# Sun Cluster Upgrade Guide for Solaris OS

Sun microsystems

# Contents

# Preface

The *Sun Cluster Upgrade Guide for Solaris OS* contains guidelines and procedures for upgrading the Sun Cluster software on both SPARC® based systems and x86 based systems.

**Note –** This Sun Cluster release supports systems that use the SPARC and x86 families of processor architectures: UltraSPARC, SPARC64, AMD64, and Intel 64. In this document, x86 refers to the larger family of 64-bit x86 compatible products. Information in this document pertains to all platforms unless otherwise specified.

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

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

**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 about commands that are used to install, configure, or upgrade a Sun Cluster configuration. This document might not contain complete information about basic UNIX® commands and procedures such as shutting down the system, booting the system, and configuring devices.

See one or more of the following sources for this information.

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

# Typographic Conventions

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

**TABLE P–1**    Typographic Conventions

| Typeface | Meaning | Example |
|---|---|---|
| AaBbCc123 | The names of commands, files, and directories, and onscreen computer output | Edit your `.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*. |
| | | A *cache* is a copy that is stored locally. |
| | | Do *not* save the file. |
| | | **Note:** Some emphasized items appear bold online. |

# Shell Prompts in Command Examples

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

**TABLE P–2**    Shell Prompts

| Shell | Prompt |
|---|---|
| C shell | `machine_name%` |
| C shell for superuser | `machine_name#` |
| Bourne shell and Korn shell | `$` |
| Bourne shell and Korn shell for superuser | `#` |

# 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* |
| | *Sun Cluster 3.2 1/09 Documentation Center* |
| Concepts | *Sun Cluster Concepts Guide for Solaris OS* |
| Hardware installation and administration | *Sun Cluster 3.1 - 3.2 Hardware Administration Manual for Solaris OS* |
| | Individual hardware administration guides |
| Software installation | *Sun Cluster Software Installation Guide for Solaris OS* |
| | *Sun Cluster Quick Start 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* |
| | *Sun Cluster Quick Reference* |
| Software upgrade | *Sun Cluster Upgrade 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* |
| | *Sun Cluster Data Services Reference Manual for Solaris OS* |
| | *Sun Cluster Quorum Server 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://wikis.sun.com/display/SunCluster/Home/.

# Related Third-Party Web Site References

Sun is not responsible for the availability of third-party web sites mentioned in this document. Sun does not endorse and is not responsible or liable for any content, advertising, products, or other materials that are available on or through such sites or resources. Sun will not be responsible or liable for any actual or alleged damage or loss caused or alleged to be caused by or in connection with use of or reliance on any such content, goods, or services that are available on or through such sites or resources.

# Documentation, Support, and Training

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

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

# Getting Help

If you have problems installing or using Sun Cluster software, contact your service provider and supply the following information.

- Your name and email address (if available)
- Your company name, address, and phone number
- The model number and serial number of your systems
- The release number of the Solaris OS (for example, Solaris 10)
- The release number of Sun Cluster (for example, Sun Cluster 3.2 1/09)

Use the following commands to gather information about 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/clnode show-rev | Displays Sun Cluster release and package version information |

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

# Preparing to Upgrade Sun Cluster Software

This chapter provides the following information and procedures to prepare to upgrade a Sun Cluster configuration to Sun Cluster 3.2 1/09 software:

- "Upgrade Requirements and Software Support Guidelines" on page 9
- "Choosing a Sun Cluster Upgrade Method" on page 11

## Upgrade Requirements and Software Support Guidelines

Observe the following requirements and software-support guidelines when you upgrade to Sun Cluster 3.2 1/09 software:

- **Upgrade of x86 based systems** - On x86 based systems, you cannot upgrade from the Solaris 9 OS to the Solaris 10 OS. You must reinstall the cluster with a fresh installation of the Solaris 10 OS and Sun Cluster 3.2 software for x86 based systems. Follow procedures in Chapter 2, "Installing Software on Global-Cluster Nodes," in *Sun Cluster Software Installation Guide for Solaris OS*.

- **Minimum Sun Cluster software version** - Sun Cluster 3.2 1/09 software supports the following direct upgrade paths:

  - **SPARC: From version 3.0 including update releases to version 3.2 1/09** - Use the standard upgrade method only.

  - **SPARC: From version 3.1 including update releases to version 3.2 1/09** - Use the standard, dual-partition, or live upgrade method.

  - **From version 3.2 to version 3.2 1/09** - Use the standard, dual-partition, or live upgrade method.

  - **From version 3.2 to version 3.2 1/09** *with no Solaris upgrade or Solaris upgrade only to an update release* – You can also use the rolling upgrade method.

  See "Choosing a Sun Cluster Upgrade Method" on page 11 for additional requirements and restrictions for each upgrade method.

- **Patch requirement** - The following are the minimum Sun Cluster patch levels that are required. Apply the appropriate patch to your cluster before you start to upgrade Sun Cluster software. These patches contain versioning functionality that is necessary for Sun Cluster upgrade:
  - Solaris 9 OS - 125510–02
  - Solaris 10 OS on SPARC - 125511–02
  - Solaris 10 OS on x86 - 125512–02
- **Minimum Solaris OS** - The cluster must run on or be upgraded to at least Solaris 9 9/05 software or Solaris 10 5/08 software, including the most current required patches. The Solaris 9 OS is supported only on SPARC based platforms.
- **Supported hardware** - The cluster hardware must be a supported configuration for Sun Cluster 3.2 1/09 software. Contact your Sun representative for information about current supported Sun Cluster configurations.
- **Architecture changes during upgrade** - Sun Cluster 3.2 1/09 software does not support upgrade between architectures.
- **Software migration** - Do not migrate from one type of software product to another product during Sun Cluster upgrade. For example, migration from Solaris Volume Manager disk sets to VxVM disk groups or from UFS file systems to VxFS file systems is not supported during Sun Cluster upgrade. Perform only software configuration changes that are specified by upgrade procedures of an installed software product.
- **Global-devices partition size** - If the size of your /global/.devices/node@*nodeid* partition is less than 512 Mbytes but it provides sufficient space for existing device nodes, you do not need to change the file-system size. The 512-Mbyte minimum applies to new installations of Sun Cluster 3.2 1/09 software.

  However, you must still ensure that the global-devices file system has ample space and ample inode capacity for existing devices and for any new devices that you intend to configure. Certain configuration changes, such as adding disks, disk volumes, or metadevices, might require increasing the partition size to provide sufficient additional inodes.
- **Data services** - Sun Cluster 3.0 data services are not supported on Sun Cluster 3.2 software. You must upgrade all Sun Cluster 3.0 data service software to a supported version and migrate resources to the new resource-type version. However, you can continue to use data service software from Sun Cluster 3.1 or 3.2 releases after you upgrade the cluster to the Sun Cluster 3.2 1/09 release.
- **Upgrading to compatible versions** - You must upgrade all software on the cluster nodes to a version that is supported by Sun Cluster 3.2 1/09 software. For example, if a version of an application is supported on Sun Cluster 3.1 software but is not supported on Sun Cluster 3.2 1/09 software, you must upgrade that application to the version that is supported on Sun Cluster 3.2 1/09 software, if such a version exists. See "Supported Products" in Sun Cluster Release Notes for information about supported products.

- **Converting from NAFO to IPMP groups** - For upgrade from a Sun Cluster 3.0 release, have available the test IP addresses to use with your public-network adapters when NAFO groups are converted to IP network multipathing groups. The scinstall upgrade utility prompts you for a test IP address for each public-network adapter in the cluster. A test IP address must be on the same subnet as the primary IP address for the adapter.

  See *System Administration Guide: IP Services* (Solaris 9) or Chapter 31, "Administering IPMP (Tasks)," in *System Administration Guide: IP Services* (Solaris 10) for information about test IP addresses for IPMP groups.

- **Downgrade** - Sun Cluster 3.2 1/09 software does not support any downgrade of Sun Cluster software.

- **Limitation of scinstall for data-service upgrades** - The scinstall upgrade utility only upgrades those data services that are provided with Sun Cluster 3.2 1/09 software. You must manually upgrade any custom or third-party data services.

# Choosing a Sun Cluster Upgrade Method

The following matrixes summarize the supported upgrade methods for each Solaris OS version and platform, *provided that all other requirements for any supported method are met*:

TABLE 1–1 Upgrade From Sun Cluster 3.0 Software

| | Solaris 8 | Solaris 9 |
|---|---|---|
| **Method** | **SPARC** | **SPARC** |
| Standard upgrade | X | X |
| Dual-partition upgrade | - | – |
| Live upgrade | – | – |
| Rolling upgrade | – | – |

TABLE 1–2 Upgrade From Sun Cluster 3.1 Through 3.1 9/04 Software

| | Solaris 8 | | Solaris 9 | |
|---|---|---|---|---|
| **Method** | **SPARC** | **x86** | **SPARC** | **x86** |
| Standard upgrade | X | Direct upgrade is not permitted. You must perform a fresh installation of Solaris 10 OS for x86. | X | Direct upgrade is not permitted. You must perform a fresh installation of Solaris 10 OS for x86. |
| Dual-partition upgrade | X | | X | |
| Live upgrade | * | | X | |
| Rolling upgrade | - | | - | |

TABLE 1–2   Upgrade From Sun Cluster 3.1 Through 3.1 9/04 Software        *(Continued)*

| | Solaris 8 | | Solaris 9 | |
|---|---|---|---|---|
| Method | SPARC | x86 | SPARC | x86 |
| * Direct upgrade from the Solaris 8 OS to the Solaris 10 5/08 OS is not supported by Solaris Live Upgrade. See "Solaris Live Upgrade Restrictions" in *Solaris 10 5/08 Installation Guide: Solaris Live Upgrade and Upgrade Planning* for more information and upgrade alternatives. Direct upgrade from the Solaris 8 OS to the Solaris 9 OS is supported by Solaris Live Upgrade. | | | | |

TABLE 1–3   Upgrade From Sun Cluster 3.1 8/05 Through 3.2 Software, Including Solaris OS Upgrade

| | Solaris 8 | | Solaris 9 | | Solaris 10 | |
|---|---|---|---|---|---|---|
| Method | SPARC | x86 | SPARC | x86 | SPARC | x86 |
| Standard upgrade | X | Direct upgrade is not permitted. You must perform a fresh installation of Solaris 10 OS for x86. | X | Direct upgrade is not permitted. You must perform a fresh installation of Solaris 10 OS for x86. | X | X |
| Dual-partition upgrade | X | | X | | X | X |
| Live upgrade | * | | X | | X | X |
| Rolling upgrade | - | | - | | - | - |
| * Direct upgrade from the Solaris 8 OS to the Solaris 10 5/08 OS is not supported by Solaris Live Upgrade. See "Solaris Live Upgrade Restrictions" in *Solaris 10 5/08 Installation Guide: Solaris Live Upgrade and Upgrade Planning* for more information and upgrade alternatives. Direct upgrade from the Solaris 8 OS to the Solaris 9 OS is supported by Solaris Live Upgrade. | | | | | | |

TABLE 1–4   Upgrade From Sun Cluster 3.2 Software, With Solaris OS Update Only

| | Solaris 9 | | Solaris 10 | |
|---|---|---|---|---|
| Method | SPARC | x86 | SPARC | x86 |
| Standard upgrade | X | X | X | X |
| Dual-partition upgrade | X | X | X | X |
| Live upgrade | X | X | X | X |
| Rolling upgrade | X | X | X | X |

Choose from the following methods to upgrade your cluster to Sun Cluster 3.2 1/09 software:

- **Standard upgrade** – In a standard upgrade, you shut down the cluster before you upgrade the cluster nodes. You return the cluster to production after all nodes are fully upgraded. Use this method if you are upgrading from a Sun Cluster 3.0 release.

- **Dual-partition upgrade** - In a *dual-partition* upgrade, you divide the cluster into two groups of nodes. You bring down one group of nodes and upgrade those nodes. The other group of nodes continues to provide services. After you complete upgrade of the first group of nodes, you switch services to those upgraded nodes. You then upgrade the remaining nodes and boot them back into the rest of the cluster. The cluster outage time is limited to the amount of time needed for the cluster to switch over services to the upgraded partition.

  Observe the following additional restrictions and requirements for the dual–partition upgrade method:

  - **Sun Cluster HA for Sun Java™ System Application Server EE (HADB)** - If you are running the Sun Cluster HA for Sun Java System Application Server EE (HADB) data service with Sun Java System Application Server EE (HADB) software as of version 4.4, you must shut down the database before you begin the dual-partition upgrade. The HADB database does not tolerate the loss of membership that would occur when a partition of nodes is shut down for upgrade. This requirement does not apply to versions before version 4.4.

  - **Data format changes** - Do not use the dual-partition upgrade method if you intend to upgrade an application that requires that you change its data format during the application upgrade. The dual-partition upgrade method is not compatible with the extended downtime that is needed to perform data transformation.

  - **Location of application software** - Applications must be installed on nonshared storage. Shared storage is not accessible to a partition that is in noncluster mode. Therefore, it is not possible to upgrade application software that is located on shared storage.

  - **Division of storage** - Each shared storage device must be connected to a node in each group.

  - **Single-node clusters** - Dual-partition upgrade is not available to upgrade a single-node cluster. Use the standard upgrade or live upgrade method instead.

  - **Minimum Sun Cluster version** - The cluster must be running at least a Sun Cluster 3.1 release before you begin the dual-partition upgrade.

  - **Configuration changes** - Do not make cluster configuration changes that are not documented in the upgrade procedures. Such changes might not be propagated to the final cluster configuration. Also, validation attempts of such changes would fail because not all nodes are reachable during a dual-partition upgrade.

- **Live upgrade** - A live upgrade maintains your previous cluster configuration until you have upgraded all nodes and you commit to the upgrade. If the upgraded configuration causes a problem, you can revert to your previous cluster configuration until you can rectify the problem.

  Observe the following additional restrictions and requirements for the live upgrade method:

  - **Minimum Solaris OS patch level** - The following are the minimum Solaris OS patch levels that are required to use Solaris Live Upgrade.

    - Solaris 10 OS on SPARC — 137321–01

- Solaris 10 OS on x86 — 137322 —01
- Solaris 9 OS on SPARC — 137477–01
- Solaris 9 OS on x86 — 137478–01

- **Minimum Sun Cluster version** - The cluster must be running at least a Sun Cluster 3.1 release before you begin the live upgrade.

- **Minimum version of Live Upgrade software** - To use the live upgrade method, you must use the Solaris Live Upgrade packages from at least the Solaris 9 9/04 or Solaris 10 release. This requirement applies to clusters running on all Solaris OS versions, including Solaris 8 software. The live upgrade procedures provide instructions for upgrading these packages.

- **Dual-partition upgrade** - The live upgrade method cannot be used in conjunction with a dual-partition upgrade.

- **Disk space** - To use the live upgrade method, you must have enough spare disk space available to make a copy of each node's boot environment. You reclaim this disk space after the upgrade is complete and you have verified and committed the upgrade. For information about space requirements for an inactive boot environment, refer to "Solaris Live Upgrade Disk Space Requirements" in *Solaris 9 9/04 Installation Guide* or "Allocating Disk and Swap Space" in *Solaris 10 5/08 Installation Guide: Planning for Installation and Upgrade*.

- **Rolling upgrade** - In a rolling upgrade, you upgrade software to an update release on one node at a time. Services continue on the other nodes except for the time it takes to switch services from a node to be upgraded to a node that will remain in service.

  Observe the following additional restrictions and requirements for the rolling upgrade method:

  - **Minimum Sun Cluster version** - The cluster must be running a Sun Cluster 3.2 release.

  - **Required patch** - The cluster must be running at least level 02 of one of the following patches, depending on the platform:

    - Solaris 9 OS - 125510–02
    - Solaris 10 OS on SPARC - 125511–02
    - Solaris 10 OS on x86 - 125512–02

  - **Solaris upgrade paths** - You can upgrade the Solaris OS only to another update version of the same release. For example, you perform a rolling upgrade from Solaris 9 9/04 to Solaris 9 9/05, or from Solaris 10 11/06 to Solaris 10 7/07. But you cannot perform a rolling upgrade to upgrade from a version of Solaris 9 to a version of Solaris 10.

  - **Hardware configuration changes** - Do *not* make any changes to the cluster configuration during a rolling upgrade. For example, do not add to or change the cluster interconnect or quorum devices. If you need to make such a change, do so before you start the rolling upgrade procedure or wait until after all nodes are upgraded and the cluster is committed to the new software version.

- **Duration of the upgrade** - Limit the amount of time that you take to complete a rolling upgrade of all cluster nodes. After a node is upgraded, begin the upgrade of the next cluster node as soon as possible. You can experience performance penalties and other penalties when you run a mixed-version cluster for an extended period of time.

- **Software configuration changes** - Avoid installing new data services or issuing any administrative configuration commands during the upgrade.

- **New-feature availability** - Until all nodes of the cluster are successfully upgraded and the upgrade is committed, new features that are introduced by the new release might not be available.

For overview information about planning your Sun Cluster 3.2 1/09 configuration, see Chapter 1, "Planning the Sun Cluster Configuration," in *Sun Cluster Software Installation Guide for Solaris OS*.

2

# Performing a Standard Upgrade to Sun Cluster 3.2 1/09 Software

This chapter provides the following information to upgrade to Sun Cluster 3.2 1/09 software by using the standard nonrolling upgrade method:

- "How to Prepare the Cluster for Upgrade (Standard)" on page 18
- "How to Upgrade the Solaris OS and Volume Manager Software (Standard)" on page 26
- "How to Upgrade Sun Cluster 3.2 1/09 Software (Standard)" on page 31

## Performing a Standard Upgrade of a Cluster

The following table lists the tasks to perform to upgrade from Sun Cluster 3.1 or 3.2 software to Sun Cluster 3.2 1/09 software. You also perform these tasks to upgrade only the version of the Solaris OS. If you upgrade the Solaris OS to a new marketing release, such as from Solaris 9 to Solaris 10 software, you must also upgrade the Sun Cluster software and dependency software to the version that is compatible with the new version of the Solaris OS.

**TABLE 2–1**    Task Map: Performing a Standard Upgrade to Sun Cluster 3.2 1/09 Software

| Task | Instructions |
|------|-------------|
| 1. Read the upgrade requirements and restrictions. Determine the proper upgrade method for your configuration and needs. | "Upgrade Requirements and Software Support Guidelines" on page 9 <br><br> "Choosing a Sun Cluster Upgrade Method" on page 11 |
| 2. Remove the cluster from production and back up shared data. If Sun Cluster Geographic Edition software is installed, uninstall it. | "How to Prepare the Cluster for Upgrade (Standard)" on page 18 |

**TABLE 2–1** Task Map: Performing a Standard Upgrade to Sun Cluster 3.2 1/09 Software    *(Continued)*

| Task | Instructions |
|---|---|
| 3. Upgrade the Solaris software, if necessary, to a supported Solaris update. If the cluster uses dual-string mediators for Solaris Volume Manager software, unconfigure the mediators. As needed, upgrade Veritas Volume Manager (VxVM) and Veritas File System (VxFS). Solaris Volume Manager software is automatically upgraded with the Solaris OS. | "How to Upgrade the Solaris OS and Volume Manager Software (Standard)" on page 26 |
| 4. Upgrade to Sun Cluster 3.2 1/09 framework and data-service software. If necessary, upgrade applications. If the cluster uses dual-string mediators and you upgraded the Solaris OS, reconfigure the mediators. If you upgraded VxVM, upgrade disk groups. | "How to Upgrade Sun Cluster 3.2 1/09 Software (Standard)" on page 31 |
| 5. Use the scversions command to commit the cluster to the upgrade. | "How to Commit the Upgraded Cluster to Sun Cluster 3.2 1/09 Software" on page 95 |
| 6. Verify successful completion of upgrade to Sun Cluster 3.2 1/09 software. | "How to Verify Upgrade of Sun Cluster 3.2 1/09 Software" on page 96 |
| 7. Enable resources and bring resource groups online. Migrate existing resources to new resource types. | "How to Finish Upgrade to Sun Cluster 3.2 1/09 Software" on page 98 |
| 8. (*Optional*) SPARC: Upgrade the Sun Cluster module for Sun Management Center, if needed. | "SPARC: How to Upgrade Sun Cluster Module Software for Sun Management Center" on page 117 |

## ▼ How to Prepare the Cluster for Upgrade (Standard)

Perform this procedure to remove the cluster from production before you perform a standard upgrade. On the Solaris 10 OS, perform all steps from the global zone only.

**Before You Begin**    Perform the following tasks:

- Ensure that the configuration meets the requirements for upgrade. See "Upgrade Requirements and Software Support Guidelines" on page 9.

- Have available the installation media, documentation, and patches for all software products that you are upgrading, including the following software:

    - Solaris OS

    - Sun Cluster 3.2 1/09 framework

    - Sun Cluster 3.2 Core Patch

        - Solaris 9 OS - 125510–02
        - Solaris 10 OS on SPARC - 125511–02
        - Solaris 10 OS on x86 - 125512–02

    - Sun Cluster 3.2 1/09 data services (agents)

- Applications that are managed by Sun Cluster 3.2 1/09 data-services
- Veritas Volume Manager, if applicable

See *Patches and Required Firmware Levels* in the Sun Cluster Release Notes for the location of patches and installation instructions.

- If you use role-based access control (RBAC) instead of superuser to access the cluster nodes, ensure that you can assume an RBAC role that provides authorization for all Sun Cluster commands. This series of upgrade procedures requires the following Sun Cluster RBAC authorizations if the user is not superuser:
- `solaris.cluster.modify`
- `solaris.cluster.admin`
- `solaris.cluster.read`

See "Role-Based Access Control (Overview)" in *System Administration Guide: Security Services* for more information about using RBAC roles. See the Sun Cluster man pages for the RBAC authorization that each Sun Cluster subcommand requires.

**1    Ensure that the cluster is functioning normally.**

**a.    View the current status of the cluster by running the following command from any node.**

- On Sun Cluster 3.0 or 3.1 software, use the following command:

  phys-schost% **scstat**

- On Sun Cluster 3.2 software, use the following command:

  phys-schost% **cluster status**

See the scstat(1M) or cluster(1CL) man page for more information.

**b.    Search the** /var/adm/messages **log on the same node for unresolved error messages or warning messages.**

**c.    Check the volume-manager status.**

**2    Notify users that cluster services will be unavailable during the upgrade.**

**3    If Sun Cluster Geographic Edition software is installed, uninstall it.**

For uninstallation procedures, see the documentation for your version of Sun Cluster Geographic Edition software.

**4    Become superuser on a node of the cluster.**

**5  Take each resource group offline and disable all resources.**

Take offline all resource groups in the cluster, including those that are in non-global zones. Then disable all resources, to prevent the cluster from bringing the resources online automatically if a node is mistakenly rebooted into cluster mode.

- **If you are upgrading from Sun Cluster 3.1 or 3.2 software and want to use the** `scsetup` **or** `clsetup` **utility, perform the following steps:**

  a. **Start the utility.**

     - On Sun Cluster 3.1 software, use the following command:

       ```
       phys-schost# scsetup
       ```

     - On Sun Cluster 3.2 software, use the following command:

       ```
       phys-schost# clsetup
       ```

     The Main Menu is displayed.

  b. **Type the option number for Resource Groups and press the Return key.**

     The Resource Group Menu is displayed.

  c. **Type the option number for Online/Offline or Switchover a Resource Group and press the Return key.**

  d. **Follow the prompts to take offline all resource groups and to put them in the unmanaged state.**

  e. **When all resource groups are offline, type q to return to the Resource Group Menu.**

  f. **Exit the** `scsetup` **utility.**

     Type **q** to back out of each submenu or press **Ctrl-C**.

