluster 3.1 Software (Continued)

Data Service	Sun Cluster Resource Type
Sun Cluster HA for Oracle	SUNW.oracle_server SUNW.oracle_listener
Sun Cluster Support for Oracle Parallel Server/Real Application Clusters	SUNW.rac_framework SUNW.rac_udlm SUNW.rac_cvm SUNW.rac_hwraid
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 SWIFTAlliance Access	SUNW.gds
Sun Cluster HA for Samba	SUNW.gds
Sun Cluster HA for Siebel	SUNW.sblgtwy SUNW.sblsrvr
Sun Cluster HA for Sun Java System Application Server	SUNW.slas
Sun Cluster HA for Sun Java System HADB	SUNW.hadb
Sun Cluster HA for Sun Java System Message Queue	SUNW.s1mq
Sun Cluster HA for Sun Java System Web Server (This data service was formerly known as Sun Cluster HA for Sun ONE Web Server)	SUNW.iws
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 software requires extra memory beyond what is configured for a node under a normal workload. The extra memory equals 128 Mbytes plus ten percent. 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 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 Environment 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 1-2 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

TABLE 1–2 Data Services Supported by Sun Cluster Security Hardening *(Continued)*

Data Service Agent	Application Version: Failover	Application Version: Scalable	Solaris Version
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 Parallel Server/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 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

Restrictions

The following restrictions apply to the Sun Cluster 3.1 release:

- “Hardware Restrictions” on page 11
- “Network Restrictions” on page 11
- “Volume-Manager Restrictions” on page 12
- “Cluster File System Restrictions” on page 12
- “VxFS Restrictions” on page 13
- “Internet Protocol (IP) Network Multipathing Restrictions” on page 13

- “Service and Application Restrictions” on page 14
- “Data Service Restrictions” on page 15
- “Using Sun Cluster HA for Oracle With Oracle 10g” on page 15
- “Running Sun Cluster HA for Oracle 3.0 on Sun Cluster 3.1 Software” on page 15

For other known problems or restrictions, see “Known Issues and Bugs” on page 17.

Hardware Restrictions

- Multihost tape, CD-ROM, and DVD-ROM are not supported.
- Alternate Pathing (AP) is not supported.
- Storage devices with more than a single path from a given cluster node to the enclosure are not supported except on the following storage devices:
 - Sun StorEdge™ A3500, for which two paths are supported to each of two nodes
 - Any device that supports Sun StorEdge Traffic Manager
 - EMC storage devices that use EMC PowerPath software
- If you are using a Sun Enterprise™ 420R server with a PCI card in slot J4701, the motherboard must be at dash-level 15 or higher (501-5168-15 or higher). To find the motherboard part number and revision level, look at the edge of the board closest to PCI slot 1.
- System panics have been observed in clusters when UDWIS I/O cards are used in slot 0 of a board in a Sun Enterprise 10000 server; do not install UDWIS I/O cards in slot 0 of a board in this server.
- When you increase or decrease the number of node attachments to a quorum device, the quorum vote count is not automatically recalculated. You can reestablish the correct quorum vote if you remove all quorum devices and then add them back into the configuration.
- SunVTS™ is not supported.

Network Restrictions

- IPv6 is not supported.
- Remote Shared Memory (RSM) transport types are mentioned in the documentation, but are not supported. If you use the RSM API, specify `dlpi` as the transport type.
- The SBus Scalable Coherent Interface (SCI) is not supported as a cluster interconnect. However, the PCI-SCI interface is supported.
- Logical network interfaces are reserved for use by Sun Cluster software.
- Client applications that run on cluster nodes should not map to logical IP addresses of an HA data service. During failover, these logical IP addresses might go away, leaving the client without a connection.

Volume-Manager Restrictions

- If you are upgrading from VERITAS Volume Manager (VxVM) 3.2 to 3.5, the Cluster Volume Manger (CVM) feature will not be available until you install the CVM license key for version 3.5. In VxVM 3.5, the CVM license key for version 3.2 does not enable CVM and must be upgraded to the CVM license key for version 3.5.
- In Solstice DiskSuite/Solaris Volume Manager configurations that use mediators, the number of mediator hosts configured for a diskset must be exactly two.
- DiskSuite Tool (Solstice DiskSuite `metatool`) and the Enhanced Storage module of Solaris Management Console (Solaris Volume Manager) are not compatible with Sun Cluster 3.1 software.
- With VxVM 3.2 or later, Dynamic Multipathing (DMP) cannot be disabled with the `scvxinstall` command during VxVM installation. This procedure is described in the chapter, "Installing and Configuring VERITAS Volume Manager" in *Sun Cluster Software Installation Guide for Solaris OS*. The use of Veritas Dynamic Multipathing is supported in the following configurations.
 - A single I/O path per node to the cluster's shared storage.
 - A supported multipathing solution (Sun Traffic Manager, EMC PowerPath, Hitachi HDLM) that manages multiple I/O paths per node to the shared cluster storage. The use of Dynamic Multipathing (DMP) alone to manage multiple I/O paths per node to the shared storage is not supported.
- Simple root disk groups (`rootdg` created on a single slice of the root disk) are not supported as disk types with VxVM on Sun Cluster 3.1 software.
- Software RAID 5 is not supported.

