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An Oracle White Paper
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How to Install and Configure a Two-Node Cluster

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Introduction

This white paper is intended to help a new or experienced Oracle® Solaris user quickly and easily install and configure Oracle Solaris Cluster software for two nodes, including the configuration of a quorum device. Users are guided step-by-step through the process, with examples and screenshots to simplify the process. This document will not cover the configuration of highly available services; that topic is covered in a separate guide.

For more details about how to install and configure other Oracle Solaris Cluster software configurations, see the Oracle Solaris Cluster Software Installation Guide at docs.sun.com/app/docs/doc/820-7356.

Two-Node Cluster: Overview

This white paper uses the interactive scinstall utility. This utility enables you to configure all the nodes of your new cluster quickly and easily. The interactive scinstall utility is menu driven. These menus help reduce the chance of mistakes and promote best practices by using default values and prompting you for information specific to your cluster. The utility also helps prevent mistakes by identifying invalid entries. Finally, the scinstall utility eliminates the need to manually set up a quorum device by automating the configuration of a quorum device for your new cluster. This white paper refers to the Oracle Solaris Cluster 3.2 release. For more information about the latest Oracle Solaris Cluster release, visit: developers.sun.com/solaris/cluster.

Prerequisites, Assumptions, and Defaults

This section discusses several prerequisites, assumptions, and defaults for two-node clusters.

Configuration Assumptions

This white paper assumes the following configurations:

- You are installing on Oracle Solaris 9 9/05 , Solaris 10 5/09 or later and you have basic administration skills.
- You are installing Oracle Solaris Cluster 3.2 11/09 software.
- You already have the Oracle Solaris Cluster 3.2 11/09 software. If not, you can download it from developers.sun.com/solaris/cluster.
- The cluster hardware is a supported configuration for Oracle Solaris Cluster 3.2 11/09 software. If you are not sure about your configuration, visit: developers.sun.com/solaris/cluster/sysreq_cluster_0410.pdf.
- This is a two-node cluster, and you have a third system that will be your administrative console.
- Each node has two spare network interfaces to be used as private interconnects.
- SCSI shared storage is connected to the two nodes.
- All of the SCSI devices are supported by Oracle Solaris Cluster software as potential quorum devices. For more information about SCSI devices that are supported for use as quorum device, see your Oracle Solaris Cluster customer service representative or visit the online documentation at docs.sun.com/app/docs/coll/1124.8
- Your setup looks like the drawing below. You might have fewer or more devices, depending on your system or network configuration.

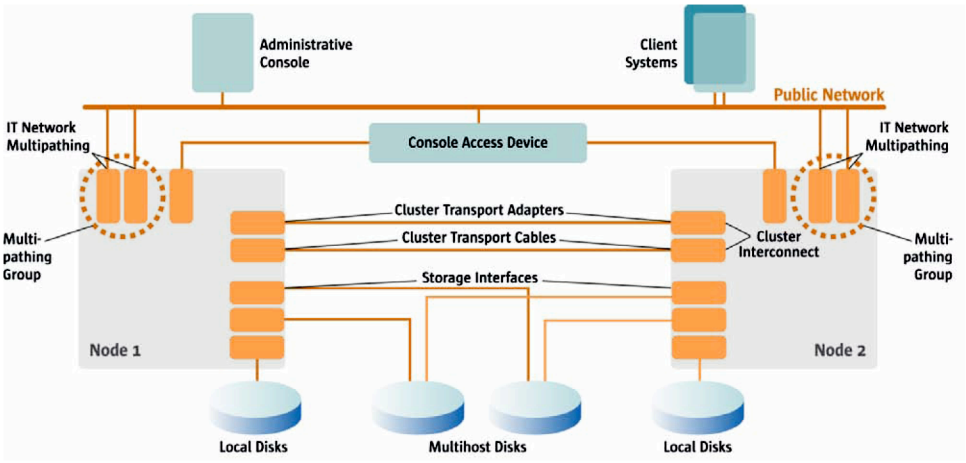


Figure 1. Oracle Solaris Cluster hardware configuration

Prerequisites for Each System

This white paper assumes that the following prerequisites have been met on both systems.

- Oracle Solaris 9 9/05, Solaris 10 5/09 or later is installed.
- The Oracle Solaris software group is at least End User.
- (Optional) A 20-Mbyte partition is created on slice 7 for volume manager use.
- The latest patches have been installed on your systems using Sun Update Connection. For more information, visit sunsolve.sun.com or My Oracle Support.

If Oracle Solaris software is preinstalled on the servers that you will configure as cluster nodes, ensure that the Oracle Solaris operating system meets the above criteria. If the Oracle Solaris does not meet these requirements, modify the configuration or reinstall the Oracle Solaris software on each server.

Initial Preparation of Public IP Addresses and Logical Hostnames

You have to add the logical names (hostnames) and IP addresses of the nodes to be configured as a cluster. Add those entries on each other's /etc/inet/hosts file or /etc/inet/ipnodes file or both, as appropriate, and to a naming service if used (like DNS or NIS+ maps).

Table 1 lists the configuration used in this example.

TABLE 1. CONFIGURATION

COMPONENT	NAME	INTERFACE	IP ADDRESS
Administrative Console	myconsole	ce0	192.168.1.1
Cluster Name	mycluster	—	—
Node 1	mynode1	eri0	192.168.1.10
Node 2	mynode2	eri0	192.168.1.11

Defaults

The scinstall interactive utility in Typical mode installs the Oracle Solaris Cluster software with the following defaults.

- Private-network address 172.16.0.0
- Private-network netmask 255.255.248.0
- Cluster-transport switches switch1 and switch2
- Installation security (DES) level Limited

The example in this paper has no cluster-transport switches. Instead, the private-networking is resolved by using cross-over cables. More information can be found at: docs.sun.com (search for Oracle Solaris Cluster 3.2 architecture).