- **To use the command line, perform the following steps:**

  a. **Take each resource offline.**

     - On Sun Cluster 3.0 or 3.1 software, use the following command:

       ```
       phys-schost# scswitch -F -g resource-group
       ```

       -F                      Switches a resource group offline.

       -g *resource-group*     Specifies the name of the resource group to take offline.

     - On Sun Cluster 3.2 software, use the following command:

```
phys-schost# clresource offline resource-group
```

**b. From any node, list all enabled resources in the cluster.**

- On Sun Cluster 3.0 or 3.1 software, use the following command:

```
phys-schost# scrgadm -pv | grep "Res enabled"
(resource-group:resource) Res enabled: True
```

- On Sun Cluster 3.2 software, use the following command:

```
phys-schost# clresource show -p Enabled
=== Resources ===

Resource:                                      resource
  Enabled{nodename1}:                              True
  Enabled{nodename2}:                              True
...
```

**c. Identify those resources that depend on other resources.**

```
phys-schost# clresource show -p resource_dependencies
=== Resources ===

Resource:                                      node
  Resource_dependencies:                       node
...
```

You must disable dependent resources first before you disable the resources that they depend on.

**d. Disable each enabled resource in the cluster.**

- On Sun Cluster 3.0 or 3.1 software, use the following command:

```
phys-schost# scswitch -n -j resource
```

-n          Disables.

-j resource    Specifies the resource.

- On Sun Cluster 3.2 software, use the following command:

```
phys-schost# clresource disable resource
```

See the scswitch(1M) or clresource(1CL) man page for more information.

**e. Verify that all resources are disabled.**

- On Sun Cluster 3.0 or 3.1 software, use the following command:

```
phys-schost# scrgadm -pv | grep "Res enabled"
(resource-group:resource) Res enabled: False
```

- On Sun Cluster 3.2 software, use the following command:

```
phys-schost# clresource show -p Enabled
=== Resources ===

Resource:                                        resource
  Enabled{nodename1}:                            False
  Enabled{nodename2}:                            False
...
```

f.  **Move each resource group to the unmanaged state.**

- On Sun Cluster 3.0 or 3.1 software, use the following command:

```
phys-schost# scswitch -u -g resource-group
```

-u                  Moves the specified resource group to the unmanaged state.

-g *resource-group*   Specifies the name of the resource group to move into the
                    unmanaged state.

- On Sun Cluster 3.2 software, use the following command:

```
phys-schost# clresourcegroup unmanage resource-group
```

6   **Verify that all resources on all nodes are** Offline **and that all resource groups are in the**
    Unmanaged **state.**

- On Sun Cluster 3.0 or 3.1 software, use the following command:

```
phys-schost# scstat -g
```

- On Sun Cluster 3.2 software, use the following command:

```
phys-schost# cluster status -t resource,resourcegroup
```

7   **(Optional) If you are upgrading from a version of Sun Cluster 3.0 software and do not want your**
    ntp.conf **file renamed to** ntp.conf.cluster**, create an** ntp.conf.cluster **file.**

    On each node, copy /etc/inet/ntp.cluster as ntp.conf.cluster.

```
phys-schost# cp /etc/inet/ntp.cluster /etc/inet/ntp.conf.cluster
```

    The existence of an ntp.conf.cluster file prevents upgrade processing from renaming the
    ntp.conf file. The ntp.conf file will still be used to synchronize NTP among the cluster nodes.

8   **Stop all applications that are running on each node of the cluster.**

**9    Ensure that all shared data is backed up.**

**10   If you will upgrade the Solaris OS and your cluster uses dual-string mediators for Solaris Volume Manager software, unconfigure your mediators.**

See "Configuring Dual-String Mediators" in *Sun Cluster Software Installation Guide for Solaris OS* for more information about mediators.

**a.   Run the following command to verify that no mediator data problems exist.**

```
phys-schost# medstat -s setname
```

-s setname        Specifies the disk set name.

If the value in the Status field is Bad, repair the affected mediator host. Follow the procedure "How to Fix Bad Mediator Data" in *Sun Cluster Software Installation Guide for Solaris OS*.

**b.   List all mediators.**

Save this information for when you restore the mediators during the procedure "How to Finish Upgrade to Sun Cluster 3.2 1/09 Software" on page 98.

**c.   For a disk set that uses mediators, take ownership of the disk set if no node already has ownership.**

- On Sun Cluster 3.1 software, use the following command:

  ```
  phys-schost# scswitch -z -D setname -h node
  ```

  -z                   Changes mastery.

  -D *devicegroup*     Specifies the name of the disk set.

  -h *node*            Specifies the name of the node to become primary of the disk set.

- On Sun Cluster 3.2 software, use the following command:

  ```
  phys-schost# cldevicegroup switch -n node devicegroup
  ```

**d.   Unconfigure all mediators for the disk set.**

```
phys-schost# metaset -s setname -d -m mediator-host-list
```

-s *setname*              Specifies the disk set name.

-d                        Deletes from the disk set.

-m *mediator-host-list*   Specifies the name of the node to remove as a mediator host for the disk set.

See the mediator(7D) man page for further information about mediator-specific options to the metaset command.

**e. Repeat Step c through Step d for each remaining disk set that uses mediators.**

**11 From one node, shut down the cluster.**

- On Sun Cluster 3.0 or 3.1 software, use the following command:

    phys-schost# **scshutdown -g0 -y**

- On Sun Cluster 3.2 software, use the following command:

    phys-schost# **cluster shutdown -g0 -y**

See the scshutdown(1M)man page for more information.

**12 Boot each node into noncluster mode.**

- **On SPARC based systems, perform the following command:**

    ok **boot -x**

- **On x86 based systems, perform the following commands:**

    **a. In the GRUB menu, use the arrow keys to select the appropriate Solaris entry and type e to edit its commands.**

    The GRUB menu appears similar to the following:

    ```
    GNU GRUB version 0.95 (631K lower / 2095488K upper memory)
    +----------------------------------------------------------------------+
    | Solaris 10 /sol_10_x86                                                |
    | Solaris failsafe                                                      |
    |                                                                      |
    +----------------------------------------------------------------------+
    Use the ^ and v keys to select which entry is highlighted.
    Press enter to boot the selected OS, 'e' to edit the
    commands before booting, or 'c' for a command-line.
    ```

    For more information about GRUB based booting, see "Booting an x86 Based System by Using GRUB (Task Map)" in *System Administration Guide: Basic Administration*.

    **b. In the boot parameters screen, use the arrow keys to select the kernel entry and type e to edit the entry.**

    The GRUB boot parameters screen appears similar to the following:

    ```
    GNU GRUB version 0.95 (615K lower / 2095552K upper memory)
    +----------------------------------------------------------------------+
    | root (hd0,0,a)                                                        |
    | kernel /platform/i86pc/multiboot                                     |
    | module /platform/i86pc/boot_archive                                  |
    +----------------------------------------------------------------------+
    ```

```
Use the ^ and v keys to select which entry is highlighted.
Press 'b' to boot, 'e' to edit the selected command in the
boot sequence, 'c' for a command-line, 'o' to open a new line
after ('O' for before) the selected line, 'd' to remove the
selected line, or escape to go back to the main menu.
```

**c. Add -x to the command to specify that the system boot into noncluster mode.**

```
[ Minimal BASH-like line editing is supported. For the first word, TAB
lists possible command completions. Anywhere else TAB lists the possible
completions of a device/filename. ESC at any time exits. ]

grub edit> kernel /platform/i86pc/multiboot -x
```

**d. Press Enter to accept the change and return to the boot parameters screen.**

The screen displays the edited command.

```
GNU GRUB version 0.95 (615K lower / 2095552K upper memory)
+-------------------------------------------------------------------+
| root (hd0,0,a)                                                    |
| kernel /platform/i86pc/multiboot -x                               |
| module /platform/i86pc/boot_archive                               |
+-------------------------------------------------------------------+
Use the ^ and v keys to select which entry is highlighted.
Press 'b' to boot, 'e' to edit the selected command in the
boot sequence, 'c' for a command-line, 'o' to open a new line
after ('O' for before) the selected line, 'd' to remove the
selected line, or escape to go back to the main menu.-
```

**e. Type b to boot the node into noncluster mode.**

---

**Note** – This change to the kernel boot parameter command does not persist over the system boot. The next time you reboot the node, it will boot into cluster mode. To boot into noncluster mode instead, perform these steps to again to add the -x option to the kernel boot parameter command.

---

**13    Ensure that each system disk is backed up.**

**Next Steps**    Upgrade software on each node.

- To upgrade Solaris software before you perform Sun Cluster software upgrade, go to "How to Upgrade the Solaris OS and Volume Manager Software (Standard)" on page 26.
  - You must upgrade the Solaris software to a supported release if Sun Cluster 3.2 1/09 software does not support the release of the Solaris OS that your cluster currently runs . See "Supported Products" inSun Cluster Release Notes for more information.

- If Sun Cluster 3.2 1/09 software supports the release of the Solaris OS that you currently run on your cluster, further Solaris software upgrade is optional.

- Otherwise, upgrade to Sun Cluster 3.2 1/09 software. Go to "How to Upgrade Sun Cluster 3.2 1/09 Software (Standard)" on page 31.

## ▼ How to Upgrade the Solaris OS and Volume Manager Software (Standard)

Perform this procedure on each node in the cluster to upgrade the Solaris OS. On the Solaris 10 OS, perform all steps from the global zone only. If the cluster already runs on a version of the Solaris OS that supports Sun Cluster 3.2 1/09 software, further upgrade of the Solaris OS is optional. If you do not intend to upgrade the Solaris OS, proceed to "How to Upgrade Sun Cluster 3.2 1/09 Software (Standard)" on page 31.

---

**Note –** The cluster must already run on, or be upgraded to, at least the minimum required level of the Solaris OS to support upgrade to Sun Cluster 3.2 1/09 software. See "Supported Products" in Sun Cluster Release Notes for more information.

---

**Before You Begin**    Ensure that all steps in "How to Prepare the Cluster for Upgrade (Standard)" on page 18 are completed.

**1**    **Become superuser on the cluster node to upgrade.**

If you are performing a dual-partition upgrade, the node must be a member of the partition that is in noncluster mode.

**2**    **Determine whether the following Apache run-control scripts exist and are enabled or disabled:**

```
/etc/rc0.d/K16apache
/etc/rc1.d/K16apache
/etc/rc2.d/K16apache
/etc/rc3.d/S50apache
/etc/rcS.d/K16apache
```

Some applications, such as Sun Cluster HA for Apache, require that Apache run control scripts be disabled.

- If these scripts exist and contain an uppercase K or S in the file name, the scripts are enabled. No further action is necessary for these scripts.

- If these scripts do not exist, in Step 7 you must ensure that any Apache run control scripts that are installed during the Solaris OS upgrade are disabled.

- If these scripts exist but the file names contain a lowercase k or s, the scripts are disabled. In Step 7 you must ensure that any Apache run control scripts that are installed during the Solaris OS upgrade are disabled.

**3  Comment out all entries for globally mounted file systems in the node's** /etc/vfstab **file.**

   **a.  For later reference, make a record of all entries that are already commented out.**

   **b.  Temporarily comment out all entries for globally mounted file systems in the** /etc/vfstab **file.**

   Entries for globally mounted file systems contain the global mount option. Comment out these entries to prevent the Solaris upgrade from attempting to mount the global devices.

**4  Determine which procedure to follow to upgrade the Solaris OS.**

| Volume Manager | Procedure | Location of Instructions |
| --- | --- | --- |
| Solaris Volume Manager | Any Solaris upgrade method *except* the Live Upgrade method | Solaris installation documentation |
| Veritas Volume Manager | "Upgrading VxVM and Solaris" | Veritas Volume Manager installation documentation |

**Note** – If your cluster has VxVM installed, you must reinstall the existing VxVM software or upgrade to the Solaris 9 or 10 version of VxVM software as part of the Solaris upgrade process.

**5  Upgrade the Solaris software, following the procedure that you selected in Step 4.**

**Note** – *Do not* perform the final reboot instruction in the Solaris software upgrade. Instead, do the following:

a.  Return to this procedure to perform Step 6 and Step 7.
b.  Reboot into noncluster mode in Step 8 to complete Solaris software upgrade.

- When prompted, choose the manual reboot option.

- When you are instructed to reboot a node during the upgrade process, *always* reboot into noncluster mode. For the boot and reboot commands, add the -x option to the command. The -x option ensures that the node reboots into noncluster mode. For example, either of the following two commands boot a node into single-user noncluster mode:

- **On SPARC based systems, perform either of the following commands:**

  ```
  phys-schost# reboot -- -xs
       or
  ok boot -xs
  ```

  If the instruction says to run the init S command, use the reboot -- -xs command instead.

- **On x86 based systems, perform the following command:**

  ```
  phys-schost# shutdown -g -y -i0
  Press any key to continue
  ```

  a. **In the GRUB menu, use the arrow keys to select the appropriate Solaris entry and type e to edit its commands.**

  The GRUB menu appears similar to the following:

  ```
  GNU GRUB version 0.95 (631K lower / 2095488K upper memory)
  +-------------------------------------------------------------------------+
  | Solaris 10 /sol_10_x86                                                   |
  | Solaris failsafe                                                         |
  |                                                                         |
  +-------------------------------------------------------------------------+
  Use the ^ and v keys to select which entry is highlighted.
  Press enter to boot the selected OS, 'e' to edit the
  commands before booting, or 'c' for a command-line.
  ```

  For more information about GRUB based booting, see "Booting an x86 Based System by Using GRUB (Task Map)" in *System Administration Guide: Basic Administration*.

  b. **In the boot parameters screen, use the arrow keys to select the kernel entry and type e to edit the entry.**

  The GRUB boot parameters screen appears similar to the following:

  ```
  GNU GRUB version 0.95 (615K lower / 2095552K upper memory)
  +-------------------------------------------------------------------+
  | root (hd0,0,a)                                                    |
  | kernel /platform/i86pc/multiboot                                  |
  | module /platform/i86pc/boot_archive                               |
  +-------------------------------------------------------------------+
  Use the ^ and v keys to select which entry is highlighted.
  Press 'b' to boot, 'e' to edit the selected command in the
  boot sequence, 'c' for a command-line, 'o' to open a new line
  after ('O' for before) the selected line, 'd' to remove the
  ```

```
selected line, or escape to go back to the main menu.
```

c. **Add - x to the command to specify that the system boot into noncluster mode.**

```
[ Minimal BASH-like line editing is supported. For the first word, TAB
lists possible command completions. Anywhere else TAB lists the possible
completions of a device/filename. ESC at any time exits. ]

grub edit> kernel /platform/i86pc/multiboot -x
```

d. **Press Enter to accept the change and return to the boot parameters screen.**

The screen displays the edited command.

```
GNU GRUB version 0.95 (615K lower / 2095552K upper memory)
+-------------------------------------------------------------------+
| root (hd0,0,a)                                                    |
| kernel /platform/i86pc/multiboot -x                               |
| module /platform/i86pc/boot_archive                               |
+-------------------------------------------------------------------+
Use the ^ and v keys to select which entry is highlighted.
Press 'b' to boot, 'e' to edit the selected command in the
boot sequence, 'c' for a command-line, 'o' to open a new line
after ('O' for before) the selected line, 'd' to remove the
selected line, or escape to go back to the main menu.-
```

e. **Type b to boot the node into noncluster mode.**

---

**Note** – This change to the kernel boot parameter command does not persist over the system boot. The next time you reboot the node, it will boot into cluster mode. To boot into noncluster mode instead, perform these steps to again to add the -x option to the kernel boot parameter command.

---

If the instruction says to run the init S command, shut down the system then change the GRUB kernel boot command to /platform/i86pc/multiboot -sx instead.

6    In the /a/etc/vfstab **file, uncomment those entries for globally mounted file systems that you commented out in Step 3.**

7    **If Apache run control scripts were disabled or did not exist before you upgraded the Solaris OS, ensure that any scripts that were installed during Solaris upgrade are disabled.**

To disable Apache run control scripts, use the following commands to rename the files with a lowercase k or s.

```
phys-schost# mv /a/etc/rc0.d/K16apache /a/etc/rc0.d/k16apache
phys-schost# mv /a/etc/rc1.d/K16apache /a/etc/rc1.d/k16apache
phys-schost# mv /a/etc/rc2.d/K16apache /a/etc/rc2.d/k16apache
phys-schost# mv /a/etc/rc3.d/S50apache /a/etc/rc3.d/s50apache
phys-schost# mv /a/etc/rcS.d/K16apache /a/etc/rcS.d/k16apache
```

Alternatively, you can rename the scripts to be consistent with your normal administration practices.

**8 Reboot the node into noncluster mode.**

Include the double dashes (--) in the following command:

```
phys-schost# reboot -- -x
```

**9 If your cluster runs VxVM, perform the remaining steps in the procedure "Upgrading VxVM and Solaris" to reinstall or upgrade VxVM.**

Make the following changes to the procedure:

- **After VxVM upgrade is complete but before you reboot, verify the entries in the** /etc/vfstab **file.**

  If any of the entries that you uncommented in Step 6 were commented out, make those entries uncommented again.

- **When the VxVM procedures instruct you to perform a final reconfiguration reboot,** *do not* **use the** -r **option alone. Instead, reboot into noncluster mode by using the** -rx **options.**

  - **On SPARC based systems, perform the following command:**

    ```
    phys-schost# reboot -- -rx
    ```

  - **On x86 based systems, perform the shutdown and boot procedures that are described in Step 5 except add** -rx **to the kernel boot command instead of** -sx**.**

---

**Note –** If you see a message similar to the following, type the root password to continue upgrade processing. Do *not* run the fsck command nor type Ctrl-D.

```
WARNING - Unable to repair the /global/.devices/node@1 filesystem.
Run fsck manually (fsck -F ufs /dev/vx/rdsk/rootdisk_13vol). Exit the
shell when done to continue the boot process.

Type control-d to proceed with normal startup,
(or give root password for system maintenance):      Type the root password
```

---

**10 (Optional) SPARC: Upgrade VxFS.**

Follow procedures that are provided in your VxFS documentation.

**11 Install any required Solaris software patches and hardware-related patches, and download any needed firmware that is contained in the hardware patches.**

**Note** – Do not reboot after you add patches. Wait to reboot the node until after you upgrade the Sun Cluster software.

See *Patches and Required Firmware Levels* in the Sun Cluster Release Notes for the location of patches and installation instructions.

**Next Steps** Upgrade to Sun Cluster 3.2 1/09 software. Go to "How to Upgrade Sun Cluster 3.2 1/09 Software (Standard)" on page 31.

**Note** – To complete the upgrade to a new marketing release of the Solaris OS, such as from Solaris 8 to Solaris 10 software, you must also upgrade the Sun Cluster software and dependency software to the version that is compatible with the new version of the Solaris OS.

## ▼ How to Upgrade Sun Cluster 3.2 1/09 Software (Standard)

Perform this procedure to upgrade each node of the cluster to Sun Cluster 3.2 1/09 software. This procedure also upgrades required Sun Java Enterprise System shared components.

You must also perform this procedure after you upgrade to a different marketing release of the Solaris OS, such as from Solaris 8 to Solaris 10 software.

On the Solaris 10 OS, perform all steps from the global zone only.

**Tip** – You can perform this procedure on more than one node at the same time.

**Before You Begin** Perform the following tasks:

- Ensure that all steps in "How to Prepare the Cluster for Upgrade (Standard)" on page 18 are completed.
- If you upgraded to a new marketing release of the Solaris OS, such as from Solaris 8 to Solaris 10 software, ensure that all steps in "How to Upgrade the Solaris OS and Volume Manager Software (Standard)" on page 26 are completed.
- Ensure that you have installed all required Solaris software patches and hardware-related patches.

**1 Become superuser on a node of the cluster.**

**2    Ensure that the** /usr/java/ **directory is a symbolic link to the minimum or latest version of Java software.**

Sun Cluster software requires at least version 1.5.0_06 of Java software. If you upgraded to a version of Solaris that installs an earlier version of Java, the upgrade might have changed the symbolic link to point to a version of Java that does not meet the minimum requirement for Sun Cluster 3.2 software.

**a.   Determine what directory the** /usr/java/ **directory is symbolically linked to.**

```
phys-schost# ls -l /usr/java
lrwxrwxrwx   1 root   other    9 Apr 19 14:05 /usr/java -> /usr/j2se/
```

**b.   Determine what version or versions of Java software are installed.**

The following are examples of commands that you can use to display the version of their related releases of Java software.

```
phys-schost# /usr/j2se/bin/java -version
phys-schost# /usr/java1.2/bin/java -version
phys-schost# /usr/jdk/jdk1.5.0_06/bin/java -version
```

**c.   If the** /usr/java/ **directory is not symbolically linked to a supported version of Java software, recreate the symbolic link to link to a supported version of Java software.**

The following example shows the creation of a symbolic link to the /usr/j2se/ directory, which contains Java 1.5.0_06 software.

```
phys-schost# rm /usr/java
phys-schost# ln -s /usr/j2se /usr/java
```

**3    Load the Sun Java Availability Suite DVD-ROM into the DVD-ROM drive.**

If the volume management daemon vold(1M) is running and is configured to manage CD-ROM or DVD devices, the daemon automatically mounts the media on the /cdrom/cdrom0 directory.

**4    Change to the installation wizard directory of the DVD-ROM.**

- If you are installing the software packages on the SPARC platform, type the following command:

  ```
  phys-schost# cd /cdrom/cdrom0/Solaris_sparc
  ```

- If you are installing the software packages on the x86 platform, type the following command:

  ```
  phys-schost# cd /cdrom/cdrom0/Solaris_x86
  ```

**5    Start the installation wizard program.**

```
phys-schost# ./installer
```

**6    Follow the instructions on the screen to select and upgrade Shared Components software packages on the node.**

---

**Note –** Do *not* use the installation wizard program to upgrade Sun Cluster software packages.

---

The installation wizard program displays the status of the installation. When the installation is complete, the program displays an installation summary and the installation logs.

**7    Exit the installation wizard program.**

**8    Change to the** /Solaris_*arch*/Product/sun_cluster/Solaris_*ver*/Tools/ **directory, where** *arch* **is** sparc **or** x86 **(Solaris 10 only) and where** *ver* **is** 9 **for Solaris 9 or** 10 **for Solaris 10 .**

```
phys-schost# cd /cdrom/cdrom0/Solaris_arch/Product/sun_cluster/Solaris_ver/Tools
```

**9    Start the** scinstall **utility.**

```
phys-schost# ./scinstall
```

---

**Note –** Do not use the /usr/cluster/bin/scinstall command that is already installed on the node. You must use the scinstall command that is located on the Sun Java Availability Suite DVD-ROM.

---

The scinstall Main Menu is displayed.

