

# Updating Your Oracle® Solaris Cluster 4.4 Environment

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## Using This Documentation

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- **Overview** – Describes how to update software in an Oracle Solaris Cluster configuration.
- **Audience** – Experienced system administrators with extensive knowledge of Oracle software and hardware.
- **Required knowledge** – Knowledge of the Oracle Solaris operating system, of Oracle Solaris Cluster software, and expertise with the volume manager software that is used with Oracle Solaris Cluster software.

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# Overview of Updating Oracle Solaris Cluster Software

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This chapter describes the kinds of software updates you can perform on an Oracle Solaris Cluster configuration and the appropriate method to use.

- [“Updating to a New Oracle Solaris Cluster Version” on page 15](#)
- [“Installing an SRU” on page 16](#)
- [“Installing Individual Packages” on page 16](#)

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**Note** - Installing an Oracle Solaris Cluster Core SRU by using the `pkg` command does *not* provide the same result as updating the software to another Oracle Solaris Cluster version by using the `scinstall` command. The `scinstall` command performs additional cluster checks to ensure that the cluster will meet certain support requirements of the new software version.

---

## Updating to a New Oracle Solaris Cluster Version

Formerly called an upgrade, a version update moves the cluster to the latest Oracle Solaris Cluster release by updating all packages. By default, the update also updates the Oracle Solaris OS and any other packages to the latest compatible version and SRU.

Depending on your configuration, preparing your cluster for a version update might include the following task:

- Update `solaris` branded failover zones.

During a version update, the `scinstall` utility or the `scinstall -u update` command creates a new boot environment (a bootable instance of an image), mounts the boot environment on a mount point that is not being used, updates the bits, and activates the new boot environment. Creating the clone environment initially consumes no additional space and occurs instantaneously. After you perform this update, you must reboot the cluster.

To perform a version update, go to [Chapter 2, “Preparing to Update Oracle Solaris Cluster Software”](#).

## Installing an SRU

An SRU update installs specific Oracle Solaris Cluster packages to different SRU levels. You can follow procedures for a version update to install an SRU, or use one of the `pkg` commands to update Image Packaging System (IPS) packages in a Support Repository Update (SRU).

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**Note** - Installing an Oracle Solaris Cluster Core SRU by using the `pkg` command does *not* provide the same result as updating the software to another Oracle Solaris Cluster version by using the `scinstall` command. The `scinstall` command performs additional cluster checks to ensure that the cluster will meet certain support requirements of the new software version.

---

SRUs are generally released regularly and contain updated packages and defect fixes. The repository contains all IPS packages and the updated packages. Running the `pkg update` command updates both the Oracle Solaris operating system and the Oracle Solaris Cluster software to compatible versions. After you perform this update, you might need to reboot the cluster. For instructions, see [“How to Update a Specific Package or SRU \(pkg\)” on page 79](#).

You must be a registered My Oracle Support user to view and download the required software updates for the Oracle Solaris Cluster product. If you do not have a My Oracle Support account, contact your Oracle service representative or sales engineer, or register online at <http://support.oracle.com>. For information about firmware updates, see your hardware documentation.

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**Note** - Read the software update README before applying or removing any update.

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Information for using the Oracle Solaris package management utility, `pkg`, is provided in [Chapter 3, “Installing and Updating Software Packages” in \*Updating Systems and Adding Software in Oracle Solaris 11.4\*](#).

## Installing Individual Packages

To update a zone cluster that is not branded, follow procedures in [“How to Update a Specific Package or SRU \(pkg\)” on page 79](#) to update the underlying global cluster. When the global cluster is updated, its zone clusters are automatically updated as well.



## Preparing to Update Oracle Solaris Cluster Software

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This chapter provides the following information and procedures to prepare to update Oracle Solaris Cluster 4.4 software on a global cluster:

- [“Update Requirements and Software Support Guidelines” on page 17](#)
- [“Choosing an Oracle Solaris Cluster Update Method” on page 23](#)

### Update Requirements and Software Support Guidelines

Observe the following requirements and software-support guidelines when you update to the Oracle Solaris Cluster 4.4 software:

- **Minimum Oracle Solaris OS** – Oracle Solaris 11.4 is the minimum required to support Oracle Solaris Cluster 4.4 software.
- **Supported Oracle Solaris bundled applications** – Confirm your application is supported in Oracle Solaris 11.4, see [Chapter 2, “Compatibility Notes” in Oracle Solaris Cluster 4.4 Release Notes](#).
- **Supported Java version** – Only Java 8 is supported with Oracle Solaris Cluster 4.4 software. Running a Java version that is earlier or later than version 8 might cause unexpected behavior.
- **Update paths** – Oracle Solaris Cluster 4.4 software supports the following direct update paths:
  - **Update from at least version 4.3** – Use the standard, dual-partition method, or rolling method.
- **Supported hardware** – The cluster hardware must be a supported configuration for Oracle Solaris Cluster 4.4 software. Contact your Oracle representative for information about current supported Oracle Solaris Cluster configurations.

- **Architecture changes during update** – Oracle Solaris Cluster 4.4 software does not support update between architectures.
- **Software migration** – Do not migrate from one type of software product to another product during Oracle Solaris Cluster update. Perform only software configuration changes that are specified by update procedures of an installed software product.
- **Updating to compatible versions** – You must update all software on the cluster nodes to a version that is supported by Oracle Solaris Cluster 4.4 software. For example, if an application version is supported on Oracle Solaris Cluster 4.3 software but is not supported on Oracle Solaris Cluster 4.4 software, you must update to an application version that is supported on Oracle Solaris Cluster 4.4 software, if such a version of the application exists. See the [Oracle Solaris Cluster 4 Compatibility Guide \(http://www.oracle.com/technetwork/server-storage/solaris-cluster/overview/solariscluster4-compatibilityguide-1429037.pdf\)](http://www.oracle.com/technetwork/server-storage/solaris-cluster/overview/solariscluster4-compatibilityguide-1429037.pdf) for information about supported products.
- **Identical updates for all nodes** – All cluster member nodes must have the same updates applied for proper cluster operation.
- **Migration from Oracle Solaris 10** – You can alternatively migrate Oracle Solaris Cluster 3.3 software running on the Oracle Solaris 10 OS to a `solaris10` brand zone cluster. On a global cluster that already runs Oracle Solaris Cluster 4.4 software on Oracle Solaris 11 software, create a new `solaris10` brand zone cluster. Then migrate to the zone cluster your Oracle Solaris Cluster 3.3 configuration and applications. See [Chapter 6, “Creating Zone Clusters”](#) in *Installing and Configuring an Oracle Solaris Cluster 4.4 Environment* and [“Creating the Image for Directly Migrating Oracle Solaris 10 Systems Into Zones”](#) in *Creating and Using Oracle Solaris 10 Zones*.
- **Zone cluster update** – To update the Oracle Solaris OS or Oracle Solaris Cluster software that is running in a zone cluster, you must update the underlying global cluster. Do not attempt to update the OS or cluster software directly in the zone cluster. It is required that the cluster software version on the global cluster be the same as the cluster software version in the zone cluster.

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**Note** - This requirement does not apply to a `solaris10` brand zone cluster, which is handled differently.

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If the upgrade is a rolling upgrade from Oracle Solaris Cluster 4.3 to Oracle Solaris Cluster 4.4 and the zone cluster has the resource of `SUNW.rac_framework` type, a special upgrade preparation procedure is required.

On one Oracle Solaris Cluster 4.3 cluster node, in the global zone run the following command for each zone cluster configured:

```
schost# /usr/cluster/lib/sc/ccradm addkey -Z <ZoneClusterName> \  
-v 1 -k "cluster.properties.cmm_version" infrastructure
```

Without this preparation, the node rebooted into Oracle Solaris Cluster 4.4 will have its zone cluster node join the zone cluster but the zone cluster UCMM process then gets stuck in step10 state (instead of reaching the end state). This causes the RAC framework resource to reach its default (5 minute) start method timeout and go into the `start_failed` state. If the cluster is in this situation, just perform the step above in a node still running Oracle Solaris Cluster 4.3 and reboot the zone cluster node on the node running Oracle Solaris Cluster 4.4.

- **Failover zone update** – You can update failover zones only when using the standard update or rolling update method. You cannot update failover zones if you are using the dual-partition update method.
- **Downgrade** – Oracle Solaris Cluster 4.4 software does not support any downgrade of Oracle Solaris Cluster software.
- **Limitation of `scinstall` for data-service updates** – The `scinstall` update utility only updates those data services that are provided with Oracle Solaris Cluster 4.4 software. You must manually update any custom or third-party data services, unless they also have IPS packages and later versions are available in their publisher.
- **Unique zpool names** – `zpool` name must not be same as a cluster device group name. `zpools` managed by `HAStoragePlus` and an Oracle Solaris Cluster device group (e.g. device group of type `SVM` or type `Disk`) in the same cluster must not have the same name. Before you update, rename Oracle Solaris Cluster device group name or `zpool` name.
- **ORCL.ha-zone\_sczbt, ORCL.ha-zone\_sczsh, or ORCL.ha-zone\_sczsmf resource updates** –

When the cluster that you are updating is running resources of type `ORCL.ha-zone_sczbt`, `ORCL.ha-zone_sczsh` or `ORCL.ha-zone_sczsmf`, you must upgrade to Oracle Solaris Cluster 4.3 SRU 4 or later and specifically implement note 14 from the OSC 4.3 SRU4 README before you update to Oracle Solaris Cluster 4.4. See (<https://support.oracle.com/rs?type=doc&id=2170110.1>), and “Migration of Resources Registered as `ORCL.ha-zone_sczbt`, `ORCL.ha-zone_sczsh` or `ORCL.ha-zone_sczsmf` to the Latest Resource Type Version (21926061)” in *Oracle Solaris Cluster 4.4 Release Notes*.