In this example, the interfaces of the private interconnects are eri1 and hme0 on both cluster nodes. To find more information about how to identify your hardware, visit the Oracle Solaris 10 hardware platform guide: docs.sun.com/source/817-6337/chapterHPG.html

Installing the Oracle Solaris Cluster Software Packages

1. To use the GUI form of the installer program, set the display environment on your administrative console. In this example, we are using csh.

```
myconsole# xhost +
```

   Continue using the administrative console for the next steps, and remember to perform them on both nodes, one at a time.

2. Temporarily enable ssh access for root on Cluster node.
3. Become superuser on the cluster node on which you are installing Oracle Solaris Cluster software. Use the telnet command to mynode1, then log in with the root login and password.

```
myconsole# ssh –X root@mynode1
password: ********
```

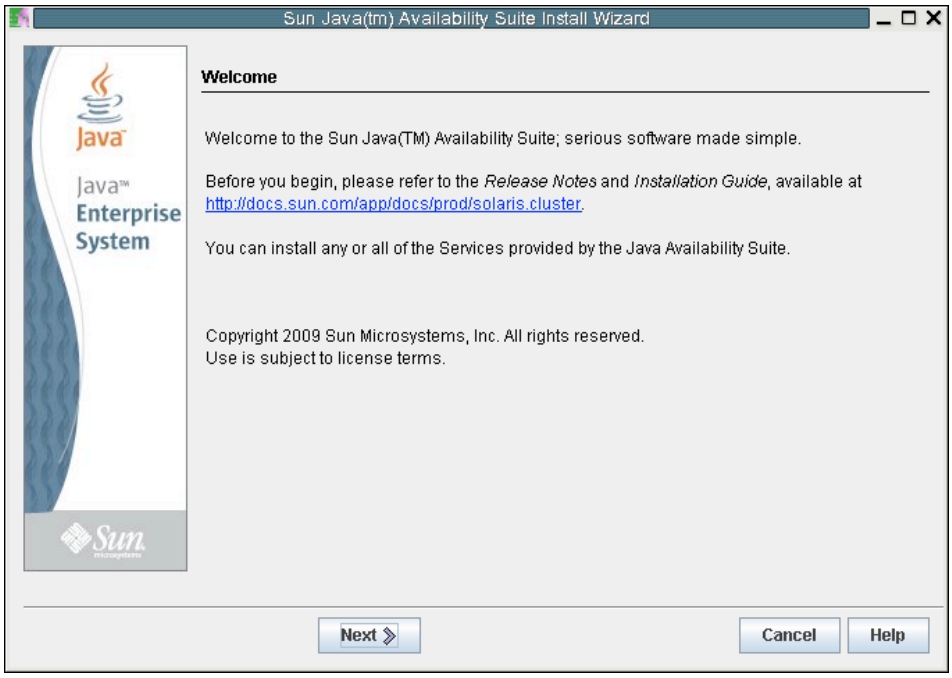
4. Insert the Oracle Solaris Cluster installation media into the appropriate media drive of the cluster node. If you are installing from a network, navigate to the appropriate media image.
5. Change to the directory that contains the installer program (in this case the local DVD reader) and use the appropriate directory, depending on the architecture of your nodes. In the following example, use the first command for an UltraSPARC® platform and the second command for all x86 systems.

```
mynode1# cd /cdrom/cdrom0/solaris_sparc
[Or]
mynode1# cd /cdrom/cdrom0/solaris_x86
```

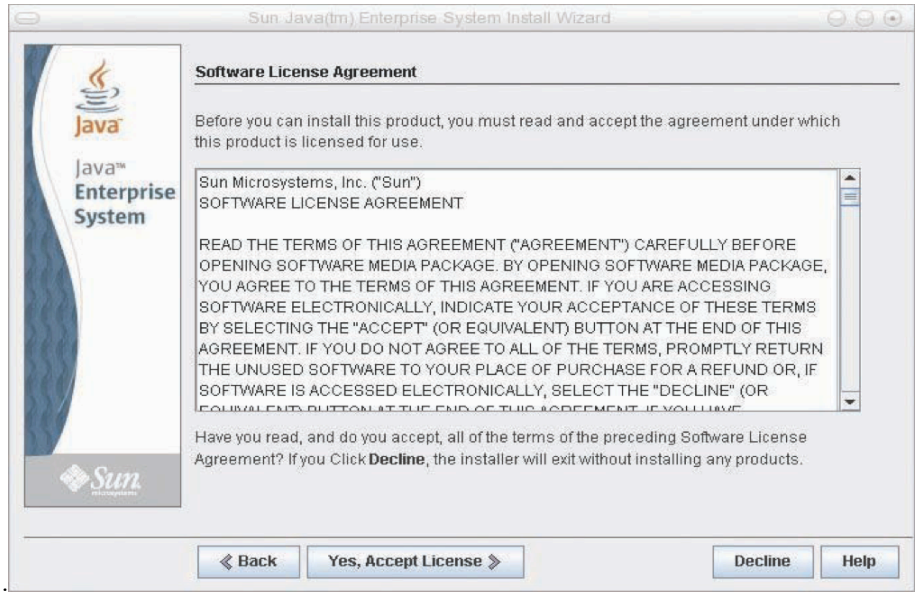
6. Start the installer program.

```
mynode1# ./installer
```