**10   Type the option number for Upgrade This Cluster Node and press the Return key.**

```
   *** Main Menu ***

  Please select from one of the following (*) options:

      1) Create a new cluster or add a cluster node
      2) Configure a cluster to be JumpStarted from this install server
    * 3) Manage a dual-partition upgrade
    * 4) Upgrade this cluster node
    * 5) Print release information for this cluster node

    * ?) Help with menu options
    * q) Quit

    Option:  4
```

The Upgrade Menu is displayed.

**11   Type the option number for Upgrade Sun Cluster Framework On This Cluster Node and press the Return key.**

**12   Follow the menu prompts to upgrade the cluster framework.**

During the Sun Cluster upgrade, scinstall might make one or more of the following configuration changes:

- Convert NAFO groups to IPMP groups but keep the original NAFO-group name.

  See one of the following manuals for information about test addresses for IPMP:

  - "Configuring Test Addresses" in "Administering Multipathing Groups With Multiple Physical Interfaces" in *System Administration Guide: IP Services* (Solaris 9)
  - "Test Addresses" in *System Administration Guide: IP Services* (Solaris 10)

  See the scinstall(1M) man page for more information about the conversion of NAFO groups to IPMP during Sun Cluster software upgrade.

- Rename the ntp.conf file to ntp.conf.cluster, if ntp.conf.cluster does not already exist on the node.

- Set the local-mac-address? variable to true, if the variable is not already set to that value.

Upgrade processing is finished when the system displays the message Completed Sun Cluster framework upgrade and prompts you to press Enter to continue.

**13   Quit the scinstall utility.**

**14   Upgrade data service packages.**

You must upgrade all data services to the Sun Cluster 3.2 version.

---

**Note –** For Sun Cluster HA for SAP Web Application Server, if you are using a J2EE engine resource or a web application server component resource or both, you must delete the resource and recreate it with the new web application server component resource. Changes in the new web application server component resource includes integration of the J2EE functionality. For more information, see *Sun Cluster Data Service for SAP Web Application Server Guide for Solaris OS*.

---

**a. Start the upgraded interactive scinstall utility.**

```
phys-schost# /usr/cluster/bin/scinstall
```

---

**Note –** Do not use the scinstall utility that is on the installation media to upgrade data service packages.

---

The scinstall Main Menu is displayed.

**b. Type the option number for Upgrade This Cluster Node and press the Return key.**

The Upgrade Menu is displayed.

    **c. Type the option number for Upgrade Sun Cluster Data Service Agents On This Node and press the Return key.**

    **d. Follow the menu prompts to upgrade Sun Cluster data service agents that are installed on the node.**

    You can choose from the list of data services that are available to upgrade or choose to upgrade all installed data services.

    Upgrade processing is finished when the system displays the message `Completed upgrade of Sun Cluster data services agents` and prompts you to press Enter to continue.

    **e. Press Enter.**

    The Upgrade Menu is displayed.

**15**   **Quit the** `scinstall` **utility.**

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

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

    **b. Eject the DVD-ROM.**

    `phys-schost# `**`eject cdrom`**

**17**   **If you have Sun Cluster HA for NFS configured on a highly available local file system, ensure that the loopback file system (LOFS) is disabled.**

---

**Note –** If you have non-global zones configured, LOFS must remain enabled. For guidelines about using LOFS and alternatives to disabling it, see "Cluster File Systems" in *Sun Cluster Software Installation Guide for Solaris OS*.

---

As of the Sun Cluster 3.2 release, LOFS is no longer disabled by default during Sun Cluster software installation or upgrade. To disable LOFS, ensure that the `/etc/system` file contains the following entry:

`exclude:lofs`

This change becomes effective at the next system reboot.

**18**   **As needed, manually upgrade any custom data services that are not supplied on the product media.**

**19**   **Verify that each data-service update is installed successfully.**

    View the upgrade log file that is referenced at the end of the upgrade output messages.

**20    Install any Sun Cluster 3.2 1/09 framework and data-service software patches.**

See *Patches and Required Firmware Levels* in the Sun Cluster Release Notes for the location of patches and installation instructions.

**21    Upgrade software applications that are installed on the cluster.**

Ensure that application levels are compatible with the current versions of Sun Cluster and Solaris software. See your application documentation for installation instructions.

**22    (Optional) Reconfigure the private-network address range.**

Perform this step if you want to increase or decrease the size of the IP address range that is used by the private interconnect. The IP address range that you configure must minimally support the number of nodes and private networks in the cluster. See "Private Network" in *Sun Cluster Software Installation Guide for Solaris OS* for more information.

   **a. From one node, start the `clsetup` utility.**

   When run in noncluster mode, the `clsetup` utility displays the Main Menu for noncluster-mode operations.

   **b. Type the option number for Change IP Address Range and press the Return key.**

   The `clsetup` utility displays the current private-network configuration, then asks if you would like to change this configuration.

   **c. To change either the private-network IP address or the IP address range, type `yes` and press the Return key.**

   The `clsetup` utility displays the default private-network IP address, `172.16.0.0`, and asks if it is okay to accept this default.

   **d. Change or accept the private-network IP address.**

   ■ **To accept the default private-network IP address and proceed to changing the IP address range, type `yes` and press the Return key.**

   The `clsetup` utility will ask if it is okay to accept the default netmask. Skip to the next step to enter your response.

   ■ **To change the default private-network IP address, perform the following substeps.**

   **i. Type `no` in response to the `clsetup` utility question about whether it is okay to accept the default address, then press the Return key.**

   The `clsetup` utility will prompt for the new private-network IP address.

ii. **Type the new IP address and press the Return key.**

The `clsetup` utility displays the default netmask and then asks if it is okay to accept the default netmask.

e. **Change or accept the default private-network IP address range.**

The default netmask is 255.255.248.0. This default IP address range supports up to 64 nodes and up to 10 private networks in the cluster.

- **To accept the default IP address range, type** `yes` **and press the Return key.**

  Then skip to the next step.

- **To change the IP address range, perform the following substeps.**

  i. **Type** `no` **in response to the** `clsetup` **utility's question about whether it is okay to accept the default address range, then press the Return key.**

     When you decline the default netmask, the `clsetup` utility prompts you for the number of nodes and private networks that you expect to configure in the cluster.

  ii. **Enter the number of nodes and private networks that you expect to configure in the cluster.**

     From these numbers, the `clsetup` utility calculates two proposed netmasks:

     - The first netmask is the minimum netmask to support the number of nodes and private networks that you specified.
     - The second netmask supports twice the number of nodes and private networks that you specified, to accommodate possible future growth.

  iii. **Specify either of the calculated netmasks, or specify a different netmask that supports the expected number of nodes and private networks.**

f. **Type** `yes` **in response to the** `clsetup` **utility's question about proceeding with the update.**

g. **When finished, exit the** `clsetup` **utility.**

23 **After all nodes in the cluster are upgraded, reboot the upgraded nodes.**

a. **Shut down each node.**

   ```
   phys-schost# shutdown -g0 -y
   ```

b. **Boot each node into cluster mode.**

   - **On SPARC based systems, do the following:**
     ```
     ok boot
     ```

■ **On x86 based systems, do the following:**

When the GRUB menu is displayed, select the appropriate Solaris entry and press Enter. The GRUB menu appears similar to the following:

```
GNU GRUB version 0.95 (631K lower / 2095488K upper memory)
+-------------------------------------------------------------------+
| Solaris 10 /sol_10_x86                                            |
| Solaris failsafe                                                   |
|                                                                   |
+-------------------------------------------------------------------+
Use the ^ and v keys to select which entry is highlighted.
Press enter to boot the selected OS, 'e' to edit the
commands before booting, or 'c' for a command-line.
```

For more information about GRUB based booting, see "Booting an x86 Based System by Using GRUB (Task Map)" in *System Administration Guide: Basic Administration*.

**Next Steps**    Go to Chapter 6, "Completing the Upgrade."

# 3

# Performing a Dual-Partition Upgrade to Sun Cluster 3.2 1/09 Software

This chapter provides the following information to upgrade a multiple-node cluster from a Sun Cluster 3.1 or 3.2 release to Sun Cluster 3.2 1/09 software by using the dual-partition upgrade method:

- "How to Prepare the Cluster for Upgrade (Dual-Partition)" on page 40
- "How to Upgrade the Solaris OS and Volume Manager Software (Dual-Partition)" on page 49
- "How to Upgrade Sun Cluster 3.2 1/09 Software (Dual-Partition)" on page 54

## Performing a Dual-Partition Upgrade of a Cluster

The following table lists the tasks to perform to upgrade from Sun Cluster 3.1 or 3.2 software to Sun Cluster 3.2 1/09 software. You also perform these tasks to upgrade only the version of the Solaris OS. If you upgrade the Solaris OS to a new marketing release, such as from Solaris 9 to Solaris 10 software, you must also upgrade the Sun Cluster software and dependency software to the version that is compatible with the new version of the Solaris OS.

**TABLE 3–1**    Task Map: Performing a Dual-Partition Upgrade to Sun Cluster 3.2 1/09 Software

| Task | Instructions |
|------|--------------|
| 1. Read the upgrade requirements and restrictions. Determine the proper upgrade method for your configuration and needs. | "Upgrade Requirements and Software Support Guidelines" on page 9<br><br>"Choosing a Sun Cluster Upgrade Method" on page 11 |
| 2. If Sun Cluster Geographic Edition software is installed, uninstall it. Partition the cluster into two groups of nodes. | "How to Prepare the Cluster for Upgrade (Dual-Partition)" on page 40 |

**TABLE 3–1**   Task Map: Performing a Dual-Partition Upgrade to Sun Cluster 3.2 1/09 Software      *(Continued)*

| Task | Instructions |
|---|---|
| 3. Upgrade the Solaris software, if necessary, to a supported Solaris update. If the cluster uses dual-string mediators for Solaris Volume Manager software, unconfigure the mediators. As needed, upgrade Veritas Volume Manager (VxVM) and Veritas File System (VxFS). Solaris Volume Manager software is automatically upgraded with the Solaris OS. | "How to Upgrade the Solaris OS and Volume Manager Software (Dual-Partition)" on page 49 |
| 4. Upgrade to Sun Cluster 3.2 1/09 framework and data-service software. If necessary, upgrade applications. If the cluster uses dual-string mediators and you upgraded the Solaris OS, reconfigure the mediators. If you upgraded VxVM, upgrade disk groups. | "How to Upgrade Sun Cluster 3.2 1/09 Software (Dual-Partition)" on page 54 |
| 5. Use the scversions command to commit the cluster to the upgrade. | "How to Commit the Upgraded Cluster to Sun Cluster 3.2 1/09 Software" on page 95 |
| 6. Verify successful completion of upgrade to Sun Cluster 3.2 1/09 software. | "How to Verify Upgrade of Sun Cluster 3.2 1/09 Software" on page 96 |
| 7. Enable resources and bring resource groups online. Optionally, migrate existing resources to new resource types. | "How to Finish Upgrade to Sun Cluster 3.2 1/09 Software" on page 98 |
| 8. (*Optional*) SPARC: Upgrade the Sun Cluster module for Sun Management Center, if needed. | "SPARC: How to Upgrade Sun Cluster Module Software for Sun Management Center" on page 117 |

## ▼ How to Prepare the Cluster for Upgrade (Dual-Partition)

Perform this procedure to prepare a multiple-node cluster for a dual-partition upgrade. These procedures will refer to the two groups of nodes as the first partition and the second partition. The nodes that you assign to the second partition will continue cluster services while you upgrade the nodes in the first partition. After all nodes in the first partition are upgraded, you switch cluster services to the first partition and upgrade the second partition. After all nodes in the second partition are upgraded, you boot the nodes into cluster mode to rejoin the nodes from the first partition.

**Note –** If you are upgrading a single-node cluster, do not use this upgrade method. Instead, go to "How to Prepare the Cluster for Upgrade (Standard)" on page 18 or "How to Prepare the Cluster for Upgrade (Live Upgrade)" on page 64.

On the Solaris 10 OS, perform all steps from the global zone only.

**Before You Begin**   Perform the following tasks:

- Ensure that the configuration meets the requirements for upgrade. See "Upgrade Requirements and Software Support Guidelines" on page 9.

- Have available the installation media, documentation, and patches for all software products that you are upgrading, including the following software:

  - Solaris OS

  - Sun Cluster 3.2 1/09 framework

  - Sun Cluster 3.2 Core Patch

    - Solaris 9 OS - 125510–02
    - Solaris 10 OS on SPARC - 125511–02
    - Solaris 10 OS on x86 - 125512–02

  - Sun Cluster 3.2 1/09 data services (agents)

  - Applications that are managed by Sun Cluster 3.2 1/09 data-services

  - Veritas Volume Manager, if applicable

  See *Patches and Required Firmware Levels* in the Sun Cluster Release Notes for the location of patches and installation instructions.

- If you use role-based access control (RBAC) instead of superuser to access the cluster nodes, ensure that you can assume an RBAC role that provides authorization for all Sun Cluster commands. This series of upgrade procedures requires the following Sun Cluster RBAC authorizations if the user is not superuser:

  - `solaris.cluster.modify`
  - `solaris.cluster.admin`
  - `solaris.cluster.read`

  See "Role-Based Access Control (Overview)" in *System Administration Guide: Security Services* for more information about using RBAC roles. See the Sun Cluster man pages for the RBAC authorization that each Sun Cluster subcommand requires.

1 **Ensure that the cluster is functioning normally.**

   a. **View the current status of the cluster by running the following command from any node.**

      - On Sun Cluster 3.1 software, use the following command:

        phys-schost% **scstat**

      - On Sun Cluster 3.2 software, use the following command:

        phys-schost% **cluster status**

      See the scstat(1M) or cluster(1CL) man page for more information.

**b. Search the** /var/adm/messages **log on the same node for unresolved error messages or warning messages.**

**c. Check the volume-manager status.**

**2 If necessary, notify users that cluster services might be temporarily interrupted during the upgrade.**

Service interruption will be approximately the amount of time that your cluster normally takes to switch services to another node.

**3 Become superuser.**

**4 Ensure that the** RG_system **property of all resource groups in the cluster is set to** FALSE**.**

A setting of RG_system=TRUE would restrict certain operations that the dual-partition software must perform.

**a. On each node, determine whether any resource groups are set to** RG_system=TRUE**.**

phys-schost# **clresourcegroup show -p RG_system**

Make note of which resource groups to change. Save this list to use when you restore the setting after upgrade is completed.

**b. For each resource group that is set to** RG_system=TRUE**, change the setting to** FALSE**.**

phys-schost# **clresourcegroup set -p RG_system=FALSE** *resourcegroup*

**5 If Sun Cluster Geographic Edition software is installed, uninstall it.**

For uninstallation procedures, see the documentation for your version of Sun Cluster Geographic Edition software.

**6 If you will upgrade the Solaris OS and your cluster uses dual-string mediators for Solaris Volume Manager software, unconfigure your mediators.**

See "Configuring Dual-String Mediators" in *Sun Cluster Software Installation Guide for Solaris OS* for more information about mediators.

**a. Run the following command to verify that no mediator data problems exist.**

phys-schost# **medstat -s** *setname*

-s setname      Specifies the disk set name.

If the value in the Status field is Bad, repair the affected mediator host. Follow the procedure "How to Fix Bad Mediator Data" in *Sun Cluster Software Installation Guide for Solaris OS*.

**b. List all mediators.**

Save this information for when you restore the mediators during the procedure "How to Finish Upgrade to Sun Cluster 3.2 1/09 Software" on page 98.

**c. For a disk set that uses mediators, take ownership of the disk set if no node already has ownership.**

- On Sun Cluster 3.1 software, use the following command:

  ```
  phys-schost# scswitch -z -D setname -h node
  ```

  -z              Changes mastery.

  -D *devicegroup*   Specifies the name of the disk set.

  -h *node*          Specifies the name of the node to become primary of the disk set.

- On Sun Cluster 3.2 software, use the following command:

  ```
  phys-schost# cldevicegroup switch -n node devicegroup
  ```

**d. Unconfigure all mediators for the disk set.**

```
phys-schost# metaset -s setname -d -m mediator-host-list
```

-s *setname*              Specifies the disk set name.

-d                        Deletes from the disk set.

-m *mediator-host-list*   Specifies the name of the node to remove as a mediator host for the disk set.

See the mediator(7D) man page for further information about mediator-specific options to the metaset command.

**e. Repeat Step c through Step d for each remaining disk set that uses mediators.**

**7   If you are upgrading a two-node cluster, skip to Step 17.**

Otherwise, proceed to Step 8 to determine the partitioning scheme to use. You will determine which nodes each partition will contain, but interrupt the partitioning process. You will then compare the node lists of all resource groups against the node members of each partition in the scheme that you will use. If any resource group does not contain a member of each partition, you must change the node list.

**8   Load the Sun Java Availability Suite DVD-ROM into the DVD-ROM drive.**

If the volume management daemon vold(1M) is running and is configured to manage CD-ROM or DVD devices, the daemon automatically mounts the media on the /cdrom/cdrom0 directory.

**9    Become superuser on a node of the cluster.**

**10   Change to the** /Solaris_*arch*/Product/sun_cluster/Solaris_*ver*/Tools/ **directory, where**
     *arch* **is** sparc **or** x86 **(Solaris 10 only) and where** *ver* **is** 9 **for Solaris 9 or** 10 **for Solaris 10 .**

```
phys-schost# cd /cdrom/cdrom0/Solaris_arch/Product/sun_cluster/Solaris_ver/Tools
```

**11   Start the** scinstall **utility in interactive mode.**

```
phys-schost# ./scinstall
```

---

**Note –** Do not use the /usr/cluster/bin/scinstall command that is already installed on the
node. You must use the scinstall command on the Sun Java Availability Suite DVD-ROM.

---

The scinstall Main Menu is displayed.

**12   Type the option number for Manage a Dual-Partition Upgrade and press the Return key.**

```
*** Main Menu ***

    Please select from one of the following (*) options:

      1) Create a new cluster or add a cluster node
      2) Configure a cluster to be JumpStarted from this install server
    * 3) Manage a dual-partition upgrade
    * 4) Upgrade this cluster node
    * 5) Print release information for this cluster node

    * ?) Help with menu options
    * q) Quit

    Option:  3
```

The Manage a Dual-Partition Upgrade Menu is displayed.

**13   Type the option number for Display and Select Possible Partitioning Schemes and press the
     Return key.**

**14   Follow the prompts to perform the following tasks:**

**a.   Display the possible partitioning schemes for your cluster.**

**b.   Choose a partitioning scheme.**

**c.   Choose which partition to upgrade first.**

---

**Note** – Stop and do *not* respond yet when prompted, Do you want to begin the
dual-partition upgrade?, but do not exit the scinstall utility. You will respond to this
prompt in Step 19 of this procedure.

---

**15 Make note of which nodes belong to each partition in the partition scheme.**

**16 On another node of the cluster, become superuser.**

**17 Ensure that any critical data services can switch over between partitions.**

For a two-node cluster, each node will be the only node in its partition.

When the nodes of a partition are shut down in preparation for dual-partition upgrade, the
resource groups that are hosted on those nodes switch over to a node in the other partition. If a
resource group does not contain a node from each partition in its node list, the resource group
cannot switch over. To ensure successful switchover of all critical data services, verify that the
node list of the related resource groups contains a member of each upgrade partition.

**a. Display the node list of each resource group that you require to remain in service during the
entire upgrade.**

■ On Sun Cluster 3.1 software, use the following command:

```
phys-schost# scrgadm -pv -g resourcegroup | grep "Res Group Nodelist"
```

-p                 Displays configuration information.

-v                 Displays in verbose mode.

-g *resourcegroup*   Specifies the name of the resource group.

■ On Sun Cluster 3.2 software, use the following command:

```
phys-schost# clresourcegroup show -p nodelist
=== Resource Groups and Resources ===

Resource Group:                                    resourcegroup
  Nodelist:                                        node1 node2
...
```

**b. If the node list of a resource group does not contain at least one member of each partition,
redefine the node list to include a member of each partition as a potential primary node.**

■ On Sun Cluster 3.1 software, use the following command:

```
phys-schost# scrgadm -a -g resourcegroup -h nodelist
```

-a      Adds a new configuration.

-h     Specifies a comma-separated list of node names.

■ On Sun Cluster 3.2 software, use the following command:

```
phys-schost# clresourcegroup add-node -n node resourcegroup
```

**18    Determine your next step.**

■ **If you are upgrading a two-node cluster, return to Step 8 through Step 14 to designate your partitioning scheme and upgrade order.**
When you reach the prompt Do you want to begin the dual-partition upgrade?, skip to Step 19.

■ **If you are upgrading a cluster with three or more nodes, return to the node that is running the interactive scinstall utility.**
Proceed to Step 19.

**19    At the interactive scinstall prompt Do you want to begin the dual-partition upgrade?, type Yes.**
The command verifies that a remote installation method is available.

**20    When prompted, press Enter to continue each stage of preparation for dual-partition upgrade.**
The command switches resource groups to nodes in the second partition, and then shuts down each node in the first partition.

**21    After all nodes in the first partition are shut down, boot each node in that partition into noncluster mode.**

■ **On SPARC based systems, perform the following command:**
ok **boot -x**

■ **On x86 based systems, perform the following commands:**

**a. In the GRUB menu, use the arrow keys to select the appropriate Solaris entry and type e to edit its commands.**
The GRUB menu appears similar to the following:

```
GNU GRUB version 0.95 (631K lower / 2095488K upper memory)
+-------------------------------------------------------------------+
| Solaris 10 /sol_10_x86                                            |
| Solaris failsafe                                                  |
|                                                                   |
+-------------------------------------------------------------------+
Use the ^ and v keys to select which entry is highlighted.
```

```
Press enter to boot the selected OS, 'e' to edit the
commands before booting, or 'c' for a command-line.
```

For more information about GRUB based booting, see "Booting an x86 Based System by Using GRUB (Task Map)" in *System Administration Guide: Basic Administration*.

**b. In the boot parameters screen, use the arrow keys to select the** kernel **entry and type e to edit the entry.**

The GRUB boot parameters screen appears similar to the following:

```
GNU GRUB version 0.95 (615K lower / 2095552K upper memory)
+----------------------------------------------------------------------+
| root (hd0,0,a)                                                       |
| kernel /platform/i86pc/multiboot                                    |
| module /platform/i86pc/boot_archive                                 |
+----------------------------------------------------------------------+
Use the ^ and v keys to select which entry is highlighted.
Press 'b' to boot, 'e' to edit the selected command in the
boot sequence, 'c' for a command-line, 'o' to open a new line
after ('O' for before) the selected line, 'd' to remove the
selected line, or escape to go back to the main menu.
```

**c. Add -x to the command to specify that the system boot into noncluster mode.**

```
[ Minimal BASH-like line editing is supported. For the first word, TAB
lists possible command completions. Anywhere else TAB lists the possible
completions of a device/filename. ESC at any time exits. ]

grub edit> kernel /platform/i86pc/multiboot -x
```

**d. Press Enter to accept the change and return to the boot parameters screen.**

The screen displays the edited command.

```
GNU GRUB version 0.95 (615K lower / 2095552K upper memory)
+----------------------------------------------------------------------+
| root (hd0,0,a)                                                       |
| kernel /platform/i86pc/multiboot -x                                 |
| module /platform/i86pc/boot_archive                                 |
+----------------------------------------------------------------------+
Use the ^ and v keys to select which entry is highlighted.
Press 'b' to boot, 'e' to edit the selected command in the
boot sequence, 'c' for a command-line, 'o' to open a new line
after ('O' for before) the selected line, 'd' to remove the
selected line, or escape to go back to the main menu.-
```

**e. Type b to boot the node into noncluster mode.**

> **Note –** This change to the kernel boot parameter command does not persist over the system boot. The next time you reboot the node, it will boot into cluster mode. To boot into noncluster mode instead, perform these steps to again to add the -x option to the kernel boot parameter command.