Cluster File System Restrictions

- Quotas are not supported on cluster file systems.
- Sun Cluster 3.1 software does not support the use of the loopback file system (LOFS) on cluster nodes.
- The command `umount -f` behaves in the same manner as the `umount` command without the `-f` option. It does not support forced unmounts.
- The command `unlink(1M)` is not supported on non-empty directories.
- The command `lockfs -d` is not supported. Use `lockfs -n` as a workaround.
- The cluster file system does not support any of the file-system features of Solaris software by which one would put a communication end-point in the file-system name space. Therefore, although you can create a UNIX domain socket whose name is a path name into the cluster file system, the socket would not survive a node failover. In addition, any fifos or named pipes you create on a cluster file system would not be globally accessible, nor should you attempt to use `fat attach` from any node other than the local node.

- It is not supported to execute binaries off cluster file systems that are mounted by using the `forcedirectio` mount option.
- You cannot remount a cluster file system with the `directio` mount option added at remount time.
You cannot set the `directio` mount option on a single file by using the `directio` ioctl.

VxFS Restrictions

- The following VxFS features are not supported in a Sun Cluster 3.1 configuration.
 - Quick I/O
 - Snapshots
 - Storage checkpoints
 - Cache advisories (these can be used, but the effect will be observed on the given node only)
 - VERITAS CFS (requires VERITAS cluster feature and VCS)

All other VxFS features and options that are supported in a cluster configuration are supported by Sun Cluster 3.1 software. See VxFS documentation and man pages for details about VxFS options that are or are not supported in a cluster configuration.

- The following VxFS-specific mount options are not supported in a Sun Cluster 3.1 configuration.
 - `convosync` (Convert `O_SYNC`)
 - `mincache`
 - `qlog`, `delaylog`, `tmplog`
- For information about administering VxFS cluster file systems in a Sun Cluster configuration, see “Administering Cluster File Systems” in *Sun Cluster System Administration Guide for Solaris OS*.

Internet Protocol (IP) Network Multipathing Restrictions

This section identifies any restrictions on using IP Network Multipathing that apply only in a Sun Cluster 3.1 environment, or are different than information provided in the Solaris documentation for IP Network Multipathing.

- IPv6 is not supported.
- All public network adapters must be in IP Network Multipathing groups.
- In the `/etc/default/mpathd` file, do not change `TRACK_INTERFACES_ONLY_WITH_GROUPS` from yes to no.

Most procedures, guidelines, and restrictions that are identified in the Solaris documentation for IP Network Multipathing are the same in a cluster or a noncluster environment. Therefore, see the appropriate Solaris document for additional information about IP Network Multipathing restrictions.

Operating Environment Release	For Instructions, Go To...
Solaris 8 operating environment	<i>IP Network Multipathing Administration Guide</i>
Solaris 9 operating environment	"IP Network Multipathing Topics" in <i>System Administration Guide: IP Series</i>

Service and Application Restrictions

- Do not configure cluster nodes as routers (gateways). If the system goes down, the clients cannot find an alternate router and cannot recover.
- Do not configure cluster nodes as NIS or NIS+ servers. However, cluster nodes can be NIS or NIS+ clients.
- Do not use a Sun Cluster configuration to provide a highly available boot or installation service on client systems.
- Do not use a Sun Cluster configuration to provide an `rarpd` service.
- If you install an RPC service on the cluster, the service must not use the following program numbers: 100141, 100142, and 100248. These numbers are reserved for the Sun Cluster daemons `rgmd_receptionist`, `fed`, and `pmfd`, respectively. If the RPC service you install also uses one of these program numbers, you must change that RPC service to use a different program number.
- Currently, Sun StorEdge Network Data Replicator (SNDR) can only be used with HAStorage. This restriction only applies to the light weight resource group that includes the logical host that SNDR is using for replication. Application resource groups can still use HAStoragePlus with SNDR. You can use failover file system with HAStoragePlus and SNDR by using HAStorage for the SNDR resource group, and HAStoragePlus for the application resource group, where the HAStorage and HAStoragePlus resources point at the same underlying DCS device. A patch is being developed to enable SNDR to work with HAStoragePlus.
- Running high-priority process scheduling classes on cluster nodes is not supported. Processes that run in the time-sharing scheduling class with a high priority, or processes that run in the real-time scheduling class should not be run on cluster nodes. Sun Cluster software relies on kernel threads that do not run in the real-time scheduling class. Other time-sharing processes that run at higher-than-normal priority or real-time processes can prevent the Sun Cluster kernel threads from acquiring needed CPU cycles.