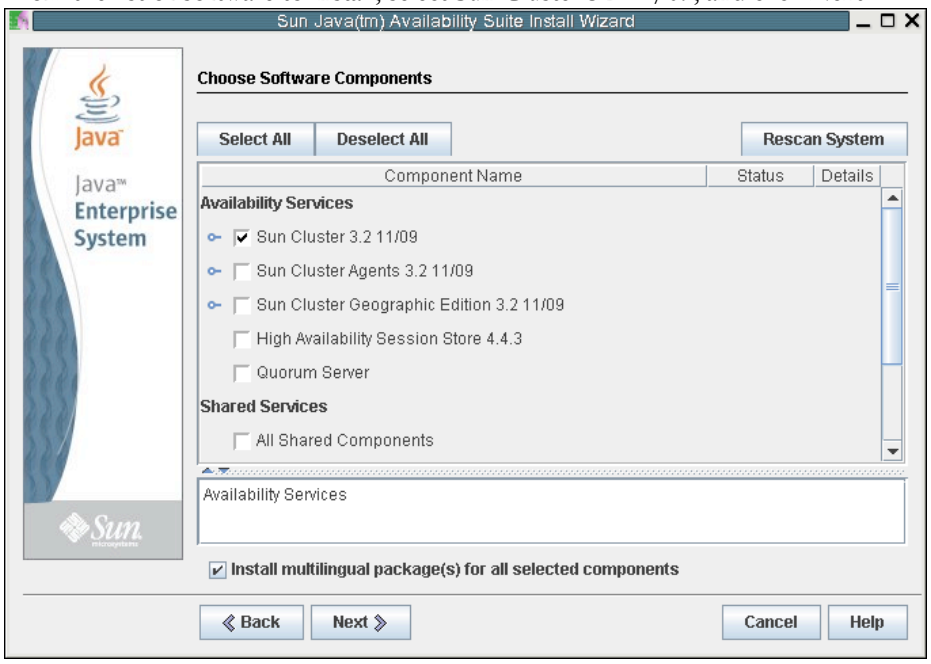
7. Follow the instructions on the screen to install the Oracle Solaris Cluster software. On the welcome opening screen, click Next.



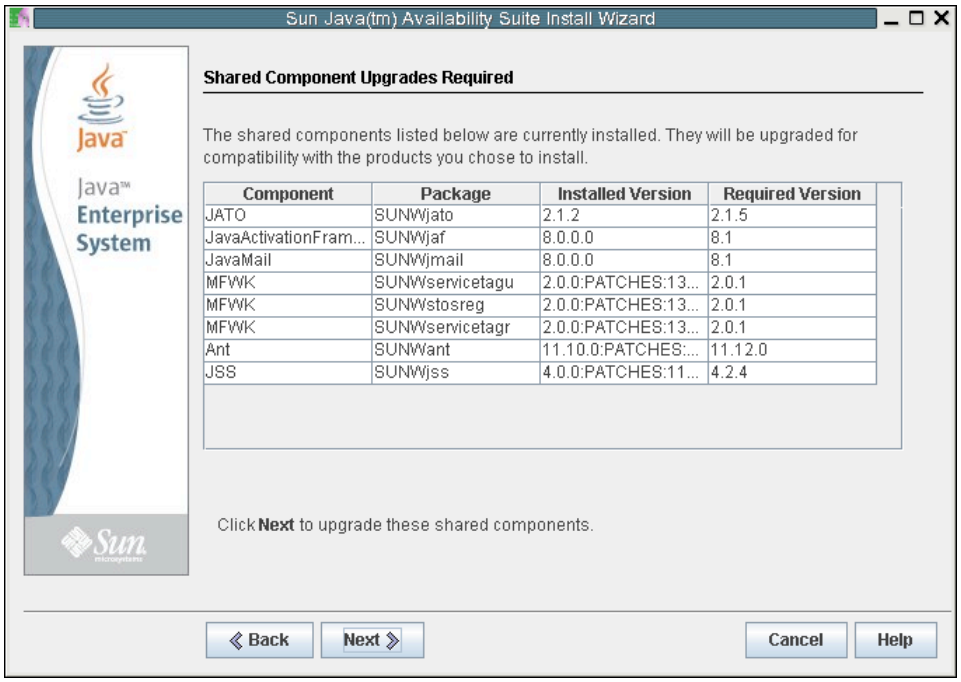
Click Yes, Accept License to accept the license agreement



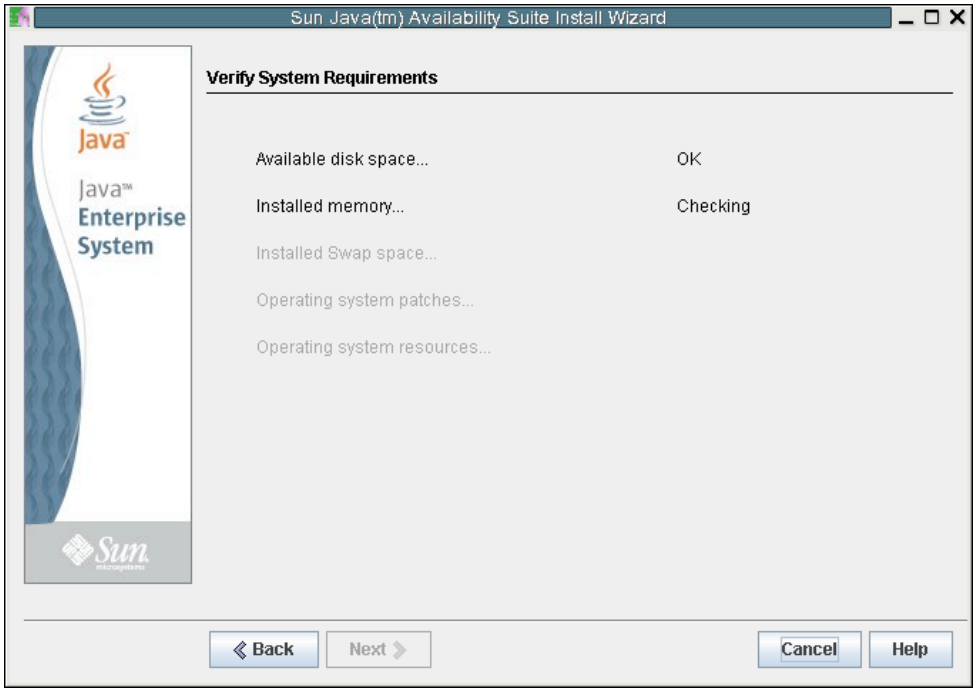
From the list of software to install, select Sun Cluster 3.2 11/09, and click Next.



