Install Oracle10g Real Application Clusters Release 1 (10.1.0.4) on SuSE Linux Enterprise Server 9 and Matrix Server

This Installation Guide is intended to augment the Oracle and Novell documentation for installing Oracle10g Real Application Clusters. The scope of this document is to point out best practices particular to Matrix Server. Following the steps in this document will result in a single, shared Oracle Home for all Oracle10g nodes in the cluster. Screen shots and examples in this guide are taken from a 10-node Matrix Server running SLES9.

SLES9 System-Level Configuration

Critical Supplemental Documentation

In addition to this Installation Guide, the following Oracle and Novell documents are required for a successful installation. The Oracle documents describe generic configuration and setup procedures for Real Application Clusters. The Novell document provides generic SLES9-specific installation documentation. Having PolyServe Matrix Server in the stack does not change the generic requirements at all.

- Oracle® Real Application Clusters Installation and Configuration Guide 10g Release 1 (10.1) for AIX-Based Systems, HP-UX PA-RISC (64-bit), Tru64 UNIX, Linux, Solaris Operating System (SPARC 64-bit), Part No. B10766-01

  This is a very large document. Chapter 5, which is Linux-specific, is of primary interest during systems preparation.

- Oracle® Database Patch Set Notes 10g Release 1 (10.1.0.4) Patch Set 2 for Linux x86, Metalink Node 304930

- *ORA-27125* while creating the DB instance on Kernel 2.6 above, Metalink Note 293988.1

- Oracle 10g R1 (10.1.0.3) on SUSE LINUX Enterprise Server 9, available at: ftp://ftp.novell.com/partners/oracle/docs/10gR1_sles9_install.pdf

  Although this Novell document does not cover an installation of Real Application Clusters, it does offer system-level configuration information pertinent to Oracle10g, and therefore Oracle10g RAC.

Overview of System Configuration Requirements

Installing Oracle10g RAC on Linux requires specific node-level configuration. PolyServe Matrix Server does not change those requirements in any way. It is not possible to install Oracle10g RAC on a Linux cluster that does not comply with the following:

- **Kernel Parameters.** Metalink Note 263715.1 contains a lengthy list of kernel parameters and recommended values. Generally speaking, the only parameter that affects an install of Oracle10g is SHMMAX. The recommendations for the remaining parameters are optimized settings.
- **SSH.** Oracle10g introduces the use of **ssh** by Oracle Universal Installer. **ssh** must be configured in accordance *with Oracle® Real Application Clusters Installation and Configuration Guide 10g Release 1* (Part Number B10766-01), page 5-14.

Install Oracle10g Real Application Clusters on SLES9 and Matrix Server 3.0

To aid in the generic installation complexity of Oracle10g RAC, Oracle Support Services has prepared a Pre-Install script that validates the OS-level requirements on Linux. PolyServe recommends that you obtain this script, which is mentioned in the following MetaLink Note: *Pre-Install Checks for 10g RDBMS on Linux, Note:283748.1*

However, PolyServe recommends that Novell documents override this installation checker. If a failure is detected that conflicts with the Novell document, PolyServe advises you to keep the Novell setting.

Matrix Server Filesystem Requirements for Oracle10g RAC

After the cluster nodes are configured in accordance with the above requirements, installing Oracle10g RAC on PolyServe Matrix Server is quite simple. There are three requirements:

- **Regular PolyServe Filesystem Mount Option**. At least one PolyServe filesystem must be mounted with the non-DB Optimized mount option in which to locate ORACLE_BASE. For example, */u01* with ORACLE_BASE being */u01/app/oracle*.
- **DB Optimized Mount Option**. At least one PolyServe cluster filesystem must be mounted with the DB Optimized mount option before Oracle10g is installed.
- **Preallocated Oracle Clusterware Files**. New with Oracle10g is the Cluster Ready Services (CRS) clusterware. As was the case with the OCMS clusterware of Oracle9iRAC, this clusterware will execute alongside the Matrix Server clusterware.

The Oracle Cluster Repository file must be presized to the recommended size of least 100 MB and must be located within a filesystem mounted with the DB Optimized option. Provided that */u02* is mounted with the DB Optimized option, this file can be created using the following **dd**(1) command syntax:

```
$ dd if=/dev/zero of=/u02/ocr.dbf bs=1024k count=100
```

The CSS voting disk must be presized to the recommended size of 25 MB and must reside in a filesystem mounted with the DB Optimized option. Provided that */u02* is mounted with the DB Optimized option, this file can be created using the following sample **dd**(1) command syntax:

```
$ dd if=/dev/zero of=/u02/voting.dbf bs=1024k count=25
```

PolyServe Oracle Disk Manager Library (MxODM)

As stated in the MxODM documentation, it is advisable to postpone the installation of MxODM until the entire Oracle10g installation is complete, including DBCA. While there is no functional reason to do so, it does help ensure that hitting any Oracle10g installation problems does not invoke suspicion about Oracle Disk Manager. Once you are satisfied with your Oracle10g RAC installation, simply shut down all instances and install MxODM in accordance with the product release notes.

Failed Oracle10g Installation Attempts

If any of the aforementioned requirements are not implemented, the installation of Cluster Ready Services (CRS) will fail. Oracle Corporation has associated the startup of the CRS processes with system runtime control (see **init**(8)). If CRS does not install cleanly, looping system reboots may result. It is imperative to quickly uninstall any residual CRS files should the installation not succeed.

The procedure for cleaning up after a failed CRS installation attempt is documented in Metalink note 239998.1, "10g RAC: How to Clean Up After a Failed CRS." In brief, the most critical step to take immediately after a failed CRS install attempt is to restore, on each node, the */etc/inittab* file preserved by Oracle Universal Installer. Use the following command:

```
# cp /etc/inittab.orig /etc/inittab
```

Dual Version Oracle9i/Oracle10g Clusters

Both Oracle9i RAC and Oracle10g RAC can be installed in the same cluster. This configuration is supported as per Metalink note 220970.1; however, you will encounter significant difficulty if Oracle10g is installed after Oracle9i. Oracle Corporation states support for the combination but does not document how to implement it.

If you want to configure a dual Oracle9i/Oracle10g system and neither is installed yet, simply install Oracle10g RAC first and then install Oracle9i RAC. The 9i RAC install has no knowledge of 10g, and Oracle Universal Installer will not take a different course based on detecting Oracle10g. The converse is not true.

If an Oracle9i RAC installation exists when Oracle10g is being installed, the Oracle Universal Installer will detect that fact and force the direction of the installation procedure through an upgrade path full of steps to convert the Oracle9i Server Config file over to Cluster Ready Services format along with many other undesired side effects.

To successfully install Oracle10g to co-exist with Oracle9i RAC in the same cluster, PolyServe recommends the following tested method:

Task 1. Shut down all Oracle9i RAC processes, including:

- All Oracle Database instances
- All SQL*Net Listeners
- All Global Services Daemon processes
- All Oracle Cluster Management Services processes

Task 2. Obscure the Oracle9i RAC Installation by renaming the Server Configuration pointer file as in the following example:

```
mv /var/opt/oracle/srvConfig.loc /var/opt/oracle/srvConfig.loc.save
```

Task 3. In the environment of the processes invoking the Oracle10g OUI, unset any environment variables such as the following that point to the Oracle9i installation:

- SRVM_SHARED_CONFIG
- TNS_ADMIN

Task 4. Choose a location for the Oracle10g ORACLE_BASE. For example, if the Oracle9i ORACLE_BASE *is /u01/app/oracle*, create and use another directory such as */u01/app/oracle10*.

After Oracle10g is installed, reverse the action in Task 2 and then reverse the actions in Task 1. You will then have a dual purpose Oracle9i/Oracle10g RAC Matrix Server setup.

Cryptic And Erroneous Error Messages From Oracle Universal Installer

There are conditions under which the Oracle Universal Installer raises an exception with completely incorrect diagnostics during the installation of Cluster Ready Services. These dialog boxes are generically titled "Error" and no error numbers are provided. As a courtesy, two of these conditions are described below.

Condition 1

During the Cluster Ready Services installation, the exception shown in Figure 1.1 may be raised:

Figure 1.1

If the paths you have specified for the Oracle Cluster Registry (also known as Repository) and Cluster Synchronization Services disks are located in a PolyServe DB Optimized location and presized in accordance with the information above, this is simply an erroneous exception. That is not to say, however, that there is not a problem. This exception is raised under any of the following misconfiguration scenarios:

- SSH is not configured for unchallenged remote command execution among all nodes.
- The filesystems containing the preallocated OCR and/or CSS disks are not mounted on all nodes of the cluster.
- The permissions for the CRS_HOME are incorrect on one or more nodes.

- The permissions for the mount point of the OCR and/or CSS disk are incorrect on one or more nodes.

Condition 2

The exception shown in Figure 1.2 suggests that **ssh/scp** or **rsh/rcp** are not configured. However, this exception can also be raised in circumstances where the true problem is actually related to permissions. If this exception is raised, ensure that the */etc/hosts* file is the same on all nodes.