**22    Ensure that each system disk is backed up.**

**23    If any applications that are running in the second partition are not under control of the Resource Group Manager (RGM), create scripts to halt the applications before you begin to upgrade those nodes.**

During dual-partition upgrade processing, these scripts would be called to stop applications such as Oracle Real Application Clusters before the nodes in the second partition are halted.

**a.    Create the scripts that you need to stop applications that are not under RGM control.**

- Create separate scripts for those applications that you want stopped before applications under RGM control are stopped and for those applications that you want stop afterwards.

- To stop applications that are running on more than one node in the partition, write the scripts accordingly.

- Use any name and directory path for your scripts that you prefer.

**b.    Ensure that each node in the cluster has its own copy of your scripts.**

**c.    On each node, modify the following Sun Cluster scripts to call the scripts that you placed on that node.**

- /etc/cluster/ql/cluster_pre_halt_apps - Use this file to call those scripts that you want to run *before* applications that are under RGM control are shut down.

- /etc/cluster/ql/cluster_post_halt_apps - Use this file to call those scripts that you want to run *after* applications that are under RGM control are shut down.

The Sun Cluster scripts are issued from one arbitrary node in the partition during post-upgrade processing of the partition. Therefore, ensure that the scripts on any node of the partition will perform the necessary actions for all nodes in the partition.

**Next Steps**    Upgrade software on each node in the first partition.

- To upgrade Solaris software before you perform Sun Cluster software upgrade, go to "How to Upgrade the Solaris OS and Volume Manager Software (Dual-Partition)" on page 49.

- If Sun Cluster 3.2 1/09 software does not support the release of the Solaris OS that you currently run on your cluster, you must upgrade the Solaris software to a supported release. See "Supported Products" in Sun Cluster Release Notes for more information.

- If Sun Cluster 3.2 1/09 software supports the release of the Solaris OS that you currently run on your cluster, further Solaris software upgrade is optional.

- Otherwise, upgrade to Sun Cluster 3.2 1/09 software. Go to "How to Upgrade Sun Cluster 3.2 1/09 Software (Dual-Partition)" on page 54.

## ▼ How to Upgrade the Solaris OS and Volume Manager Software (Dual-Partition)

Perform this procedure on each node in the cluster to upgrade the Solaris OS. On the Solaris 10 OS, perform all steps from the global zone only. If the cluster already runs on a version of the Solaris OS that supports Sun Cluster 3.2 1/09 software, further upgrade of the Solaris OS is optional. If you do not intend to upgrade the Solaris OS, proceed to "How to Upgrade Sun Cluster 3.2 1/09 Software (Standard)" on page 31.

---

**Note –** The cluster must already run on, or be upgraded to, at least the minimum required level of the Solaris OS to support upgrade to Sun Cluster 3.2 1/09 software. See "Supported Products" in Sun Cluster Release Notes for more information.

---

**Before You Begin** Ensure that all steps in "How to Prepare the Cluster for Upgrade (Standard)" on page 18 are completed.

1 **Become superuser on the cluster node to upgrade.**

The node must be a member of the partition that is in noncluster mode.

2 **Determine whether the following Apache run-control scripts exist and are enabled or disabled:**

```
/etc/rc0.d/K16apache
/etc/rc1.d/K16apache
/etc/rc2.d/K16apache
/etc/rc3.d/S50apache
/etc/rcS.d/K16apache
```

Some applications, such as Sun Cluster HA for Apache, require that Apache run control scripts be disabled.

- If these scripts exist and contain an uppercase K or S in the file name, the scripts are enabled. No further action is necessary for these scripts.

- If these scripts do not exist, in Step 7 you must ensure that any Apache run control scripts that are installed during the Solaris OS upgrade are disabled.

- If these scripts exist but the file names contain a lowercase k or s, the scripts are disabled. In Step 7 you must ensure that any Apache run control scripts that are installed during the Solaris OS upgrade are disabled.

3   **Comment out all entries for globally mounted file systems in the node's** /etc/vfstab **file.**

   a. **For later reference, make a record of all entries that are already commented out.**

   b. **Temporarily comment out all entries for globally mounted file systems in the** /etc/vfstab **file.**

      Entries for globally mounted file systems contain the global mount option. Comment out these entries to prevent the Solaris upgrade from attempting to mount the global devices.

4   **Determine which procedure to follow to upgrade the Solaris OS.**

   | Volume Manager | Procedure | Location of Instructions |
   |---|---|---|
   | Solaris Volume Manager | Any Solaris upgrade method *except* the Live Upgrade method | Solaris installation documentation |
   | Veritas Volume Manager | "Upgrading VxVM and Solaris" | Veritas Volume Manager installation documentation |

   **Note –** If your cluster has VxVM installed, you must reinstall the existing VxVM software or upgrade to the Solaris 9 or 10 version of VxVM software as part of the Solaris upgrade process.

5   **Upgrade the Solaris software, following the procedure that you selected in Step 4.**

   a. **When prompted, choose the manual reboot option.**

   b. **When prompted to reboot, always reboot into noncluster mode.**

      **Note –** *Do not* perform the final reboot instruction in the Solaris software upgrade. Instead, do the following:

      a. Return to this procedure to perform Step 6 and Step 7.
      b. Reboot into noncluster mode in Step 8 to complete Solaris software upgrade.

Execute the following commands to boot a node into noncluster mode during Solaris upgrade:

- **On SPARC based systems, perform either of the following commands:**

  ```
  phys-schost# reboot -- -x
        or
  ok boot -x
  ```

  If the instruction says to run the init S command, use the reboot -- -xs command instead.

- **On x86 based systems, perform the following command:**

  ```
  phys-schost# shutdown -g -y -i0

  Press any key to continue
  ```

  **i. In the GRUB menu, use the arrow keys to select the appropriate Solaris entry and type e to edit its commands.**

  The GRUB menu appears similar to the following:

  ```
  GNU GRUB version 0.95 (631K lower / 2095488K upper memory)
  +-----------------------------------------------------------------------+
  | Solaris 10 /sol_10_x86                                                 |
  | Solaris failsafe                                                       |
  |                                                                       |
  +-----------------------------------------------------------------------+
  Use the ^ and v keys to select which entry is highlighted.
  Press enter to boot the selected OS, 'e' to edit the
  commands before booting, or 'c' for a command-line.
  ```

  For more information about GRUB based booting, see "Booting an x86 Based System by Using GRUB (Task Map)" in *System Administration Guide: Basic Administration*.

  **ii. In the boot parameters screen, use the arrow keys to select the kernel entry and type e to edit the entry.**

  The GRUB boot parameters screen appears similar to the following:

  ```
  GNU GRUB version 0.95 (615K lower / 2095552K upper memory)
  +-----------------------------------------------------------------------+
  | root (hd0,0,a)                                                         |
  | kernel /platform/i86pc/multiboot                                      |
  | module /platform/i86pc/boot_archive                                   |
  +-----------------------------------------------------------------------+
  Use the ^ and v keys to select which entry is highlighted.
  Press 'b' to boot, 'e' to edit the selected command in the
  boot sequence, 'c' for a command-line, 'o' to open a new line
  after ('O' for before) the selected line, 'd' to remove the
  selected line, or escape to go back to the main menu.
  ```

**iii. Add -x to the command to specify that the system boot into noncluster mode.**

```
[ Minimal BASH-like line editing is supported. For the first word, TAB
lists possible command completions. Anywhere else TAB lists the possible
completions of a device/filename. ESC at any time exits. ]

grub edit> kernel /platform/i86pc/multiboot -x
```

**iv. Press Enter to accept the change and return to the boot parameters screen.**

The screen displays the edited command.

```
GNU GRUB version 0.95 (615K lower / 2095552K upper memory)
+---------------------------------------------------------------------+
| root (hd0,0,a)                                                      |
| kernel /platform/i86pc/multiboot -x                                |
| module /platform/i86pc/boot_archive                                |
+---------------------------------------------------------------------+
Use the ^ and v keys to select which entry is highlighted.
Press 'b' to boot, 'e' to edit the selected command in the
boot sequence, 'c' for a command-line, 'o' to open a new line
after ('O' for before) the selected line, 'd' to remove the
selected line, or escape to go back to the main menu.-
```

**v. Type b to boot the node into noncluster mode.**

---

**Note –** This change to the kernel boot parameter command does not persist over the system boot. The next time you reboot the node, it will boot into cluster mode. To boot into noncluster mode instead, perform these steps to again to add the -x option to the kernel boot parameter command.

---

If the instruction says to run the init S command, shut down the system then change the GRUB kernel boot command to /platform/i86pc/multiboot -sx instead.

**6** In the /a/etc/vfstab file, uncomment those entries for globally mounted file systems that you commented out in Step 3.

**7** If Apache run control scripts were disabled or did not exist before you upgraded the Solaris OS, ensure that any scripts that were installed during Solaris upgrade are disabled.

To disable Apache run control scripts, use the following commands to rename the files with a lowercase k or s.

```
phys-schost# mv /a/etc/rc0.d/K16apache /a/etc/rc0.d/k16apache
phys-schost# mv /a/etc/rc1.d/K16apache /a/etc/rc1.d/k16apache
phys-schost# mv /a/etc/rc2.d/K16apache /a/etc/rc2.d/k16apache
phys-schost# mv /a/etc/rc3.d/S50apache /a/etc/rc3.d/s50apache
phys-schost# mv /a/etc/rcS.d/K16apache /a/etc/rcS.d/k16apache
```

Alternatively, you can rename the scripts to be consistent with your normal administration practices.

**8    Reboot the node into noncluster mode.**

- **On SPARC based systems, perform the following command.**

  Include the double dashes (--) in the command:

  ```
  phys-schost# reboot -- -x
  ```

- **On x86 based systems, perform the shutdown and boot procedures that are described in Step 5 except add** -x **to the kernel boot command instead of** -sx**.**

**9    If your cluster runs VxVM, perform the remaining steps in the procedure "Upgrading VxVM and Solaris" to reinstall or upgrade VxVM.**

Make the following changes to the procedure:

- **After VxVM upgrade is complete but before you reboot, verify the entries in the** /etc/vfstab **file.**

  If any of the entries that you uncommented in Step 6 were commented out, make those entries uncommented again.

- **When the VxVM procedures instruct you to perform a final reconfiguration reboot,** *do not* **use the** -r **option alone. Instead, reboot into noncluster mode by using the** -rx **options.**

  - **On SPARC based systems, perform the following command:**

    ```
    phys-schost# reboot -- -rx
    ```

  - **On x86 based systems, perform the shutdown and boot procedures that are described in Step 5 except add** -rx **to the kernel boot command instead of** -sx**.**

---

**Note –** If you see a message similar to the following, type the root password to continue upgrade processing. Do *not* run the fsck command nor type Ctrl-D.

```
WARNING - Unable to repair the /global/.devices/node@1 filesystem.
Run fsck manually (fsck -F ufs /dev/vx/rdsk/rootdisk_13vol). Exit the
shell when done to continue the boot process.

Type control-d to proceed with normal startup,
(or give root password for system maintenance):       Type the root password
```

---

**10   (Optional) SPARC: Upgrade VxFS.**

Follow procedures that are provided in your VxFS documentation.

**11   Install any required Solaris software patches and hardware-related patches, and download any needed firmware that is contained in the hardware patches.**

**Note –** Do not reboot after you add patches. Wait to reboot the node until after you upgrade the Sun Cluster software.

See *Patches and Required Firmware Levels* in the Sun Cluster Release Notes for the location of patches and installation instructions.

**Next Steps** Upgrade to Sun Cluster 3.2 1/09 software. Go to "How to Upgrade Sun Cluster 3.2 1/09 Software (Dual-Partition)" on page 54.

**Note –** To complete the upgrade to a new marketing release of the Solaris OS, such as from Solaris 9 to Solaris 10 software, you must also upgrade the Sun Cluster software and dependency software to the version that is compatible with the new version of the Solaris OS.

## ▼ How to Upgrade Sun Cluster 3.2 1/09 Software (Dual-Partition)

Perform this procedure to upgrade each node of the cluster to Sun Cluster 3.2 1/09 software. This procedure also upgrades required Sun Java Enterprise System shared components. You must also perform this procedure after you upgrade to a different marketing release of the Solaris OS, such as from Solaris 9 to Solaris 10 software.

On the Solaris 10 OS, perform all steps from the global zone only.

**Tip –** You can perform this procedure on more than one node of the partition at the same time.

**Before You Begin** Perform the following tasks:

- Ensure that all steps in "How to Prepare the Cluster for Upgrade (Dual-Partition)" on page 40 are completed.
- Ensure that the node you are upgrading belongs to the partition that is not active in the cluster and that the node is in noncluster mode.
- If you upgraded to a new marketing release of the Solaris OS, such as from Solaris 9 to Solaris 10 software, ensure that all steps in "How to Upgrade the Solaris OS and Volume Manager Software (Dual-Partition)" on page 49 are completed.
- Ensure that you have installed all required Solaris software patches and hardware-related patches.

**1 Become superuser on a node that is a member of the partition that is in noncluster mode.**

**2    Ensure that the** /usr/java/ **directory is a symbolic link to the minimum or latest version of Java software.**

Sun Cluster software requires at least version 1.5.0_06 of Java software. If you upgraded to a version of Solaris that installs an earlier version of Java, the upgrade might have changed the symbolic link to point to a version of Java that does not meet the minimum requirement for Sun Cluster 3.2 software.

**a.    Determine what directory the** /usr/java/ **directory is symbolically linked to.**

```
phys-schost# ls -l /usr/java
lrwxrwxrwx   1 root   other     9 Apr 19 14:05 /usr/java -> /usr/j2se/
```

**b.    Determine what version or versions of Java software are installed.**

The following are examples of commands that you can use to display the version of their related releases of Java software.

```
phys-schost# /usr/j2se/bin/java -version
phys-schost# /usr/java1.2/bin/java -version
phys-schost# /usr/jdk/jdk1.5.0_06/bin/java -version
```

**c.    If the** /usr/java/ **directory is not symbolically linked to a supported version of Java software, recreate the symbolic link to link to a supported version of Java software.**

The following example shows the creation of a symbolic link to the /usr/j2se/ directory, which contains Java 1.5.0_06 software.

```
phys-schost# rm /usr/java
phys-schost# ln -s /usr/j2se /usr/java
```

**3    Load the Sun Java Availability Suite DVD-ROM into the DVD-ROM drive.**

If the volume management daemon vold(1M) is running and is configured to manage CD-ROM or DVD devices, the daemon automatically mounts the media on the /cdrom/cdrom0 directory.

**4    Change to the installation wizard directory of the DVD-ROM.**

- If you are installing the software packages on the SPARC platform, type the following command:

  ```
  phys-schost# cd /cdrom/cdrom0/Solaris_sparc
  ```

- If you are installing the software packages on the x86 platform, type the following command:

  ```
  phys-schost# cd /cdrom/cdrom0/Solaris_x86
  ```

**5    Start the installation wizard program.**

```
phys-schost# ./installer
```

Chapter 3  •  Performing a Dual-Partition Upgrade to Sun Cluster 3.2 1/09 Software

**6    Follow the instructions on the screen to select and upgrade Shared Components software packages on the node.**

---

**Note –** Do *not* use the installation wizard program to upgrade Sun Cluster software packages.

---

The installation wizard program displays the status of the installation. When the installation is complete, the program displays an installation summary and the installation logs.

**7    Exit the installation wizard program.**

**8    Change to the** /Solaris_*arch*/Product/sun_cluster/Solaris_*ver*/Tools/ **directory, where** *arch* **is** sparc **or** x86 **(Solaris 10 only) and where** *ver* **is** 9 **for Solaris 9 or** 10 **for Solaris 10 .**

```
phys-schost# cd /cdrom/cdrom0/Solaris_arch/Product/sun_cluster/Solaris_ver/Tools
```

**9    Start the** scinstall **utility.**

```
phys-schost# ./scinstall
```

---

**Note –** Do not use the /usr/cluster/bin/scinstall command that is already installed on the node. You must use the scinstall command that is located on the Sun Java Availability Suite DVD-ROM.

---

The scinstall Main Menu is displayed.

**10    Type the option number for Upgrade This Cluster Node and press the Return key.**

```
  *** Main Menu ***

    Please select from one of the following (*) options:

        1) Create a new cluster or add a cluster node
        2) Configure a cluster to be JumpStarted from this install server
      * 3) Manage a dual-partition upgrade
      * 4) Upgrade this cluster node
      * 5) Print release information for this cluster node

      * ?) Help with menu options
      * q) Quit

    Option:  4
```

The Upgrade Menu is displayed.

**11    Type the option number for Upgrade Sun Cluster Framework On This Cluster Node and press the Return key.**

**12 Follow the menu prompts to upgrade the cluster framework.**

During the Sun Cluster upgrade, `scinstall` might make one or more of the following configuration changes:

- Convert NAFO groups to IPMP groups but keep the original NAFO-group name.

  See one of the following manuals for information about test addresses for IPMP:

  - "Configuring Test Addresses" in "Administering Multipathing Groups With Multiple Physical Interfaces" in *System Administration Guide: IP Services* (Solaris 9)
  - "Test Addresses" in *System Administration Guide: IP Services* (Solaris 10)

  See the scinstall(1M) man page for more information about the conversion of NAFO groups to IPMP during Sun Cluster software upgrade.

- Rename the `ntp.conf` file to `ntp.conf.cluster`, if `ntp.conf.cluster` does not already exist on the node.
- Set the `local-mac-address?` variable to `true`, if the variable is not already set to that value.

Upgrade processing is finished when the system displays the message Completed Sun Cluster framework upgrade and prompts you to press Enter to continue.

**13 Quit the** `scinstall` **utility.**

**14 Upgrade data service packages.**

You must upgrade all data services to the Sun Cluster 3.2 version.

---

**Note –** For Sun Cluster HA for SAP Web Application Server, if you are using a J2EE engine resource or a web application server component resource or both, you must delete the resource and recreate it with the new web application server component resource. Changes in the new web application server component resource includes integration of the J2EE functionality. For more information, see *Sun Cluster Data Service for SAP Web Application Server Guide for Solaris OS*.

---

**a. Start the upgraded interactive** `scinstall` **utility.**

```
phys-schost# /usr/cluster/bin/scinstall
```

---

**Note –** Do not use the `scinstall` utility that is on the installation media to upgrade data service packages.

---

The `scinstall` Main Menu is displayed.

**b. Type the option number for Upgrade This Cluster Node and press the Return key.**

The Upgrade Menu is displayed.

    **c. Type the option number for Upgrade Sun Cluster Data Service Agents On This Node and press the Return key.**

    **d. Follow the menu prompts to upgrade Sun Cluster data service agents that are installed on the node.**

    You can choose from the list of data services that are available to upgrade or choose to upgrade all installed data services.

    Upgrade processing is finished when the system displays the message `Completed upgrade of Sun Cluster data services agents` and prompts you to press Enter to continue.

    **e. Press Enter.**

    The Upgrade Menu is displayed.

**15**   **Quit the** `scinstall` **utility.**

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

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

    **b. Eject the DVD-ROM.**

```
phys-schost# eject cdrom
```

**17**   **If you have Sun Cluster HA for NFS configured on a highly available local file system, ensure that the loopback file system (LOFS) is disabled.**

---

**Note –** If you have non-global zones configured, LOFS must remain enabled. For guidelines about using LOFS and alternatives to disabling it, see "Cluster File Systems" in *Sun Cluster Software Installation Guide for Solaris OS*.

---

As of the Sun Cluster 3.2 release, LOFS is no longer disabled by default during Sun Cluster software installation or upgrade. To disable LOFS, ensure that the `/etc/system` file contains the following entry:

```
exclude:lofs
```

This change becomes effective at the next system reboot.

**18**   **As needed, manually upgrade any custom data services that are not supplied on the product media.**

**19**   **Verify that each data-service update is installed successfully.**

View the upgrade log file that is referenced at the end of the upgrade output messages.

**20  Install any Sun Cluster 3.2 1/09 framework and data-service software patches.**

See *Patches and Required Firmware Levels* in the Sun Cluster Release Notes for the location of patches and installation instructions.

**21  Upgrade software applications that are installed on the cluster.**

Ensure that application levels are compatible with the current versions of Sun Cluster and Solaris software. See your application documentation for installation instructions.

**22  Repeat all steps in this procedure up to this point on all remaining nodes that you need to upgrade in the partition.**

**23  After all nodes in a partition are upgraded, apply the upgrade changes.**

**a.  From one node in the partition that you are upgrading, start the interactive** scinstall **utility.**

```
phys-schost# /usr/cluster/bin/scinstall
```

---

**Note –** Do not use the scinstall command that is located on the installation media. Only use the scinstall command that is located on the cluster node.

---

The scinstall Main Menu is displayed.

**b.  Type option number for Apply Dual-Partition Upgrade Changes to the Partition and press the Return key.**

**c.  Follow the prompts to continue each stage of the upgrade processing.**

The command performs the following tasks, depending on which partition the command is run from:

- **First partition** - The command halts each node in the second partition, one node at a time. When a node is halted, any services on that node are automatically switched over to a node in the first partition, provided that the node list of the related resource group contains a node in the first partition. After all nodes in the second partition are halted, the nodes in the first partition are booted into cluster mode and take over providing cluster services.

- **Second partition** - The command boots the nodes in the second partition into cluster mode, to join the active cluster that was formed by the first partition. After all nodes have rejoined the cluster, the command performs final processing and reports on the status of the upgrade.

**d.  Exit the** scinstall **utility, if it is still running.**

**e. If you are finishing upgrade of the first partition, perform the following substeps to prepare the second partition for upgrade.**

Otherwise, if you are finishing upgrade of the second partition, proceed to "How to Verify Upgrade of Sun Cluster 3.2 1/09 Software" on page 96.

**i. Boot each node in the second partition into noncluster mode.**

- **On SPARC based systems, perform the following command:**

  ```
  ok boot -x
  ```

- **On x86 based systems, perform the following commands:**

  **In the GRUB menu, use the arrow keys to select the appropriate Solaris entry and type e to edit its commands.**

  The GRUB menu appears similar to the following:

  ```
  GNU GRUB version 0.95 (631K lower / 2095488K upper memory)
  +-------------------------------------------------------------------+
  | Solaris 10 /sol_10_x86                                             |
  | Solaris failsafe                                                   |
  |                                                                   |
  +-------------------------------------------------------------------+
  Use the ^ and v keys to select which entry is highlighted.
  Press enter to boot the selected OS, 'e' to edit the
  commands before booting, or 'c' for a command-line.
  ```

  For more information about GRUB based booting, see "Booting an x86 Based System by Using GRUB (Task Map)" in *System Administration Guide: Basic Administration*.