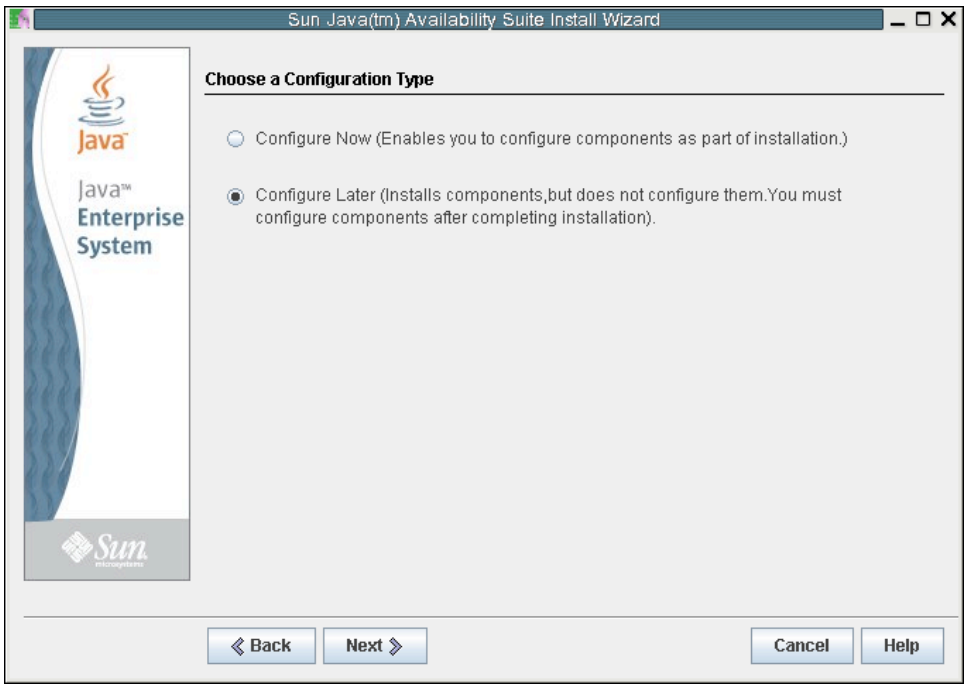
The shared components will be installed, click Next.



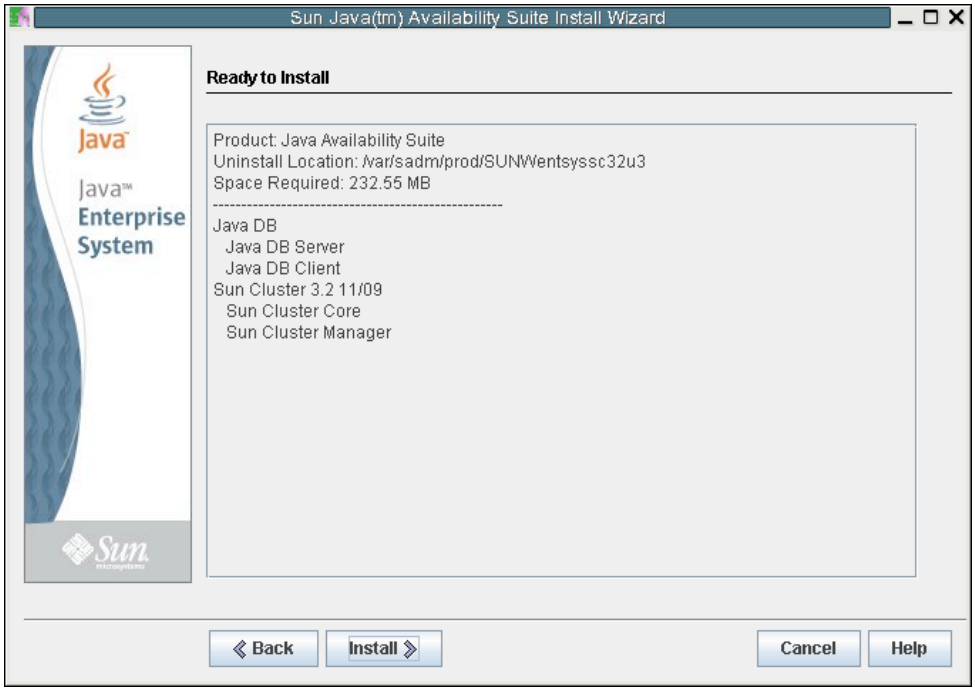
When you receive confirmation that the system is ready to install, click Next.



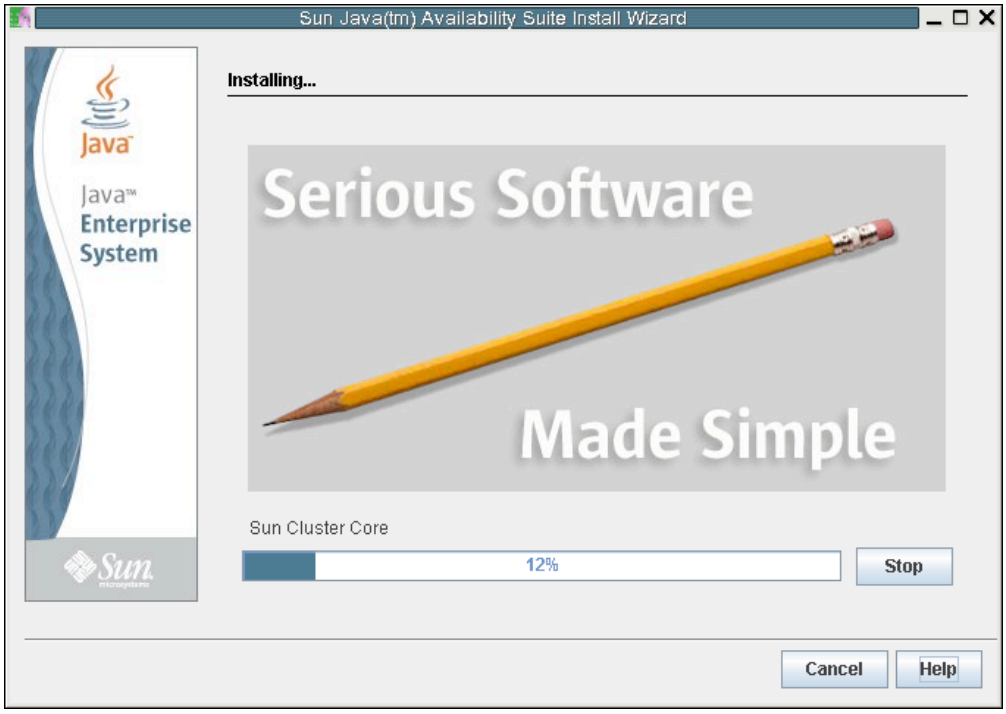
When prompted, choose Configure Later.