- **HA-LDOMS resource updates**–

For resources registered as `SUNW.ldom`, before upgrading to Oracle Solaris Cluster 4.4, you must upgrade to Oracle Solaris Cluster 4.3 SRU 4 or later and specifically implement note 17 from the Oracle Solaris Cluster 4.3 SRU4 README ([Doc ID 2170110.1](#)) and “[HA-LDOMS Resources Must Update to 4.3 before Updating to 4.4 \(23308155\)](#)” in *Oracle Solaris Cluster 4.4 Release Notes*.



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**Caution** - The `/var/cluster.sav/` directory is created and used during current and future Oracle Solaris Cluster installation, update, and uninstallation operations. This directory and its contents are for Oracle Solaris Cluster internal use only, and must not be deleted by the user. User removal of this directory, or any of its contents, would pose a high risk of compromising the cluster during any future installation, update, or uninstallation of Oracle Solaris Cluster software.

---

## ▼ How to Confirm Your Oracle Solaris Bundled Application is Supported

Check the following list to see if your application is supported in Oracle Solaris 11.4. See <http://www.oracle.com/technetwork/systems/end-of-notices/eonsolaris11-392732.html>.

- **Depending if your application is supported, or not, perform one of the following tasks.**
  - **If your application with the version you are running is supported, proceed to “Choosing an Oracle Solaris Cluster Update Method” on page 23.**
  - **If your application with the version you are running is not supported, but a newer version is supported in Oracle Solaris 11.4, perform these steps.**  
See <http://www.oracle.com/technetwork/systems/end-of-notices/eonsolaris11-392732.html>.

---

**Note** - For applications bundled with Oracle Solaris, the upgrade to Oracle Solaris 11.4 will remove the unsupported application version and will install new application version if one is supported on Oracle Solaris 11.4.

---

- a. **Confirm the new version is supported by Oracle Solaris Cluster 4.4.**  
See the Oracle Solaris Cluster 4.4 Compatibility Guide.
- b. **Make a backup of your boot environment so you can return to the current configuration if needed.**
- c. **It may be that configuration changes will be required at the application configuration level and the cluster configuration to support the new version once the cluster boots into Oracle Solaris 11.4. One such case**

is when application configuration and or cluster configuration refers to application locations and these locations change. If your configuration will require changes perform these steps, otherwise proceed to [“Choosing an Oracle Solaris Cluster Update Method” on page 23.](#)

- i **Suspend each resource group(s) that manage the application that is getting a newer version in Oracle Solaris 11.4.**

```
# clresourcegroup suspend resource-group
```

The resource groups remain online but they are prevented from failing the application over during upgrade. While in this state, the resource groups are also prevented from automatically rebooting the application when the nodes are rebooted after upgrade.

- ii **Perform the upgrade on the nodes. Proceed to [“Choosing an Oracle Solaris Cluster Update Method” on page 23.](#)**

Perform all steps, including booting into the new boot environment. Then return to this procedure.

- iii **Disable each resource for the application that got a newer version in Oracle Solaris 11.4.**

```
# clresource disable resource
```

Disabling this resource ensures that the resource does not attempt to start before necessary configuration updates are done.

- iv **For each resource group that you recorded in the first step, bring the resource group online.**

```
# clresourcegroup online resource-group
```

This step brings online necessary storage resources and other resources that this resource depends on.

- v **Make necessary updates to the configuration to reflect the new software version.**

For example, upgrading from Oracle Solaris 11.3 to Oracle Solaris 11.4 removes Apache 2.2 and installs Apache 2.4. After booting into Oracle Solaris 11.4, both `apachectl` and `httpd.conf` may point to `/etc/apache2/2.2`, `/var/apache2/2.2` or `/usr/apache2/2.2`. All of which will be gone after the node

upgrade to Oracle Solaris 11.4. After the upgrade, update configuration files and resource properties with changes required to point to Apache 4.4 locations.

vi **Enable each resource that you disabled earlier in this procedure.**

- **If there is no new version of your application supported in Oracle Solaris 11.4, and it will not be supported in a future release, perform these steps.**
  - a. **Make a backup of your boot environment so you can return to the current configuration if needed.**
  - b. **Remove all cluster objects for this application (resources, resource groups and protection groups).**

---

**Note** - For applications bundled with Oracle Solaris 11.4, the upgrade to Oracle Solaris 11.4 will remove the unsupported application.

---

c. **Proceed to [“Choosing an Oracle Solaris Cluster Update Method” on page 23.](#)**

- **If there is no new version of your application supported in Oracle Solaris 11.4, and it will be supported in the future by Oracle Solaris 11.4, perform these steps.**

---

**Note** - For applications bundled with Oracle Solaris 11.4, the upgrade to Oracle Solaris 11.4 will remove the unsupported application.

---

- a. **Make a backup of your boot environment so you can return to the current configuration if needed.**
- b. **Remove all cluster objects for this application (resources, resource groups and protection groups).**
- c. **Disable the application so that it does not attempt to start when the nodes are booted into Oracle Solaris 11.4 boot environment.**
- d. **Proceed to [“Choosing an Oracle Solaris Cluster Update Method” on page 23.](#)**

## Choosing an Oracle Solaris Cluster Update Method

The following sections describe the supported update methods for each Oracle Solaris OS version and platform, *provided that all other requirements for the method are met*. Check the documentation of other products in the cluster, such as volume management software and other applications, for any additional update requirements or restrictions.

Choose from the following methods to update your Oracle Solaris Cluster 4.4 cluster software:

- [“Standard Update” on page 23](#)
- [“Dual-Partition Update” on page 24](#)
- [“Rolling Update” on page 24](#)

For overview information about planning your Oracle Solaris Cluster 4.4 configuration, see [Chapter 1, “Planning the Oracle Solaris Cluster Configuration” in \*Installing and Configuring an Oracle Solaris Cluster 4.4 Environment\*](#).

### Standard Update

A standard update updates a cluster to a new release and updates the Oracle Solaris OS to the latest compatible version. You do not need to place the cluster in noncluster mode before performing this update because the update always occurs in the new boot environment (BE) and the existing BE remains unchanged. You can specify a name for the new BE or you can use the auto-generated name. All cluster nodes must be rebooted into the updated BE at the same time.

Any time you update the Oracle Solaris Cluster software, by default you also update the data services and Disaster Recovery Framework software. However, if you want to update the data services separately, see [“Overview of the Installation and Configuration Process” in \*Planning and Administering Data Services for Oracle Solaris Cluster 4.4\*](#). If you want to update Oracle Solaris Cluster Disaster Recovery Framework separately, see the [Installing and Configuring the Disaster Recovery Framework for Oracle Solaris Cluster 4.4](#).

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**Note** - If you want to update individual packages, use the pkg command. See [“Updating a Specific Package or SRU \(pkg\)” on page 78](#).

---

For complete instructions on performing a standard update, see [Chapter 4, “Performing a Standard Update”](#).

The cluster outage is limited to the amount of time that is needed to reboot all cluster nodes into the updated BE.

## Dual-Partition Update

In a *dual-partition* update, you divide the cluster into two groups of nodes. You bring down one group of nodes and update those nodes. The other group of nodes continues to provide services. After you complete update of the first group of nodes, you switch services to those updated nodes. You then update the remaining nodes and boot them back into the rest of the cluster.

The cluster outage time is limited to the amount of time that is needed for the cluster to switch over services to the updated partition.

Observe the following additional restrictions and requirements for the dual-partition update method:

- **Data format changes** – Do not use the dual-partition update method if you intend to update an application that requires that you change its data format during the application update. The dual-partition update 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 update 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 update is not available to update a single-node cluster. Use the standard update method instead.
- **Failover zone update** – You cannot update failover zones if you are using the dual-partition update method. You can only update failover zones if you are using the standard update or rolling update method.
- **Configuration changes** – Do not make cluster configuration changes that are not documented in the update 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 update.

## Rolling Update

In a rolling update, you update software to an update release, such as from Oracle Solaris 11.3 to Oracle Solaris 11.4, or from Oracle Solaris Cluster version 4.3 to version 4.4 or to a version 4.3 SRU. You perform the update 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 updated to a node that will remain in service.



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

- **Oracle Solaris update paths** – You can update the Oracle Solaris OS only to a new SRU or an update version of the same release. For example, you can perform a rolling update from Oracle Solaris 11.4 to a later compatible Oracle Solaris 11 release, but you cannot perform a rolling update from a version of Oracle Solaris 10.
- **Hardware configuration changes** – Do *not* change the cluster configuration during a rolling update. 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 update procedure or wait until after all nodes are updated and the cluster is committed to the new software version.
- **Duration of the update** – Limit the amount of time that you take to complete a rolling update of all cluster nodes. After a node is booted into its updated boot environment (BE), boot the next cluster node into its updated BE 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 other than those in the update procedure during the update. Do not create or delete resources or resource groups during a rolling update.
- **New-feature availability** – Until all nodes of the cluster are successfully updated and the update is committed, new features that are introduced by the new release might not be available.



## Updating Zones Managed by Oracle Solaris Cluster Software

---

This chapter provides information to update `solaris` branded non-global zones that are managed by the Oracle Solaris Cluster software. For more information about making a non-global zone highly available, see [Oracle Solaris Cluster Data Service for Oracle Solaris Zones Guide](#).

### Updating Solaris Branded Failover Zones

A failover zone is a non-global zone that is configured with the HA for Oracle Solaris Zones data service so that it can be managed by the Oracle Solaris Cluster software. If you have failover zones of brand type `solaris` configured on the cluster, perform this procedure in conjunction with the procedures for the cluster update method that you use.

After you update the `solaris` branded zone, failover behavior differs, depending on the version of Oracle Solaris the cluster is running.