  **In the boot parameters screen, use the arrow keys to select the kernel entry and type e to edit the entry.**

  The GRUB boot parameters screen appears similar to the following:

  ```
  GNU GRUB version 0.95 (615K lower / 2095552K upper memory)
  +-------------------------------------------------------------------+
  | root (hd0,0,a)                                                    |
  | kernel /platform/i86pc/multiboot                                  |
  | module /platform/i86pc/boot_archive                               |
  +-------------------------------------------------------------------+
  Use the ^ and v keys to select which entry is highlighted.
  Press 'b' to boot, 'e' to edit the selected command in the
  boot sequence, 'c' for a command-line, 'o' to open a new line
  after ('O' for before) the selected line, 'd' to remove the
  selected line, or escape to go back to the main menu.
  ```

**Add -x to the command to specify that the system boot into noncluster mode.**

```
[ Minimal BASH-like line editing is supported. For the first word, TAB
lists possible command completions. Anywhere else TAB lists the possible
completions of a device/filename. ESC at any time exits. ]

grub edit> kernel /platform/i86pc/multiboot -x
```

**Press Enter to accept the change and return to the boot parameters screen.**

The screen displays the edited command.

```
GNU GRUB version 0.95 (615K lower / 2095552K upper memory)

+-------------------------------------------------------------------+
| root (hd0,0,a)                                                    |
| kernel /platform/i86pc/multiboot -x                              |
| module /platform/i86pc/boot_archive                              |
+-------------------------------------------------------------------+
Use the ^ and v keys to select which entry is highlighted.
Press 'b' to boot, 'e' to edit the selected command in the
boot sequence, 'c' for a command-line, 'o' to open a new line
after ('O' for before) the selected line, 'd' to remove the
selected line, or escape to go back to the main menu.-
```

**Type b to boot the node into noncluster mode.**

---

**Note** – This change to the kernel boot parameter command does not persist over the system boot. The next time you reboot the node, it will boot into cluster mode. To boot into noncluster mode instead, perform these steps to again to add the -x option to the kernel boot parameter command.

---

**ii. Upgrade the nodes in the second partition.**

To upgrade Solaris software before you perform Sun Cluster software upgrade, go to "How to Upgrade the Solaris OS and Volume Manager Software (Dual-Partition)" on page 49.

Otherwise, upgrade Sun Cluster software on the second partition. Return to Step 1.

**24** **If you changed the** RG_system **property of any resource groups to** FALSE**, change the settings back to** TRUE**.**

```
phys-schost# clresourcegroup set -p RG_system=TRUE resourcegroup
```

**Next Steps** Go to Chapter 6, "Completing the Upgrade."

**Troubleshooting** If you experience an unrecoverable error during dual-partition upgrade, perform recovery procedures in "How to Recover from a Failed Dual-Partition Upgrade" on page 107.

# 4

# Performing a Live Upgrade to Sun Cluster 3.2 1/09 Software

This chapter provides the following information to upgrade from Sun Cluster 3.2 1/09 software to Sun Cluster 3.2 software by using the live upgrade method:

- "How to Prepare the Cluster for Upgrade (Live Upgrade)" on page 64
- "How to Upgrade the Solaris OS and Sun Cluster 3.2 1/09 Software (Live Upgrade)" on page 66

## Performing a Live Upgrade of a Cluster

The following table lists the tasks to perform to upgrade from Sun Cluster 3.1 or 3.2 software to Sun Cluster 3.2 1/09 software. You also perform these tasks to upgrade only the version of the Solaris OS. If you upgrade the Solaris OS to a new marketing release, such as from Solaris 9 to Solaris 10 software, you must also upgrade the Sun Cluster software and dependency software to the version that is compatible with the new version of the Solaris OS.

TABLE 4–1   Task Map: Performing a Live Upgrade to Sun Cluster 3.2 1/09 Software

| Task | Instructions |
| --- | --- |
| 1. Read the upgrade requirements and restrictions. Determine the proper upgrade method for your configuration and needs. | "Upgrade Requirements and Software Support Guidelines" on page 9<br><br>"Choosing a Sun Cluster Upgrade Method" on page 11 |
| 2. If Sun Cluster Geographic Edition software is installed, uninstall it. | "How to Prepare the Cluster for Upgrade (Live Upgrade)" on page 64 |

**TABLE 4–1**  Task Map: Performing a Live Upgrade to Sun Cluster 3.2 1/09 Software      *(Continued)*

| Task | Instructions |
|---|---|
| 3. If the cluster uses dual-string mediators for Solaris Volume Manager software, unconfigure the mediators. Upgrade the Solaris software, if necessary, to a supported Solaris update. Upgrade to Sun Cluster 3.2 1/09 framework and data-service software. If necessary, upgrade applications. If the cluster uses dual-string mediators, reconfigure the mediators. As needed, upgrade Veritas Volume Manager (VxVM)software and disk groups and Veritas File System (VxFS). | "How to Upgrade the Solaris OS and Sun Cluster 3.2 1/09 Software (Live Upgrade)" on page 66 |
| 4. Use the `scversions` command to commit the cluster to the upgrade. | "How to Commit the Upgraded Cluster to Sun Cluster 3.2 1/09 Software" on page 95 |
| 5. Verify successful completion of upgrade to Sun Cluster 3.2 1/09 software. | "How to Verify Upgrade of Sun Cluster 3.2 1/09 Software" on page 96 |
| 6. Enable resources and bring resource groups online. Migrate existing resources to new resource types. | "How to Finish Upgrade to Sun Cluster 3.2 1/09 Software" on page 98 |
| 7. (*Optional*) SPARC: Upgrade the Sun Cluster module for Sun Management Center, if needed. | "SPARC: How to Upgrade Sun Cluster Module Software for Sun Management Center" on page 117 |

## ▼ How to Prepare the Cluster for Upgrade (Live Upgrade)

Perform this procedure to prepare a cluster for live upgrade.

**Before You Begin**    Perform the following tasks:

- Ensure that the configuration meets the requirements for upgrade. See "Upgrade Requirements and Software Support Guidelines" on page 9.
- Have available the installation media, documentation, and patches for all software products that you are upgrading, including the following software:
  - Solaris OS
  - Sun Cluster 3.2 1/09 framework
  - Sun Cluster 3.2 Core Patch
    - Solaris 9 OS - 125510–02
    - Solaris 10 OS on SPARC - 125511–02
    - Solaris 10 OS on x86 - 125512–02
  - Sun Cluster 3.2 1/09 data services (agents)
  - Applications that are managed by Sun Cluster 3.2 1/09 data-services
  - Veritas Volume Manager, if applicable

See *Patches and Required Firmware Levels* in the Sun Cluster Release Notes for the location of patches and installation instructions.

- If you use role-based access control (RBAC) instead of superuser to access the cluster nodes, ensure that you can assume an RBAC role that provides authorization for all Sun Cluster commands. This series of upgrade procedures requires the following Sun Cluster RBAC authorizations if the user is not superuser:

  - `solaris.cluster.modify`
  - `solaris.cluster.admin`
  - `solaris.cluster.read`

  See "Role-Based Access Control (Overview)" in *System Administration Guide: Security Services* for more information about using RBAC roles. See the Sun Cluster man pages for the RBAC authorization that each Sun Cluster subcommand requires.

1. **Ensure that the cluster is functioning normally.**

   a. **View the current status of the cluster by running the following command from any node.**

      - On Sun Cluster 3.1 software, use the following command:

        phys-schost% **scstat**

      - On Sun Cluster 3.2 software, use the following command:

        phys-schost% **cluster status**

      See the scstat(1M) or cluster(1CL) man page for more information.

   b. **Search the** /var/adm/messages **log on the same node for unresolved error messages or warning messages.**

   c. **Check the volume-manager status.**

2. **If necessary, notify users that cluster services will be temporarily interrupted during the upgrade.**

   Service interruption will be approximately the amount of time that your cluster normally takes to switch services to another node.

3. **If Sun Cluster Geographic Edition software is installed, uninstall it.**

   For uninstallation procedures, see the documentation for your version of Sun Cluster Geographic Edition software.

4. **Become superuser on a node of the cluster.**

5. **Ensure that all shared data is backed up.**

**6    Ensure that each system disk is backed up.**

**Next Steps**    Perform a live upgrade of the Solaris OS, Sun Cluster 3.2 software, and other software. Go to
"How to Upgrade the Solaris OS and Sun Cluster 3.2 1/09 Software (Live Upgrade)" on page 66.

## ▼ How to Upgrade the Solaris OS and Sun Cluster 3.2 1/09 Software (Live Upgrade)

Perform this procedure to upgrade the Solaris OS, Java ES shared components,
volume-manager software, and Sun Cluster software by using the live upgrade method. The
Sun Cluster live upgrade method uses the Solaris Live Upgrade feature. For information about
live upgrade of the Solaris OS, refer to the documentation for the Solaris version that you are
using:

- Chapter 32, "Solaris Live Upgrade (Topics)," in *Solaris 9 9/04 Installation Guide*
- *Solaris 10 5/08 Installation Guide: Solaris Live Upgrade and Upgrade Planning*
- If non-global zones are installed on the cluster, see Chapter 9, "Upgrading the Solaris OS on
  a System With Non-Global Zones Installed," in *Solaris 10 5/08 Installation Guide: Solaris
  Live Upgrade and Upgrade Planning*.

---

**Note –** The cluster must already run on, or be upgraded to, at least the minimum required level
of the Solaris OS to support upgrade to Sun Cluster 3.2 1/09 software. See "Supported Products"
in Sun Cluster Release Notes for more information.

---

Perform this procedure on each node in the cluster.

---

**Tip –** You can use the `cconsole` utility to perform this procedure on all nodes simultaneously.
See "How to Install Cluster Control Panel Software on an Administrative Console" in *Sun
Cluster Software Installation Guide for Solaris OS* for more information.

---

**Before You Begin**    ■  Ensure that all steps in "How to Prepare the Cluster for Upgrade (Live Upgrade)" on page 64
are completed.

- If you will upgrade to VxVM 5.0, have available patch 122058–06. You must install this
  patch on the alternate boot environment after you upgrade to VxVM 5.0 to enable the live
  upgrade to succeed. The patch is available from the VxVM MP1 patch set.

**1    Ensure that a supported version of Solaris Live Upgrade software is installed on each node.**

If your operating system is already upgraded to Solaris 9 9/05 software or Solaris 10 5/08 software, you have the correct Solaris Live Upgrade software. If your operating system is an older version, perform the following steps:

**a.    Insert the Solaris 9 9/05 software or Solaris 10 5/08 software media.**

You can use either of these versions of the Solaris OS to install Solaris Live Upgrade software on a Solaris 8 configuration.

**b.    Become superuser.**

**c.    Install the Live Upgrade packages.**

- **On the Solaris 9 OS, follow procedures in "Installing Solaris Live Upgrade" in** *Solaris 9 9/04 Installation Guide***.**

- **On the Solaris 10 OS, follow procedures in "Installing Solaris Live Upgrade" in** *Solaris 10 5/08 Installation Guide: Solaris Live Upgrade and Upgrade Planning***.**

**2    If you will upgrade the Solaris OS and your cluster uses dual-string mediators for Solaris Volume Manager software, unconfigure your mediators.**

See "Configuring Dual-String Mediators" in *Sun Cluster Software Installation Guide for Solaris OS* for more information about mediators.

**a.    Run the following command to verify that no mediator data problems exist.**

```
phys-schost# medstat -s setname
```

-s setname       Specifies the disk set name.

If the value in the Status field is Bad, repair the affected mediator host. Follow the procedure "How to Fix Bad Mediator Data" in *Sun Cluster Software Installation Guide for Solaris OS*.

**b.    List all mediators.**

Save this information for when you restore the mediators during the procedure "How to Finish Upgrade to Sun Cluster 3.2 1/09 Software" on page 98.

**c.    For a disk set that uses mediators, take ownership of the disk set if no node already has ownership.**

- On Sun Cluster 3.1 software, use the following command:

```
phys-schost# scswitch -z -D setname -h node
```

-z                       Changes mastery.

-D *devicegroup*        Specifies the name of the disk set.

-h *node*               Specifies the name of the node to become primary of the disk set.

■ On Sun Cluster 3.2 software, use the following command:

phys-schost# **cldevicegroup switch -n** *node devicegroup*

**d. Unconfigure all mediators for the disk set.**

phys-schost# **metaset -s** *setname* **-d -m** *mediator-host-list*

-s *setname*                  Specifies the disk set name.

-d                            Deletes from the disk set.

-m *mediator-host-list*       Specifies the name of the node to remove as a mediator host for the
                              disk set.

See the mediator(7D) man page for further information about mediator-specific options to
the metaset command.

**e. Repeat Step c through Step d for each remaining disk set that uses mediators.**

**3    On each node, temporarily change the name of the global devices entry in the** /etc/vfstab **file
      from the DID name to the physical name.**

This name change is necessary for live upgrade software to recognize the global-devices file
system. You will restore the DID names after the live upgrade is completed.

**a. Back up the** /etc/vfstab **file.**

phys-schost# **cp /etc/vfstab /etc/vfstab.old**

**b. Open the** /etc/vfstab **file for editing.**

**c. Locate and edit the line that corresponds to** /global/.device/*node*@N**.**

■ Change the DID names to the physical names by changing /dev/did/{r}dsk/d*Y*s*Z* to
   /dev/{r}dsk/c*N*t*X*d*Y*s*Z*.

■ Remove global from the entry.

The following example shows the names of DID device d3s3, which corresponds to
/global/.devices/node@2, changed to its physical device names and the global entry
removed:

   *Original:*
/dev/did/dsk/d3s3  /dev/did/rdsk/d3s3 /global/.devices/*node*@2  ufs  2  no  global

   *Changed:*

```
               dev/dsk/c0t0d0s3   /dev/rdsk/c0t0d0s3 /global/.devices/node@2 ufs  2  no  -
```

4 **Build an inactive boot environment (BE).**

phys-schost# **lucreate** *options***-n** *BE-name*

-n *BE-name*       Specifies the name of the boot environment that is to be upgraded.

For information about important options to the lucreate command, see *Solaris 10 5/08 Installation Guide: Solaris Live Upgrade and Upgrade Planning* and the lucreate(1M) man page.

5 **If necessary, upgrade the Solaris OS software in your inactive BE.**

If the cluster already runs on a properly patched version of the Solaris OS that supports Sun Cluster 3.2 1/09 software, this step is optional.

- **If you use Solaris Volume Manager software, run the following command:**

  phys-schost# **luupgrade -u -n** *BE-name* **-s** *os-image-path*

  -u                 Upgrades an operating system image on a boot environment.

  -s *os-image-path* Specifies the path name of a directory that contains an operating system image.

- **If you use Veritas Volume Manager, follow live upgrade procedures in your VxVM installation documentation.**

6 **Mount your inactive BE by using the** lumount **command.**

phys-schost# **lumount -n** *BE-name* **-m** *BE-mount-point*

-m *BE-mount-point*       Specifies the mount point of *BE-name*.

For more information, see *Solaris 10 5/08 Installation Guide: Solaris Live Upgrade and Upgrade Planning* and the lumount(1M) man page.

7 **Ensure that the** /*BE-mount-point*/usr/java/ **directory is a symbolic link to the minimum or latest version of Java software.**

Sun Cluster software requires at least version 1.5.0_06 of Java software. If you upgraded to a version of Solaris that installs an earlier version of Java, the upgrade might have changed the symbolic link to point to a version of Java that does not meet the minimum requirement for Sun Cluster 3.2 1/09 software.

a. **Determine what directory the** /*BE-mount-point*/usr/java/ **directory is symbolically linked to.**

```
phys-schost# ls -l /BE-mount-point/usr/java
lrwxrwxrwx  1 root   other    9 Apr 19 14:05 /BE-mount-point/usr/java -> /BE-mount-point/usr/j2se/
```

**b. Determine what version or versions of Java software are installed.**

The following are examples of commands that you can use to display the version of their related releases of Java software.

```
phys-schost# /BE-mount-point/usr/j2se/bin/java -version
phys-schost# /BE-mount-point/usr/java1.2/bin/java -version
phys-schost# /BE-mount-point/usr/jdk/jdk1.5.0_06/bin/java -version
```

**c. If the** /BE-mount-point/usr/java/ **directory is not symbolically linked to a supported version of Java software, recreate the symbolic link to link to a supported version of Java software.**

The following example shows the creation of a symbolic link to the /usr/j2se/ directory, which contains Java 1.5.0_06 software.

```
phys-schost# rm /BE-mount-point/usr/java
phys-schost# cd /BE-mount-point/usr
phys-schost# ln -s j2se java
```

**8   Apply any necessary Solaris patches.**

You might need to patch your Solaris software to use Solaris Live Upgrade. For details about the patches that the Solaris OS requires and where to download them, see "Managing Packages and Patches With Solaris Live Upgrade" in *Solaris 9 9/04 Installation Guide* or "Upgrading a System With Packages or Patches" in *Solaris 10 5/08 Installation Guide: Solaris Live Upgrade and Upgrade Planning*.

**9   If necessary and if your version of the Veritas Volume Manager (VxVM) software supports it, upgrade your VxVM software.**

---

**Note –** You must install patch 122058–06. This patch is required for the live upgrade of VxVM to succeed.

---

Refer to your VxVM software documentation to determine whether your version of VxVM can use the live upgrade method.

**10   (Optional) SPARC: Upgrade VxFS.**

Follow procedures that are provided in your VxFS documentation.

**11   If your cluster hosts software applications that require an upgrade and that you can upgrade by using Solaris Live Upgrade, upgrade those software applications.**

However, if some software applications to upgrade cannot use Solaris Live Upgrade, such as Sun StorageTek™ QFS software, upgrade the applications in Step 27.

**12 Load the Sun Java Availability Suite DVD-ROM into the DVD-ROM drive.**

If the volume management daemon vold(1M) is running and is configured to manage CD-ROM or DVD devices, the daemon automatically mounts the media on the /cdrom/cdrom0 directory.

**13 Change to the installation wizard directory of the DVD-ROM.**

- If you are installing the software packages on the SPARC platform, type the following command:

  phys-schost# **cd /cdrom/cdrom0/Solaris_sparc**

- If you are installing the software packages on the x86 platform, type the following command:

  phys-schost# **cd /cdrom/cdrom0/Solaris_x86**

**14 Start the installation wizard program to direct output to a state file.**

Specify the name to give the state file and the absolute or relative path where the file should be created.

- To create a state file by using the graphical interface, use the following command:

  phys-schost# **./installer -no -saveState** *statefile*

- To create a state file by using the text-based interface, use the following command:

  phys-schost# **./installer -no -nodisplay -saveState** *statefile*

See "Generating the Initial State File" in *Sun Java Enterprise System 5 Installation Guide for UNIX* for more information.

**15 Follow the instructions on the screen to select and upgrade Shared Components software packages on the node.**

The installation wizard program displays the status of the installation. When the installation is complete, the program displays an installation summary and the installation logs.

**16 Exit the installation wizard program.**

**17 Run the** installer **program in silent mode and direct the installation to the alternate boot environment.**

**Note –** The installer program must be the same version that you used to create the state file.

phys-schost# **./installer -nodisplay -noconsole -state** *statefile* **-altroot** *BE-mount-point*

See "To Run the Installer in Silent Mode" in *Sun Java Enterprise System 5 Installation Guide for UNIX* for more information.

**18    Change to the** `/Solaris_arch/Product/sun_cluster/Solaris_ver/Tools/` **directory, where** *arch* **is** `sparc` **or** `x86` **(Solaris 10 only) and where** *ver* **is** `9` **for Solaris 9 or** `10` **for Solaris 10 .**

```
phys-schost# cd /cdrom/cdrom0/Solaris_arch/Product/sun_cluster/Solaris_ver/Tools
```

**19    Upgrade your Sun Cluster software by using the** `scinstall` **command.**

```
phys-schost# ./scinstall -u update -R BE-mount-point
```

-u update                    Specifies that you are performing an upgrade of Sun Cluster software.

-R *BE-mount-point*      Specifies the mount point for your alternate boot environment.

For more information, see the `scinstall(1M)` man page.

**20    Upgrade your data services by using the** `scinstall` **command.**

```
phys-schost# BE-mount-point/usr/cluster/bin/scinstall -u update -s all  \
-d /cdrom/cdrom0/Solaris_arch/Product/sun_cluster_agents -R BE-mount-point
```

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

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

**b.    Eject the DVD-ROM.**

```
phys-schost# eject cdrom
```

**22    Repeat, starting from Step 1, for each node in the cluster.**

---

**Note –** Do not reboot any node until all nodes in the cluster are upgraded on their inactive BE.

---

**23    On each cluster node, restore the DID names of the global-devices entry in the** `/etc/vfstab` **file.**

**a.    On the current, unupgraded BE, restore the original** `/etc/vfstab` **file.**

```
phys-schost# cp /etc/vstab.old /etc/vfstab
```

**b.    In the alternate BE, open the** `/etc/vfstab` **file for editing.**

**c.    Locate the line that corresponds to** `/global/.devices/`*node*`@N` **and replace the dash (-) at the end of the entry with the word** `global`**.**

```
/dev/dsk/cNtXdYsZ  /dev/rdsk/cNtXdYsZ  /global/.devices/node@N  ufs  2  no  global
```

When the node is rebooted into the upgraded alternate BE, the DID names are substituted in the /etc/vfstab file automatically.

**24    Unmount the inactive BE.**

phys-schost# **luumount -n** *BE-name*

**25    Activate the upgraded inactive BE.**

phys-schost# **luactivate** *BE-name*

*BE-name*        The name of the alternate BE that you built in Step 4.

**26    Reboot all nodes to use the upgraded BE.**

---

**Note –** Do not use the reboot or halt command. These commands do not activate a new BE. Use only shutdown or init to reboot into a new BE.

---

- **If you have no additional software to upgrade, boot the upgraded BE into cluster mode.**

  phys-schost# **shutdown -y -g0 -i6**

  The nodes reboot into cluster mode using the new, upgraded BE. The cluster upgrade is completed.