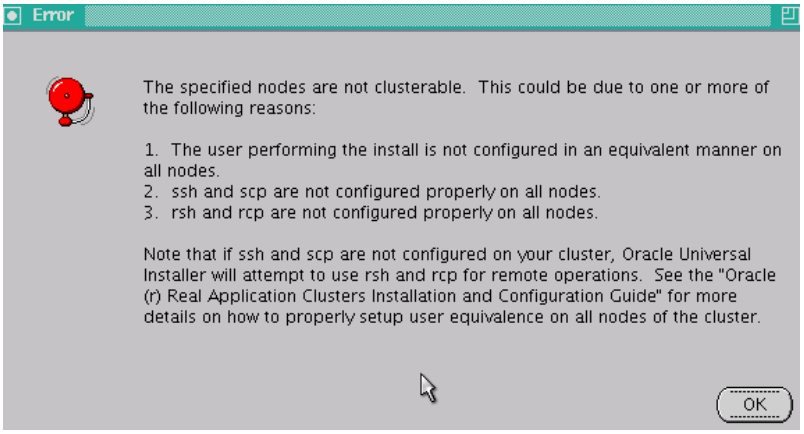

Figure 1.2

Oracle Managed Files

When you execute the Database Configuration Assistant, you will be given the option to choose Oracle Managed Files. (See Figure 6.10.) Using Oracle Managed Files (OMF) is optional, but recommended. With the Matrix Server cluster filesystem and OMF, such things as file sizes, names, and segment management are taken care of automatically for the core database files such as the SYSTEM and SYSAUX tablespaces. The database created with this option is easy to add to later on with customized, site-specific tablespace create scripts.

ORACLE_BASE, ORACLE_HOME and CRS_HOME

Before invoking OUI, it is important to review section 2, pages 17 and 18 of the *Oracle® Real Application Clusters Installation and Configuration Guide* (part number B10766-01). The installer asks for the name and location for the CRS home and by default tries to place it into Oracle Home. (See Figure 2.7.) It is imperative that the default path be changed.

It is recommended that you accept the default name of the CRS home (e.g., OraCr10g_home1), but change the CRS path to be a subdirectory adjacent to Oracle Home and mandatorily placed under Oracle Base. Assign Oracle Base to a directory in a Matrix Server cluster filesystem that is **not mounted** with the DB Optimized mount option. For example:

```
ORACLE_BASE=/u01/app/oracle
ORACLE_HOME=/u01/app/oracle/product/10.1.0/db_1
```

Given the above example, the value provided for CRS home should be *${ORACLE_BASE}/product/10.1.0/crs_1*.

Install Oracle10g Real Application Clusters on SLES9 and Matrix Server

Installation Methodology Overview

Oracle Universal Installer (OUI) is a feature-rich installation tool. It provides functionality to call other Oracle configuration tools during the installation based upon decisions by the Database Administrator. For example, the Database Administrator can direct OUI to invoke DBCA to create a starter database. In the end, there are many paths that can be taken to get the same result.

This document contains a series of informational text and screen shots detailing an Oracle10g RAC install on a 10-node Matrix Server. The sample procedure details a "best-practices" approach consisting of the following steps:

1. Extract the distribution medium.
2. Install Cluster Ready Services version 10.1.0.3.
3. Upgrade CRS to version 10.1.0.4.
4. Install Oracle10g Enterprise Edition **without a starter database**.
5. Upgrade Oracle10g Enterprise Edition to 10.1.0.4.
6. Execute the Database Configuration Assistant (a 14-step process). The key points are:
   - Select Cluster Filesystem (the default in step 7 of 14. See Figure 6.9).
   - Select OMF (step 8 of 14, Figure 6.10).
7. Execute the Enterprise Manager Configuration Assistant.

Step 1: Extract the Distribution Medium

Before starting the installation, ensure that all of the system configuration steps described earlier have been performed. Next, extract the distribution medium into a working directory in accordance with the Oracle documentation.

Step 2: Install Cluster Ready Services (CRS) 10.1.0.3

Several environment variables must be set before you run the Oracle Universal Installer. Figure 2.1 shows a terminal session with an example of the necessary and recommended environment variable assignments.

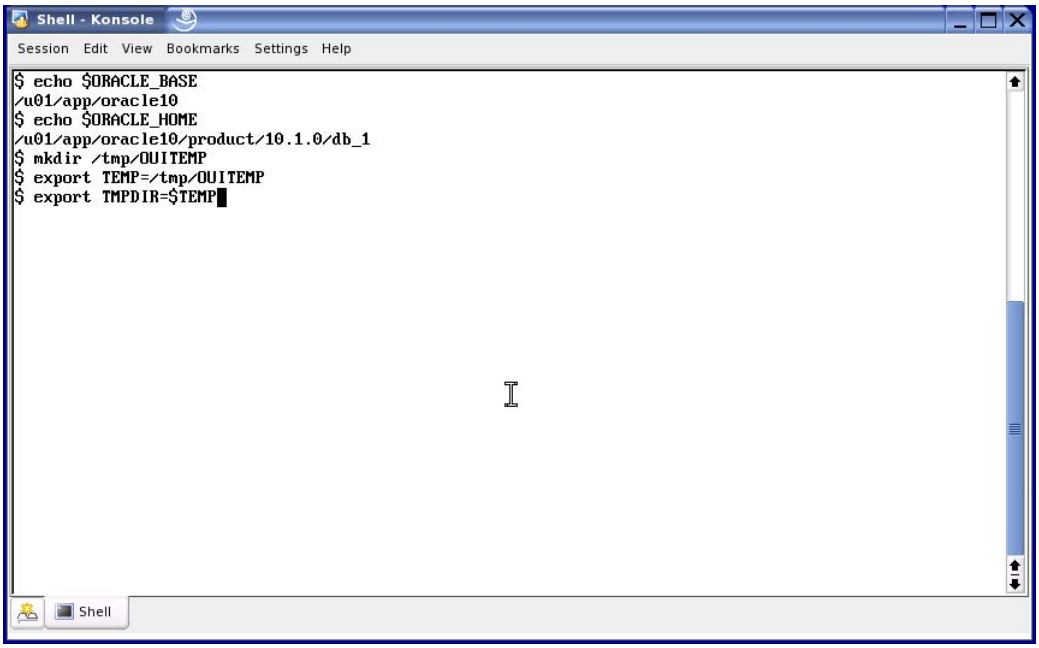

Figure 2.1

As the Oracle software owner, go to the directory where the CRS distribution medium was extracted and execute Oracle Universal Installer (i.e., **./runInstaller**).

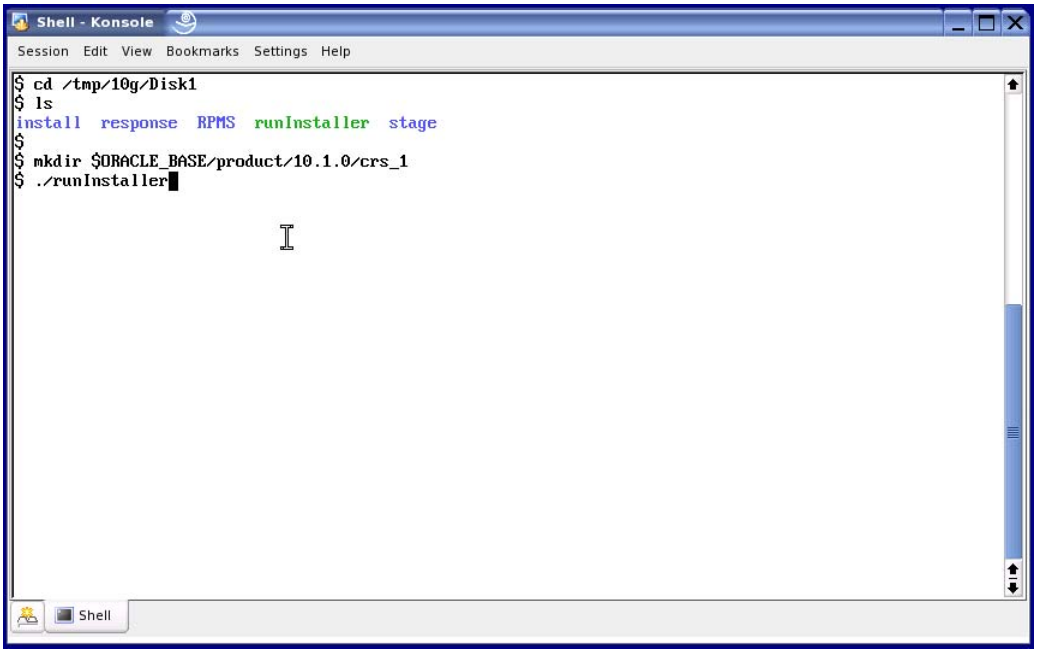

Figure 2.2

The Welcome page appears as shown in Figure 2.3. Click Next.

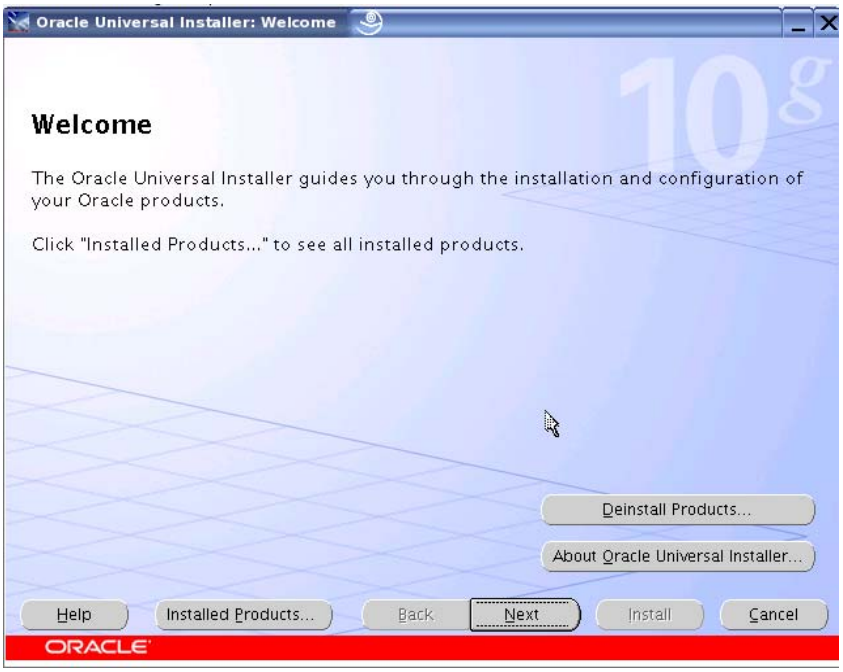

Figure 2.3

On the Specify Inventory directory and credentials page, ensure that the path specified for the OraInventory is under Oracle Base. (By convention, it is generally an immediate subdirectory under Oracle Base.) If ORACLE_BASE is set in the environment, this will be the default as shown in Figure 2.4.