- On Oracle Solaris 11.3 or Oracle Solaris 11.4, the zone is attached using the `-x deny-zbe-clone` option of the `zoneadm attach` command. For more information about this option, see the [zoneadm\(8\)](#) man page.

---

**Note** - You can update a failover zone only when using the standard update or rolling update method. You cannot update a failover zone when using the dual-partition update method.

---

---

**Note** - If you are updating Oracle Solaris or Oracle Solaris10 branded failover zones in a cluster in a Disaster Recovery configuration, refer to [Updating the Oracle Solaris and Oracle Solaris Cluster Software with HA for Oracle Solaris Zones in a Disaster Recovery Configuration \(Doc ID 2250186.1\)](#).

---

---

**Note** - If you are updating resources registered as `ORCL.ha-zone_sczbt`, `ORCL.ha-zone_sczsh` or `ORCL.ha-zone_sczsmf`, you must update to Oracle Solaris Cluster 4.3 before you update to Oracle Solaris Cluster 4.4. See <http://www.oracle.com/pls/topic/lookup?ctx=E69294-01&id=CLRELgtcvn>.

---

## ▼ How to Update a solaris Branded Failover Zone

---

**Note** - This task does not apply to `solaris10` or `solaris-kz` (kernel) branded failover zones. To manage packages and patches in a `solaris10` or `solaris-kz` branded failover zone, follow normal Oracle Solaris 10 Zone or Oracle Solaris Kernel Zone procedures. See [Creating and Using Oracle Solaris 10 Zones](#) or [Creating and Using Oracle Solaris Kernel Zones](#).

---

1. **Identify which resource groups that manage a failover zone of brand type `solaris` are online.**

```
# clresourcegroup status
```

Make a record for later reference of the online resource groups and on which cluster node each resource group is online.

2. **Identify the resource name for the `sczbt` components that manage the failover zone.**

Do this for each resource group that you identified in [Step 1](#).

```
# clresource status -g resource-group
```

Make a record for later reference of the resource names.

3. **Suspend each online resource group that manages a failover zone of brand type `solaris`.**

```
# clresourcegroup suspend resource-group
```

The resource groups remain online but they are prevented from failing the zones over during update. While in this state, the resource groups are also prevented from automatically rebooting the zones when the nodes are rebooted after update. The failover zone will be updated together with the node on which it is currently online.

4. **Perform the standard or rolling update on the nodes.**

Perform all steps, including booting into the new boot environment, in “[How to Update the Software \(Standard Update\)](#)” on page 35 or “[How to Update the Software \(Rolling Update\)](#)” on page 54. Then return to this procedure.

**5. Disable each sczbt resource that you recorded in [Step 2](#).**

```
# clresource disable sczbt-resource
```

Disabling this resource ensures that the resource does not time out if the first boot of the updated zone takes more time than the resource's `Start_timeout` allows.

**6. For each resource group that you recorded in [Step 1](#), bring the resource group online on the same node where it was online during the update.**

```
# clresourcegroup online -n node resource-group
```

The updated failover zones are currently only associated with the global zone boot environment, where they were updated, and can only successfully boot there.

**7. Attach and boot the failover zone.**

Do this for each zone that is managed by an sczbt resource that you identified in [Step 2](#).

```
# zoneadm -z zone-name attach
# zoneadm -z zone-name boot
```

**8. Verify the zone console.**

Do this for each zone that is managed by an sczbt resource that you identified in [Step 2](#).

```
# zlogin -C zone-name
```

**9. Shut down and forcibly detach the failover zone.**

Do this for each zone that is managed by an sczbt resource that you identified in [Step 2](#).

```
# zoneadm -z zone-name shutdown
# zoneadm -z zone-name detach -F
```

**10. Enable each sczbt resource.**

Do this for each zone that is managed by an sczbt resource that you identified in [Step 2](#).

```
# clresource enable sczbt-resource
```

**11. Resume each resource group that you brought online in [Step 6](#).**

```
# clresourcegroup resume resource-group
```

**Next Steps** Go to [Chapter 7, “Completing the Update”](#).

## Performing a Standard Update

---

This chapter provides the following information to update to Oracle Solaris Cluster 4.4 software or to a Support Repository Update (SRU) by using the standard nonrolling update method:

- [“How to Update Quorum Server Software” on page 32](#)
- [“How to Prepare the Cluster for Update \(Standard Update\)” on page 34](#)
- [“How to Update the Software \(Standard Update\)” on page 35](#)

---

**Note** - Updating to Oracle Solaris Cluster 4.4 software also updates the Oracle Solaris operating system to the latest compatible version.

---

## Performing a Standard Update of a Cluster

A standard update updates a cluster to a new release, including installed data service software, and updates the Oracle Solaris OS to the latest compatible version. You do not need to place the cluster in noncluster mode before performing this update because the update always occurs in the new boot environment (BE) and the existing BE remains unchanged. Normal cluster operations and services can continue while you are updating the new BE. You can specify a name for the new BE or you can use the auto-generated name.

If you do not want to update all of your software to the latest available version, you can prevent certain components from being updated. You can do this by freezing individual packages or incorporations, or by disabling the appropriate publisher. For instructions, see [Chapter 5, “Configuring Installed Images” in \*Updating Systems and Adding Software in Oracle Solaris 11.4\*](#) or the `pkg(1)` man page.

Any time you update the Oracle Solaris Cluster software in the global cluster, by default you also update the data services and the Disaster Recovery Framework, formerly called Geographic Edition, in the global cluster and in any zone clusters.

---

**Note** - If you want to install any individual Oracle Solaris Cluster SRUs, instead see [“How to Update a Specific Package or SRU \(pkg\)” on page 79](#).

---

The following table lists the tasks to update to Oracle Solaris Cluster 4.4 software or to a 4.4 SRU. By default, all Oracle Solaris packages are automatically updated.

**TABLE 1** Task Map: Performing a Standard Update for Oracle Solaris Cluster 4.4 Software

Task	Instructions
1. Read the update requirements and restrictions. Determine the proper update method for your configuration and needs.	<a href="#">“Update Requirements and Software Support Guidelines” on page 17</a> <a href="#">“Choosing an Oracle Solaris Cluster Update Method” on page 23</a>
2. If failover zones of brand type solaris are configured in the cluster, update the failover zones.	<a href="#">“Updating Solaris Branded Failover Zones” on page 27</a>
3. If a quorum server is used, update the Quorum Server software.	<a href="#">“How to Update Quorum Server Software” on page 32</a>
4. Remove the cluster from production and back up shared data.	<a href="#">“How to Prepare the Cluster for Update (Standard Update)” on page 34</a>
5. Update to Oracle Solaris Cluster 4.4 framework, data-service, and Disaster Recovery Framework software. If necessary, update applications that support alternate boot environments.	<a href="#">“How to Update the Software (Standard Update)” on page 35</a>
6. Use the <code>scversions</code> command to commit the cluster to the update.	<a href="#">“How to Commit the Updated Cluster” on page 59</a>
7. Verify successful completion of update to Oracle Solaris Cluster 4.4 software.	<a href="#">“How to Verify the Update” on page 60</a>
8. Enable resources and bring resource groups online. Migrate existing resources to new resource types. If necessary, boot into noncluster mode and update applications that do not support alternate boot environments.	<a href="#">“How to Finish the Update” on page 61</a>

## ▼ How to Update Quorum Server Software

If the cluster uses a quorum server, update the Quorum Server software on the quorum server *before* you update the cluster.

---

**Note** - If more than one cluster uses the quorum server, perform on each cluster the steps to remove the quorum server and later the steps to add back the quorum server.

---

Perform all steps as the root role on the cluster and on the quorum server.

- 1. If the cluster has two nodes and the quorum server is the cluster's only quorum device, temporarily add a second quorum device.**



See [“Adding a Quorum Device” in \*Administering an Oracle Solaris Cluster 4.4 Configuration\*](#).

If you add another quorum server as a temporary quorum device, the quorum server can run the same software version as the quorum server that you are updating, or it can run the 4.4 version of Quorum Server software.

2. **Unconfigure the quorum server from each cluster that uses the quorum server.**

```
phys-schost# clquorum remove quorum-server
```

3. **From the quorum server to update, verify that the quorum server no longer serves any cluster.**

```
quorumserver# clquorumserver show +
```

If the output shows any cluster is still served by the quorum server, unconfigure the quorum server from that cluster. Then repeat this step to confirm that the quorum server is no longer configured with any cluster.

---

**Note** - If you have unconfigured the quorum server from a cluster but the `clquorumserver show` command still reports that the quorum server is serving that cluster, the command might be reporting stale configuration information. See [“Cleaning Up Stale Quorum Server Cluster Information” in \*Administering an Oracle Solaris Cluster 4.4 Configuration\*](#).

---

4. **From the quorum server to update, halt all quorum server instances.**

```
quorumserver# clquorumserver stop +
```

5. **Uninstall the Quorum Server software from the quorum server to update.**

```
quorumserver# pkg uninstall ha-cluster/*
```

6. **(Optional) Clean up or remove the quorum server directories.**

By default, this directory is `/var/scqsd`.

7. **Install the Oracle Solaris Cluster 4.4 Quorum Server software, reconfigure the quorum server, and start the quorum server daemon.**

Follow the steps in [“How to Install and Configure Oracle Solaris Cluster Quorum Server Software” in \*Installing and Configuring an Oracle Solaris Cluster 4.4 Environment\*](#) for installing the Quorum Server software.

8. **From a cluster node, configure the updated quorum server as a quorum device.**

Follow the steps in [“How to Configure Quorum Devices” in \*Installing and Configuring an Oracle Solaris Cluster 4.4 Environment\*](#).

**9. If you configured a temporary quorum device, unconfigure it.**

```
phys-schost# clquorum remove temp-quorum
```

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

Perform this procedure to remove the cluster from production before you perform a standard update. Performing a standard update also updates the Oracle Solaris OS to the latest compatible version. Perform all steps from the global zone only.