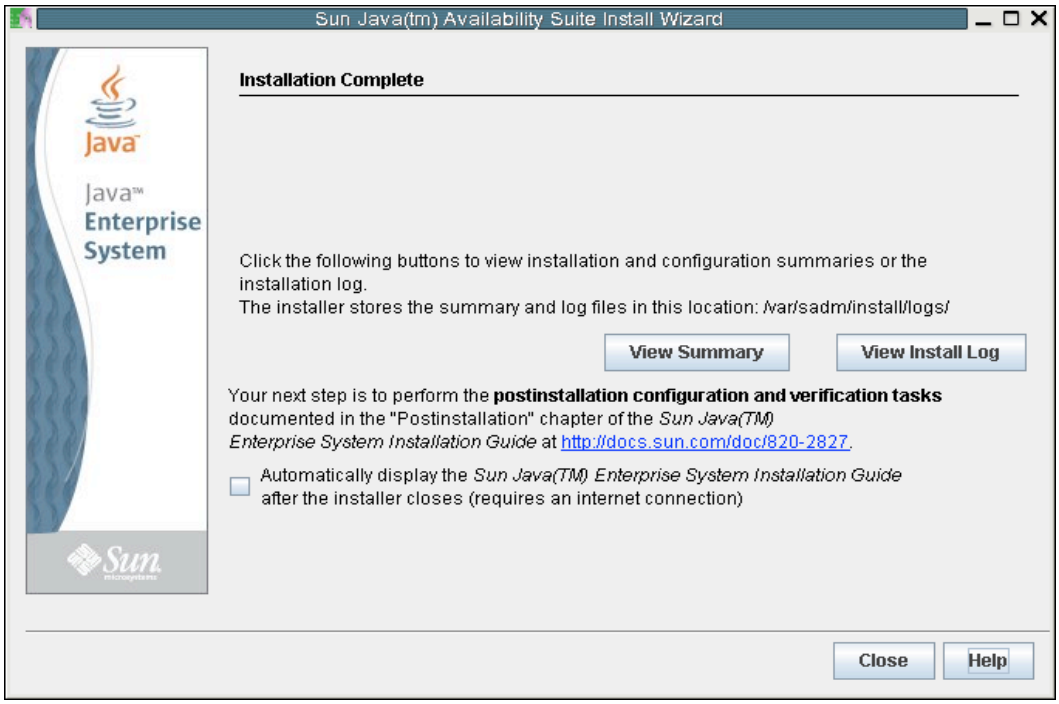
Click Install to confirm selections.

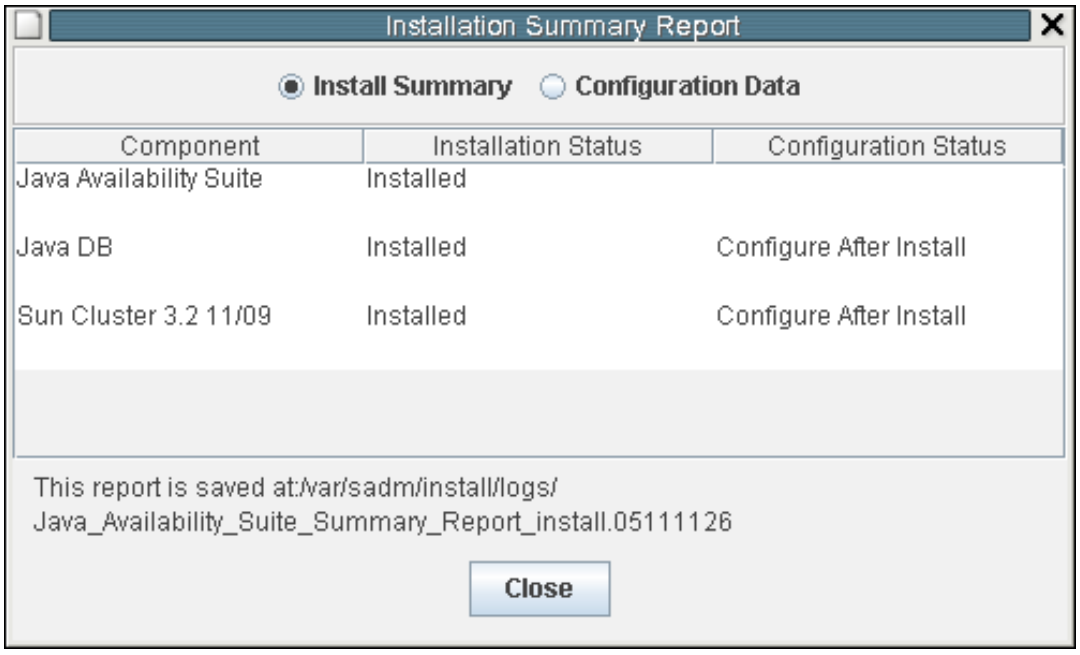


Different images will rotate while installing the software.
The installer program installs Oracle Solaris Cluster software packages plus additional software that is required to run certain Oracle Solaris Cluster functionality.



When finished, the installation program confirms the Installation is Complete.