Figure 2.4

When you click Next, the dialog shown in Figure 2.5 asks you to execute the **orainstRoot.sh** script as superuser.

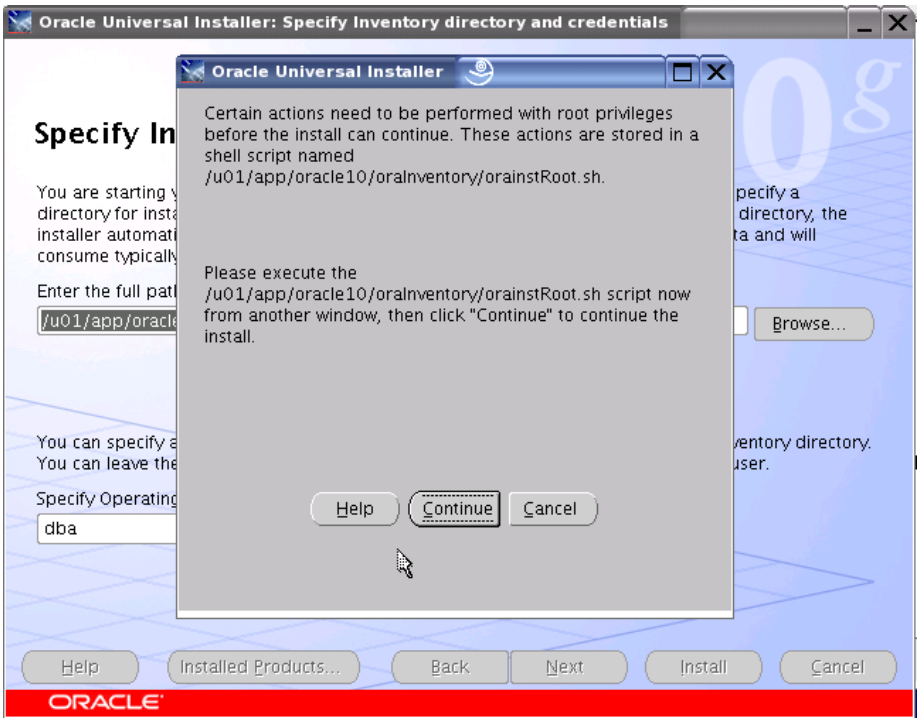

Figure 2.5

Perform this step in another terminal window as shown in Figure 2.6 and click Next.

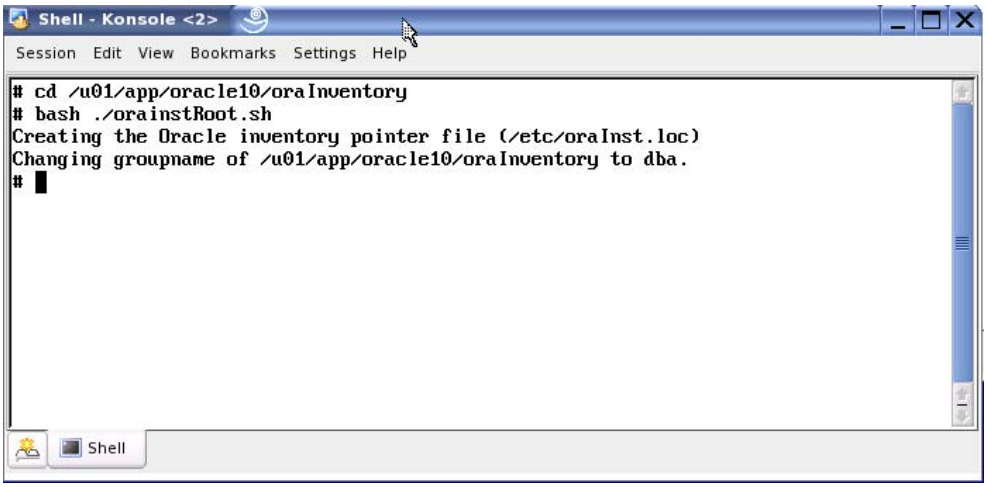

Figure 2.6

The Specify File Locations page shown in Figure 2.7 appears next. As mentioned earlier, ensure that the Destination path for CRS home is not the same as ORACLE_HOME. It is recommended that you accept the default name for CRS home (e.g., OraCr10g_home1), but change the CRS path to be a subdirectory that is adjacent to Oracle Home and placed under Oracle Base. (Assign Oracle Base to a directory in a Matrix Server cluster filesystem that is not mounted with the DB Optimized mount option.)

In our example:

- ORACLE_BASE is */u01/app/oracle10*
- ORACLE_HOME is */u01/app/oracle10/product/10.1.0/db_1*

The Destination path for CRS home is therefore */u01/app/oracle10/product/10.1.0/crs_1*.

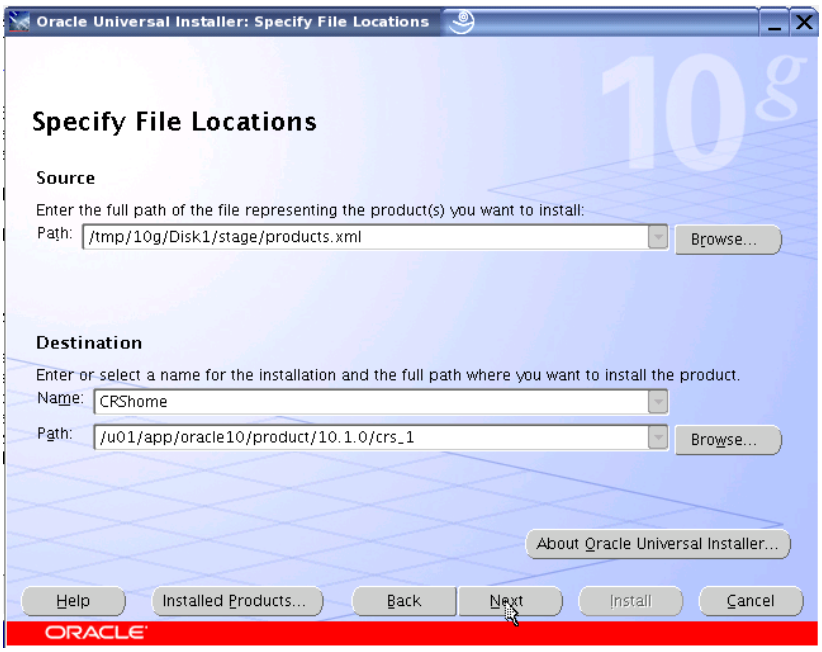

Figure 2.7

When you click Next, the Language Selection page appears as shown in Figure 2.8. Select the appropriate language and click Next again.

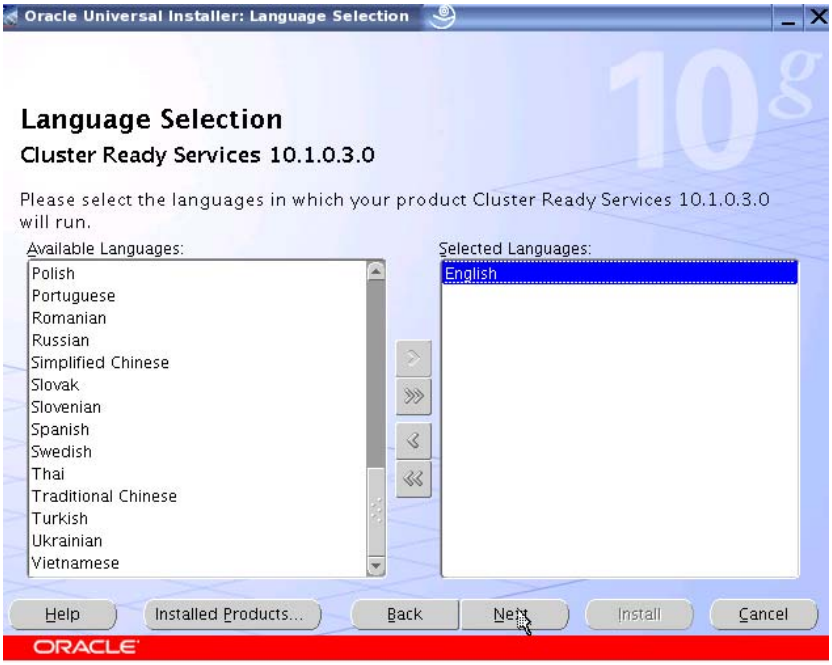

Figure 2.8

On the Cluster Configuration page, shown in Figure 2.9, supply a cluster name and the private and public interconnect information and then click Next.