Data Service Restrictions

- Sun Cluster 3.1 software can only provide service for those data services that are either supplied with the Sun Cluster product or set up with the Sun Cluster data services API.
- Sun Cluster software currently does not have an HA data service for the `sendmail(1M)` subsystem. The `sendmail` subsystem can run on the individual cluster nodes, but the `sendmail` functionality will not be highly available, including the functionality of mail delivery and mail routing, queuing, or retry.

Using Sun Cluster HA for Oracle With Oracle 10g

If you are using Sun Cluster HA for Oracle with Oracle 10g, do *not* install the Oracle binary files on a highly available local file system. Sun Cluster HA for Oracle does not support such a configuration. However, you may install data files, log files, and configuration files on a highly available file system.

If you have installed Oracle 10g binary files on the cluster file system, error messages for the Oracle `cssd` daemon might appear on the system console during the booting of a node. When the cluster file system is mounted, these messages no longer appear.

These error messages are as follows:

```
INIT: Command is respawning too rapidly. Check for possible errors.  
id: h1 "/etc/init.d/init.cssd run >/dev/null 2>&1 >/dev/null"
```

Sun Cluster HA for Oracle does not require the Oracle `cssd` daemon. Therefore, you may ignore these error messages.

Running Sun Cluster HA for Oracle 3.0 on Sun Cluster 3.1 Software

The Sun Cluster HA for Oracle 3.0 data service can run on Sun Cluster 3.1 software only when used with the following versions of the Solaris operating environment:

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

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

Sun Cluster HA for Oracle Parallel Server/Real Application Cluster

Adhere to the documentation of Oracle Parallel Fail Safe/Real Application Clusters Guard option of Oracle Parallel Server/Real Application clusters because you cannot change hostnames after you install Sun Cluster software.

For more information on this restriction on hostnames and node names, see the Oracle Parallel Fail Safe/Real Application Clusters Guard documentation.

Sun Cluster HA for NetBackup

- If the VERITAS NetBackup client is a cluster, only one logical host can be configured as the client because there is only one `bp.conf` file.
- If the NetBackup client is a cluster and if one of the logical hosts on the cluster is configured as the NetBackup client, NetBackup cannot back up the physical hosts.
- On the cluster running the master server, the master server is the only logical host that can be backed up.
- Backup media cannot be attached to the master server, so one or more media servers are required.
- In a Sun Cluster environment, robotic control is only supported on media servers and not on the NetBackup master server running on Sun Cluster.

Sun Cluster HA for NFS

- No Sun Cluster node may be an NFS client of a Sun Cluster HA for NFS-exported file system being mastered on a node in the same cluster. Such cross-mounting of Sun Cluster HA for NFS is prohibited. Use the cluster file system to share files among cluster nodes.
- Applications running locally on the cluster must not lock files on a file system exported via NFS. Otherwise, local blocking (for example, `fcntl(3UCB)` or `fcntl(2)`) might interfere with the ability to restart the lock manager (`lockd`). During restart, a blocked local process may be granted a lock which may be intended to be reclaimed by a remote client. This would cause unpredictable behavior.
- Sun Cluster HA for NFS requires that all NFS client mounts be “hard” mounts.
- Sun Cluster 3.1 software does not support Secure NFS or the use of Kerberos with NFS, in particular, the `secure` and `kerberos` options to the `share_nfs(1M)` subsystem. However, Sun Cluster 3.1 software does support the use of secure ports for NFS by adding the entry `set nfssrv:nfs_portmon=1` to the `/etc/system` file on cluster nodes.

Sun Cluster HA for SAP liveCache

Do not use NIS for naming services in a cluster running Sun Cluster HA for SAP liveCache because the NIS entry is only used if files are not available.

For more procedural information about the `nsswitch.conf` password requirements related to this restriction, see “Preparing the Nodes and Disks” in *Sun Cluster Data Service for SAP liveCache Guide for Solaris OS*.

Known Issues and Bugs

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

Data Services: Installation Guidelines

Identify requirements for all data services **before** you begin Solaris and Sun Cluster installation. If you do not determine these requirements, you might perform the installation process incorrectly and thereby need to completely reinstall the Solaris and Sun Cluster software.

For example, the Oracle Parallel Fail Safe/Real Application Clusters Guard option of Oracle Parallel Server/Real Application Clusters has special requirements for the hostnames/node names that you use in the cluster. You must accommodate these requirements before you install Sun Cluster software because you cannot change hostnames after you install Sun Cluster software. For more information on the special requirements for the hostnames/node names, see the Oracle Parallel Fail Safe/Real Application Clusters Guard documentation.

Nodes Unable to Bring Up qfe Paths (4526883)

Problem Summary: Sometimes, private interconnect transport paths ending at a qfe adapter fail to come online.