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

- Ensure that the configuration meets the requirements for update. See [Chapter 1, “Overview of Updating Oracle Solaris Cluster Software”](#).
- Have available the installation media, documentation, and software updates for all software products that you are updating, including the following software:
  - Oracle Solaris OS
  - Oracle Solaris Cluster
  - Applications that are managed by Oracle Solaris Cluster data services
  - Any other third-party applications to update

For instructions on updating single or multiple packages, see [Chapter 10, “Updating Software Packages”](#).

- If you use role-based access control (RBAC) instead of the root role to access the cluster nodes, ensure that you can become an administrator with rights for all Oracle Solaris Cluster commands. This series of update procedures requires the following Oracle Solaris Cluster RBAC authorizations if the user is not the root role:
  - `solaris.cluster.modify`
  - `solaris.cluster.admin`
  - `solaris.cluster.read`

See [“User Rights Management” in \*Securing Users and Processes in Oracle Solaris 11.4\*](#) for more information about using RBAC roles. See the Oracle Solaris Cluster man pages for the RBAC authorization that each Oracle Solaris 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.**

```
phys-schost% cluster status
```

See the [cluster\(8CL\)](#) 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. **Assume the root role on a node of the cluster.**
  3. **Ensure that all shared data is backed up.**
  4. **Ensure that each system disk is backed up.**

**Next Steps** Update the cluster and OS software. Go to [“How to Update the Software \(Standard Update\)”](#) on page 35.

## ▼ How to Update the Software (Standard Update)

Perform this procedure on each node of the cluster. You can perform update tasks in parallel on multiple nodes by using the `pconsole` utility. For more information about the `pconsole` utility, see [“How to Install pconsole Software on an Administrative Console”](#) in *Installing and Configuring an Oracle Solaris Cluster 4.4 Environment*.

- Before You Begin**
- If you have failover zones of brand type `solaris` configured on the cluster, you must perform additional steps. Follow the instructions in [“How to Update a solaris Branded Failover Zone”](#) on page 28 before you begin this procedure.
  - If you have a `solaris10` brand zone in a zone cluster, follow the instructions in [“Upgrading a solaris10 Branded Zone in a Zone Cluster”](#) on page 67.
  - If you have configured immutable zone clusters, on the node where you run `scinstall -u` update reboot the zone-cluster node on it to writable mode using the command `clzonecluster reboot -n <node-updating> -w <zone-cluster-name>`. This ensures that the services running within the zone-cluster node are failed over to other nodes of the zone-cluster, ensuring availability. This command should be run before running the `scinstall` command. After the upgrade has finished on that immutable zone cluster node, the subsequent reboot into the new boot environment ensures that the immutable zone cluster node is no longer in write mode.

To update packages inside the zone-cluster see [“Administering an Immutable Zone Cluster by Making It Writable”](#) in *Administering an Oracle Solaris Cluster 4.4 Configuration*.

1. **Assume the root role or become an administrator with `solaris.cluster.admin` RBAC authorization.**
2. **Subscribe to the `ha-cluster` publisher that contains the software you want to update to.**

```
# pkg set-publisher -p URL_for_ha-cluster_repository
```

3. **Ensure that the `solaris` publisher is valid.**

```
# pkg publisher
PUBLISHER                                TYPE    STATUS  P  LOCATION
solaris                                   origin  online  F  ha-cluster-repository
solaris                                   origin  online  F  solaris-repository
ha-cluster                                origin  online  F  ha-cluster-repository
```

For information about setting the `solaris` publisher, see [“Adding, Modifying, or Removing Package Publishers”](#) in *Updating Systems and Adding Software in Oracle Solaris 11.4*.

4. **Run the update.**

If you are updating a failover zone, follow the instructions in [“How to Update a `solaris` Branded Failover Zone”](#) on page 28.

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

```
# scinstall -u update [-b bename | -R mounted-be-path] [-L accept,licenses]
```

- You can choose to specify a name for the new boot environment with the `-b bename` option, or specify a mounted boot environment with the `-R mounted-be-path` option. You cannot use both options in the same command.
- If you specify the `-L accept,licenses` option, the command accepts and displays the licenses of the packages you update.

See the [`scinstall\(8\)`](#) man page for more information about these and other options.

- **To use the interactive `scinstall` utility, perform the following:**

- a. **Start the `scinstall` utility.**

```
phys-schost# scinstall
```

The `scinstall` Main Menu is displayed.

**b. Choose the menu item, Update This Cluster Node.**

The Update Menu is displayed.

**c. Choose the menu item, Update This Cluster Node.****d. Follow the menu prompts to update the cluster framework, data service agents, and underlying OS.**

Update processing is finished when the system displays the message Completed Oracle Solaris Cluster framework update and prompts you to press Enter to continue.

**e. Quit the scinstall utility.**

5. **As needed, update other applications that support alternate boot environments.**
6. **After all cluster nodes are updated on their new boot environments, from one node shut down the cluster.**

---

**Note** - Do not perform this step until the new boot environment on each cluster nodes has been updated and is ready to put into production. You must boot the new boot environment on all cluster nodes at the same time.

---

```
phys-schost-1# cluster shutdown -g0 -y cluster
```

7. **Boot all machines into the new boot environment at the same time.**
  - **If you need to update any applications that do not support alternate boot environments, boot the node into the new boot environment in noncluster mode.**

```
ok> boot -x
```
  - **Otherwise, follow the prompts to boot the machine into the new boot environment.**

**Next Steps** Go to [Chapter 7, “Completing the Update”](#).



## Performing a Dual-Partition Update

---

This chapter provides the following information to update a multiple-node cluster to Oracle Solaris Cluster 4.4 by using the dual-partition update method:

- [“How to Update Quorum Server Software” on page 32](#)
- [“How to Prepare the Cluster for Update \(Dual-Partition\)” on page 40](#)
- [“How to Update the Software \(Dual-Partition\)” on page 45](#)

---

**Note** - You cannot update a failover zone when using the dual-partition update method.

---

## Performing a Dual-Partition Update of a Cluster

The following table lists the tasks to update to Oracle Solaris Cluster 4.4 software or to a 4.4 SRU. By default, all Oracle Solaris packages are automatically updated.

---

**Note** - If you update the Oracle Solaris OS to a new marketing release, such as from Oracle Solaris 11.3 to Oracle Solaris 11.4, you must also update the Oracle Solaris Cluster software and dependency software to the version that is compatible with the new OS version.

---

**TABLE 2** Task Map: Performing a Dual-Partition Update to Oracle Solaris Cluster 4.4 Software

Task	Instructions
1. Read the update requirements and restrictions. Determine the proper update method for your configuration and needs.	<a href="#">“Update Requirements and Software Support Guidelines” on page 17</a> <a href="#">“Choosing an Oracle Solaris Cluster Update Method” on page 23</a>
2. If a quorum server is used, update the Quorum Server software.	<a href="#">“How to Update Quorum Server Software” on page 32</a>
3. Partition the cluster into two groups of nodes.	<a href="#">“How to Prepare the Cluster for Update (Dual-Partition)” on page 40</a>

Task	Instructions
4. Update to Oracle Solaris Cluster 4.4 framework, data-service, and Disaster Recovery Framework software. If necessary, update applications that support alternate boot environments.	<a href="#">“How to Update the Software (Dual-Partition)” on page 45</a>
5. Use the <code>scversions</code> command to commit the cluster to the update.	<a href="#">“How to Commit the Updated Cluster” on page 59</a>
6. Verify successful completion of update to Oracle Solaris Cluster 4.4 software.	<a href="#">“How to Verify the Update” on page 60</a>
7. Enable resources and bring resource groups online. Optionally, migrate existing resources to new resource types.	<a href="#">“How to Finish the Update” on page 61</a>

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

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

---

**Note** - If you are updating a single-node cluster, do not use this update method. Instead, go to [“How to Prepare the Cluster for Update \(Standard Update\)” on page 34](#).

---

Perform all steps from the global zone only.

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

- Ensure that the configuration meets the requirements for update. See [Chapter 1, “Overview of Updating Oracle Solaris Cluster Software”](#).
- Have available the installation media, documentation, and software updates for all software products that you are updating, including the following software:
  - Oracle Solaris OS
  - Oracle Solaris Cluster
  - Applications that are managed by Oracle Solaris Cluster data services
  - Any other third-party applications to update

For instructions on updating single or multiple packages, see [Chapter 10, “Updating Software Packages”](#).



- If you use role-based access control (RBAC) instead of the root role to access the cluster nodes, ensure that you can become an administrator with rights for all Oracle Solaris Cluster commands. This series of update procedures requires the following Oracle Solaris Cluster RBAC authorizations if the user is not the root role:
  - `solaris.cluster.modify`
  - `solaris.cluster.admin`
  - `solaris.cluster.read`

See “[User Rights Management](#)” in *Securing Users and Processes in Oracle Solaris 11.4* for more information about using RBAC roles. See the Oracle Solaris Cluster man pages for the RBAC authorization that each Oracle Solaris 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.**

```
phys-schost% cluster status
```

See the [cluster\(8CL\)](#) 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 update.**

Service interruption will be approximately the amount of time that your cluster normally takes to switch services to another node.
3. **Assume the root role.**
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 update 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
```

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.

- 5. Assume the `root` role on a node of the cluster.**

- 6. Start the `scinstall` utility in interactive mode.**

```
phys-schost# scinstall
```

The `scinstall` Main Menu is displayed.

- 7. Choose the menu item, `Manage a Dual-Partition Update`.**

The `Manage a Dual-Partition Update` Menu is displayed.

- 8. Choose the menu item, `Display and Select Possible Partitioning Schemes`.**

- 9. 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 update first.**

---

**Note** - Stop and do *not* respond yet when prompted, Do you want to begin the dual-partition update?, but do not exit the `scinstall` utility. You respond to this prompt in [Step 13](#) of this procedure.

---

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

- 11. On another node of the cluster, become superuser.**

- 12. 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 update, 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 update partition.

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

```
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.**

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

13. **At the interactive `scinstall` prompt Do you want to begin the dual-partition update?, type Yes.**

The command verifies that a remote installation method is available.