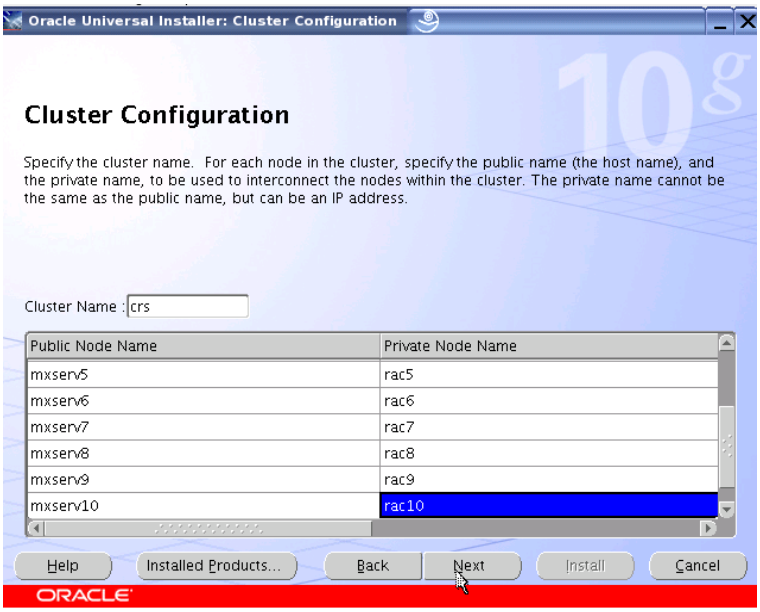

Figure 2.9

On the Specify Network Interface Usage page (Figure 2.10), use mouse clicks to establish interconnect types for each node specified on the Cluster Configuration page. Click Next.

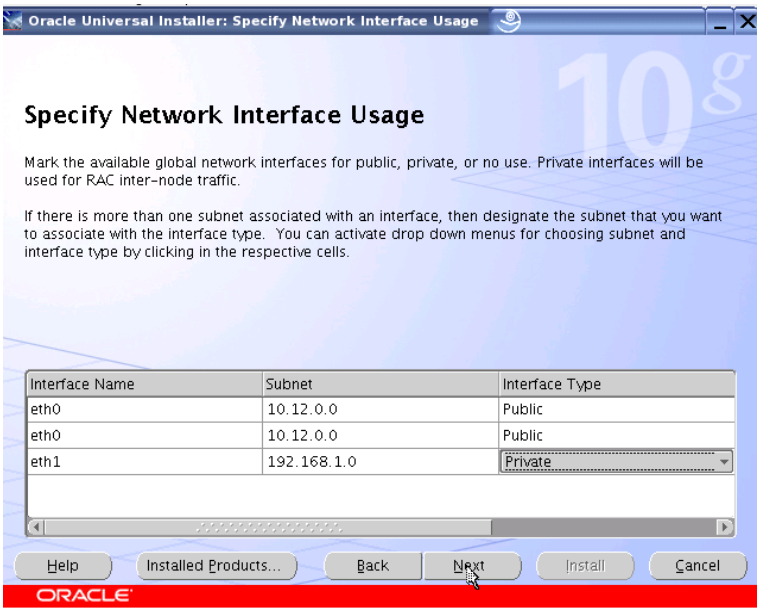

Figure 2.10

The Oracle Cluster Registry page shown in Figure 2.11 appears next. The OCR location must be a pre-sized file and must reside in a filesystem mounted with the DB Optimized option. The install will not proceed beyond this point if either of these two critical requirements is not met. Enter a path for the OCR location and click Next.

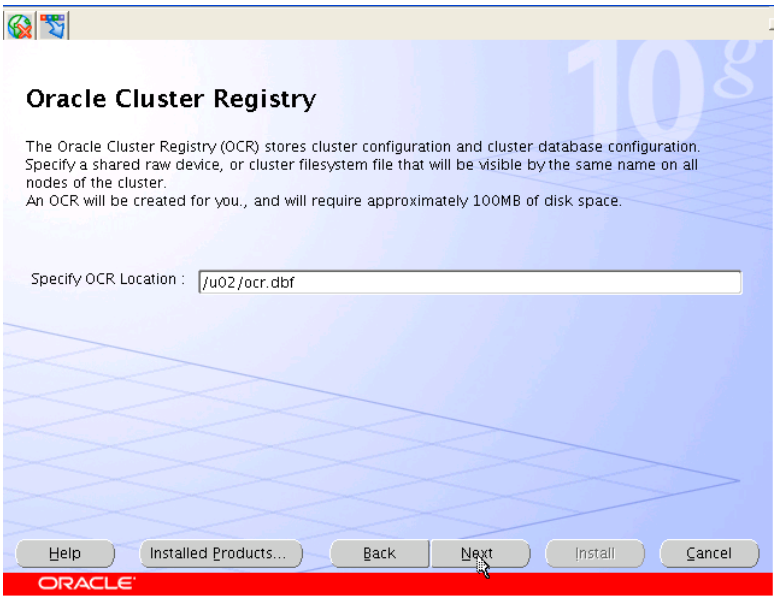

Figure 2.11

The Voting Disk page shown in Figure 2.12 now appears. Cluster Synchronization Services (CSS) require that this file be pre-sized and reside in a filesystem mounted with the DB Optimized option. Once again, installation will not proceed if these criteria are not met. Supply the appropriate path and click Next.

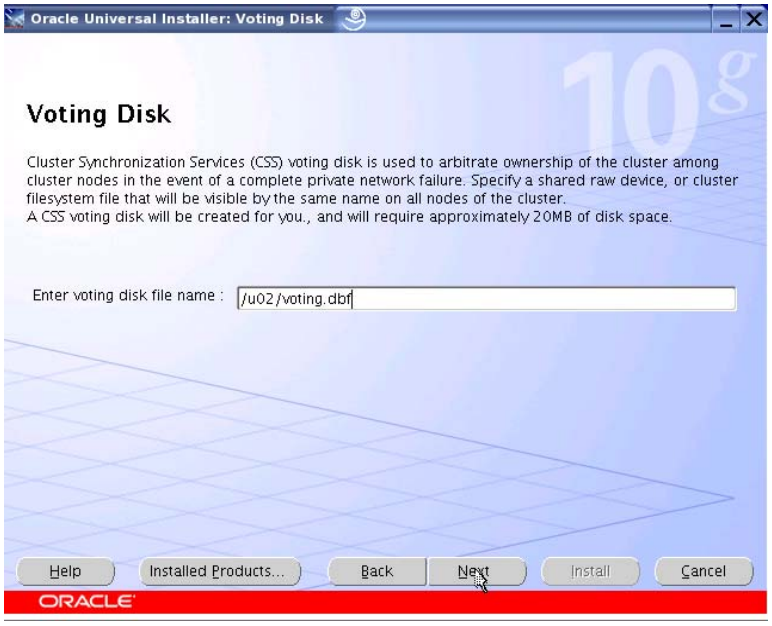

Figure 2.12

The dialog shown in Figure 2.13 now asks you to execute the **orainstRoot.sh** script on all nodes of the cluster. After doing so, click Next.

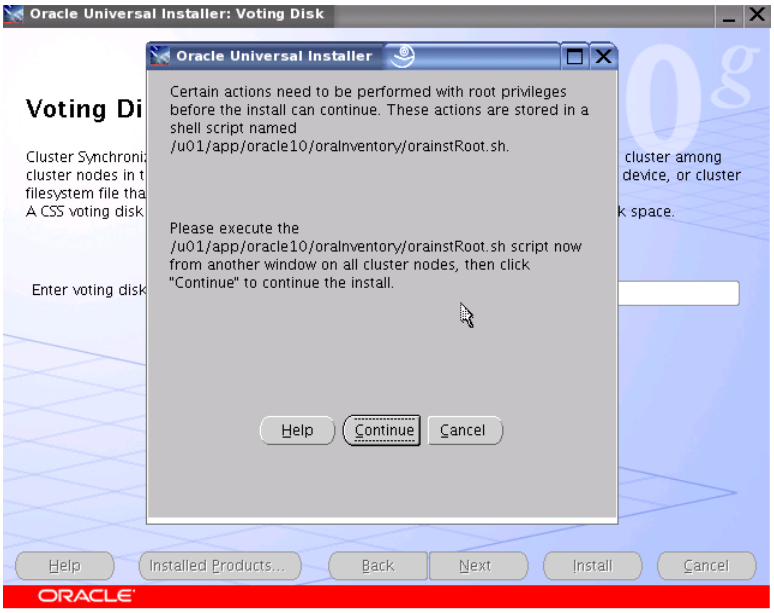

Figure 2.13

When the Summary screen (Figure 2.14) appears, click Install.