Workaround: Follow the steps shown below:

1. Using `scstat -w`, identify the adapter that is at fault. The output will show all transport paths with that adapter as one of the path endpoints in the `faulted` or the `waiting` states.
2. Use `scsetup` to remove from the cluster configuration all the cables connected to that adapter.

3. Use `scsetup` again to remove that adapter from the cluster configuration.
4. Add back the adapter and the cables.
5. Verify if the paths appear. If the problem persists, repeat steps 1–5 a few times.
6. Verify if the paths appear. If the problem still persists, reboot the node with the at-fault adapter. Before the node is rebooted, make sure that the remaining cluster has enough quorum votes to survive the node reboot.

The remove Script Fails to Unregister SUNW.gds Resource Type (4727699)

Problem Summary: The `remove` script fails to unregister `SUNW.gds` resource type and displays the following message:

```
Resource type has been un-registered already.
```

Workaround: After using the `remove` script, manually unregister `SUNW.gds`. Alternatively, use the `scsetup` command or the SunPlex Manager.

Path Timeouts When Using ce Adapters on the Private Interconnect (4746175)

Problem Summary: Clusters using `ce` adapters on the private interconnect may notice path timeouts and subsequent node panics if one or more cluster nodes have more than four processors.

Workaround: Set the `ce_taskq_disable` parameter in the `ce` driver by adding `set ce:ce_taskq_disable=1` to `/etc/system` file on all cluster nodes and then rebooting the cluster nodes. This ensures that heartbeats (and other packets) are always delivered in the interrupt context, eliminating path timeouts and the subsequent node panics. Quorum considerations should be observed while rebooting cluster nodes.

Node Hangs After Rebooting When Switchover Is in Progress (4806621)

Problem Summary: If a device group switchover is in progress when a node joins the cluster, the joining node and the switchover operation may hang. Any attempts to access any device service will also hang. This is more likely to happen on a cluster with more than two nodes and if the file system mounted on the device is a VxFS file system.

Workaround: To avoid this situation, do not initiate device group switchovers while a node is joining the cluster. If this situation occurs, then all the cluster nodes must be rebooted to restore access to device groups.

DNS Wizard Fails if an Existing DNS Configuration is not Supplied (4839993)

Problem Summary: SunPlex Manager includes a data service installation wizard that sets up a highly available DNS service on the cluster. If the user does not supply an existing DNS configuration, such as a `named.conf` file, the wizard attempts to generate a valid DNS configuration by autodetecting the existing network and nameservice configuration. However, it fails in some network environments, causing the wizard to fail without issuing an error message.

Workaround: When prompted, supply the SunPlex Manager DNS data service install wizard with an existing, valid `named.conf` file. Otherwise, follow the documented DNS data service procedures to manually configure highly available DNS on the cluster.

Using SunPlex Manager to Install an Oracle Service (4843605)

Problem Summary: SunPlex Manager includes a data service installation wizard which sets up a highly available Oracle service on the cluster by installing and configuring the Oracle binaries as well as creating the cluster configuration. However, this installation wizard is currently not working, and results in a variety of errors based on the users' software configuration.

Workaround: Manually install and configure the Oracle data service on the cluster, using the procedures provided in the Sun Cluster documentation.

Unable to Add Adapter to IPMP Group After Removal (4884060)

Problem Summary: If SunPlex Manager is used to remove an adapter from a multi-adapter IPMP group, it may not always be possible to immediately add the adapter back to the same group again.

Workaround: Remove `/etc/hostname.adapter` before attempting to add the adapter back to the same IPMP group.

Shell Version of `scds_syslog` Does Not Use Facility `LOG_DAEMON` (4897239)

Problem Summary: Due to an internal error, most Sun-supplied cluster agents are writing messages to the system log (see `syslog(3C)`) using the `LOG_USER` facility instead of using `LOG_DAEMON`. On a cluster that is configured with the default syslog settings (see `syslog.conf(4)`), messages with a severity of `LOG_WARNING` or `LOG_NOTICE`, which would ordinarily be written to the system log, are not being output.

Workaround: Add the following line near the front of the `/etc/syslog.conf` file on all cluster nodes:

```
user.warning                /var/adm/messages
```

This will cause `user.warning` messages to be logged. A similar line can be added for `user.notice` messages, but this is not necessary and might cause the logs to fill up too quickly, depending on the mix of applications that are running.