14. **When prompted, press Enter to continue each stage of preparation for dual-partition update.**

The command switches resource groups to nodes in the second partition, and then shuts down each node in the first partition.

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

- **SPARC:**

```
ok boot -x
```

- **x86:**

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

For more information about GRUB based booting, see [“About Run Level Booting” in \*Booting and Shutting Down Oracle Solaris 11.4 Systems\*](#).

- b. **In the boot parameters screen, use the arrow keys to select the kernel entry and type `e` to edit the entry.**
- c. **Add `-x` to the `multiboot` command to specify that the system boot into noncluster mode.**
- d. **Press Enter to accept the change and return to the boot parameters screen.**

The screen displays the edited command.
- 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 add the `-x` option to the kernel boot parameter command.

---

16. **Ensure that each system disk is backed up.**
17. **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 update those nodes.**

During dual-partition update processing, these scripts would be called to stop applications such as Oracle RAC 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 Oracle Solaris 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 Oracle Solaris Cluster scripts are issued from one arbitrary node in the partition during post-update 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** Update software on each node in the first partition. Go to [“How to Update the Software \(Dual-Partition\)” on page 45](#).

## ▼ How to Update the Software (Dual-Partition)

Perform this procedure to update each node of the cluster to Oracle Solaris Cluster 4.4 software and, if necessary, update the Oracle Solaris software. You must also perform this procedure if you only updated to a different marketing release of the Oracle Solaris OS, such as from Oracle Solaris 11.3 to Oracle Solaris 11.4 software.

---

**Note** - If you intend to update failover zones, do not use the dual-partition update method. Instead, use the standard update or rolling update method.

---

Perform all steps from the global zone only.

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

- Ensure that all steps in [“How to Prepare the Cluster for Update \(Dual-Partition\)” on page 40](#) are completed.
- Ensure that the node you are updating belongs to the partition that is not active in the cluster and that the node is in noncluster mode.
- For immutable zone clusters, ensure that on each node of the partition you are updating, you reboot the immutable zone cluster's zone (on that node) to writable mode using the following command:

```
. zoneadm -z <zonecluster name> reboot -w
```

When the partition nodes are rebooted the immutable zone-cluster nodes will boot back to read-only mode.

---

**Tip** - You can use the `pconsole` utility to perform this procedure on multiple nodes simultaneously. See the `pconsole(1)` man page that is installed with the `terminal/pconsole` package for more information.

---

1. **Assume the `root` role on a node that is a member of the partition that is in noncluster mode.**
2. **Subscribe to the `ha-cluster` publisher that contains the software you want to update to.**

```
# pkg set-publisher -p URL_for_ha-cluster_repository
```

3. **Ensure that the `solaris` publisher is valid.**

```
# pkg publisher
PUBLISHER                                TYPE      STATUS    P  LOCATION
solaris                                  origin    online    F  ha-cluster-repository
solaris                                  origin    online    F  solaris-repository
ha-cluster                               origin    online    F  ha-cluster-repository
```

For information about setting the `solaris` publisher, see [“Adding, Modifying, or Removing Package Publishers” in \*Updating Systems and Adding Software in Oracle Solaris 11.4\*](#).

4. **Start the `scinstall` utility.**

```
phys-schost# scinstall
```

The `scinstall` Main Menu is displayed.

5. **Choose the menu item, `Update This Cluster Node`.**

The Update Menu is displayed.

6. **Follow the menu prompts to update the cluster framework.**

Update processing is finished when the system displays the message `Completed Oracle Solaris Cluster framework update` and prompts you to press `Enter` to continue.

7. **Quit the `scinstall` utility.**

8. **If you have 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 [“Planning Cluster File Systems” in \*Installing and Configuring an Oracle Solaris Cluster 4.4 Environment\*](#).

---

To disable LOFS, ensure that the `/etc/system` file contains the following entry:

```
exclude:lofs
```

This change becomes effective at the next system reboot.

9. **As needed, manually update any custom data services that are not supplied on the product media.**
10. **Verify that each data-service update is installed successfully.**  
View the update log file that is referenced at the end of the update output messages.
11. **Install any Oracle Solaris Cluster 4.4 framework and data-service software updates.**  
For instructions on updating your software, see [“Overview of the Installation and Configuration Process” in \*Planning and Administering Data Services for Oracle Solaris Cluster 4.4\*](#).
12. **Update software applications that are installed on the cluster.**  
Ensure that application levels are compatible with the current versions of Oracle Solaris Cluster and Oracle Solaris software. See your application documentation for installation instructions.

---

**Note** - If any update procedure instructs you to perform a reboot, you must add the `-x` option to the boot command. This option boots the cluster into noncluster mode.

---

13. **Repeat all steps in this procedure up to this point on all remaining nodes that you need to update in the partition.**
14. **After all nodes in a partition are updated, apply the update changes.**
  - a. **From one node in the partition that you are updating, start the interactive `scinstall` utility.**

```
phys-schost# scinstall
```

The `scinstall` Main Menu is displayed.
  - b. **Type option number for Apply Dual-Partition Update Changes to the Partition.**

**c. Follow the prompts to continue each stage of the update 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 in the second partition 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.



**Caution** - Do not reboot any node of the first partition again until after the update is completed on all nodes. If you again reboot a node of the first partition before the second partition is updated and rebooted into the cluster, the update might fail in an unrecoverable state.

---

- **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 update.

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

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

Otherwise, if you are finishing update of the second partition, proceed to [Step 16](#).

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

■ **SPARC:**

```
ok boot -x
```

■ **x86:**

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

For more information about GRUB based booting, see [“About Run Level Booting”](#) in *Booting and Shutting Down Oracle Solaris 11.4 Systems*.



- ii **In the boot parameters screen, use the arrow keys to select the kernel entry and type e to edit the entry.**
- iii **Add -x to the multiboot command to specify that the system boot into noncluster mode.**
- iv **Press Enter to accept the change and return to the boot parameters screen.**

The screen displays the edited command.
- 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 add the -x option to the kernel boot parameter command.

---

**b. Update the nodes in the second partition.**

Return to [Step 1](#).

- 16. 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 7, “Completing the Update”](#).

**Troubleshooting** If you experience an unrecoverable error during dual-partition update, perform recovery procedures in [“How to Recover from a Failed Dual-Partition Update”](#) on page 71.



## Performing a Rolling Update

---

This chapter provides procedures to perform a rolling upgrade of an Oracle Solaris Cluster 4.3 release to the Oracle Solaris Cluster 4.4 release, from the Oracle Solaris Cluster 4.4 release to a newer Oracle Solaris Cluster 4.4 SRU, or from a compatible Oracle Solaris 11 release to a newer Oracle Solaris 11 release or SRU.

In a rolling update, you update one cluster node at a time, while the other cluster nodes remain in production. After all nodes are updated and have rejoined the cluster, you must commit the cluster to the new software version before you can use any new features.

---

**Note** - To update an Oracle Solaris Cluster configuration from an earlier marketing release of Oracle Solaris software, use another update method. See [“Choosing an Oracle Solaris Cluster Update Method” on page 23](#) to determine the best update method for your configuration.

---

This chapter provides the following information to update an Oracle Solaris Cluster 4.3 or 4.4 configuration to Oracle Solaris Cluster 4.4 or an SRU of 4.4 or to an SRU of the Oracle Solaris OS by using the rolling update method:

- [“How to Update Quorum Server Software” on page 32](#)
- [“How to Prepare a Cluster Node for Update \(Rolling Update\)” on page 52](#)
- [“How to Update the Software \(Rolling Update\)” on page 54](#)

## Performing a Rolling Update of a Cluster

The following table lists the tasks to update to Oracle Solaris Cluster 4.4 software or to a 4.4 SRU. By default, all Oracle Solaris packages are automatically updated.

---

**Note** - If you update the Oracle Solaris OS to a new marketing release, you must also update the Oracle Solaris Cluster software and dependency software to the version that is compatible with the new OS version.

---

**TABLE 3** Task Map: Performing a Rolling Update to Oracle Solaris Cluster 4.4 Software

Task	Instructions
1. Read the update requirements and restrictions.	<a href="#">“Updating to a New Oracle Solaris Cluster Version” on page 15</a>
2. If failover zones of brand type solaris are configured in the cluster, update the failover zones.	<a href="#">“Updating Solaris Branded Failover Zones” on page 27</a>
3. If a quorum server is used, update the Quorum Server software.	<a href="#">“How to Update Quorum Server Software” on page 32</a>
4. 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.	<a href="#">“How to Prepare a Cluster Node for Update (Rolling Update)” on page 52</a>
5. Update the cluster node Oracle Solaris Cluster 4.4 framework, data service, and Disaster Recovery Framework software. If necessary, update applications that support alternate boot environments.	<a href="#">“How to Update the Software (Rolling Update)” on page 54</a>
6. Repeat Tasks 3 through 4 on each remaining node to update.	
7. Use the <code>scversions</code> command to commit the cluster to the update.	<a href="#">“How to Commit the Updated Cluster” on page 59</a>
8. Verify successful completion of update to Oracle Solaris Cluster 4.4 software.	<a href="#">“How to Verify the Update” on page 60</a>
9. Enable resources and bring resource groups online. Migrate existing resources to new resource types. If necessary, update applications that do not support alternate boot environments.	<a href="#">“How to Finish the Update” on page 61</a>

## ▼ How to Prepare a Cluster Node for Update (Rolling Update)

Perform this procedure on one node at a time. You will take the updated 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 update. See [“Updating to a New Oracle Solaris Cluster Version” on page 15](#).
- Have available the installation media, documentation, and updates for all the software products that you are updating, including the following software:
  - Oracle Solaris OS
  - Oracle Solaris Cluster
  - Applications that are managed by Oracle Solaris Cluster 4.4 data service agents
  - Any other third-party applications to update

For instructions about updating single or multiple packages, see [“How to Update the Software \(Rolling Update\)” on page 54](#).