- **If your cluster hosts software applications that require upgrade and for which you cannot use Solaris Live Upgrade, perform the following steps to boot the upgraded BE into noncluster mode.**

  **a.    Shut down the nodes.**

   - On Sun Cluster 3.1 software, on *each* node of the cluster use the following command:

     phys-schost# **shutdown -g0 -y**

   - On Sun Cluster 3.2 software, on *one* node of the cluster use the following command:

     phys-schost# **cluster shutdown -g0 -y**

  **b.    Boot each node into noncluster mode.**

   - **On SPARC based systems, perform the following command:**

     ok **boot -x**

- **On x86 based systems, perform the following commands:**

    i. **In the GRUB menu, use the arrow keys to select the appropriate Solaris entry and type e to edit its commands.**

    The GRUB menu appears similar to the following:

    ```
    GNU GRUB version 0.95 (631K lower / 2095488K upper memory)
    +-------------------------------------------------------------------+
    | Solaris 10 /sol_10_x86                                             |
    | Solaris failsafe                                                   |
    |                                                                   |
    +-------------------------------------------------------------------+
    Use the ^ and v keys to select which entry is highlighted.
    Press enter to boot the selected OS, 'e' to edit the
    commands before booting, or 'c' for a command-line.
    ```

    For more information about GRUB based booting, see "Booting an x86 Based System by Using GRUB (Task Map)" in *System Administration Guide: Basic Administration*.

    ii. **In the boot parameters screen, use the arrow keys to select the** kernel **entry and type e to edit the entry.**

    The GRUB boot parameters screen appears similar to the following:

    ```
    GNU GRUB version 0.95 (615K lower / 2095552K upper memory)
    +-------------------------------------------------------------------+
    | root (hd0,0,a)                                                     |
    | kernel /platform/i86pc/multiboot                                  |
    | module /platform/i86pc/boot_archive                               |
    +-------------------------------------------------------------------+
    Use the ^ and v keys to select which entry is highlighted.
    Press 'b' to boot, 'e' to edit the selected command in the
    boot sequence, 'c' for a command-line, 'o' to open a new line
    after ('O' for before) the selected line, 'd' to remove the
    selected line, or escape to go back to the main menu.
    ```

    iii. **Add -x to the command to specify that the system boot into noncluster mode.**

    ```
    [ Minimal BASH-like line editing is supported. For the first word, TAB
    lists possible command completions. Anywhere else TAB lists the possible
    completions of a device/filename. ESC at any time exits. ]

    grub edit> kernel /platform/i86pc/multiboot -x
    ```

**iv. Press Enter to accept the change and return to the boot parameters screen.**

The screen displays the edited command.

```
GNU GRUB version 0.95 (615K lower / 2095552K upper memory)
+----------------------------------------------------------------------+
| root (hd0,0,a)                                                       |
| kernel /platform/i86pc/multiboot -x                                  |
| module /platform/i86pc/boot_archive                                  |
+----------------------------------------------------------------------+
Use the ^ and v keys to select which entry is highlighted.
Press 'b' to boot, 'e' to edit the selected command in the
boot sequence, 'c' for a command-line, 'o' to open a new line
after ('O' for before) the selected line, 'd' to remove the
selected line, or escape to go back to the main menu.-
```

**v. Type b to boot the node into noncluster mode.**

---

**Note –** This change to the kernel boot parameter command does not persist over the system boot. The next time you reboot the node, it will boot into cluster mode. To boot into noncluster mode instead, perform these steps to again to add the -x option to the kernel boot parameter command.

---

If the instruction says to run the init S command, shut down the system then change the GRUB kernel boot command to /platform/i86pc/multiboot -sx instead.

The upgraded BE now runs in noncluster mode.

**27 Upgrade any software applications for which you cannot use Solaris Live Upgrade.**

---

**Note –** Throughout the process of software-application upgrade, always reboot into noncluster mode until all upgrades are complete, as described in Step 26.

---

**a. Upgrade each software application that requires an upgrade.**

Remember to boot into noncluster mode if you are directed to reboot, until all applications are upgraded.

**b. After all nodes are upgraded, reboot the nodes into cluster mode.**

**i. Shut down each node.**

```
phys-schost# shutdown -g0 -y
```

ii. **Boot each node into cluster mode.**

- **On SPARC based systems, perform the following command:**

  ok **boot**

- **On x86 based systems, perform the following commands:**

  When the GRUB menu is displayed, select the appropriate Solaris entry and press
  Enter. The GRUB menu appears similar to the following:

```
GNU GRUB version 0.95 (631K lower / 2095488K upper memory)
+-------------------------------------------------------------------------+
| Solaris 10 /sol_10_x86                                                   |
| Solaris failsafe                                                         |
|                                                                         |
+-------------------------------------------------------------------------+
Use the ^ and v keys to select which entry is highlighted.
Press enter to boot the selected OS, 'e' to edit the
commands before booting, or 'c' for a command-line.
```

The cluster upgrade is completed.

**Example 4–1**   Live Upgrade to Sun Cluster 3.2 1/09 Software

This example shows a live upgrade of a cluster node. The example upgrades the SPARC based
node to the Solaris 10 OS, Sun Cluster 3.2 1/09 framework, and all Sun Cluster data services that
support the live upgrade method. In this example, sc31u2 is the original boot environment
(BE). The new BE that is upgraded is named sc32 and uses the mount point /sc32. The
directory /net/installmachine/export/solaris10/OS_image/ contains an image of the
Solaris 10 OS. The Java ES installer state file is named sc32state.

The following commands typically produce copious output. This output is shown only where
necessary for clarity.

```
phys-schost# lucreate sc31u2 -m /:/dev/dsk/c0t4d0s0:ufs -n sc32
...
lucreate: Creation of Boot Environment sc32 successful.

phys-schost# luupgrade -u -n sc32 -s /net/installmachine/export/solaris10/OS_image/
The Solaris upgrade of the boot environment sc32 is complete.
    Apply patches

phys-schost# lumount sc32 /sc32
phys-schost# ls -l /sc32/usr/java
lrwxrwxrwx   1 root    other    9 Apr 19 14:05 /sc32/usr/java -> /sc32/usr/j2se/
```

*Insert the Sun Java Availability Suite DVD-ROM.*

```
phys-schost# cd /cdrom/cdrom0/Solaris_sparc
phys-schost# ./installer -no -saveState sc32state
phys-schost# ./installer -nodisplay -noconsole -state sc32state -altroot /sc32
phys-schost# cd /cdrom/cdrom0/Solaris_sparc/sun_cluster/Sol_9/Tools
phys-schost# ./scinstall -u update -R /sc32
phys-schost# /sc32/usr/cluster/bin/scinstall -u update -s all -d /cdrom/cdrom0 -R /sc32
phys-schost# cd /
phys-schost# eject cdrom

phys-schost# luumount sc32
phys-schost# luactivate sc32
Activation of boot environment sc32 successful.
    Upgrade all other nodes

    Boot all nodes
phys-schost# shutdown -y -g0
ok boot
```

At this point, you might upgrade data-service applications that cannot use the live upgrade method, before you reboot into cluster mode.

**Troubleshooting**     **DID device name errors** - During the creation of the inactive BE, if you receive an error that a file system that you specified with its DID device name, /dev/dsk/did/d$N$s$X$, does not exist, but the device name does exist, you must specify the device by its physical device name. Then change the vfstab entry on the alternate BE to use the DID device name instead. Perform the following steps:

1) For all unrecognized DID devices, specify the corresponding physical device names as arguments to the -m or -M option in the lucreate command. For example, if /global/.devices/node@*nodeid* is mounted on a DID device, use lucreate -m /global/.devices/node@*nodeid*:/dev/dsk/c$N$t$X$d$Y$s$Z$:ufs [-m…] -n *BE-name* to create the BE.

2) Mount the inactive BE by using the lumount -n *BE-name* -m *BE-mount-point* command.

3) Edit the /*BE-name*/etc/vfstab file to convert the physical device name, /dev/dsk/c$N$t$X$d$Y$s$Z$, to its DID device name, /dev/dsk/did/d$N$s$X$.

**Mount point errors** - During creation of the inactive boot environment, if you receive an error that the mount point that you supplied is not mounted, mount the mount point and rerun the lucreate command.

**New BE boot errors** - If you experience problems when you boot the newly upgraded environment, you can revert to your original BE. For specific information, see "Failure Recovery: Falling Back to the Original Boot Environment (Command-Line Interface)" in

*Solaris 9 9/04 Installation Guide* or Chapter 6, "Failure Recovery: Falling Back to the Original Boot Environment (Tasks)," in *Solaris 10 5/08 Installation Guide: Solaris Live Upgrade and Upgrade Planning*.

**Global-devices file-system errors** - After you upgrade a cluster on which the root disk is encapsulated, you might see one of the following error messages on the cluster console during the first reboot of the upgraded BE:

```
mount: /dev/vx/dsk/bootdg/node@1 is already mounted or
/global/.devices/node@1 is busy
Trying to remount /global/.devices/node@1
mount: /dev/vx/dsk/bootdg/node@1 is already mounted or
/global/.devices/node@1 is busy

WARNING - Unable to mount one or more of the following filesystem(s):
/global/.devices/node@1
If this is not repaired, global devices will be unavailable.
Run mount manually (mount filesystem...).
After the problems are corrected, please clear the
maintenance flag on globaldevices by running the
following command:
/usr/sbin/svcadm clear svc:/system/cluster/globaldevices:default

Dec 6 12:17:23 svc.startd[8]:
svc:/system/cluster/globaldevices:default: Method
"/usr/cluster/lib/svc/method/globaldevices start" failed with exit
status 96.
[ system/cluster/globaldevices:default misconfigured (see 'svcs -x' for
details) ]
Dec 6 12:17:25 Cluster.CCR: /usr/cluster/bin/scgdevs: Filesystem
/global/.devices/node@1 is not available in /etc/mnttab.
Dec 6 12:17:25 Cluster.CCR: /usr/cluster/bin/scgdevs: Filesystem
/global/.devices/node@1 is not available in /etc/mnttab.
```

These messages indicate that the vxio minor number is the same on each cluster node. Reminor the root disk group on each node so that each number is unique in the cluster. See "How to Assign a New Minor Number to a Device Group" in *Sun Cluster Software Installation Guide for Solaris OS*.

**Next Steps** Go to Chapter 6, "Completing the Upgrade."

**See Also** You can choose to keep your original, and now inactive, boot environment for as long as you need to. When you are satisfied that your upgrade is acceptable, you can then choose to remove the old environment or to keep and maintain it.

- If you used an unmirrored volume for your inactive BE, delete the old BE files. For specific information, see "Deleting an Inactive Boot Environment" in *Solaris 9 9/04 Installation Guide* or "Deleting an Inactive Boot Environment" in *Solaris 10 5/08 Installation Guide: Solaris Live Upgrade and Upgrade Planning*.

- If you detached a plex to use as the inactive BE, reattach the plex and synchronize the mirrors. For more information about working with a plex, see "Example of Detaching and Upgrading One Side of a RAID 1 Volume (Mirror) (Command-Line Interface)" in *Solaris 9 9/04 Installation Guide* or "Example of Detaching and Upgrading One Side of a RAID-1 Volume (Mirror)" in *Solaris 10 5/08 Installation Guide: Solaris Live Upgrade and Upgrade Planning*.

You can also maintain the inactive BE. For information about how to maintain the environment, see Chapter 37, "Maintaining Solaris Live Upgrade Boot Environments (Tasks)," in *Solaris 9 9/04 Installation Guide* or Chapter 7, "Maintaining Solaris Live Upgrade Boot Environments (Tasks)," in *Solaris 10 5/08 Installation Guide: Solaris Live Upgrade and Upgrade Planning*.

5

# Performing a Rolling Upgrade

This chapter provides procedures to perform a rolling upgrade from Sun Cluster 3.2 software to Sun Cluster 3.2 1/09 software. In a rolling upgrade, you upgrade one cluster node at a time, while the other cluster nodes remain in production. After all nodes are upgraded and have rejoined the cluster, you must commit the cluster to the new software version before you can use any new features.

This chapter provides the following information to upgrade from Sun Cluster 3.2 1/09 software to Sun Cluster 3.2 software by using the live upgrade method:

## Performing a Rolling Upgrade of a Cluster

To upgrade from Sun Cluster 3.0 software, follow instead the procedures in Chapter 2, "Performing a Standard Upgrade to Sun Cluster 3.2 1/09 Software."

---

**Note –** Sun Cluster 3.2 1/09 software does not support rolling upgrade from Solaris 8 software to Solaris 9 or 10 software or from Solaris 9 software to Solaris 10 software. You can only upgrade Solaris software to an update of the same release during Sun Cluster rolling upgrade. To upgrade a Sun Cluster configuration from Solaris 8 software to Solaris 9 or 10 software or from Solaris 9 software to Solaris 10 software or compatible, perform instead the procedures in another upgrade method. See "Choosing a Sun Cluster Upgrade Method" on page 11 to determine the best upgrade method for your configuration.

---

**TABLE 5–1** Task Map: Performing a Rolling Upgrade to Sun Cluster 3.2 1/09 Software

| Task | Instructions |
|---|---|
| 1. Read the upgrade requirements and restrictions. | "Upgrade Requirements and Software Support Guidelines" on page 9 |
| 2. On one node of the cluster, move resource groups and device groups to another cluster node, and ensure that shared data and system disks are backed up. If Sun Cluster Geographic Edition software is installed, uninstall it. If the cluster uses dual-string mediators for Solaris Volume Manager software, unconfigure the mediators. Then reboot the node into noncluster mode. | "How to Prepare a Cluster Node for a Rolling Upgrade" on page 82 |
| 3. Upgrade the Solaris OS on the cluster node, if necessary, to a supported Solaris update release. | "How to Perform a Rolling Upgrade of a Solaris Maintenance Update" on page 86 |
| 4. Upgrade the cluster node to Sun Cluster 3.2 1/09 framework software. Optionally, upgrade data-service software. If necessary, upgrade applications. | "How to Perform a Rolling Upgrade of Sun Cluster 3.2 1/09 Software" on page 89 |
| 5. Repeat Tasks 3 through 4 on each remaining node to upgrade. | |
| 6. Use the scversions command to commit the cluster to the upgrade. | "How to Commit the Upgraded Cluster to Sun Cluster 3.2 1/09 Software" on page 95 |
| 7. Verify successful completion of upgrade to Sun Cluster 3.2 1/09 software. | "How to Verify Upgrade of Sun Cluster 3.2 1/09 Software" on page 96 |
| 8. Enable resources and bring resource groups online. Migrate existing resources to new resource types. | "How to Finish Upgrade to Sun Cluster 3.2 1/09 Software" on page 98 |
| 9. (*Optional*) SPARC: Upgrade the Sun Cluster module to Sun Management Center. | "SPARC: How to Upgrade Sun Cluster Module Software for Sun Management Center" on page 117 |

## ▼ How to Prepare a Cluster Node for a Rolling Upgrade

Perform this procedure on one node at a time. You will take the upgraded node out of the cluster while the remaining nodes continue to function as active cluster members.

**Before You Begin**    Perform the following tasks:

- Ensure that the configuration meets requirements for upgrade. See "Upgrade Requirements and Software Support Guidelines" on page 9.
- Have available the installation media, documentation, and patches for all the software products that you are upgrading, including the following software:
  - Solaris OS
  - Sun Cluster 3.2 1/09 framework
  - Sun Cluster 3.2 Core Patch

- Solaris 9 OS - 125510–02
- Solaris 10 OS on SPARC - 125511–02
- Solaris 10 OS on x86 - 125512–02
- Sun Cluster 3.2 1/09 data services (agents)
- Applications that are managed by Sun Cluster 3.2 1/09 data-service agents

See *Patches and Required Firmware Levels* in the Sun Cluster Release Notes for the location of patches and installation instructions.

**1  Ensure that the cluster is functioning normally.**

   **a.  View the current status of the cluster by running the following command from any node.**

     `phys-schost% `**`cluster status`**

     See the cluster(1CL) man page for more information.

   **b.  Search the** `/var/adm/messages` **log on the same node for unresolved error messages or warning messages.**

   **c.  Check the volume-manager status.**

**2  If necessary, notify users that cluster services might be temporarily interrupted during the upgrade.**

Service interruption will be approximately the amount of time that your cluster normally takes to switch services to another node.

**3  If Sun Cluster Geographic Edition software is installed, uninstall it.**

For uninstallation procedures, see the documentation for your version of Sun Cluster Geographic Edition software.

**4  Become superuser on a node of the cluster.**

**5  Move all resource groups and device groups that are running on the node to upgrade.**

`phys-schost# `**`clnode evacuate`** *node-to-evacuate*

See the clnode(1CL) man page for more information.

**6  Verify that the move was completed successfully.**

`phys-schost# `**`cluster status -t devicegroup,resourcegroup`**

**7  Ensure that the system disk, applications, and all data are backed up.**

**8    If you will upgrade the Solaris OS and your cluster uses dual-string mediators for Solaris Volume Manager software, unconfigure your mediators.**

See "Configuring Dual-String Mediators" in *Sun Cluster Software Installation Guide for Solaris OS* for more information.

**a.  Run the following command to verify that no mediator data problems exist.**

```
phys-schost# medstat -s setname
```

`-s setname`      Specifies the disk set name

If the value in the Status field is Bad, repair the affected mediator host. Follow the procedure "How to Fix Bad Mediator Data" in *Sun Cluster Software Installation Guide for Solaris OS*.

**b.  List all mediators.**

Save this information for when you restore the mediators during the procedure "How to Commit the Upgraded Cluster to Sun Cluster 3.2 1/09 Software" on page 95.

**c.  For a disk set that uses mediators, take ownership of the disk set if no node already has ownership.**

```
phys-schost# cldevicegroup switch -n node devicegr
```

**d.  Unconfigure all mediators for the disk set.**

```
phys-schost# metaset -s setname -d -m mediator-host-list
```

| | |
|---|---|
| `-s setname` | Specifies the disk-set name |
| `-d` | Deletes from the disk set |
| `-m mediator-host-list` | Specifies the name of the node to remove as a mediator host for the disk set |

See the mediator(7D) man page for further information about mediator-specific options to the metaset command.

**e.  Repeat these steps for each remaining disk set that uses mediators.**

**9    Shut down the node that you want to upgrade and boot it into noncluster mode.**

- **On SPARC based systems, perform the following commands:**

```
phys-schost# shutdown -y -g0
ok boot -x
```

■ **On x86 based systems, perform the following commands:**

**a. In the GRUB menu, use the arrow keys to select the appropriate Solaris entry and type e to edit its commands.**

The GRUB menu appears similar to the following:

```
GNU GRUB version 0.95 (631K lower / 2095488K upper memory)
+-------------------------------------------------------------------------+
| Solaris 10 /sol_10_x86                                                   |
| Solaris failsafe                                                         |
|                                                                         |
+-------------------------------------------------------------------------+
Use the ^ and v keys to select which entry is highlighted.
Press enter to boot the selected OS, 'e' to edit the
commands before booting, or 'c' for a command-line.
```

For more information about GRUB based booting, see "Booting an x86 Based System by Using GRUB (Task Map)" in *System Administration Guide: Basic Administration*.

**b. In the boot parameters screen, use the arrow keys to select the** kernel **entry and type e to edit the entry.**

The GRUB boot parameters screen appears similar to the following:

```
GNU GRUB version 0.95 (615K lower / 2095552K upper memory)
+-----------------------------------------------------------------------+
| root (hd0,0,a)                                                        |
| kernel /platform/i86pc/multiboot                                      |
| module /platform/i86pc/boot_archive                                   |
+-----------------------------------------------------------------------+
Use the ^ and v keys to select which entry is highlighted.
Press 'b' to boot, 'e' to edit the selected command in the
boot sequence, 'c' for a command-line, 'o' to open a new line
after ('O' for before) the selected line, 'd' to remove the
selected line, or escape to go back to the main menu.
```

**c. Add - x to the command to specify that the system boot into noncluster mode.**

```
[ Minimal BASH-like line editing is supported. For the first word, TAB
lists possible command completions. Anywhere else TAB lists the possible
completions of a device/filename. ESC at any time exits. ]

grub edit> kernel /platform/i86pc/multiboot -x
```

**d. Press Enter to accept the change and return to the boot parameters screen.**

The screen displays the edited command.

```
GNU GRUB version 0.95 (615K lower / 2095552K upper memory)
+-----------------------------------------------------------------------+
| root (hd0,0,a)                                                        |
```

```
| kernel /platform/i86pc/multiboot -x                              |
| module /platform/i86pc/boot_archive                              |
+------------------------------------------------------------------+
Use the ^ and v keys to select which entry is highlighted.
Press 'b' to boot, 'e' to edit the selected command in the
boot sequence, 'c' for a command-line, 'o' to open a new line
after ('O' for before) the selected line, 'd' to remove the
selected line, or escape to go back to the main menu.-
```

    **e. Type b to boot the node into noncluster mode.**

---

**Note –** This change to the kernel boot parameter command does not persist over the system boot. The next time you reboot the node, it will boot into cluster mode. To boot into noncluster mode instead, perform these steps to again to add the -x option to the kernel boot parameter command.

---

The other nodes of the cluster continue to function as active cluster members.

**Next Steps**     To upgrade the Solaris software to a Maintenance Update release, go to "How to Perform a Rolling Upgrade of a Solaris Maintenance Update" on page 86.

---

**Note –** The cluster must already run on, or be upgraded to, at least the minimum required level of the Solaris OS to support Sun Cluster 3.2 1/09 software. See the Sun Cluster Release Notes for information about supported releases of the Solaris OS.

---

If you do not intend to upgrade the Solaris OS, go to "How to Perform a Rolling Upgrade of Sun Cluster 3.2 1/09 Software" on page 89.

## ▼ How to Perform a Rolling Upgrade of a Solaris Maintenance Update

Perform this procedure to upgrade the Solaris OS to a supported Maintenance Update release.

---

**Note –** You cannot perform a rolling upgrade to upgrade a cluster from Solaris 8 to Solaris 9 or 10 software or from Solaris 9 to Solaris 10 software. Go to "Choosing a Sun Cluster Upgrade Method" on page 11 to identify the appropriate upgrade method to use.

---

**Before You Begin**     Ensure that all steps in "How to Prepare a Cluster Node for a Rolling Upgrade" on page 82 are completed.

**1   Temporarily comment out all entries for globally mounted file systems in the node's** `/etc/vfstab` **file.**

Perform this step to prevent the Solaris upgrade from attempting to mount the global devices.

**2   Follow the instructions in the Solaris maintenance update installation guide to install the Maintenance Update release.**

---

**Note** – Do not reboot the node when prompted to reboot at the end of installation processing.

---

**3   Uncomment all entries in the** `/a/etc/vfstab` **file for globally mounted file systems that you commented out in Step 1.**

**4   Install any required Solaris software patches and hardware-related patches, and download any needed firmware that is contained in the hardware patches.**

---

**Note** – Do not reboot the node until Step 5.

---

**5   Reboot the node into noncluster mode.**

-   **On SPARC based systems, perform the following commands:**

    ```
    phys-schost# shutdown -y -g0
    ok boot -x
    ```

-   **On x86 based systems, perform the following commands:**

    **a. In the GRUB menu, use the arrow keys to select the appropriate Solaris entry and type e to edit its commands.**

    The GRUB menu appears similar to the following:

    ```
    GNU GRUB version 0.95 (631K lower / 2095488K upper memory)
    +-------------------------------------------------------------------+
    | Solaris 10 /sol_10_x86                                             |
    | Solaris failsafe                                                   |
    |                                                                   |
    +-------------------------------------------------------------------+
    Use the ^ and v keys to select which entry is highlighted.
    Press enter to boot the selected OS, 'e' to edit the
    commands before booting, or 'c' for a command-line.
    ```

    For more information about GRUB based booting, see "Booting an x86 Based System by Using GRUB (Task Map)" in *System Administration Guide: Basic Administration*.

b.  **In the boot parameters screen, use the arrow keys to select the** `kernel` **entry and type e to edit the entry.**

The GRUB boot parameters screen appears similar to the following:

```
GNU GRUB version 0.95 (615K lower / 2095552K upper memory)
+----------------------------------------------------------------------+
| root (hd0,0,a)                                                       |
| kernel /platform/i86pc/multiboot                                    |
| module /platform/i86pc/boot_archive                                 |
+----------------------------------------------------------------------+
Use the ^ and v keys to select which entry is highlighted.
Press 'b' to boot, 'e' to edit the selected command in the
boot sequence, 'c' for a command-line, 'o' to open a new line
after ('O' for before) the selected line, 'd' to remove the
selected line, or escape to go back to the main menu.
```

c.  **Add -x to the command to specify that the system boot into noncluster mode.**

```
[ Minimal BASH-like line editing is supported. For the first word, TAB
lists possible command completions. Anywhere else TAB lists the possible
completions of a device/filename. ESC at any time exits. ]

grub edit> kernel /platform/i86pc/multiboot -x
```

d.  **Press Enter to accept the change and return to the boot parameters screen.**

The screen displays the edited command.

```
GNU GRUB version 0.95 (615K lower / 2095552K upper memory)
+----------------------------------------------------------------------+
| root (hd0,0,a)                                                       |
| kernel /platform/i86pc/multiboot -x                                 |
| module /platform/i86pc/boot_archive                                 |
+----------------------------------------------------------------------+
Use the ^ and v keys to select which entry is highlighted.
Press 'b' to boot, 'e' to edit the selected command in the
boot sequence, 'c' for a command-line, 'o' to open a new line
after ('O' for before) the selected line, 'd' to remove the
selected line, or escape to go back to the main menu.-
```

e.  **Type b to boot the node into noncluster mode.**

---

**Note** – This change to the kernel boot parameter command does not persist over the system boot. The next time you reboot the node, it will boot into cluster mode. To boot into noncluster mode instead, perform these steps to again to add the -x option to the kernel boot parameter command.