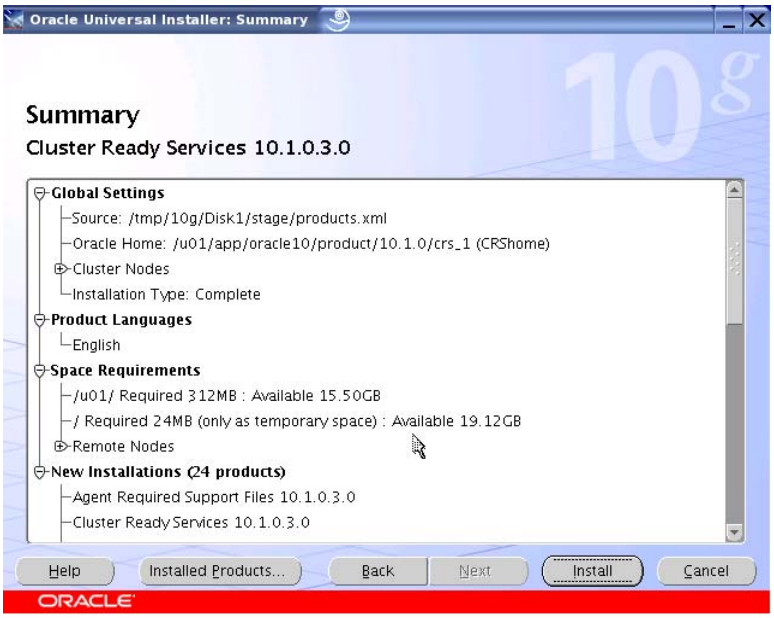

Figure 2.14

The Installer now performs processing such as copying files and relinking executables as shown in Figure 2.15.

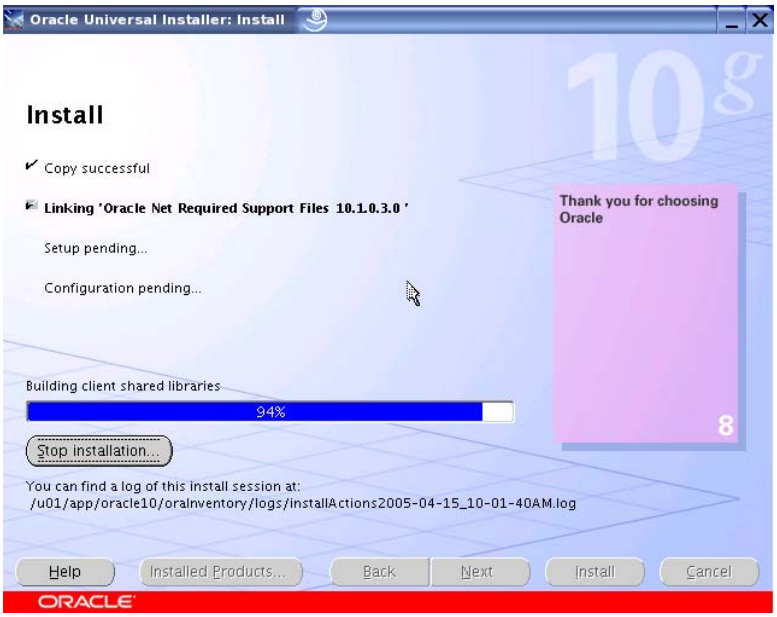

Figure 2.15

The Setup Privileges dialog, shown in Figure 2.16, asks you to execute the **root.sh** script in the CRS home on the first node and then on the remaining nodes.

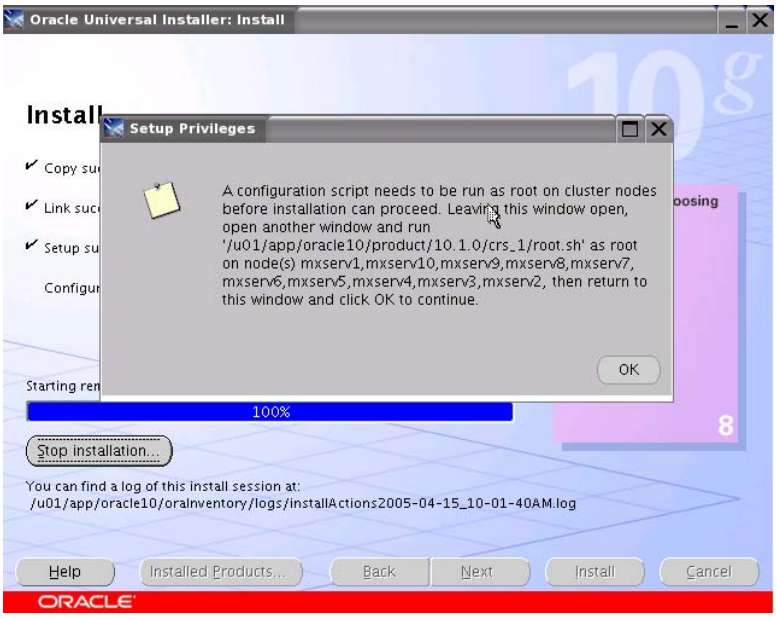

Figure 2.16

Figure 2.17 shows the output from the scripts.

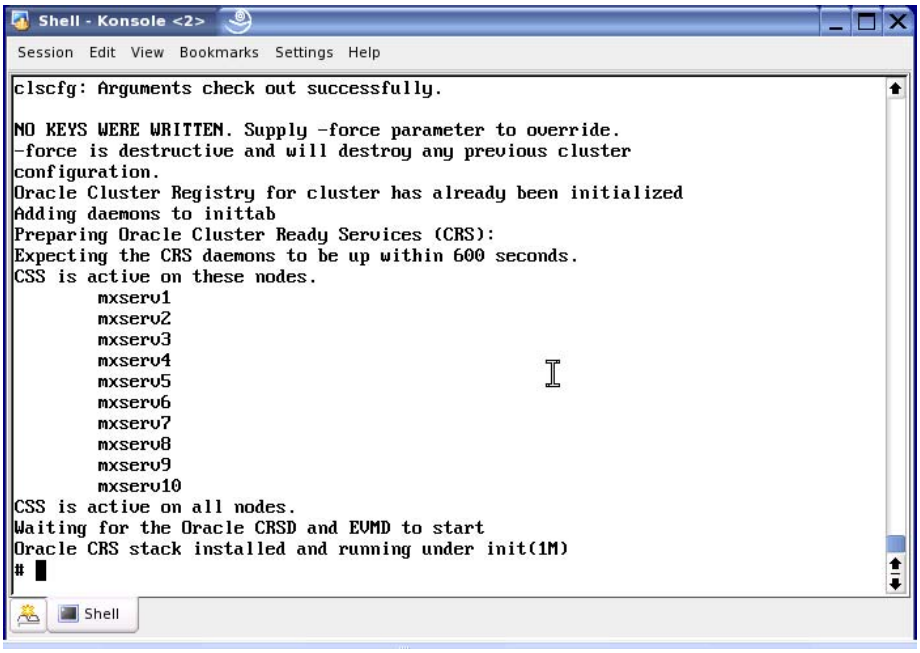

Figure 2.17

Click "OK" to continue. When the scripts are complete, click Next. The Configuration Assistants page shown in Figure 2.18 then appears. When the configuration assistants are complete, click Next.

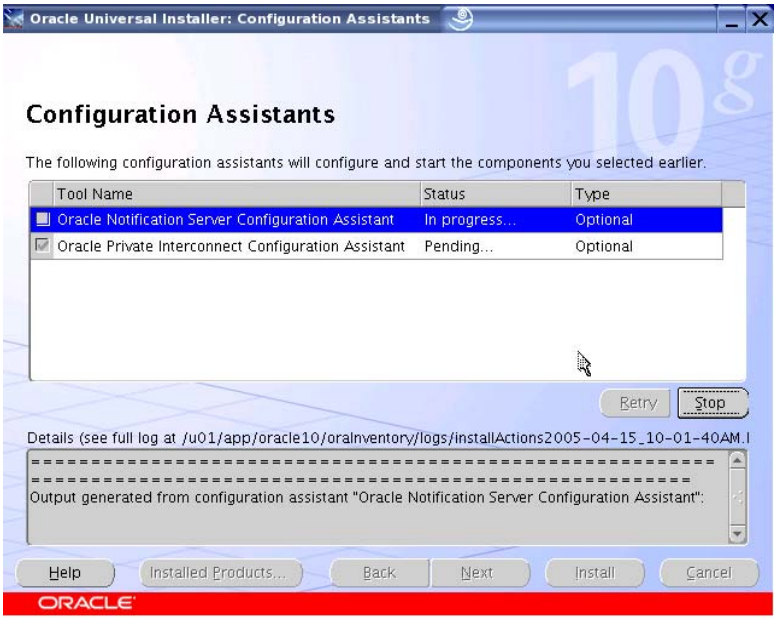

Figure 2.18

Provided that the configuration assistants succeeded, the End of Installation page shown in Figure 2.19 will appear. CRS version 10.1.0.3 is now fully functional. Exit out of the Universal Installer as shown below.

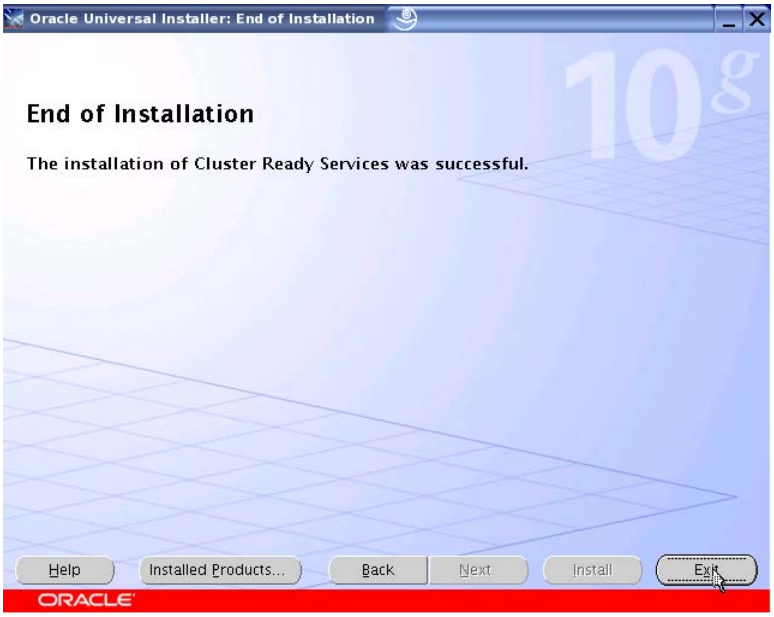

Figure 2.19

Step 3: Upgrade Cluster Ready Services (CRS) to 10.1.0.4

After you have downloaded the 10.1.0.4 patchset (p4163362), extract the zipped file into a working directory and execute **the runinstaller** script. When the Welcome screen appears as shown in Figure 3.1, click Next.