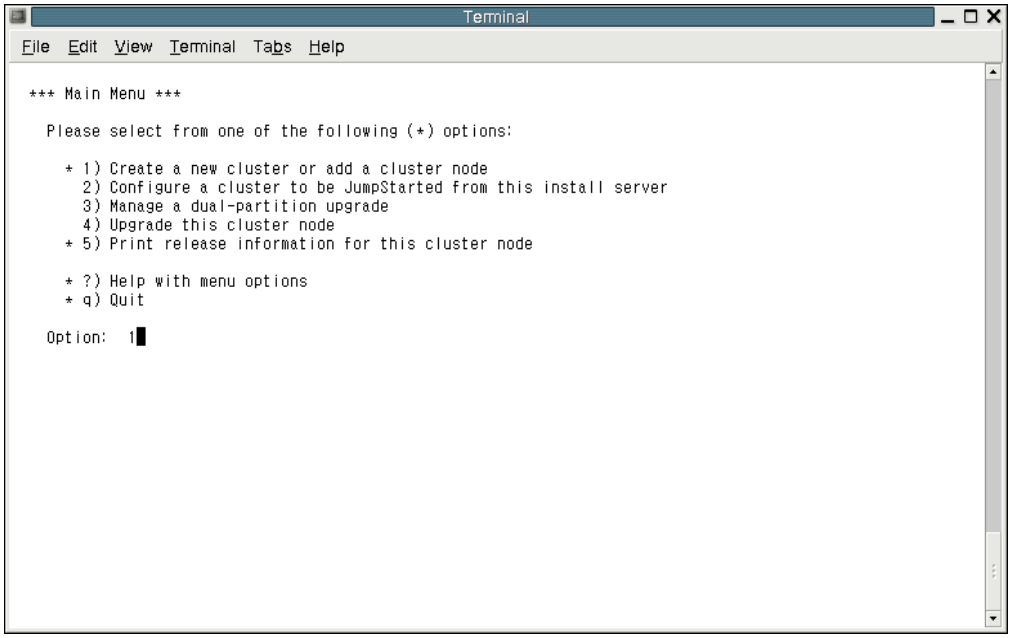
8. Now that you have finished the installation on Node1, go back to step 2 and start the installation process, this time for Node 2.
9. Install any necessary patches. Go to sunsolve.sun.com/ or My Oracle Support and download the recommended patches for Java ES Component Patch Solaris 10 SPARC or x86 accordingly and install on each node.

Configuring Oracle Solaris Cluster Software

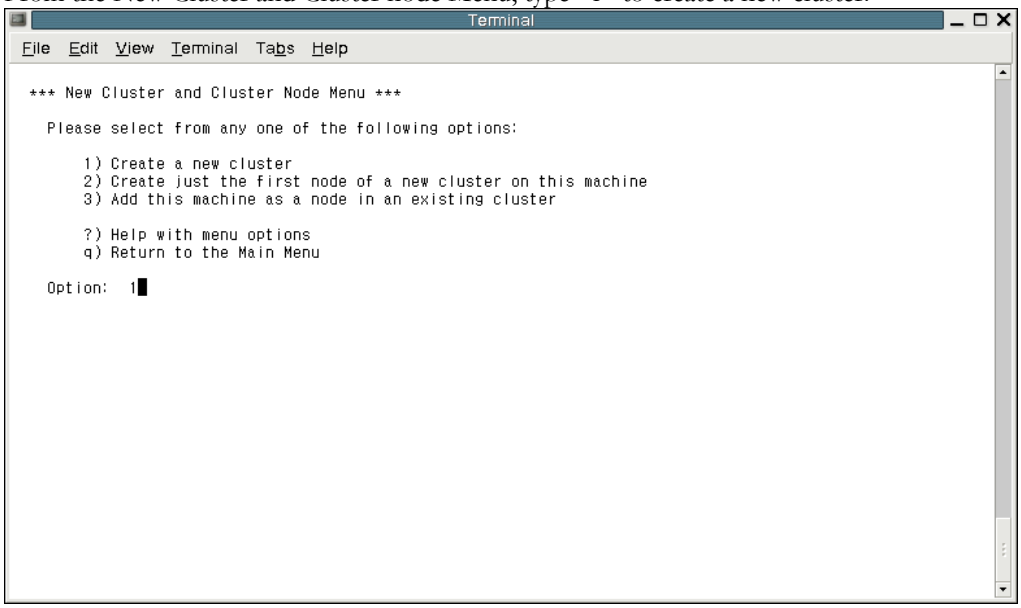
1. Log on to one of the two nodes. Start the scinstall utility in interactive mode as superuser. This procedure will configure the Oracle Cluster software on both nodes.

```
# /usr/cluster/bin/scinstall
```

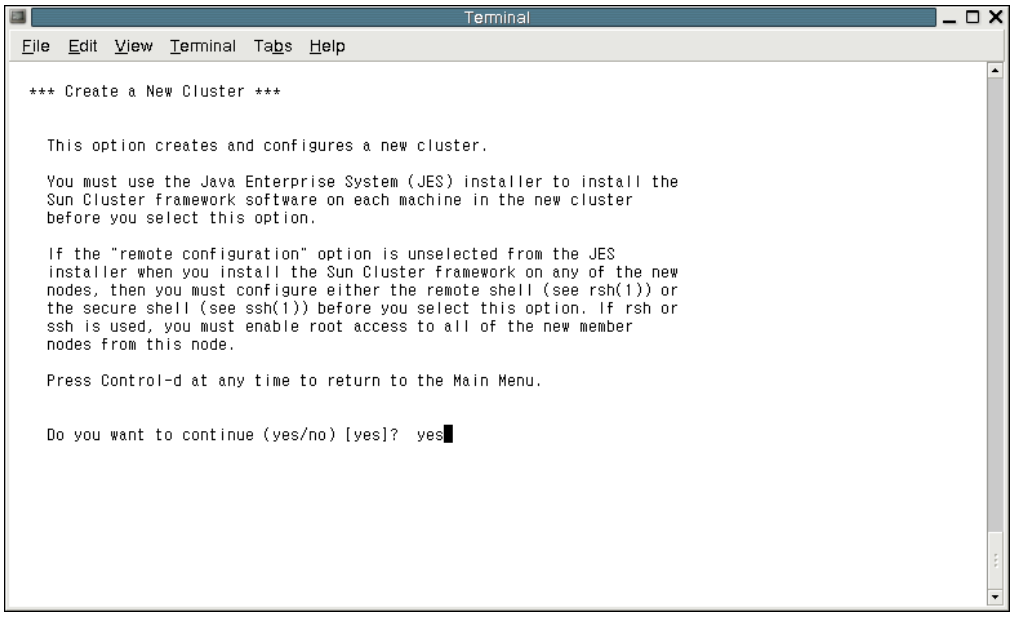
2. From the Main Menu, type "1" to choose the menu item, Create a new cluster or add a cluster node.