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\(8CL\)](#) 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 update.**

Service interruption will be approximately the amount of time that your cluster normally takes to switch services to another node.
3. **Assume the `root` role on a node of the cluster.**
4. **Evacuate resource groups and device groups from the node, except those used by failover zones on the node.**

- **If the node is configured with failover zones, suspend the resource groups used by the failover zones and evacuate all other resource groups and device groups on the node.**

Failover zones refers to `solaris` brand zones that are configured with the HA for Oracle Solaris Zones data service.

```
# clresourcegroup suspend <failover-zone-resource-group-list>
# clresourcegroup evacuate -n node-to-evacuate
# cldevicegroup switch -n backup-node device-group device-group-list
```

Alternatively, you can use the `clnode evacuate` command to evacuate all resource groups and device groups from the node, then use the `clresourcegroup switch` command to move back to the node you will update only those resource groups that are used by a failover zone. See the [clresourcegroup\(8CL\)](#) and [clnode\(8CL\)](#) man pages for more information.

For more information about failover zones, see [“Updating Solaris Branded Failover Zones” on page 27](#).

- **If there are no failover zones configured on the node, evacuate all resource groups and device groups on the node.**

---

**Note** - Do not use this command if failover zones are configured on the node. If a resource group that is used by a failover zone is evacuated from the node, even though the resource group is suspended, the evacuate operation will take the resource group offline.

---

```
phys-schost# clnode evacuate node-to-evacuate
```

See the [clnode\(8CL\)](#) man page for more information.

5. **Evacuate any resource groups that are running in a zone-cluster node that is on the node to update.**

```
phys-schost# clresourcegroup evacuate -n zone-cluster-node -Z zone-cluster-name +
```

6. **Verify that the move was completed successfully.**

```
phys-schost# cldg status;clrg status -Z all;clrs status -Z all
```

7. **Ensure that the system disk, applications, and all data are backed up.**

**Next Steps** Go to [“How to Update the Software \(Rolling Update\)”](#) on page 54.

## ▼ How to Update the Software (Rolling Update)

Perform this procedure to update to Oracle Solaris Cluster 4.4 software or to an Oracle Solaris Cluster 4.4 SRU while the remaining cluster nodes are in cluster mode.

---

**Note** - Until all nodes of the cluster are updated and the update is committed, new features that are introduced by the new release might not be available.

---

- Before You Begin**
- If you have failover zones of brand type `solaris` configured on the cluster, you must perform additional steps. Follow the instructions in [“How to Update a solaris Branded Failover Zone”](#) on page 28 before you begin this procedure.
  - If you have a `solaris10` brand zone in a zone cluster, follow the instructions in [“Upgrading a solaris10 Branded Zone in a Zone Cluster”](#) on page 67.
  - If you have configured immutable zone clusters, reboot the node you are updating with the `.clzonecluster reboot -n <node-updating> -w <zone-cluster-name>` command

before you start the update to ensure that any write operations are allowed when installing or applying maintenance. After the upgrade has finished on that node, the subsequent reboot into the new boot environment ensures that the immutable zone cluster node is no longer in write mode. To update packages inside the zone-cluster see [“Administering an Immutable Zone Cluster by Making It Writable”](#) in *Administering an Oracle Solaris Cluster 4.4 Configuration*

1. **Assume the root role or become an administrator with `solaris.cluster.admin` RBAC authorization on the node of the cluster you want to update.**
2. **Subscribe to the `ha-cluster` publisher that contains the software you want to update to.**

```
# pkg set-publisher -p URL_for_ha-cluster_repository
```

3. **Ensure that the `solaris` publisher is valid.**

```
# pkg publisher
PUBLISHER                TYPE    STATUS  P  LOCATION
solaris                   origin  online  F  ha-cluster-repository
solaris                   origin  online  F  solaris-repository
ha-cluster                 origin  online  F  ha-cluster-repository
```

For information about setting the `solaris` publisher, see [“Adding, Modifying, or Removing Package Publishers”](#) in *Updating Systems and Adding Software in Oracle Solaris 11.4*.

4. **Run the update on the node you want to update.**

If you are updating a failover zone, follow the instructions in [“How to Update a `solaris` Branded Failover Zone”](#) on page 28.

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

```
# scinstall -u update [-b bename | -R mounted-be-path] [-L accept,licenses]
```

- You can choose to specify a name for the new boot environment with the `-b bename` option, or specify a mounted boot environment with the `-R mounted-be-path` option. You cannot use both options in the same command.
- If you specify the `-L accept,licenses` option, the command accepts and displays the licenses of the packages you update.

See the `scinstall(8)` man page for more information about these options.

- **To use the interactive `scinstall` utility, perform the following:**

- a. **Start the `scinstall` utility.**

```
phys-schost# scinstall
```

The scinstall Main Menu is displayed.

**b. Choose the Update This Cluster menu item.**

The Update Menu is displayed.

**c. If you are updating a global-cluster node, follow the menu prompts to update the cluster framework, data service agents, or underlying OS.**

If you are updating a zone cluster node, follow the menu prompts to update the cluster framework, data service agents, or Oracle RAC for this node.

Update processing is finished when the system displays the message Completed Oracle Solaris Cluster framework update and prompts you to press Enter to continue.

**d. Quit the scinstall utility.**

**5. As needed, update other applications that support alternate boot environments.**

**6. Boot the node into the new boot environment.**

- **If you need to update any applications that do not support alternate boot environments, boot into the new boot environment in noncluster mode, update your applications, then reboot the node into cluster mode.**

- **On SPARC based systems, run the following command to boot the node into non-cluster mode.**

```
# shutdown -g0 -i0 -y  
ok> boot -x
```

- **On x86 based systems, run the following commands to boot the node into non-cluster mode.**

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

The GRUB menu appears.

For more information about GRUB based booting, see [Chapter 4, “Booting a System”](#) in *Booting and Shutting Down Oracle Solaris 11.4 Systems*.



- 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.

- c Add -x to the command to specify system boot in 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/kernel/$ISADIR/unix -B $ZFS-BOOTFS -x
```

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

The screen displays the edited command.

- 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 again to add the -x option to the kernel boot parameter command.

---

- **Boot the node into the new boot environment.**

```
# shutdown -g0 -i0 -y
ok> boot
```

- 7. Ensure that the updated node comes up without any problems.**

```
# svcs -x
```

Resolve any problems reported by Oracle Solaris services.

- 8. Starting with “[How to Prepare a Cluster Node for Update \(Rolling Update\)](#)” on page 52, repeat all the steps on each remaining node you want to update, one at a time.**

**Next Steps** When all nodes in the cluster are updated, go to [Chapter 7, “Completing the Update”](#).



## Completing the Update

---

This chapter provides the following information to complete all Oracle Solaris Cluster 4.4 software update methods:

- [“How to Commit the Updated Cluster” on page 59](#)
- [“How to Verify the Update” on page 60](#)
- [“How to Finish the Update” on page 61](#)

### Completing a Cluster Update

#### ▼ How to Commit the Updated Cluster

**Before You Begin** Ensure that all update procedures are completed for all cluster nodes that you are updating.

1. **From one node, check the update 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
Update commit is needed.	Proceed to <a href="#">Step 3</a> .
Update commit is NOT needed. All versions match.	Go to <a href="#">“How to Verify the Update” on page 60</a> .
Update commit cannot be performed until all cluster nodes are updated. Please run <code>scinstall(8)</code> on cluster nodes to identify older versions.	Return to the Oracle Solaris Cluster update procedures that you used and update the remaining cluster nodes.
Check update cannot be performed until all cluster nodes are updated. Please run <code>scinstall(8)</code> on cluster nodes to identify older versions.	Return to the Oracle Solaris Cluster update procedures that you used and update the remaining cluster nodes.

3. **After all nodes have rejoined the cluster, from one node commit the cluster to the update.**

```
phys-schost# scversions -c
```

Committing the update enables the cluster to utilize all features in the newer software. New features are available only after you perform the update commitment.

4. **From one node, verify that the cluster update commitment has succeeded.**

```
phys-schost# scversions
Update commit is NOT needed. All versions match.
```

**Next Steps** Go to [“How to Verify the Update” on page 60](#).

## ▼ How to Verify the Update

Perform this procedure to verify that the cluster is successfully updated to Oracle Solaris Cluster 4.4 software. Perform all steps from the global zone only.

- Before You Begin**
- Ensure that all update procedures are completed for all cluster nodes that you are updating.
  - Ensure that all steps in [“How to Commit the Updated Cluster” on page 59](#) are completed successfully.

1. **On each node, assume the root role.**
2. **On each updated node, view the installed levels of Oracle Solaris Cluster software.**

```
phys-schost# clnode show-rev -v
```

The first line of output states which version of Oracle Solaris Cluster software the node is running. This version should match the version that you just updated to.

3. **From any node, verify that all updated cluster nodes are running in cluster mode (Online).**

```
phys-schost# clnode status
```

See the [clnode\(8CL\)](#) man page for more information about displaying cluster status.

4. **From any node, view the boot environment (BE) created by the update.**

```
# beadm list
```

Record the name of the updated BE and any other BEs that you might want to boot back into if needed.

**Example 1** Verifying Update to Oracle Solaris Cluster 4.4 Software

The following example shows the commands used to verify update of a two-node cluster to Oracle Solaris Cluster 4.4 software. The cluster node names are `phys-schost-1` and `phys-schost-2`.