---

## ▼ How to Perform a Rolling Upgrade of Sun Cluster 3.2 1/09 Software

Perform this procedure to upgrade a node that runs Sun Cluster 3.2 software to Sun Cluster 3.2 1/09 software while the remaining cluster nodes are in cluster mode.

---

**Note –** Until all nodes of the cluster are upgraded and the upgrade is committed, new features that are introduced by the new release might not be available.

---

**1 Become superuser on the node of the cluster.**

**2 Ensure that the applicable Sun Cluster 3.2 Core Patch is installed before you begin to upgrade to Sun Cluster software.**

- Solaris 9 OS - 125510–02
- Solaris 10 OS on SPARC - 125511–02
- Solaris 10 OS on x86 - 125512–02

This patch contains the versioning functionality that is needed to support coexistence of different Sun Cluster software versions during the rolling upgrade process.

**3 Load the Sun Java Availability Suite DVD-ROM into the DVD-ROM drive.**

If the volume management daemon vold(1M) is running and is configured to manage CD-ROM or DVD devices, the daemon automatically mounts the media on the /cdrom/cdrom0 directory.

**4 Change to the installation wizard directory of the DVD-ROM.**

- If you are installing the software packages on the SPARC platform, type the following command:

  phys-schost# **cd /cdrom/cdrom0/Solaris_sparc**

- If you are installing the software packages on the x86 platform, type the following command:

  phys-schost# **cd /cdrom/cdrom0/Solaris_x86**

**5 Start the installation wizard program.**

phys-schost# **./installer**

**6 Follow the instructions on the screen to select and upgrade Shared Components software packages on the node.**

**Note –** Do *not* use the installation wizard program to upgrade Sun Cluster software packages.

The installation wizard program displays the status of the installation. When the installation is complete, the program displays an installation summary and the installation logs.

**7 Exit the installation wizard program.**

**8 Change to the** /Solaris_*arch*/Product/sun_cluster/Solaris_*ver*/Tools/ **directory, where** *arch* **is** sparc **or** x86 **(Solaris 10 only) and where** *ver* **is** 9 **for Solaris 9 or** 10 **for Solaris 10 .**

```
phys-schost# cd /cdrom/cdrom0/Solaris_arch/Product/sun_cluster/Solaris_ver/Tools
```

**9 Start the** scinstall **utility.**

```
phys-schost# ./scinstall
```

**Note –** Do not use the /usr/cluster/bin/scinstall command that is already installed on the node. You must use the scinstall command that is located on the Sun Java Availability Suite DVD-ROM.

The scinstall Main Menu is displayed.

**10 Type the option number for Upgrade This Cluster Node and press the Return key.**

```
*** Main Menu ***

  Please select from one of the following (*) options:

      1) Create a new cluster or add a cluster node
      2) Configure a cluster to be JumpStarted from this install server
    * 3) Manage a dual-partition upgrade
    * 4) Upgrade this cluster node
    * 5) Print release information for this cluster node

    * ?) Help with menu options
    * q) Quit

  Option:  4
```

The Upgrade Menu is displayed.

**11 Type the option number for Upgrade Sun Cluster Framework On This Cluster Node and press the Return key.**

**12 Follow the menu prompts to upgrade the cluster framework.**

Upgrade processing is finished when the system displays the message `Completed Sun Cluster framework upgrade` and prompts you to press Enter to continue.

**13 Quit the `scinstall` utility.**

**14 (Optional) Upgrade data service packages.**

---

**Note –** For Sun Cluster HA for SAP Web Application Server, if you are using a J2EE engine resource or a web application server component resource or both, you must delete the resource and recreate it with the new web application server component resource. Changes in the new web application server component resource includes integration of the J2EE functionality. For more information, see *Sun Cluster Data Service for SAP Web Application Server Guide for Solaris OS*.

---

**a. Start the upgraded interactive `scinstall` utility.**

```
phys-schost# /usr/cluster/bin/scinstall
```

---

**Note –** Do not use the `scinstall` utility that is on the installation media to upgrade data service packages.

---

The `scinstall` Main Menu is displayed.

**b. Type the option number for Upgrade This Cluster Node and press the Return key.**

The Upgrade Menu is displayed.

**c. Type the option number for Upgrade Sun Cluster Data Service Agents On This Node and press the Return key.**

**d. Follow the menu prompts to upgrade Sun Cluster data service agents that are installed on the node.**

You can choose from the list of data services that are available to upgrade or choose to upgrade all installed data services.

Upgrade processing is finished when the system displays the message `Completed upgrade of Sun Cluster data services agents` and prompts you to press Enter to continue.

**e. Press Enter.**

The Upgrade Menu is displayed.

**15 Quit the `scinstall` utility.**

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

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

**b.   Eject the DVD-ROM.**

```
phys-schost# eject cdrom
```

**17   If you have Sun Cluster HA for NFS configured on a highly available local file system, ensure that the loopback file system (LOFS) is disabled.**

**Note –** If you have non-global zones configured, LOFS must remain enabled. For guidelines about using LOFS and alternatives to disabling it, see "Cluster File Systems" in *Sun Cluster Software Installation Guide for Solaris OS*.

As of the Sun Cluster 3.2 release, LOFS is no longer disabled by default during Sun Cluster software installation or upgrade. To disable LOFS, ensure that the /etc/system file contains the following entry:

```
exclude:lofs
```

This change becomes effective at the next system reboot.

**18   As needed, manually upgrade any custom data services that are not supplied on the product media.**

**19   Verify that each data-service update is installed successfully.**

View the upgrade log file that is referenced at the end of the upgrade output messages.

**20   Install any Sun Cluster 3.2 1/09 framework and software patches.**

See *Patches and Required Firmware Levels* in the Sun Cluster Release Notes for the location of patches and installation instructions.

**21   Upgrade software applications that are installed on the cluster.**

Ensure that application levels are compatible with the current versions of Sun Cluster and Solaris software. See your application documentation for installation instructions.

**22   Shut down the node.**

```
phys-schost# shutdown -g0 -y
```

**23   Reboot the node into the cluster.**

■   On SPARC based systems, perform the following command:

```
    ok boot
```

■ On x86 based systems, perform the following commands:

When the GRUB menu is displayed, select the appropriate Solaris entry and press Enter.
The GRUB menu appears similar to the following:

```
GNU GRUB version 0.95 (631K lower / 2095488K upper memory)
+----------------------------------------------------------------------+
| Solaris 10 /sol_10_x86                                                |
| Solaris failsafe                                                      |
|                                                                      |
+----------------------------------------------------------------------+
Use the ^ and v keys to select which entry is highlighted.
Press enter to boot the selected OS, 'e' to edit the
commands before booting, or 'c' for a command-line.
```

**24  Return to "How to Prepare a Cluster Node for a Rolling Upgrade" on page 82 and repeat all upgrade procedures on the next node to upgrade.**

Repeat this process until all nodes in the cluster are upgraded.

**Example 5–1**   Rolling Upgrade From Sun Cluster 3.2 to Sun Cluster 3.2 1/09 Software

The following example shows the process of a rolling upgrade of a cluster node from Sun
Cluster 3.2 to Sun Cluster 3.2 1/09 software on a SPARC based system that runs the Solaris 9 OS.
The example includes the upgrade of all installed data services that have new versions in the Sun
Cluster 3.2 1/09 release. The cluster node name is phys-schost-1.

```
    (Upgrade framework software)
phys-schost-1# cd /cdrom/cdrom0/Solaris_sparc/Product/sun_cluster/Solaris_9/Tools/
phys-schost-1# ./scinstall
    (Follow menu prompts to upgrade Sun Cluster framework on this node)

    (Upgrade data services)
phys-schost-1# scinstall
    (Follow menu prompts to upgrade Sun Cluster data services on this node)

    (Reboot the node into the cluster)
phys-schost-1# shutdown -g0 -y
ok> boot
```

**Next Steps**   When all nodes in the cluster are upgraded, go to Chapter 6, "Completing the Upgrade."

# Completing the Upgrade

This chapter provides the following information to complete all Sun Cluster 3.2 software upgrade methods:

- "How to Commit the Upgraded Cluster to Sun Cluster 3.2 1/09 Software" on page 95
- "How to Verify Upgrade of Sun Cluster 3.2 1/09 Software" on page 96
- "How to Finish Upgrade to Sun Cluster 3.2 1/09 Software" on page 98

## Completing a Cluster Upgrade

### ▼ How to Commit the Upgraded Cluster to Sun Cluster 3.2 1/09 Software

**Before You Begin**     Ensure that all upgrade procedures are completed for all cluster nodes that you are upgrading.

**1**  **From one node, check the upgrade status of the cluster.**

   phys-schost# **scversions**

**2**  **From the following table, perform the action that is listed for the output message from Step 1.**

| Output Message | Action |
| --- | --- |
| Upgrade commit is needed. | Proceed to Step 3. |
| Upgrade commit is NOT needed. All versions match. | Go to "How to Verify Upgrade of Sun Cluster 3.2 1/09 Software" on page 96. |

| Output Message | Action |
|---|---|
| `Upgrade commit cannot be performed until all cluster`<br>`nodes are upgraded. Please run scinstall(1m) on cluster`<br>`nodes to identify older versions.` | Return to the Sun Cluster upgrade procedures that you used and upgrade the remaining cluster nodes. |
| `Check upgrade cannot be performed until all cluster`<br>`nodes are upgraded. Please run scinstall(1m) on cluster`<br>`nodes to identify older versions.` | Return to the Sun Cluster upgrade procedures that you used and upgrade the remaining cluster nodes. |

**3   After all nodes have rejoined the cluster, from one node commit the cluster to the upgrade.**

```
phys-schost# scversions -c
```

Committing the upgrade enables the cluster to utilize all features in the newer software. New features are available only after you perform the upgrade commitment.

**4   From one node, verify that the cluster upgrade commitment has succeeded.**

```
phys-schost# scversions
Upgrade commit is NOT needed. All versions match.
```

**Next Steps**   Go to "How to Verify Upgrade of Sun Cluster 3.2 1/09 Software" on page 96.

## ▼ How to Verify Upgrade of Sun Cluster 3.2 1/09 Software

Perform this procedure to verify that the cluster is successfully upgraded to Sun Cluster 3.2 1/09 software. On the Solaris 10 OS, perform all steps from the global zone only.

**Before You Begin**   ■   Ensure that all upgrade procedures are completed for all cluster nodes that you are upgrading.
   ■   Ensure that all steps in "How to Commit the Upgraded Cluster to Sun Cluster 3.2 1/09 Software" on page 95 are completed successfully.

**1   On each node, become superuser.**

**2   On each upgraded node, view the installed levels of Sun Cluster software.**

```
phys-schost# clnode show-rev -v
```

The first line of output states which version of Sun Cluster software the node is running. This version should match the version that you just upgraded to.

**3   From any node, verify that all upgraded cluster nodes are running in cluster mode (**`Online`**).**

```
phys-schost# clnode status
```

See the clnode(1CL) man page for more information about displaying cluster status.

**4  SPARC: If you upgraded from Solaris 8 to Solaris 9 software, verify the consistency of the storage configuration.**

**a.  On each node, run the following command to verify the consistency of the storage configuration.**

phys-schost# **cldevice check**

⚠ **Caution** – Do not proceed to Step b until your configuration passes this consistency check. Failure to pass this check might result in errors in device identification and cause data corruption.

The following table lists the possible output from the cldevice check command and the action you must take, if any.

| Example Message | Action |
|---|---|
| device id for 'phys-schost-1:/dev/rdsk/c1t3d0' does not match physical device's id, device may have been replaced | Go to Chapter 7, "Recovering From an Incomplete Upgrade," and perform the appropriate repair procedure. |
| device id for 'phys-schost-1:/dev/rdsk/c0t0d0' needs to be updated, run cldevice repair to update | None. You update this device ID in Step b. |
| No output message | None. |

See the cldevice(1CL) man page for more information.

**b.  On each node, migrate the Sun Cluster storage database to Solaris 9 device IDs.**

phys-schost# **cldevice repair**

**c.  On each node, run the following command to verify that storage database migration to Solaris 9 device IDs is successful.**

phys-schost# **cldevice check**

■ If the cldevice command displays a message, return to Step a to make further corrections to the storage configuration or the storage database.

■ If the cldevice command displays no messages, the device-ID migration is successful. When device-ID migration is verified on all cluster nodes, proceed to "How to Finish Upgrade to Sun Cluster 3.2 1/09 Software" on page 98.

**Example 6–1**  Verifying Upgrade to Sun Cluster 3.2 1/09 Software

The following example shows the commands used to verify upgrade of a two-node cluster to Sun Cluster 3.2 1/09 software. The cluster node names are phys-schost-1 and phys-schost-2.

```
phys-schost# clnode show-rev -v
3.2
...
phys-schost# clnode status
=== Cluster Nodes ===

--- Node Status ---

Node Name                                           Status
---------                                           ------
phys-schost-1                                       Online
phys-schost-2                                       Online
```

**Next Steps**     Go to "How to Finish Upgrade to Sun Cluster 3.2 1/09 Software" on page 98.

## ▼ How to Finish Upgrade to Sun Cluster 3.2 1/09 Software

Perform this procedure to finish Sun Cluster upgrade. On the Solaris 10 OS, perform all steps from the global zone only.

**Before You Begin**     Ensure that all steps in "How to Verify Upgrade of Sun Cluster 3.2 1/09 Software" on page 96 are completed.

**1**     **Copy the security files for the common agent container to all cluster nodes.**

This step ensures that security files for the common agent container are identical on all cluster nodes and that the copied files retain the correct file permissions.

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

```
phys-schost# /usr/sbin/smcwebserver stop
```

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

```
phys-schost# /usr/sbin/cacaoadm stop
```

**c. On one node, change to the** /etc/cacao/instances/default/ **directory.**

```
phys-schost-1# cd /etc/cacao/instances/default/
```

**d. Create a tar file of the** /etc/cacao/instances/default/ **directory.**

```
phys-schost-1# tar cf /tmp/SECURITY.tar security
```

**e. Copy the** /tmp/SECURITY.tar **file to each of the other cluster nodes.**

**f. On each node to which you copied the** /tmp/SECURITY.tar **file, extract the security files.**

Any security files that already exist in the /etc/cacao/instances/default/ directory are overwritten.

```
phys-schost-2# cd /etc/cacao/instances/default/
phys-schost-2# tar xf /tmp/SECURITY.tar
```

**g. Delete the** /tmp/SECURITY.tar **file from each node in the cluster.**

You must delete each copy of the tar file to avoid security risks.

```
phys-schost-1# rm /tmp/SECURITY.tar
phys-schost-2# rm /tmp/SECURITY.tar
```

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

```
phys-schost# /usr/sbin/cacaoadm start
```

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

```
phys-schost# /usr/sbin/smcwebserver start
```

**2 If you upgraded any data services that are not supplied on the product media, register the new resource types for those data services.**

Follow the documentation that accompanies the data services.

**3 If you upgraded Sun Cluster HA for SAP liveCache from the Sun Cluster 3.0 or 3.1 version to the Sun Cluster 3.2 version, modify the** /opt/SUNWsclc/livecache/bin/lccluster **configuration file.**

**a. Become superuser on a node that will host the liveCache resource.**

**b. Copy the new** /opt/SUNWsclc/livecache/bin/lccluster **file to the** /sapdb/*LC_NAME*/db/sap/ **directory.**

Overwrite the lccluster file that already exists from the previous configuration of the data service.

**c. Configure this** /sapdb/*LC_NAME*/db/sap/lccluster **file as documented in "How to Register and Configure Sun Cluster HA for SAP liveCache" in** *Sun Cluster Data Service for SAP liveCache Guide for Solaris OS***.**

**4 If you upgraded the Solaris OS and your configuration uses dual-string mediators for Solaris Volume Manager software, restore the mediator configurations.**

**a. Determine which node has ownership of a disk set to which you will add the mediator hosts.**

```
phys-schost# metaset -s setname
```

-s *setname*    Specifies the disk set name.

    **b. On the node that masters or will master the disk set, become superuser.**

    **c. If no node has ownership, take ownership of the disk set.**

       `phys-schost# `**`cldevicegroup switch -n `**`node devicegroup`

       *node*          Specifies the name of the node to become primary of the disk set.

       *devicegroup*    Specifies the name of the disk set.

    **d. Re-create the mediators.**

       `phys-schost# `**`metaset -s `**`setname`** `-a -m `**`mediator-host-list`

       `-a`                          Adds to the disk set.

       `-m mediator-host-list`   Specifies the names of the nodes to add as mediator hosts for the disk set.

    **e. Repeat these steps for each disk set in the cluster that uses mediators.**

**5   If you upgraded VxVM, upgrade all disk groups.**

    **a. Bring online and take ownership of a disk group to upgrade.**

       `phys-schost# `**`cldevicegroup switch -n `**`node devicegroup`

    **b. Run the following command to upgrade a disk group to the highest version supported by the VxVM release you installed.**

       `phys-schost# `**`vxdg upgrade `**`dgname`

       See your VxVM administration documentation for more information about upgrading disk groups.

    **c. On each node that is directly connected to the disk group, bring online and take ownership of the upgraded disk group.**

       `phys-schost# `**`cldevicegroup switch -n `**`node dgname`

       This step is necessary is to update the VxVM device files major number with the latest `vxio` number that might have been assigned during the upgrade.

    **d. Repeat for each remaining VxVM disk group in the cluster.**

**6   Migrate resources to new resource type versions.**

You must migrate all resources to the Sun Cluster 3.2 resource-type version.

---

**Note** – For Sun Cluster HA for SAP Web Application Server, if you are using a J2EE engine resource or a web application server component resource or both, you must delete the resource and recreate it with the new web application server component resource. Changes in the new web application server component resource includes integration of the J2EE functionality. For more information, see *Sun Cluster Data Service for SAP Web Application Server Guide for Solaris OS*.

---

See "Upgrading a Resource Type" in *Sun Cluster Data Services Planning and Administration Guide for Solaris OS*, which contains procedures which use the command line. Alternatively, you can perform the same tasks by using the Resource Group menu of the `clsetup` utility. The process involves performing the following tasks:

- Registering the new resource type.
- Migrating the eligible resource to the new version of its resource type.
- Modifying the extension properties of the resource type as specified in Sun Cluster Release Notes.

---

**Note** – The Sun Cluster 3.2 1/09 release might introduce new default values for some extension properties. These changes affect the behavior of any existing resource that uses the default values of such properties. If you require the previous default value for a resource, modify the migrated resource to set the property to the previous default value.

---

**7  If your cluster runs the Sun Cluster HA for Sun Java System Application Server EE (HADB) data service and you shut down the HADB database before you began a dual-partition upgrade, re-enable the resource and start the database.**

```
phys-schost# clresource enable hadb-resource
phys-schost# hadbm start database-name
```

For more information, see the hadbm(1m) man page.

**8  If you upgraded to the Solaris 10 OS and the Apache** `httpd.conf` **file is located on a cluster file system, ensure that the** HTTPD **entry in the Apache control script still points to that location.**

**a.  View the** HTTPD **entry in the** /usr/apache/bin/apchectl **file.**

The following example shows the `httpd.conf` file located on the `/global` cluster file system.

```
phys-schost# cat /usr/apache/bin/apchectl | grep HTTPD=/usr
HTTPD="/usr/apache/bin/httpd -f /global/web/conf/httpd.conf"
```

**b.  If the file does not show the correct** HTTPD **entry, update the file.**

```
phys-schost# vi /usr/apache/bin/apchectl
#HTTPD=/usr/apache/bin/httpd
HTTPD="/usr/apache/bin/httpd -f /global/web/conf/httpd.conf"
```

9   **If the cluster runs on the Solaris 10 OS and you intend to configure zone clusters, change the private-network IP address range.**

Specify the number of zone clusters that you expect to configure in the cluster.

```
phys-schost# cluster set net-props num_zonecluster=N
```

The command calculates the number of additional private-network IP addresses that are needed and automatically modifies the IP address range.

10   **From any node, start the** clsetup **utility.**

```
phys-schost# clsetup
```

The clsetup Main Menu is displayed.

11   **Re-enable all disabled resources.**

a.   **Type the option number for Resource Groups and press the Return key.**
The Resource Group Menu is displayed.

b.   **Type the option number for Enable/Disable a Resource and press the Return key.**

c.   **Choose a resource to enable and follow the prompts.**

d.   **Repeat Step c for each disabled resource.**

e.   **When all resources are re-enabled, type q to return to the Resource Group Menu.**

12   **Bring each resource group back online.**

This step includes the bringing online of resource groups in non-global zones.

a.   **Type the option number for Online/Offline or Switchover a Resource Group and press the Return key.**

b.   **Follow the prompts to put each resource group into the managed state and then bring the resource group online.**

13   **When all resource groups are back online, exit the** clsetup **utility.**

Type **q** to back out of each submenu, or press Ctrl-C.

**14 If, before upgrade, you enabled automatic node reboot if all monitored disk paths fail, ensure that the feature is still enabled.**

Also perform this task if you want to configure automatic reboot for the first time.

**a. Determine whether the automatic reboot feature is enabled or disabled.**

```
phys-schost# clnode show
```

- **If the** reboot_on_path_failure **property is set to** enabled**, no further action is necessary.**

- **If** reboot_on_path_failure **property is set to** disabled**, proceed to the next step to re-enable the property.**

**b. Enable the automatic reboot feature.**

```
phys-schost# clnode set -p reboot_on_path_failure=enabled
```

| -p | Specifies the property to set |
| --- | --- |
| reboot_on_path_failure=enable | Specifies that the node will reboot if all monitored disk paths fail, provided that at least one of the disks is accessible from a different node in the cluster. |

**c. Verify that automatic reboot on disk-path failure is enabled.**

```
phys-schost# clnode show
=== Cluster Nodes ===

Node Name:                                      node
...
  reboot_on_path_failure:                       enabled
...
```

**15 (Optional) Capture the disk partitioning information for future reference.**

```
phys-schost# prtvtoc /dev/rdsk/cNtXdYsZ > filename
```

Store the file in a location outside the cluster. If you make any disk configuration changes, run this command again to capture the changed configuration. If a disk fails and needs replacement, you can use this information to restore the disk partition configuration. For more information, see the prtvtoc(1M) man page.