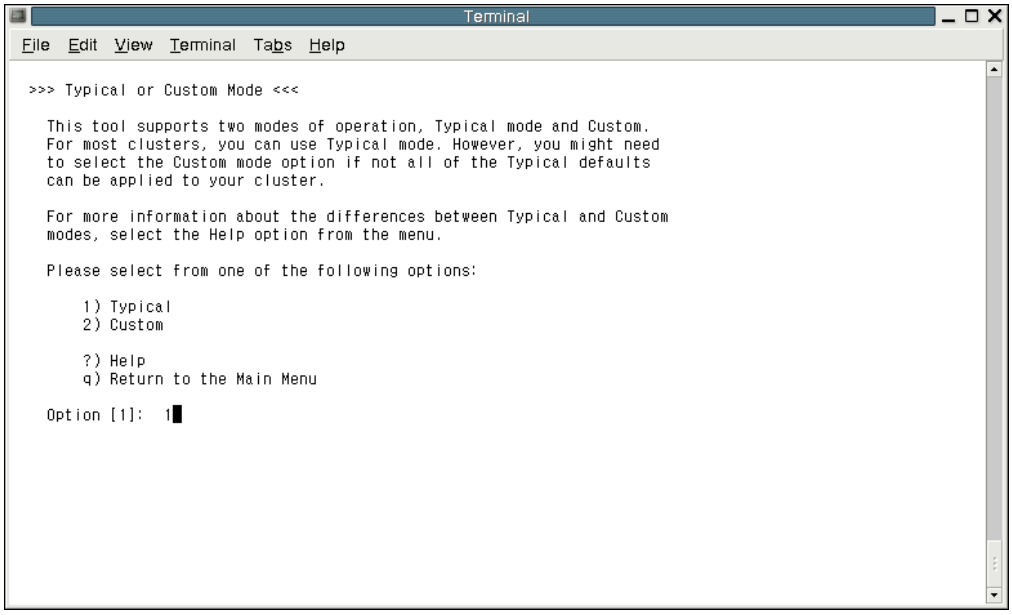
3. From the New Cluster and Cluster node Menu, type “1” to create a new cluster.



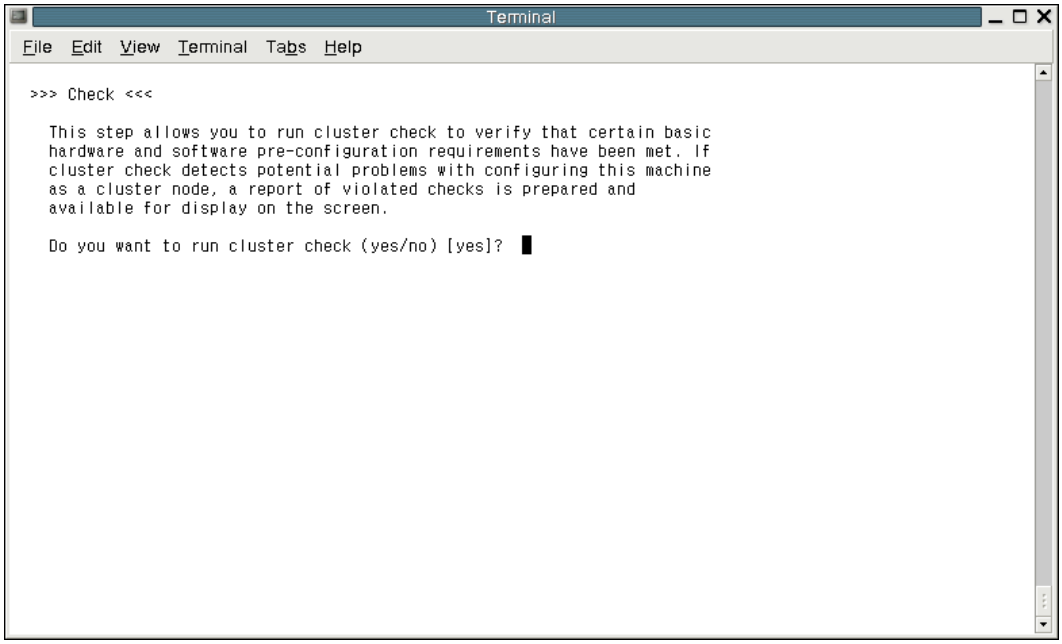
4. The Create a New Cluster Option will create and configure a new cluster, click “yes” to continue.