`nsswitch.conf` Requirements for `passwd` Make `nis` Unusable (4904975)

Problem Summary: The requirements for the `nsswitch.conf` file in “Preparing the Nodes and Disks” in *Sun Cluster Data Service for SAP liveCache Guide for Solaris OS* do 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]
```

Data Service Installation Wizards for Oracle and Apache do not Support Solaris 9 and Above (4906470)

Problem Summary: The SunPlex Manager data service installation wizards for Apache and Oracle do not support Solaris 9 and above.

Workaround: Manually install Oracle on the cluster using, using Sun Cluster documentation. If installing Apache on Solaris 9 (or higher), manually add the Solaris Apache packages `SUNWapchr` and `SUNWapchu` before running the installation wizard.

Node Panic After One Node is Rebooted as Part of `scvxinstall` Encapsulation (4931910)

Problem Summary: Improper timing of cluster-node reboots during rootdisk encapsulation can cause node panics.

Workaround: Run `scvxinstall` on one node at a time, waiting until one node has completed all of its reboots before starting `scvxinstall` on another node.

SunPlex Agent Builder's Default Window Size for Non-English Locales is Too Small (4937877)

Problem Summary: When running SunPlex Agent Builder in a non-English locale, the default window size is too small and some controls may not appear in the window. This problem has been observed in the German and Spanish locales.

Workaround: Manually resize the SunPlex Agent Builder window as needed.

`sccheck` Hangs When Simultaneously run on Multiple Nodes (4944192)

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

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

`scinstall -r` Does Not Remove Data Service Locale Packages (4955294)

Problem Summary: `scinstall -r` does not remove locale-specific data service packages.

Workaround: Once the node comes up, run `pkginfo | grep -i cluster` to make sure all data service packages have been removed. To remove the listed packages, run `pkgrm` on each package.

Incorrect Language Displayed in the Traditional Chinese Locale (4955538)

Problem Summary: Certain SunPlex Agent Builder messages in the Traditional Chinese locale are displayed in Simplified Chinese.

Workaround: Run SunPlex Agent Builder in the zh_TW locale to correctly display the messages in Traditional Chinese.

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

Problem Summary: When hadbm is invoked from the HADB agent, it takes the java binaries from /usr/bin. The HADB agent fails to work properly since the java binaries in /usr/bin need to be linked to the appropriate version of Java 1.4 (or above).

Workaround: Assign JAVA_HOME environment variable with the appropriate version of Java 1.4 (or above) in the script /opt/SUNWappserver7/SUNWhadb/4/bin/hadbm.

scsetup is Not Able to Add the First Adapter to a Single-Node Cluster (4983095)

Problem Summary: If scsetup is used in an attempt to add the first adapter to a single-node cluster, the following error message results: Unable to determine transport type.

Workaround: Configure at least the first adapter manually:

```
# scconf -a -A trtype=type,name=nodename,node=nodename
```

After the first adapter is configured, further use of scsetup to configure the interconnects works as expected.

Some Data Services Cannot be Upgraded by Using the scinstall Utility

Problem Summary: The data services for the following applications cannot be upgraded by using the scinstall utility:

- Apache Tomcat

- DHCP
- mySQL
- Oracle E-Business Suite
- Samba
- SWIFTAlliance Access
- WebLogic Server
- WebSphere MQ
- WebSphere MQ Integrator

Workaround: If you plan to upgrade a data service for an application in the preceding list, replace the step for upgrading data services in “Upgrading to Sun Cluster 3.1 4/04 Software (Rolling)” in *Sun Cluster Software Installation Guide for Solaris OS* with the steps that follow. Perform these steps for each node where the data service is installed.

1. Remove the software package for the data service that you are upgrading.

```
# pkgrm pkg-inst
```

pkg-inst specifies the software package name for the data service that you are upgrading as listed in the following table.

Application	Data Service Software Package
Apache Tomcat	SUNWscTomcat
DHCP	SUNWscdhc
mySQL	SUNWscmys
Oracle E-Business Suite	SUNWscEBS
Samba	SUNWscsmb
SWIFTAlliance Access	SUNWscsaa
WebLogic Server (English locale)	SUNWscwls
WebLogic Server (French locale)	SUNWfscwls
WebLogic Server (Japanese locale)	SUNWjscwls
WebSphere MQ	SUNWscmq
WebSphere MQ Integrator	SUNWscmqi

2. Install the software package for the version of the data service to which you are upgrading.

To install the software package, follow the instructions in the Sun Cluster documentation for the data service that you are upgrading. This documentation is available at <http://docs.sun.com>.

HA Oracle Stop Method Times Out (4644289)

Problem Summary: The Sun Cluster HA for Oracle data service uses the super user command, `su(1M)`, to start and stop the database. If you are running Solaris 8 or Solaris 9, the network service might become unavailable when a cluster node's public network fails.

Workaround: Include the following entries in the `/etc/nsswitch.conf` configuration files on each node that can be the primary for `oracle_server` or `oracle_listener` resource:

```
passwd: files
groups: files
publickey: files
project: files
```

These entries ensure that the `su` command does not refer to the NIS/NIS+ name services, so that the data service starts and stops correctly during a network failure.

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` configuration 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.

HA-Siebel Does Not Automatically Restart Failed Siebel Components (4722288)

Problem Summary: Sun Cluster HA for Siebel does not monitor individual Siebel components. If the failure of a Siebel component is detected, only a warning message is logged in `syslog`.

Workaround: Restart the Siebel server resource group in which components are offline by using the command `scswitch -R -h node -g resource_group`.

Patches and Required Firmware Levels

This section provides information about patches for Sun Cluster configurations.

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.

You can find Sun Cluster 3.1 patch information by using the Info Docs. To view the Info Docs, 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 3.1** in the search criteria box. This will bring up the Info Doc page for Sun Cluster 3.1 software.

Before you install Sun Cluster 3.1 software and apply patches to a cluster component (Solaris operating environment, Sun Cluster software, volume manager or data services software, or disk hardware), review the Info Docs and any README files that accompany the patches. All cluster nodes must have the same patch level for proper cluster operation.

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

Sun Cluster 3.1 Documentation

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

Sun Cluster 3.1 4/04 Release Notes Collection for Solaris OS

Sun Cluster 3.1 4/04 Software Collection for Solaris OS (SPARC Platform Edition)

Sun Cluster 3.1 4/04 Software Collection for Solaris OS (x86 Platform Edition)

Sun Cluster 3.1 4/04 Reference Collection for Solaris OS

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

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

The Sun Cluster 3.1 user documentation is available in PDF and HTML format on the Sun Java Enterprise System 2004Q2 2 of 2 CD-ROM. See the `index.html` file at the top level of the CD-ROM for more information. 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 4/04 CD-ROM, where `arch` is `sparc` or `x86`, and `ver` is either 8 for Solaris 8 or 9 for Solaris 9. The `SUNWsdocs` package is also automatically installed when you run the `installer` program from the Solaris 9 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 4/04 Software Collection for Solaris OS (SPARC Platform Edition)

TABLE 1-3 Sun Cluster 3.1 4/04 Software Collection for Solaris OS (SPARC Platform Edition)

Part Number	Book Title
817-4226	<i>Sun Cluster Concepts Guide for Solaris OS</i>
817-3892	<i>Sun Cluster Overview for Solaris OS</i>
817-4229	<i>Sun Cluster Software Installation Guide for Solaris OS</i>
817-4230	<i>Sun Cluster System Administration Guide for Solaris OS</i>
817-4227	<i>Sun Cluster Data Services Developer's Guide for Solaris OS</i>
817-4228	<i>Sun Cluster Error Messages Guide for Solaris OS</i>
817-4231	<i>Sun Cluster Reference Manual for Solaris OS</i>
817-4638	<i>Sun Cluster Data Services Planning and Administration Guide for Solaris OS</i>
817-4644	<i>Sun Cluster Data Service for Apache Guide for Solaris OS</i>
817-4575	<i>Sun Cluster Data Service for Apache Tomcat Guide for Solaris OS</i>
817-4653	<i>Sun Cluster Data Service for BroadVision One-To-One Enterprise Guide for Solaris OS</i>
817-4582	<i>Sun Cluster Data Service for DHCP Guide for Solaris OS</i>
817-4645	<i>Sun Cluster Data Service for Domain Name Service (DNS) Guide for Solaris OS</i>
817-4574	<i>Sun Cluster Data Service for MySQL Guide for Solaris OS</i>
817-4651	<i>Sun Cluster Data Service for NetBackup Guide for Solaris OS</i>
817-4646	<i>Sun Cluster Data Service for Network File System (NFS) Guide for Solaris OS</i>
817-4577	<i>Sun Cluster Data Service for Oracle E-Business Suite Guide for Solaris OS</i>
817-4639	<i>Sun Cluster Data Service for Oracle Guide for Solaris OS</i>
817-4640	<i>Sun Cluster Data Service for Oracle Parallel Server/Real Application Clusters Guide for Solaris OS</i>
817-4581	<i>Sun Cluster Data Service for Samba Guide for Solaris OS</i>
817-3922	<i>Sun Cluster Data Service for SAP DB Guide for Solaris OS</i>
817-4647	<i>Sun Cluster Data Service for SAP Guide for Solaris OS</i>

TABLE 1-3 Sun Cluster 3.1 4/04 Software Collection for Solaris OS (SPARC Platform Edition) (Continued)

Part Number	Book Title
817-4648	<i>Sun Cluster Data Service for SAP liveCache Guide for Solaris OS</i>
817-4652	<i>Sun Cluster Data Service for Siebel Guide for Solaris OS</i>
817-3920	<i>Sun Cluster Data Service for Sun Java System Application Server Guide for Solaris OS</i>
817-3919	<i>Sun Cluster Data Service for Sun Java System HADB Guide for Solaris OS</i>
817-4643	<i>Sun Cluster Data Service for Sun Java System Message Queue Guide for Solaris OS</i>
817-4641	<i>Sun Cluster Data Service for Sun Java System Web Server Guide for Solaris OS</i>
817-4576	<i>Sun Cluster Data Service for SWIFTAlliance Access Guide for Solaris OS</i>