```
phys-schost# clnode show-rev -v
4.4
...
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 the Update” on page 61](#).

## ▼ How to Finish the Update

Perform this procedure to finish Oracle Solaris Cluster update. Perform all steps from the global zone only.

**Before You Begin** Ensure that all steps in [“How to Verify the Update” on page 60](#) are completed.

- 1. If you updated 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.

- 2. If necessary, reset the `resource_security` property.**

After update, the `resource_security` property for the cluster is reset to `COMPATIBLE`. To use a different security policy for RGM resources, run the following command from one node of the cluster:

```
phys-schost# cluster set -p resource_security=policy clustername
```

You can alternatively use the `clsetup` utility from the Other Cluster Tasks menu option. For more information about the `resource_security` property, see the [cluster\(8CL\)](#) man page.

**3. Migrate resources to new resource type versions.**

You must migrate all resources to the Oracle Solaris Cluster 4.4 resource-type version to use the new features and bug fixes that are provided in this release.

See “[Upgrading a Resource Type](#)” in *Planning and Administering Data Services for Oracle Solaris Cluster 4.4*, 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.

---

**Note** - The Oracle Solaris Cluster 4.4 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.

---

**4. In the global zone, re-enable all disabled resources and bring online all resource groups.**

- **To use the `clsetup` utility, perform the following steps:**

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

```
phys-schost# clsetup
```

The `clsetup` Main Menu is displayed.

**b. Choose the menu item, Resource Groups.**

The Resource Group Menu is displayed.

**c. Choose the menu item, Enable/Disable a Resource.**

**d. Choose a resource to enable and follow the prompts.**

Repeat for each disabled resource.

- 
- e. **When all resources are re-enabled, type `q` to return to the Resource Group Menu.**
  - f. **Choose the menu item, Online/Offline or Switchover a Resource Group.**
  - g. **Follow the prompts to put each resource group into the managed state and then bring the resource group online.**
  - h. **When all resource groups are back online, exit the `clsetup` utility.**  
Type `q` to back out of each submenu, or press Ctrl-C.
- **To use the command line, perform the following steps:**
    - a. **Enable each disabled resource.**  
`# clresource enable resource`
    - b. **Verify that each resource is enabled.**  
`# clresource status`
    - c. **Bring online each resource group.**  
`# clresourcegroup online -emM resourcegroup`
    - d. **Verify that each resource group is online.**  
`# clresourcegroup status`
5. **If zone clusters are configured in the cluster, in each zone cluster re-enable all disabled resources and bring online all resource groups.**
- ```
# clresourcegroup online -Z zonecluster resource-group
# clresource enable -Z zonecluster resource
# clresourcegroup online -eM -Z zonecluster resource-group
```
6. **If, before update, you enabled automatic node reboot if all monitored shared-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.

**7. Enable the automatic reboot feature.**

```
phys-schost# clnode set -p reboot_on_path_failure=enabled node
```

-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.

**8. Verify that automatic reboot on disk-path failure is enabled.**

```
phys-schost# clnode show
=== Cluster Nodes ===
```

```
Node Name:                               node
...
reboot_on_path_failure:                   enabled
...
```

**9. Revalidate the updated cluster configuration.**

See [“How to Validate the Cluster”](#) in *Installing and Configuring an Oracle Solaris Cluster 4.4 Environment*.

**10. (Optional) Capture the ZFS root pool property information for future reference.**

```
phys-schost# zpool get all rootpool > filename
```

Store the file in a location outside the cluster. If you make any root pool configuration changes, run this command again to capture the changed configuration. If necessary, you can use this information to restore the root pool partition configuration. For more information, see the [zpool\(8\)](#) man page.

**11. (Optional) Make a backup of your cluster configuration.**

An archived backup of your cluster configuration facilitates easier recovery of your cluster configuration.



For more information, see [“How to Back Up the Cluster Configuration”](#) in *Administering an Oracle Solaris Cluster 4.4 Configuration*.

**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 version change** - Only Java 8 is supported with Oracle Solaris Cluster 4.4 software. Running a Java version that is earlier or later than 8 might cause unexpected behavior. If necessary, use the following command to reset the Java version to 8:

```
phys-schost# pkg set-mediator -V 8 java
```

**Java binaries location change** - If the location of the Java binaries changed during the update of Oracle Solaris software, you might see error messages similar to the following when you attempt to run the `/usr/sbin/cacaoadm start` command:

```
No suitable Java runtime found. Java 1.7 or higher is required.
```

```
Jan 3 17:10:26 ppups3 cacao: No suitable Java runtime found. Java 1.7 or higher
is required.
```

```
Cannot locate all the dependencies.
```

This error is generated because the start command 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 update.

To correct this problem, change the setting of `JAVA_HOME` in the `/etc/opt/SUNWcacao/cacao.properties` configuration file to use the current Java directory:

**Next Steps** The cluster update is complete.

## Upgrading solaris10 Branded Zone Clusters

---

This chapter provides the following information to upgrade Oracle Solaris `solaris10` branded zone clusters to a new software version:

- “How to Upgrade a `solaris10` Branded Zone in a Zone Cluster (`scinstall`)” on page 68
- “How to Upgrade a `solaris10` Branded Zone in a Zone Cluster (interactive `scinstall`)” on page 68

To patch a `solaris10` branded zone cluster, see [Updating or Patching a Zone Cluster in Oracle Solaris Cluster 4.3 System Administration Guide](#).

### Upgrading a `solaris10` Branded Zone in a Zone Cluster

Before you upgrade a `solaris10` branded zone cluster, ensure that the following conditions are met:

- The version of Oracle Solaris Cluster software that runs in the zone cluster is supported for upgrade to the new version you want to run in the zone cluster.
- The version of Oracle Solaris Cluster software that runs in the global cluster supports the version of Oracle Solaris Cluster software that the zone cluster will upgrade to.

Use the `clzonecluster show-rev` subcommand to check the cluster release information for each node of the zone cluster. For more information, see the [clzonecluster\(8CL\)](#) man page.

This section contains the following procedures:

- “How to Upgrade a `solaris10` Branded Zone in a Zone Cluster (`scinstall`)” on page 68
- “How to Upgrade a `solaris10` Branded Zone in a Zone Cluster (interactive `scinstall`)” on page 68

## ▼ How to Upgrade a solaris10 Branded Zone in a Zone Cluster (scinstall)

Perform the following steps on each zone-cluster node.

1. **Bring the zone cluster into an offline-running state.**

```
phys-schost# clzonecluster reboot -o zone-cluster
```

2. **Log in to the zone cluster.**

```
phys-schost# zlogin zone-cluster
```

3. **From the command line, type the following commands.**

```
zchost# cd new-release-dvd-path/Solaris_arch/Product/sun_cluster/Solaris_10/Tools/  
zchost# ./scinstall -u update
```

In the path, *arch* is sparc or x86.

## ▼ How to Upgrade a solaris10 Branded Zone in a Zone Cluster (interactive scinstall)

Perform the following steps for each configured zone-cluster node.

1. **Bring the zone cluster into an offline-running state.**

```
phys-schost# clzonecluster reboot -o zone-cluster
```

2. **Log in to the zone cluster.**

```
phys-schost# zlogin zone-cluster
```

3. **Change to the DVD image directory inside the zone.**

You must run the `scinstall` utility from the latest DVD directory. For example:

```
zchost# cd /net/my-machine/export/dvd/Solaris_arch/Product/sun_cluster/Solaris_10/Tools/
```

In the path, *arch* is sparc or x86.

4. **Start the `scinstall` utility.**

```
zchost# pwd
/net/my-machine/export/dvd/Solaris_arch/Product/sun_cluster/Solaris_10/Tools/
zchost# ./scinstall
```

**5. Choose the Upgrade This Cluster Node menu item.**

The Upgrading Oracle Solaris Cluster on This Node menu is displayed.

**6. Follow the menu prompts to upgrade the solaris10 branded zone on this zone cluster node.**

This action upgrades the Oracle Solaris Cluster framework and data service agents on this node.

**7. Quit the scinstall utility.**



## Recovering From an Incomplete Update

---

This chapter provides the following procedures to recover from certain kinds of incomplete updates:

- [“How to Recover from a Failed Dual-Partition Update” on page 71](#)
- [“How to Recover From a Partially Completed Dual-Partition Update” on page 73](#)
- [“How to Handle Storage Reconfiguration During an Update” on page 75](#)
- [“How to Resolve Mistaken Storage Changes During an Update” on page 76](#)

### Cluster Recovery After an Incomplete Update

This section provides information to recover from incomplete updates of an Oracle Solaris Cluster configuration.

#### ▼ How to Recover from a Failed Dual-Partition Update

If you experience an unrecoverable error during dual-partition update, perform this procedure to back out of the update.

---

**Note** - You cannot restart a dual-partition update after the update has experienced an unrecoverable error.

---

1. **Assume the root role on each node of the cluster.**
2. **Boot each node into noncluster mode.**

■ **SPARC:**

ok boot -x

■ **x86:**

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

For more information about GRUB based booting, see [“About Run Level Booting” in \*Booting and Shutting Down Oracle Solaris 11.4 Systems\*](#).

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

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

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

The screen displays the edited command.

- 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 add the `-x` option to the kernel boot parameter command.

---

**3. On each node, run the update recovery script.**

```
phys-schost# scinstall -u recover
```

`-u` Specifies update.

`recover` Restores the `/etc/vfstab` file and the Cluster Configuration Repository (CCR) database to their original state before the start of the dual-partition update.

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\(8\)](#) 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 update software on the cluster by using the standard update method.**

This method requires that all cluster nodes remain in noncluster mode during the update. See the task map for standard update, [Table 1, “Task Map: Performing a Standard Update for Oracle Solaris Cluster 4.4 Software,”](#) on page 32. You can resume the update at the last task or step in the standard update procedures that you successfully completed before the dual-partition update failed.