5. From the Typical or Custom Mode Menu, type “1” to choose Typical.

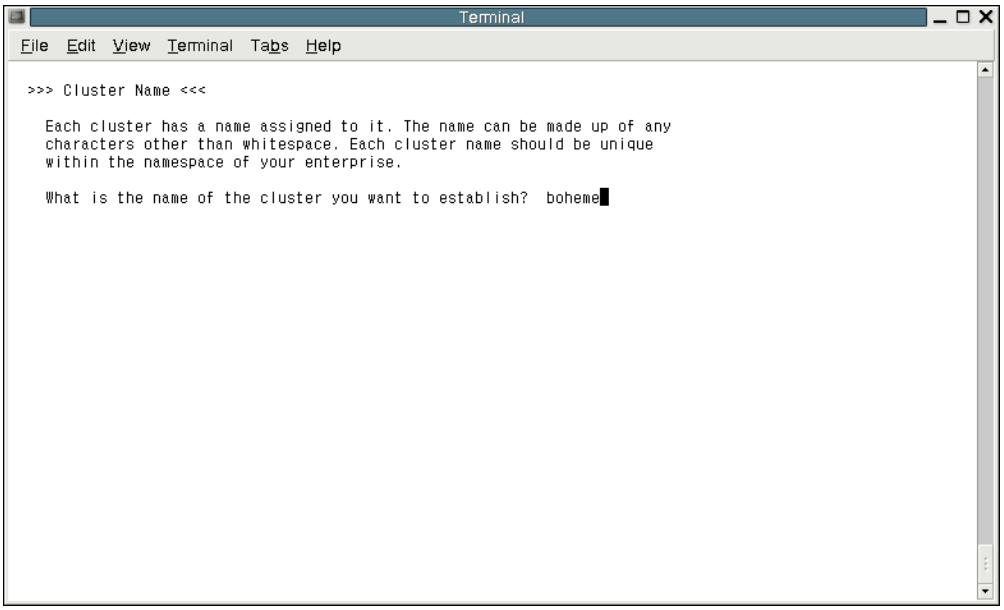


6. From the Check Menu, type “yes”.

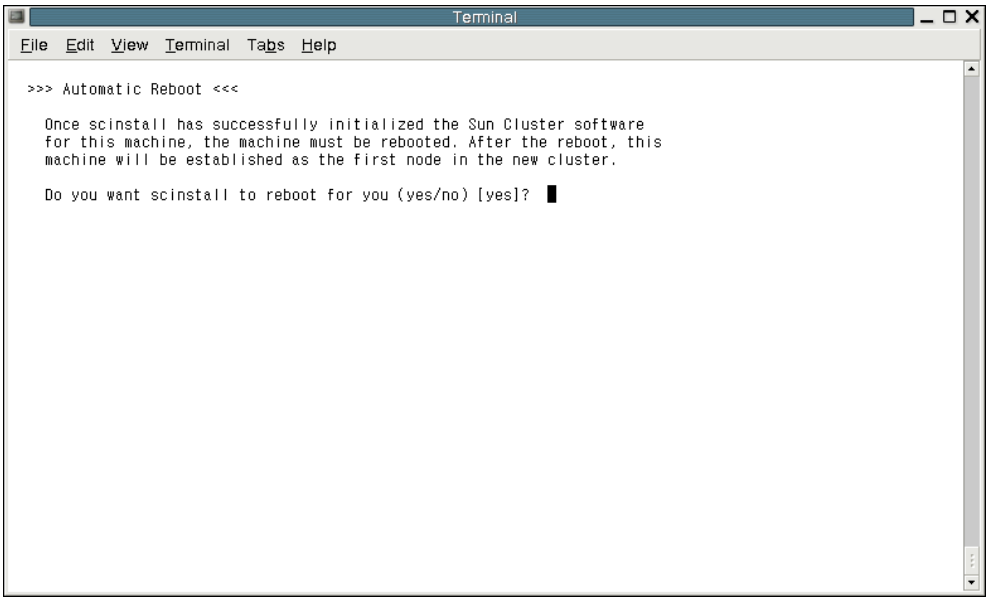


7. When prompted, supply the following information.

   - Name to give the cluster: mycluster



   - Name of the other node (if started from mynode1): mynode2
   - Type “yes” if correct and press Return to continue
   - The first cluster transport adapter name (interface name): eri1
   - The second cluster transport adapter name (interface name): hme0
   - Type “no” to disabling automatic quorum device selection
   - Type “yes” to create the new cluster and press Return to continue
   - Type “no” to not interrupt cluster creation for cluster check errors
   - Type “yes” to use lofi device
   - Type “yes” to reboot after Installation



At this point, the scinstall utility configures all cluster nodes and reboots the cluster. This might take several minutes. The cluster is established when all nodes have successfully booted into the cluster. Installation output is logged in a /var/cluster/logs/install/scinstall.log.N file.

8. Verify on each node that multi-user services for the Oracle Solaris Service Management Facility (SMF) are online. If services are not yet online for a node, wait until the state becomes online before you proceed to the next step.

```
# svcs multi-user-server
STATE STIME FMRI
online 17:52:55 svc:/milestone/multi-user-server:default
```

9. From one of the nodes, verify that both nodes have joined the cluster.

```
my-system# cluster status
```

Output resembles the following.

```
--- Node Status ---

Node Name                                       Status
---------                                       ------
pboheme2                                        Online
pboheme1                                        Online
```

At this point, the scinstall utility runs the following tasks:

- Configures the cluster nodes
- Chooses a SCSI device and configures it as a quorum device
- Removes the cluster from installation mode

When the scinstall utility finishes, this completes the installation and configuration of the basic Oracle Solaris Cluster software. The cluster is now ready to configure the components you will use to support highly available applications. These cluster components can include device groups, cluster file systems, highly available local file systems, and individual data services. To configure these components, consult the installation documentation detailed below.

For More Information

For more information on configuring Oracle Solaris Cluster components, see the following manuals.

TABLE 2. MANUALS

Oracle Solaris Cluster 3.2 Software Collection	docs.sun.com/app/docs/coll/1124.8
Oracle Solaris Cluster Software Installation Guide	docs.sun.com/app/docs/doc/820-7356
Data Services Planning and Administration Guide	docs.sun.com/app/docs/doc/819-0703
Individual Data Service Manuals	docs.sun.com/app/docs/coll/1124.4
Oracle Solaris Cluster Administration Training (ES-345)	education.oracle.com/pls/web_prod-plq-dad/db_pages.getlppage?page_id=212&path=SCLS
Oracle Solaris Cluster Advanced Administration Training (ES-445)	education.oracle.com/pls/web_prod-plq-dad/db_pages.getlppage?page_id=212&path=SCLS
Oracle Solaris Cluster Certification	http://education.oracle.com/pls/web_prod-plq-dad/db_pages.getpage?page_id=368&p_org_id=1001&lang=US http://education.oracle.com/pls/web_prod-plq-dad/db_pages.getpage?page_id=338&p_org_id=1001&lang=US
For more information on the latest Oracle Solaris Cluster release, visit:	developers.sun.com/solaris/cluster

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