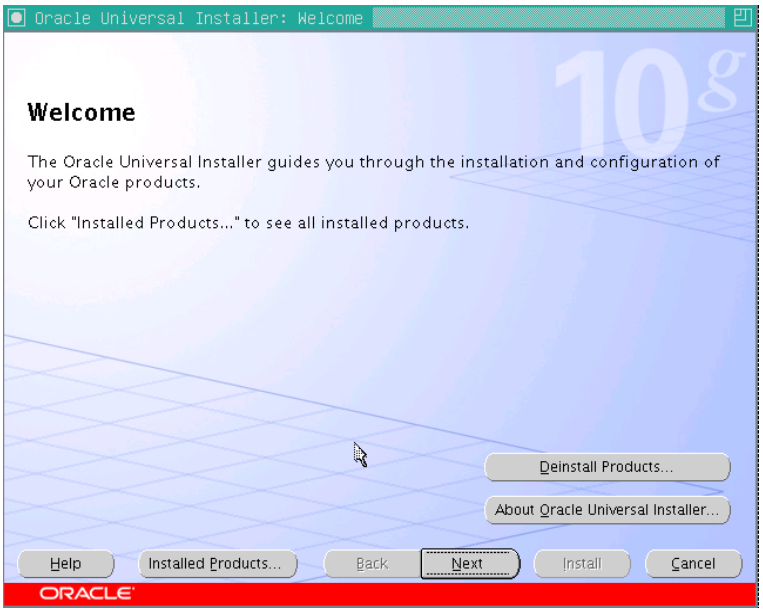

Figure 3.1

In the File Locations screen (Figure 3.2), select the CRS Home installed during the 10.1.0.3 phase of the installation and click Next.

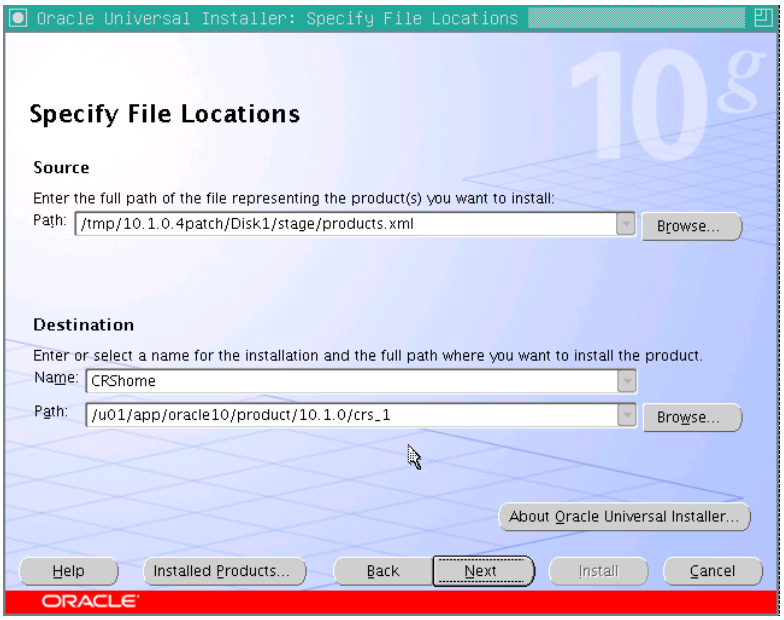

Figure 3.2

Select all nodes as shown in Figure 3.3 and click Next.

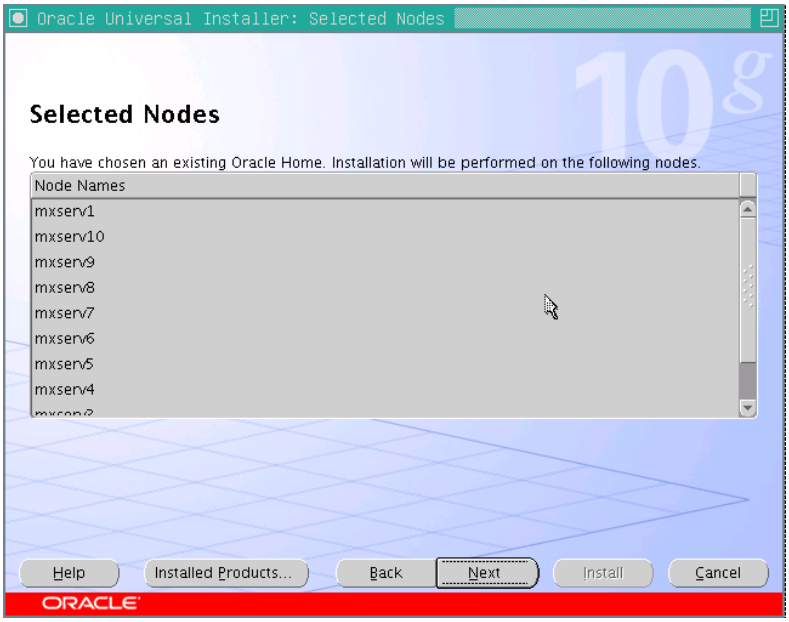

Figure 3.3

When the Summary screen appears, click Install as shown in Figure 3.4.

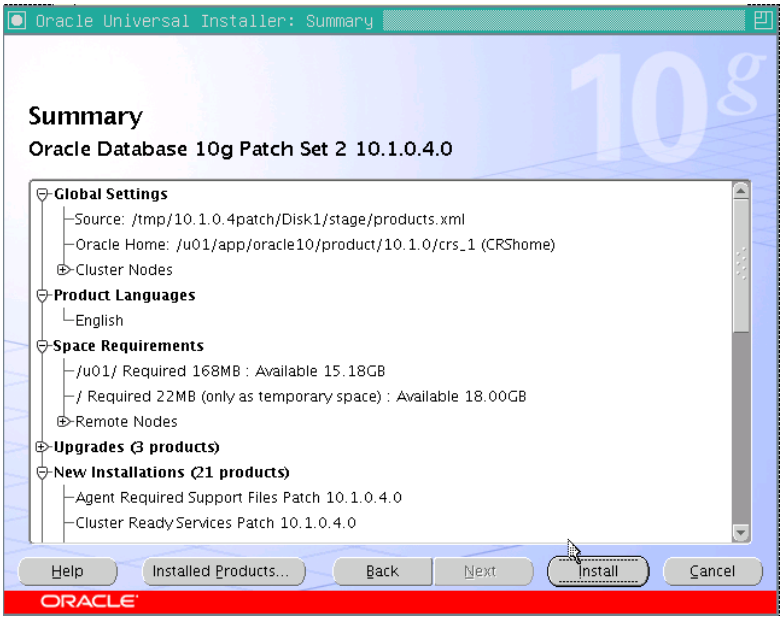

Figure 3.4

On the End of Installation screen (Figure 3.5), review the post-install instructions in the scroll box and then click Exit.

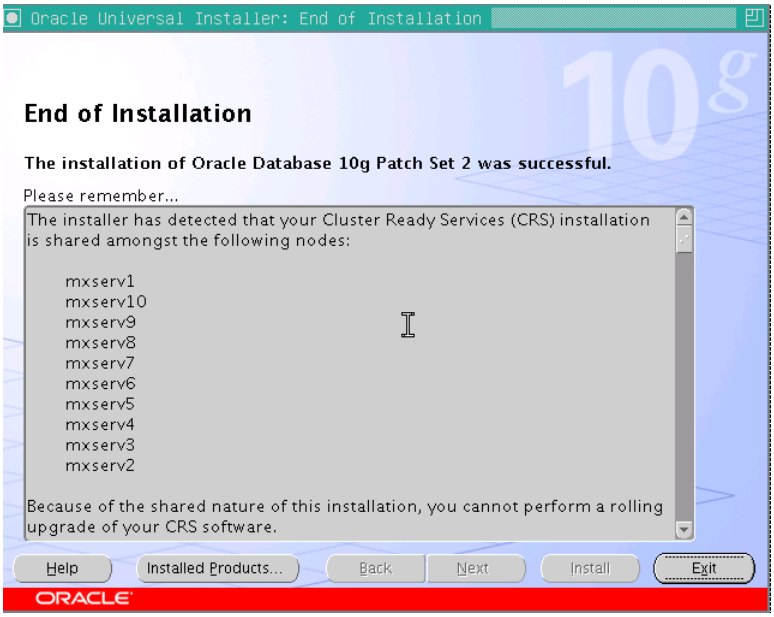

Figure 3.5

To complete the installation of this patchset, perform the following tasks on each node:

1. Shut down all RAC databases that are running on the cluster.
2. On each node of the cluster, shut down the CRS daemons. To do this, log in as *root* and issue the following command:

   ```
   /etc/init.d/init.crs stop
   ```

3. Run the **root10104.sh** script as *root* on each node. The script automatically starts the CRS daemons on each of the nodes upon completion.