817-4650	<i>Sun Cluster Data Service for Sybase ASE Guide for Solaris OS</i>
817-4649	<i>Sun Cluster Data Service for WebLogic Server Guide for Solaris OS</i>
817-4580	<i>Sun Cluster Data Service for WebSphere MQ Integrator Guide for Solaris OS</i>
817-4579	<i>Sun Cluster Data Service for WebSphere MQ Guide for Solaris OS</i>

Sun Cluster 3.1 4/04 Software Collection for Solaris OS (x86 Platform Edition)

TABLE 1-4 Sun Cluster 3.1 4/04 Software Collection for Solaris OS (x86 Platform Edition)

Part Number	Book Title
817-4226	<i>Sun Cluster Concepts Guide for Solaris OS</i>
817-3892	<i>Sun Cluster Overview for Solaris OS</i>
817-4229	<i>Sun Cluster Software Installation Guide for Solaris OS</i>
817-4230	<i>Sun Cluster System Administration Guide for Solaris OS</i>
817-4227	<i>Sun Cluster Data Services Developer's Guide for Solaris OS</i>
817-4228	<i>Sun Cluster Error Messages Guide for Solaris OS</i>
817-4231	<i>Sun Cluster Reference Manual for Solaris OS</i>
817-4638	<i>Sun Cluster Data Services Planning and Administration Guide for Solaris OS</i>
817-4575	<i>Sun Cluster Data Service for Apache Tomcat Guide for Solaris OS</i>
817-4582	<i>Sun Cluster Data Service for DHCP Guide for Solaris OS</i>

TABLE 1-4 Sun Cluster 3.1 4/04 Software Collection for Solaris OS (x86 Platform Edition) (Continued)

Part Number	Book Title
817-4645	<i>Sun Cluster Data Service for Domain Name Service (DNS) Guide for Solaris OS</i>
817-4574	<i>Sun Cluster Data Service for MySQL Guide for Solaris OS</i>
817-4646	<i>Sun Cluster Data Service for Network File System (NFS) Guide for Solaris OS</i>
817-4581	<i>Sun Cluster Data Service for Samba Guide for Solaris OS</i>
817-3920	<i>Sun Cluster Data Service for Sun Java System Application Server Guide for Solaris OS</i>
817-4643	<i>Sun Cluster Data Service for Sun Java System Message Queue Guide for Solaris OS</i>
817-4641	<i>Sun Cluster Data Service for Sun Java System Web Server Guide for Solaris OS</i>

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

TABLE 1-5 Sun Cluster 3.x Hardware Collection for Solaris OS (SPARC Platform Edition)

Part Number	Book Title
817-0168	<i>Sun Cluster 3.x Hardware Administration Manual for Solaris OS</i>
817-0180	<i>Sun Cluster 3.x With Sun StorEdge 3310 Array Manual for Solaris OS</i>
817-1673	<i>Sun Cluster 3.x With Sun StorEdge 3510 FC Array Manual for Solaris OS</i>
817-0179	<i>Sun Cluster 3.x With Sun StorEdge 3900 or 6900 Series System Manual for Solaris OS</i>
817-1701	<i>Sun Cluster 3.x With Sun StorEdge 6120 Array Manual for Solaris OS</i>
817-1702	<i>Sun Cluster 3.x With Sun StorEdge 6320 System Manual for Solaris OS</i>
817-0177	<i>Sun Cluster 3.x With Sun StorEdge 9900 Series Storage Device Manual for Solaris OS</i>
817-0171	<i>Sun Cluster 3.x With Sun StorEdge A1000 or Netra st A1000 Array Manual for Solaris OS</i>
817-0174	<i>Sun Cluster 3.x With Sun StorEdge A3500/A3500FC System Manual for Solaris OS</i>
817-0173	<i>Sun Cluster 3.x With Sun StorEdge A5x00 Array Manual for Solaris OS</i>
817-0170	<i>Sun Cluster 3.x With Sun StorEdge D1000 or Netra st D1000 Disk Array Manual for Solaris OS</i>

TABLE 1-5 Sun Cluster 3.x Hardware Collection for Solaris OS (SPARC Platform Edition)
(Continued)

Part Number	Book Title
817-0172	<i>Sun Cluster 3.x With Sun StorEdge D2 Array Manual for Solaris OS</i>
817-0169	<i>Sun Cluster 3.x With Sun StorEdge MultiPack Enclosure Manual for Solaris OS</i>
817-0178	<i>Sun Cluster 3.x With Sun StorEdge Netra D130 or StorEdge S1 Enclosure Manual for Solaris OS</i>
817-0176	<i>Sun Cluster 3.x With Sun StorEdge T3 or T3+ Array Manual for Solaris OS</i>

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

TABLE 1-6 Sun Cluster 3.x Hardware Collection for Solaris OS (x86 Platform Edition)

Part Number	Book Title
817-0168	<i>Sun Cluster 3.x Hardware Administration Manual for Solaris OS</i>
817-0180	<i>Sun Cluster 3.x With Sun StorEdge 3310 Array Manual for Solaris OS</i>

Documentation Issues

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

Note – All occurrences of "Sun One" in the names and descriptions of the data services for the JES 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."

Software Installation Guide

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

Step Missing to Install Packages for the RSMAPI and SCI-PCI Adapters

The procedure “How to Configure Sun Cluster Software on All Nodes (scinstall)” does not include instructions to install the Sun Cluster software packages that support the RSMAPI and SCI-PCI adapters. The `installer` utility does not automatically install these packages.

Follow these steps to install these additional packages from the Sun Cluster 3.1 CD-ROM. Install these packages before you install Sun Cluster framework software.

1. Determine which packages you must install.

The following table lists the Sun Cluster 3.1 packages that each feature requires and the order in which you must install each group of packages.

Feature	Additional Sun Cluster 3.1 Packages to Install
RSMAPI	SUNWscrif
SCI-PCI adapters	SUNWsci SUNWscid SUNWscidx

2. Use the following command to install the additional packages.

Replace *arch* with *sparc* or *x86* and replace *ver* with 8 (for Solaris 8) or 9 (for Solaris 9).