**16 (Optional) Make a backup of your cluster configuration.**

An archived backup of your cluster configuration facilitates easier recovery of the your cluster configuration,

For more information, see "How to Back Up the Cluster Configuration" in *Sun Cluster System Administration Guide for Solaris OS*.

**17    (Optional) Install or complete upgrade of Sun Cluster Geographic Edition 3.2 11/07 software.**

See *Sun Cluster Geographic Edition Installation Guide*.

**Troubleshooting**    **Resource-type migration failure** - Normally, you migrate resources to a new resource type while the resource is offline. However, some resources need to be online for a resource-type migration to succeed. If resource-type migration fails for this reason, error messages similar to the following are displayed:

```
phys-schost - Resource depends on a SUNW.HAStoragePlus type resource that is not
online anywhere.
(C189917) VALIDATE on resource nfsrs, resource group rg, exited with
non-zero exit status.
(C720144) Validation of resource nfsrs in resource group rg on node
phys-schost failed.
```

If resource-type migration fails because the resource is offline, use the clsetup utility to re-enable the resource and then bring its related resource group online. Then repeat migration procedures for the resource.

**Java binaries location change** - If the location of the Java binaries changed during the upgrade of shared components, you might see error messages similar to the following when you attempt to run the cacaoadm start or smcwebserver start commands:

```
phys-schost# /opt/SUNWcacao/bin/cacaoadm start
No suitable Java runtime found. Java 1.4.2_03 or higher is required.
Jan 3 17:10:26 ppups3 cacao: No suitable Java runtime found. Java 1.4.2_03 or
higher is required.
Cannot locate all the dependencies
```

```
phys-schost# smcwebserver start
/usr/sbin/smcwebserver: /usr/jdk/jdk1.5.0_04/bin/java: not found
```

These errors are generated because the start commands cannot locate the current location of the Java binaries. The JAVA_HOME property still points to the directory where the previous version of Java was located, but that previous version was removed during upgrade.

To correct this problem, change the setting of JAVA_HOME in the following configuration files to use the current Java directory:

```
/etc/webconsole/console/config.properties
```

```
/etc/opt/SUNWcacao/cacao.properties
```

**Next Steps**  If you have a SPARC based system and use Sun Management Center to monitor the cluster, go to "SPARC: How to Upgrade Sun Cluster Module Software for Sun Management Center" on page 117.

Otherwise, the cluster upgrade is complete.

# 7

# Recovering From an Incomplete Upgrade

This chapter provides the following information to recover from certain kinds of incomplete upgrades:

- "How to Recover from a Failed Dual-Partition Upgrade" on page 107
- "SPARC: How to Recover From a Partially Completed Dual-Partition Upgrade" on page 110
- "x86: How to Recover From a Partially Completed Dual-Partition Upgrade" on page 111
- "Recovering From Storage Configuration Changes During Upgrade" on page 113

## Cluster Recovery After an Incomplete Upgrade

This section provides information to recover from incomplete upgrades of a Sun Cluster configuration.

## ▼ How to Recover from a Failed Dual-Partition Upgrade

If you experience an unrecoverable error during upgrade, perform this procedure to back out of the upgrade.

**Note** – You cannot restart a dual-partition upgrade after the upgrade has experienced an unrecoverable error.

**1 Become superuser on each node of the cluster.**

**2 Boot each node into noncluster mode.**

- **On SPARC based systems, perform the following command:**
  ok **boot -x**

■ **On x86 based systems, perform the following commands:**

a. **In the GRUB menu, use the arrow keys to select the appropriate Solaris entry and type e to edit its commands.**

The GRUB menu appears similar to the following:

```
GNU GRUB version 0.95 (631K lower / 2095488K upper memory)
+----------------------------------------------------------------------+
| Solaris 10 /sol_10_x86                                               |
| Solaris failsafe                                                     |
|                                                                      |
+----------------------------------------------------------------------+
Use the ^ and v keys to select which entry is highlighted.
Press enter to boot the selected OS, 'e' to edit the
commands before booting, or 'c' for a command-line.
```

For more information about GRUB based booting, see "Booting an x86 Based System by Using GRUB (Task Map)" in *System Administration Guide: Basic Administration*.

b. **In the boot parameters screen, use the arrow keys to select the** kernel **entry and type e to edit the entry.**

The GRUB boot parameters screen appears similar to the following:

```
GNU GRUB version 0.95 (615K lower / 2095552K upper memory)
+----------------------------------------------------------------------+
| root (hd0,0,a)                                                       |
| kernel /platform/i86pc/multiboot                                    |
| module /platform/i86pc/boot_archive                                 |
+----------------------------------------------------------------------+
Use the ^ and v keys to select which entry is highlighted.
Press 'b' to boot, 'e' to edit the selected command in the
boot sequence, 'c' for a command-line, 'o' to open a new line
after ('O' for before) the selected line, 'd' to remove the
selected line, or escape to go back to the main menu.
```

c. **Add -x to the command to specify that the system boot into noncluster mode.**

```
[ Minimal BASH-like line editing is supported. For the first word, TAB
lists possible command completions. Anywhere else TAB lists the possible
completions of a device/filename. ESC at any time exits. ]

grub edit> kernel /platform/i86pc/multiboot -x
```

d. **Press Enter to accept the change and return to the boot parameters screen.**

The screen displays the edited command.

```
GNU GRUB version 0.95 (615K lower / 2095552K upper memory)
+----------------------------------------------------------------------+
| root (hd0,0,a)                                                       |
```

```
| kernel /platform/i86pc/multiboot -x                               |
| module /platform/i86pc/boot_archive                               |
+-------------------------------------------------------------------+
Use the ^ and v keys to select which entry is highlighted.
Press 'b' to boot, 'e' to edit the selected command in the
boot sequence, 'c' for a command-line, 'o' to open a new line
after ('O' for before) the selected line, 'd' to remove the
selected line, or escape to go back to the main menu.-
```

e. **Type b to boot the node into noncluster mode.**

**Note –** This change to the kernel boot parameter command does not persist over the system boot. The next time you reboot the node, it will boot into cluster mode. To boot into noncluster mode instead, perform these steps to again to add the -x option to the kernel boot parameter command.

**3 On each node, run the upgrade recovery script from the installation media.**

If the node successfully upgraded to Sun Cluster 3.2 1/09 software from an earlier 3.2 release, you can alternatively run the scinstall command from the /usr/cluster/bin directory.

**Note –** If you upgraded from a Sun Cluster 3.1 release, run the scinstall command **only** from the installation media. Recovery capability for dual-partition upgrade is not available from the 3.1 versions of the scinstall command.

```
phys-schost# cd /cdrom/cdrom0/Solaris_arch/Product/sun_cluster/Solaris_ver/Tools
phys-schost# ./scinstall -u recover
```

-u          Specifies upgrade.

recover     Restores the /etc/vfstab file and the Cluster Configuration Repository (CCR)
            database to their original state before the start of the dual-partition upgrade.

The recovery process leaves the cluster nodes in noncluster mode. Do **not** attempt to reboot the nodes into cluster mode.

For more information, see the scinstall(1M) man page.

**4 Perform either of the following tasks.**

■ **Restore the old software from backup to return the cluster to its original state.**

■ **Continue to upgrade software on the cluster by using the standard upgrade method.**

This method requires that all cluster nodes remain in noncluster mode during the upgrade. See the task map for standard upgrade, Table 2–1. You can resume the upgrade at the last task or step in the standard upgrade procedures that you successfully completed before the dual-partition upgrade failed.

## ▼ SPARC: How to Recover From a Partially Completed Dual-Partition Upgrade

Perform this procedure if a dual-partition upgrade fails and the state of the cluster meets *all* of the following criteria:

■ The nodes of the first partition have been upgraded.
■ None of the nodes of the second partition are yet upgraded.
■ None of the nodes of the second partition are in cluster mode.

You can also perform this procedure if the upgrade has succeeded on the first partition but you want to back out of the upgrade.

---

**Note** – Do not perform this procedure after dual-partition upgrade processes have begun on the second partition. Instead, perform "How to Recover from a Failed Dual-Partition Upgrade" on page 107.

---

**Before You Begin**   Before you begin, ensure that all second-partition nodes are halted. First-partition nodes can be either halted or running in noncluster mode.

Perform all steps as superuser.

**1**   **Boot each node in the second partition into noncluster mode.**

```
phys-schost# ok boot -x
```

**2**   **From the DVD image, run the** scinstall -u recover **command on each node in the second partition.**

Change to the /Solaris_*arch*/Product/sun_cluster/Solaris_*ver*/Tools/ directory, where *arch* is sparc or x86 (Solaris 10 only) and where ver is 9 for Solaris 9 or 10 for Solaris 10.

```
phys-schost# cd /cdrom/cdrom0/Solaris_arch/Product/sun_cluster/Solaris_ver/Tools/phys-schost# ./scinstall -u recover
```

The command restores the original CCR information, restores the original /etc/vfstab file, and eliminates modifications for startup.

**3    Boot each node of the second partition into cluster mode.**

phys-schost# **shutdown -g0 -y -i6**

When the nodes of the second partition come up, the second partition resumes supporting cluster data services while running the old software with the original configuration.

**4    Restore the original software and configuration data from backup media to the nodes in the first partition.**

**5    Boot each node in the first partition into cluster mode.**

phys-schost# **shutdown -g0 -y -i6**

The nodes rejoin the cluster.

## ▼  x86: How to Recover From a Partially Completed Dual-Partition Upgrade

Perform this procedure if a dual-partition upgrade fails and the state of the cluster meets *all* of the following criteria:

- The nodes of the first partition have been upgraded.
- None of the nodes of the second partition are yet upgraded.
- None of the nodes of the second partition are in cluster mode.

You can also perform this procedures if the upgrade has succeeded on the first partition but you want to back out of the upgrade.

---

**Note –** Do not perform this procedure after dual-partition upgrade processes have begun on the second partition. Instead, perform "How to Recover from a Failed Dual-Partition Upgrade" on page 107.

---

**Before You Begin**    Before you begin, ensure that all second-partition nodes are halted. First-partition nodes can be either halted or running in noncluster mode.

Perform all steps as superuser.

**1    Boot each node in the second partition into noncluster mode by completing the following steps.**

**2 In the GRUB menu, use the arrow keys to select the appropriate Solaris entry and type** e **to edit its commands.**

The GRUB menu appears similar to the following:

```
GNU GRUB version 0.95 (631K lower / 2095488K upper memory)
+-----------------------------------------------------------------------+
| Solaris 10 /sol_10_x86                                                 |
| Solaris failsafe                                                       |
|                                                                       |
+-----------------------------------------------------------------------+
Use the ^ and v keys to select which entry is highlighted.
Press enter to boot the selected OS, 'e' to edit the
commands before booting, or 'c' for a command-line.
```

For more information about GRUB-based booting, see "Booting an x86 Based System by Using GRUB (Task Map)" in *System Administration Guide: Basic Administration*.

**3 In the boot parameters screen, use the arrow keys to select the kernel entry and type** e **to edit the entry.**

The GRUB boot parameters screen appears similar to the following:

```
GNU GRUB version 0.95 (615K lower / 2095552K upper memory)
+--------------------------------------------------------------------+
| root (hd0,0,a)                                                     |
| kernel /platform/i86pc/multiboot                                  |
| module /platform/i86pc/boot_archive                               |
+--------------------------------------------------------------------+
Use the ^ and v keys to select which entry is highlighted.
Press 'b' to boot, 'e' to edit the selected command in the
boot sequence, 'c' for a command-line, 'o' to open a new line
after ('O' for before) the selected line, 'd' to remove the
selected line, or escape to go back to the main menu.
```

**4 Add the** -x **option to the command to specify that the system boot into noncluster mode.**

```
Minimal BASH-like line editing is supported.
For the first word, TAB lists possible command completions.
Anywhere else TAB lists the possible completions of a device/filename.
ESC at any time exits.

phys-schost# grub edit> kernel /platform/i86pc/multiboot -x
```

**5 Press Enter to accept the change and return to the boot parameters screen.**

The screen displays the edited command.

```
GNU GRUB version 0.95 (615K lower / 2095552K upper memory)
+--------------------------------------------------------------------+
| root (hd0,0,a)                                                     |
| kernel /platform/i86pc/multiboot -x                               |
```

```
| module /platform/i86pc/boot_archive                                 |
+--------------------------------------------------------------------+
Use the ^ and v keys to select which entry is highlighted.
Press 'b' to boot, 'e' to edit the selected command in the
boot sequence, 'c' for a command-line, 'o' to open a new line
after ('O' for before) the selected line, 'd' to remove the
selected line, or escape to go back to the main menu.-
```

6   **Type** b **to boot the node into noncluster mode.**

---

**Note –** This change to the kernel boot parameter command does not persist over the system boot. The next time you reboot the node, it will boot into cluster mode. To boot into noncluster mode instead, perform these steps to again to add the -x option to the kernel boot parameter command.

---

7   **On each node in the second partition, run the** scinstall -u recover **command.**

    phys-schost# **/usr/cluster/bin/scinstall -u recover**

    The command restores the original CCR information, restores the original /etc/vfstab file, and eliminates modifications for startup.

8   **Boot each node of the second partition into cluster mode.**

    phys-schost# **shutdown -g0 -y -i6**

    When the nodes of the second partition come up, the second partition resumes supporting cluster data services while running the old software with the original configuration.

9   **Restore the original software and configuration data from backup media to the nodes in the first partition.**

10  **Boot each node in the first partition into cluster mode.**

    phys-schost# **shutdown -g0 -y -i6**

    The nodes rejoin the cluster.

# Recovering From Storage Configuration Changes During Upgrade

This section provides the following repair procedures to follow if changes were inadvertently made to the storage configuration during upgrade:

- "How to Handle Storage Reconfiguration During an Upgrade" on page 114
- "How to Resolve Mistaken Storage Changes During an Upgrade" on page 115

▼ **How to Handle Storage Reconfiguration During an Upgrade**

Any changes to the storage topology, including running Sun Cluster commands, should be completed before you upgrade the cluster to Solaris 9 or Solaris 10 software. If, however, changes were made to the storage topology during the upgrade, perform the following procedure. This procedure ensures that the new storage configuration is correct and that existing storage that was not reconfigured is not mistakenly altered.

---

**Note –** This procedure provides the long forms of the Sun Cluster commands. Most commands also have short forms. Except for the forms of the command names, the commands are identical. For a list of the commands and their short forms, see Appendix B, "Sun Cluster Object-Oriented Commands," in *Sun Cluster System Administration Guide for Solaris OS*. This procedure provides the long forms of the Sun Cluster commands. Most commands also have short forms. Except for the forms of the command names, the commands are identical. For a list of the commands and their short forms, see Appendix B, "Sun Cluster Object-Oriented Commands," in *Sun Cluster System Administration Guide for Solaris OS*.

---

**Before You Begin**   Ensure that the storage topology is correct. Check whether the devices that were flagged as possibly being replaced map to devices that actually were replaced. If the devices were not replaced, check for and correct possible accidental configuration changes, such as incorrect cabling.

**1**   **On a node that is attached to the unverified device, become superuser.**

**2**   **Manually update the unverified device.**

```
phys-schost# cldevice repair device
```

See the cldevice(1CL) man page for more information.

**3**   **Update the DID driver.**

```
phys-schost# scdidadm -ui
phys-schost# scdidadm -r
```

-u   Loads the device-ID configuration table into the kernel.

-i   Initializes the DID driver.

-r   Reconfigures the database.

**4**   **Repeat Step 2 through Step 3 on all other nodes that are attached to the unverified device.**

**Next Steps**    Return to the remaining upgrade tasks. Go to Step 4 in "How to Upgrade Sun Cluster 3.2 1/09 Software (Standard)" on page 31.

## ▼ How to Resolve Mistaken Storage Changes During an Upgrade

If accidental changes are made to the storage cabling during the upgrade, perform the following procedure to return the storage configuration to the correct state.

---

**Note –** This procedure assumes that no physical storage was actually changed. If physical or logical storage devices were changed or replaced, instead follow the procedures in "How to Handle Storage Reconfiguration During an Upgrade" on page 114.

---

**Before You Begin**    Return the storage topology to its original configuration. Check the configuration of the devices that were flagged as possibly being replaced, including the cabling.

**1    On each node of the cluster, become superuser.**

**2    Update the DID driver on each node of the cluster.**

```
phys-schost# scdidadm -ui
phys-schost# scdidadm -r
```

-u    Loads the device–ID configuration table into the kernel.

-i    Initializes the DID driver.

-r    Reconfigures the database.

See the scdidadm(1M) man page for more information.

**3    If the** scdidadm **command returned any error messages in Step 2, make further modifications as needed to correct the storage configuration, then repeat Step 2.**

**Next Steps**    Return to the remaining upgrade tasks. Go to Step 4 in "How to Upgrade Sun Cluster 3.2 1/09 Software (Standard)" on page 31.

# SPARC: Upgrading Sun Management Center Software

This chapter provides the following procedures to upgrade the Sun Cluster module for Sun Management Center:

- "SPARC: How to Upgrade Sun Cluster Module Software for Sun Management Center" on page 117
- "SPARC: How to Upgrade Sun Management Center Software" on page 119

## Upgrading the Sun Cluster Module for Sun Management Center

This section provides procedures to upgrade the Sun Cluster module for Sun Management Center software.

### ▼ SPARC: How to Upgrade Sun Cluster Module Software for Sun Management Center

Perform the following steps to upgrade Sun Cluster module software on the Sun Management Center server machine and console machine.

**Note –** To upgrade the Sun Management Center software itself, do not perform this procedure. Instead, go to "SPARC: How to Upgrade Sun Management Center Software" on page 119 to upgrade the Sun Management Center software and the Sun Cluster module.

**Before You Begin**    Have available the Sun Java Availability Suite DVD-ROM for the SPARC platform or the path to the DVD-ROM image.

**1   As superuser, remove the existing Sun Cluster module packages from each machine.**

Use the pkgrm(1M) command to remove all Sun Cluster module packages from all locations
that are listed in the following table.

| Location | Module Package to Remove |
|---|---|
| Sun Management Center console machine | SUNWscscn |
| Sun Management Center server machine | SUNWscssv, SUNWscshl |

```
machine# pkgrm module-package
```

**Note –** Sun Cluster module software on the cluster nodes was already upgraded during the
cluster-framework upgrade.

**2   As superuser, reinstall Sun Cluster module packages on each machine.**

**a.   Insert the Sun Java Availability Suite DVD-ROM for the SPARC platform into the DVD-ROM
drive of the machine.**

**b.   Change to the** Solaris_sparc/Product/sun_cluster/Solaris_*ver*/Packages/ **directory,
where** *ver* **is 9 for Solaris 9 or 10 for Solaris 10.**

```
machine# cd Solaris_sparc/Product/sun_cluster/Solaris_ver/Packages/
```

**c.   Install the** SUNWscssv **package on the server machine.**

Note that you do not upgrade to a new SUNWscscn package on the console machine or a new
SUNWscshl package on the server machine.

```
machine# pkgadd -d . SUNWscssv
```

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

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

**ii.   Eject the DVD-ROM.**

```
machine# eject cdrom
```

# Upgrading Sun Management Center Software

This section provides procedures to upgrade Sun Management Center software.

## ▼ SPARC: How to Upgrade Sun Management Center Software

Perform the following steps to upgrade from Sun Management Center 3.6 or 3.6.1 software to Sun Management Center 3.6.1 or 4.0 software.

**Before You Begin**   Have available the following items:

- Sun Java Availability Suite DVD-ROM for the SPARC platform and, if applicable, for the x86 platform, or the paths to the DVD-ROM images. You use the DVD-ROM to reinstall the Sun Cluster 3.2 1/09 version of the Sun Cluster module packages after you upgrade Sun Management Center software.

---

**Note –** The agent packages to install on the cluster nodes are available for both SPARC based systems and x86 based systems. The package for the server machine is available for SPARC based systems only.

---

- Sun Management Center documentation.
- Sun Management Center patches and Sun Cluster module patches, if any.

  See *Patches and Required Firmware Levels* in the Sun Cluster Release Notes for the location of patches and installation instructions.

1   **Stop any Sun Management Center processes.**

   a. **If the Sun Management Center console is running, exit the console.**

      In the console window, choose File⇒Exit.

   b. **On each Sun Management Center agent machine (cluster node), stop the Sun Management Center agent process.**

      ```
      phys-schost# /opt/SUNWsymon/sbin/es-stop -a
      ```

   c. **On the Sun Management Center server machine, stop the Sun Management Center server process.**

      ```
      server# /opt/SUNWsymon/sbin/es-stop -S
      ```

**2 As superuser, remove Sun Cluster–module packages.**

Use the pkgrm(1M) command to remove all Sun Cluster module packages from all locations that are listed in the following table.

| Location | Module Package to Remove |
| --- | --- |
| Each cluster node | SUNWscsam, SUNWscsal |
| Sun Management Center console machine | SUNWscscn |
| Sun Management Center server machine | SUNWscssv, SUNWscshl |

```
machine# pkgrm module-package
```

If you do not remove the listed packages, the Sun Management Center software upgrade might fail because of package dependency problems. You reinstall these packages in Step 4, after you upgrade Sun Management Center software.

**3 Upgrade the Sun Management Center software.**

Follow the upgrade procedures in your Sun Management Center documentation.

**4 As superuser, reinstall Sun Cluster module packages from the Sun Java Availability Suite DVD-ROM to the locations that are listed in the following table.**

| Location | Module Package to Install |
| --- | --- |
| Each cluster node | SUNWscsam, SUNWscsal |
| Sun Management Center server machine | SUNWscssv |

**a. Insert the Sun Java Availability Suite DVD-ROM for the appropriate platform in the DVD-ROM drive of the machine.**

**b. Change to the /Solaris_*arch*/Product/sun_cluster/Solaris_*ver*/Packages/ directory, where *arch* is sparc or x86, and *ver* is 9 for Solaris 9 or 10 for Solaris 10.**

```
machine# cd /cdrom/cdrom0/Solaris_arch/Product/sun_cluster/Solaris_ver/Packages/
```

**Note –** The agent packages to install on the cluster nodes are available for both SPARC based systems and x86 based systems. The package for the server machine is available for SPARC based systems only.

c. **Install the appropriate module package on the machine.**

- **For cluster nodes that run the Solaris 10 OS, use the following command:**

```
phys-schost# pkgadd -G -d .
module-package
```

The -G option adds packages to the current zone only. You must add these packages only to the global zone. Therefore, this option also specifies that the packages are *not* propagated to any existing non-global zone or to any non-global zone that is created later.

- **SPARC: For cluster nodes that run the Solaris 9 OS and for the server machine, use the following command:**

```
phys-schost# pkgadd -d . module-package
```

5 **Apply any Sun Management Center patches and any Sun Cluster module patches to each node of the cluster.**

6 **Restart Sun Management Center agent, server, and console processes.**

Follow procedures in "How to Start Sun Management Center" in *Sun Cluster Software Installation Guide for Solaris OS*.

7 **Load the Sun Cluster module.**

Follow procedures in "How to Load the Sun Cluster Module" in *Sun Cluster Software Installation Guide for Solaris OS*.

If the Sun Cluster module was previously loaded, unload the module and then reload it to clear all cached alarm definitions on the server. To unload the module, choose Unload Module from the Module menu on the console's Details window.

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