   The script is located in the *CRS_HOME/install* directory. For example:

   ```
   # cd /u01/app/oracle10/product/10.1.0/crs_1/install
   # sh ./root10104.sh
   ```

Step 4: Install Oracle10g Enterprise Edition 10.1.0.3

This step installs Oracle10g Enterprise Edition without a starter database. Change directories to the *Disk1* subdirectory under the directory where the database distribution medium**, ship.db.lnx32.cpio.gz**, was extracted. Execute **runInstaller** and then take these actions:

- Click through the Welcome page
- Click through the Oracle Inventory page
- Execute the **orainstRoot.sh** script as directed and click Next

On the File Locations page shown in Figure 4.1, specify the path for ORACLE_HOME. Be sure to specify a directory other than where CRS was installed.

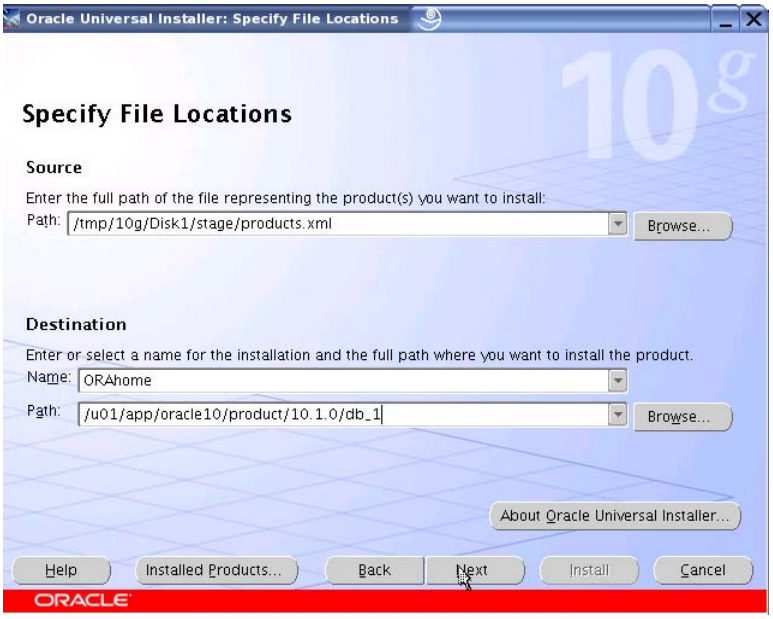

Figure 4.1

Click Next and the Language Selection page will appear. Select the appropriate language and click Next.

Since CRS is active, the Specify Hardware Cluster Installation Mode page shown in Figure 4.2 appears. The pick list contains the cluster nodes specified during the CRS install. Select all of the nodes and click Next.

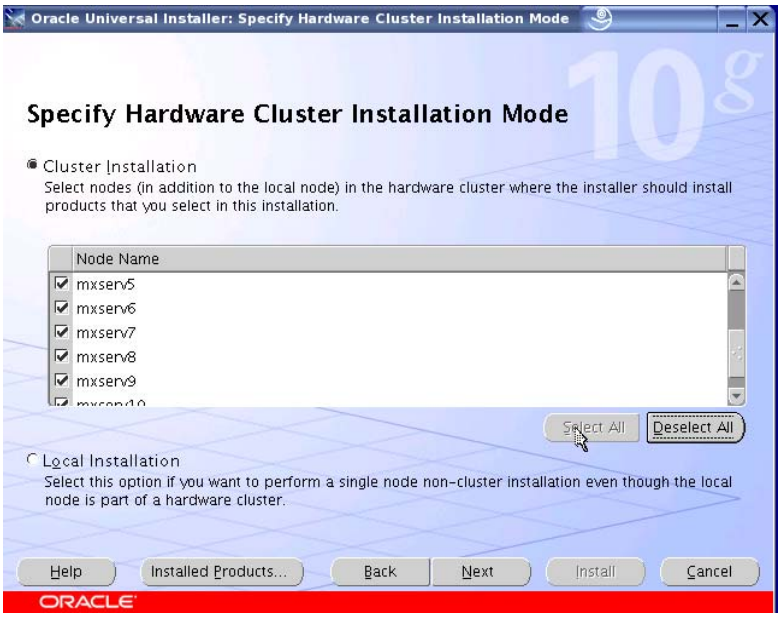

Figure 4.2

The Select Installation Type screen allows you to select either Enterprise or Standard Edition as seen in Figure 4.3. Select Enterprise Edition and click Next.

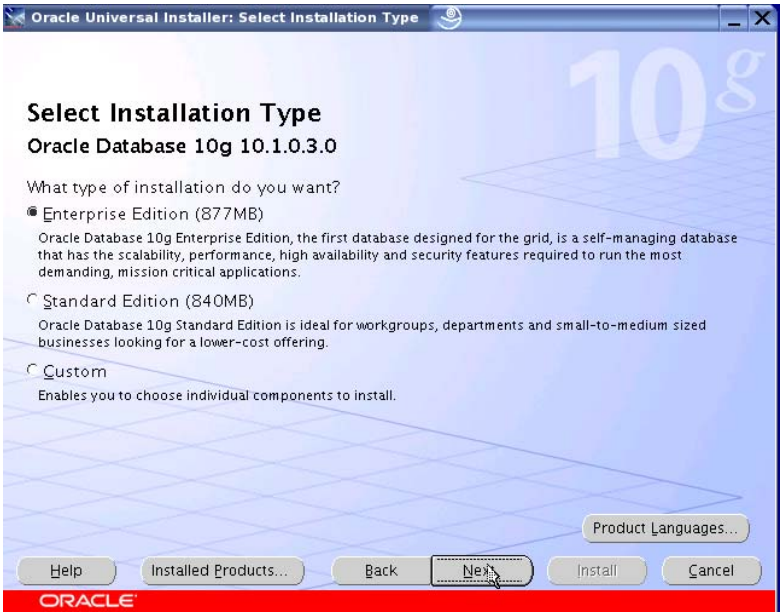

Figure 4.3

The installer now performs checks and provides status. When the checks are complete, click Next as shown in Figure 4.4.

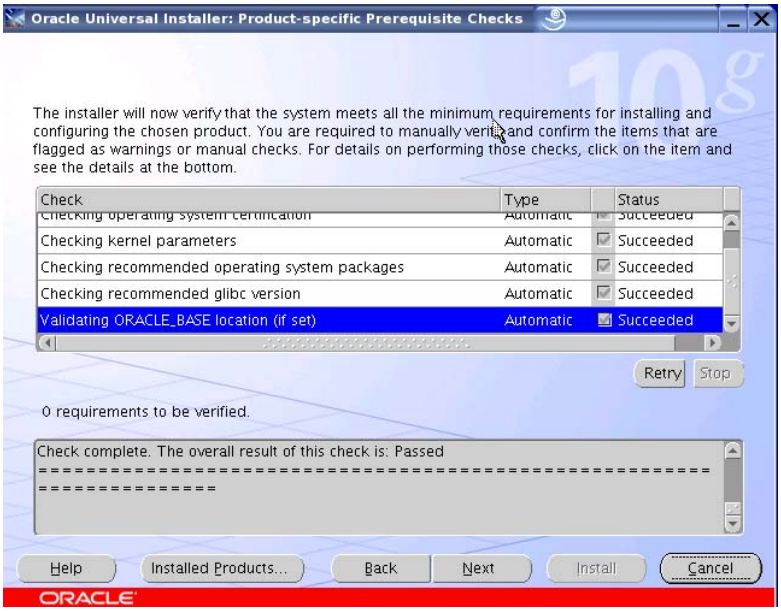

Figure 4.4

The Select Database Configuration page includes an option to have the OUI invoke DBCA to create a starter database. As shown in Figure 4.5, click "Do not create a starter database." (Database creation occurs later in the procedure as documented in Step 6.) Click Next.

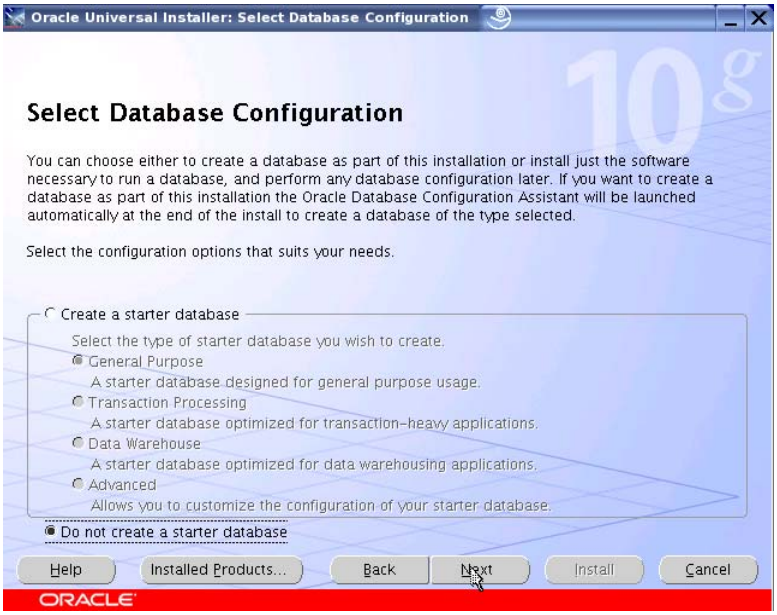

Figure 4.5

The Summary page shown in Figure 4.6 now appears. Click Install.

Figure 4.6

The status update bar in Figure 4.7 shows the installation in progress.