## ▼ **How to Recover From a Partially Completed Dual-Partition Update**

Perform this procedure if a dual-partition update fails and the state of the cluster meets *all* of the following criteria:

- The nodes of the first partition are updated.
- None of the nodes of the second partition are yet updated.
- None of the nodes of the second partition are in cluster mode.

You can also perform this procedures if the update has succeeded on the first partition but you want to back out of the update.

---

**Note** - Do not perform this procedure after dual-partition update processes have begun on the second partition. Instead, perform [“How to Recover from a Failed Dual-Partition Update”](#) on page 71.

---

**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 the root role.

1. **Boot each node in the second partition into noncluster mode by completing the following steps.**

■ **SPARC:**

```
ok boot -x
```

■ **x86:**

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

For more information about GRUB based booting, see [“About Run Level Booting” in \*Booting and Shutting Down Oracle Solaris 11.4 Systems\*](#).

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

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

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

The screen displays the edited command.

- 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 add the `-x` option to the kernel boot parameter command.

---

2. **On each node in the second partition, run the `scinstall -u recover` command.**

```
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.

## Recovering From Storage Configuration Changes During Update

This section provides repair procedures to follow if changes were inadvertently made to the storage configuration during update.

### ▼ How to Handle Storage Reconfiguration During an Update

Any changes to the storage topology, including running Oracle Solaris Cluster commands, should be completed before you update the Oracle Solaris software. If, however, changes were made to the storage topology during the update, 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.

**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, assume the root role.**
2. **Manually update the unverified device for the node list.**

```
phys-schost# cldevice repair -n node[,...] device
```

See the [cldevice\(8CL\)](#) man page for more information.

3. **Update the DID driver for the node list.**

```
phys-schost# cldevice refresh -n node[,...]
```

4. Repeat [Step 2](#) through [Step 3](#) on all other nodes that are attached to the unverified device.

**Next Steps** Return to the remaining update tasks for your update method.

## ▼ How to Resolve Mistaken Storage Changes During an Update

If accidental changes are made to the storage cabling during the update, 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 Update”](#) on page 75.

---

**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, assume the root role.
2. Update the DID driver on each node of the cluster.

```
phys-schost# cldevice refresh -n node[,...]
```

See the [cldevice\(8CL\)](#) man page for more information.

3. If the `cldevice` 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 update tasks for your update method.

## Updating Software Packages

---

This chapter provides update procedures for scenarios that do not involve updating the cluster to a new release. This chapter contains the following information:

- “Task Map of Package Update Methods” on page 77
- “Updating Tips for SRUs” on page 78
- “Updating a Specific Package or SRU (pkg)” on page 78
- “Updating a Specific Package or SRU (scinstall)” on page 80
- “Updating a Quorum Server or AI Installation Server” on page 81

### Task Map of Package Update Methods

Consult the following table to determine which method to use to install an SRU or update individual packages in an Oracle Solaris Cluster configuration. Consider the extent of changes the update would make:

- Use the `scinstall` update method to apply an SRU with significant functionality changes. The `scinstall` method performs additional cluster checks, to ensure that the cluster meets certain support requirements of the new software version. The `scinstall` method always requires a cluster reboot.
- Use the `pkg` update method to update individual packages and to apply an SRU with minor functional changes. A cluster reboot or node reboot is necessary only if a particular package requires it.

**TABLE 4** Task Map of Updating Oracle Solaris Cluster Software Packages

| Task                                | Instructions                                                                                                         |
|-------------------------------------|----------------------------------------------------------------------------------------------------------------------|
| Review tips for successful updates. | “Updating Tips for SRUs” on page 78                                                                                  |
| Update a specific package or SRU.   | “Updating a Specific Package or SRU (pkg)” on page 78<br>“Updating a Specific Package or SRU (scinstall)” on page 80 |

| Task                                              | Instructions                                                                    |
|---------------------------------------------------|---------------------------------------------------------------------------------|
| Update a quorum server or AI installation server. | <a href="#">“Updating a Quorum Server or AI Installation Server” on page 81</a> |

## Updating Tips for SRUs

Use the following tips to administer Oracle Solaris Cluster SRU updates more efficiently:

---

**Note** - Avoid using the `pkg` command to apply an Oracle Solaris Cluster SRU that provides significant functionality changes. Instead, use the `scinstall -u update` command or utility, which performs additional cluster checks, to ensure that the cluster meets certain support requirements of the new software version.

---

- Read the SRU's README file before performing the update.
- Check the update requirements of your storage devices.
- Check the hardware firmware levels and install any required firmware updates that might be needed. Consult your hardware documentation for information on firmware updates.
- When updating a node, you might occasionally need to temporarily remove a node from cluster membership, or to stop the entire cluster before performing the update.
- Apply all updates before running the cluster in a production environment.
- All nodes acting as cluster members must have the same updates.
- Run the `scversions` command on all nodes. This enables the cluster to utilize all features in the newer software. See the [scversions\(8\)](#) man page for more information.
- Keep cluster subsystem updates up to date. These updates include, for example, volume management, storage device firmware, and cluster transport.
- Test failover after major updates. Be prepared to back out the update if cluster operation is degraded or impaired.

## Updating a Specific Package or SRU (pkg)

Each IPS package is described by a Fault Managed Resource Indicator (FMRI), and you use the `pkg` command to perform the SRU update. You can also update a specific package, such as to update a Oracle Solaris Cluster data service agent.

Alternatively, you can also use the `scinstall -u update` command to perform an SRU or package update. See [“Updating a Specific Package or SRU \(scinstall\)” on page 80](#).

## ▼ How to Update a Specific Package or SRU (pkg)

Perform this procedure on each global cluster node you want to update. Any zone cluster on the cluster node will automatically also receive this update.

Note the following results of package updates:

- If a newer version of an installed package is available and is compatible with the rest of the image, the package is updated to that version.
- If the package contains binaries that have the `reboot-needed` flag set to true, then running the `pkg update pkg-fmri` command automatically creates a new boot environment. After the update, you must boot into the new boot environment.
- If the package you are updating does not contain any binaries that force a reboot, then the `pkg update` command updates the live image and a reboot is not necessary.

1. **Assume the root role or a role that provides `solaris.cluster.admin` authorization.**
2. **Update the package.**

For more information about `pkg update` options, see the [pkg\(1\)](#) man page.

- **To update all installed packages that have updates available, use the `pkg update` command with no operand.**

```
# pkg update
```

- **To update a package from a specific publisher, specify the publisher name in the `pkg-fmri`.**

```
# pkg update pkg-fmri
```

- **To update a data service agent (`ha-cluster/data-service/*` or the generic data service agent of `ha-cluster/ha-service/gds`), run the following commands.**

```
# pkg change-facet facet.version-lock.pkg-name=false
# pkg update pkg-name
```

For example:

```
# pkg change-facet facet.version-lock.ha-cluster/data-service/weblogic=false
# pkg update ha-cluster/data-service/weblogic
```

---

**Note** - If you want to freeze an agent to prevent it from being updated, run the following commands.

```
# pkg change-facet facet.version-lock.pkg-name=false
# pkg freeze pkg-name
```

For more information about freezing a specific agent, see [“Controlling Installation of Optional Components” in \*Updating Systems and Adding Software in Oracle Solaris 11.4\*](#).

---

**3. Verify that the package was updated.**

```
# pkg verify -v pkg-fmri
```

## Updating a Specific Package or SRU (scinstall)

You can install an SRU on a solaris branded zone cluster by using the `scinstall-u update` command in the underlying global cluster.

### ▼ How to Update a Specific Package or SRU (scinstall)

Perform this procedure to update a global cluster branded zone cluster by using the `scinstall-u update` command to install an SRU or update specific packages. Any zone cluster on the cluster node will automatically also receive this update.

---

**Note** - To update a solaris branded failover zone by using the `scinstall` command, follow procedures in [Chapter 3, “Updating Zones Managed by Oracle Solaris Cluster Software”](#).

---

- 1. On a node of the global cluster, assume the root role or a role that provides `solaris.cluster.admin` authorization.**
- 2. Update the global-cluster node.**

```
phys-schost# scinstall -u update [-b be-name]
ha-cluster-incorporation@<cluster-version>
ha-cluster-geo-incorporation@<cluster-version> entire@<solaris-version>
```



The command here is for illustration purposes. If the disaster recovery framework software is not installed do not include it in the command.

3. **Repeat the preceding steps for each global-cluster node.**
4. **From one global-cluster node, shutdown the global cluster. Then from each global cluster node, boot the nodes back up.**

```
phys-schost# cluster shutdown -g 0 -y  
<OK> boot
```

## Updating a Quorum Server or AI Installation Server

Use the procedure below to update the packages for your quorum server or Oracle Solaris 11.4 Automated Installer (AI) installation server. For more information about quorum servers, see [“How to Install and Configure Oracle Solaris Cluster Quorum Server Software”](#) in *Installing and Configuring an Oracle Solaris Cluster 4.4 Environment*. For more information about using the AI, see [“How to Install and Configure Oracle Solaris and Oracle Solaris Cluster Software \(IPS Repositories\)”](#) in *Installing and Configuring an Oracle Solaris Cluster 4.4 Environment*.

### ▼ How to Update a Quorum Server or AI Installation Server

Perform this task to update Oracle Solaris Cluster software on a quorum server or on an Automated Installer (AI) installation server.

1. **On the server to update, assume the root role or a role that provides `solaris.cluster.admin` authorization.**
2. **Update the Oracle Solaris Cluster packages.**

```
# pkg update ha-cluster/*
```

---

**Note** - Running the `pkg update` command updates all `ha-cluster` packages installed on the system.

---

If a newer version of the installed `ha-cluster` packages is available and is compatible with the rest of the image, the packages are updated to that version.



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