```
# cd /cdrom/suncluster_3_1Packages
# pkgadd -d . packages
```

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.

Role-Based Access Control (RBAC) (4895087)

In the table under "Sun Cluster RBAC Rights Profiles," the authorizations `solaris.cluster.appinstall` and `solaris.cluster.install` should be listed under the Cluster Management profile rather than the Cluster Operation profile.

In the table under "Sun Cluster RBAC Rights Profiles," under the profile Sun Cluster Commands, `sccheck(1M)` should also be included in the list of commands.

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 re-routed 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 discusses errors and omissions from the *Sun Cluster System Administration Guide for Solaris OS*.

Simple Root Disk Groups With VERITAS Volume Manager

Simple root disk groups are not supported as disk types with VERITAS Volume Manager on Sun Cluster software. As a result, if you perform the procedure “How to Restore a Non-Encapsulated root (/) File System (VERITAS Volume Manager)” in the *Sun Cluster System Administration Guide for Solaris OS*, you should ignore Step 9, which asks you to determine if the root disk group (`root.dg`) is on a single slice on the root disk. You would complete Step 1 through Step 8, skip Step 9, and proceed with Step 10 to the end of the procedure.

Changing the Number of Node Attachments to a Quorum Device

When increasing or decreasing the number of node attachments to a quorum device, the quorum vote count is not automatically recalculated. You can re-establish the correct quorum vote if you remove all quorum devices and then add them back into the configuration.

Data Service Guides

This section discusses errors and omissions from the Data Service Guides.

Data Service for Sun Java System Application Server

In the *Sun Cluster Data Service for Sun Java System Application Server Guide for Solaris OS*, the example given for the `asadmin` command is incorrect and should be ignored. Step 15 of the procedure “How to Install and Configure the Sun Java System Application Server” should read as follows:

Change the location of the `accesslog` parameter to reflect the directory that you created in Step 11. To change this parameter, use the `asadmin` utility. See *Sun Java System Application Server 7 Administration Guide* for instructions.

Man Pages

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

scconf_transp_adap_sci(1M)

The `scconf_transp_adap_sci(1M)` man page states that SCI transport adapters can be used with the `rsm` transport type. This support statement is incorrect. SCI transport adapters do *not* support the `rsm` transport type. SCI transport adapters support the `dlpi` transport type only.

scconf_transp_adap_sci(1M)

The following sentence clarifies the name of an SCI-PCI adapter. This information is not currently included in the `scconf_transp_adap_sci(1M)` man page.

New Information:

Use the name `sciN` to specify an SCI adapter.

scgdevs(1M)

The following paragraph clarifies behavior of the `scgdevs` command. This information is not currently included in the `scgdevs(1M)` man page.

New Information:

`scgdevs(1M)` called from the local node will perform its work on remote nodes asynchronously. Therefore, command completion on the local node does not necessarily mean it has completed its work cluster wide.

rt_properties(5)

In this release, the current `API_version` has been incremented to 3 from its previous value of 2. If you are developing a new Sun Cluster agent and wish to prevent your new resource type from being registered on an earlier version of Sun Cluster software, declare `API_version=3` in your agent's RTR file. For more information, see `seert_properties(5)`.

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 software. See "Patches and Required Firmware Levels" on page 25 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
```

SUNW.sapdb(5)

The tunability of the `Restart_if_Parent_Terminated` extension property is any time, and not as incorrectly stated in the `SUNW.sapdb(5)` man page.

SUNW.wls(5)

There is an error in the See Also section of this man page. Instead of referencing the Sun Cluster 3.1 Data Services Installation and Configuration Guide, you should reference the *Sun Cluster Data Service for WebLogic Server Guide for Solaris OS*.