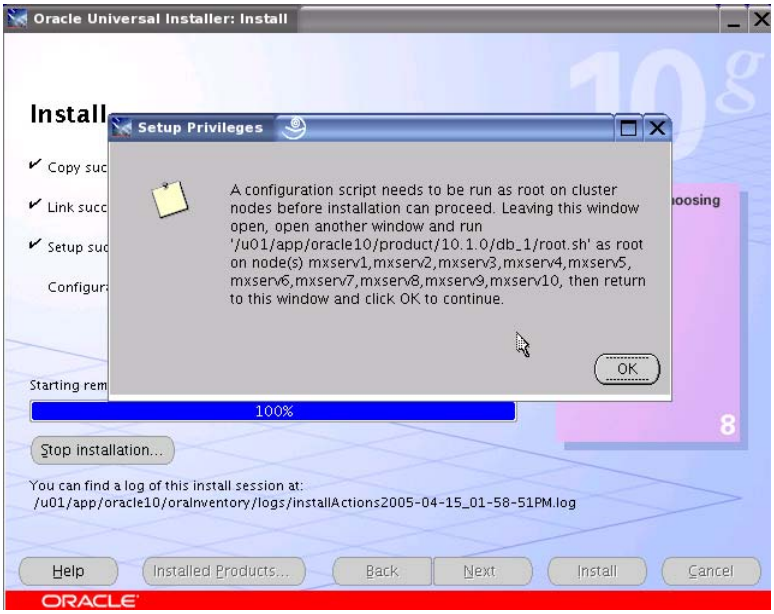

Figure 4.7

Tip! When the installation is complete, the Setup Privileges dialog shown in Figure 4.7 asks you to run the **root.sh** script on each node of the cluster. At this point of the installation, be sure to run **root.sh** from a session in which the DISPLAY environment variable is set and exported. Before executing **root.sh**, test your X environment with **xterm**(1) or **xclock**(1) as shown in Figure 4.8.

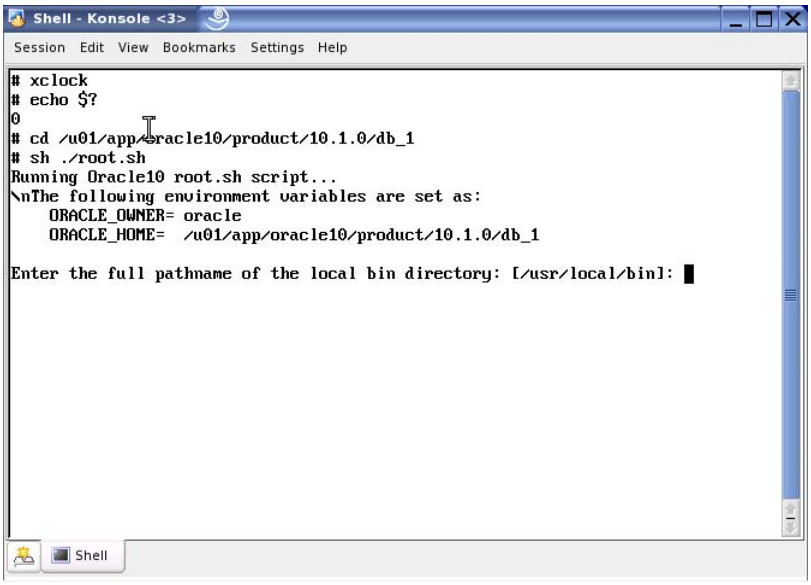

Figure 4.8

After running **root.sh** on the listed nodes, click OK and the VIP Configuration Assistant screen will appear as shown in Figure 4.9. Click Next.

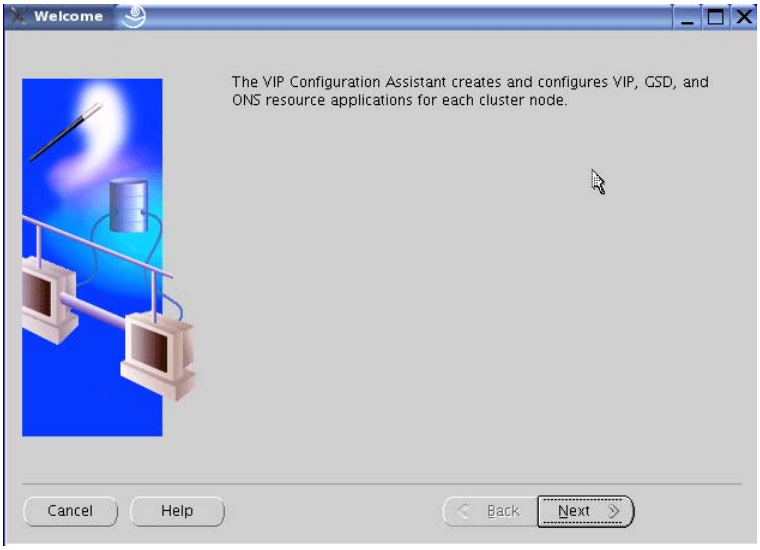

Figure 4.9

Select the desired interfaces as shown in Figure 4.10 and click Next.

NOTE: Do not click Next more than once!

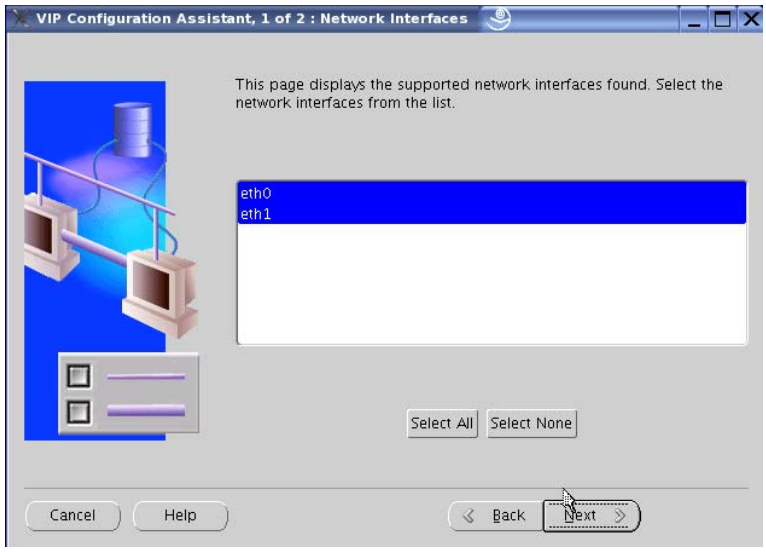

Figure 4.10

Enter the addresses of your Oracle Virtual IPs and click Next as shown in Figure 4.11.

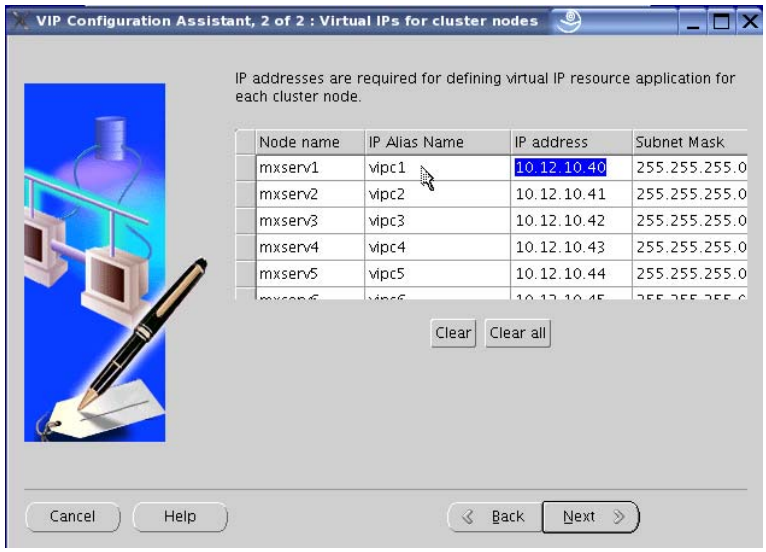

Figure 4.11

The **vipca** tool now creates and configures the GSD and related infrastructure as shown in Figure 4.12.

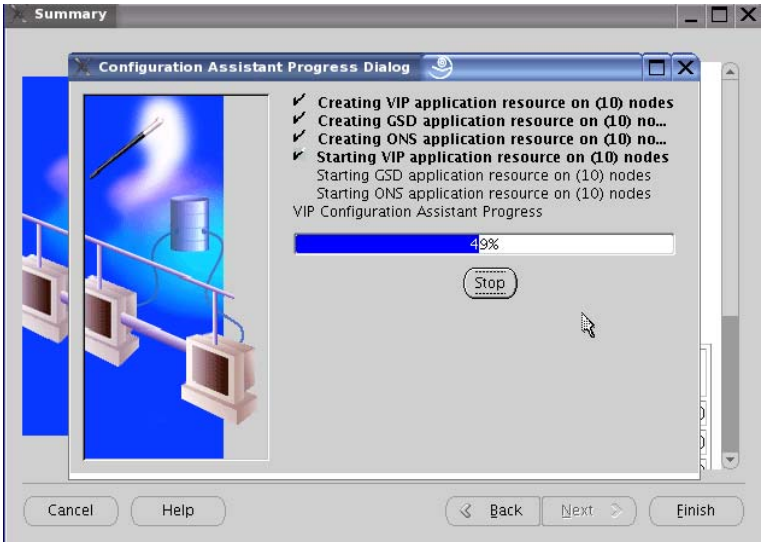

Figure 4.12

When the configuration is complete, click OK. The Configuration Results page, shown in Figure 4.13, then appears. Click Exit.

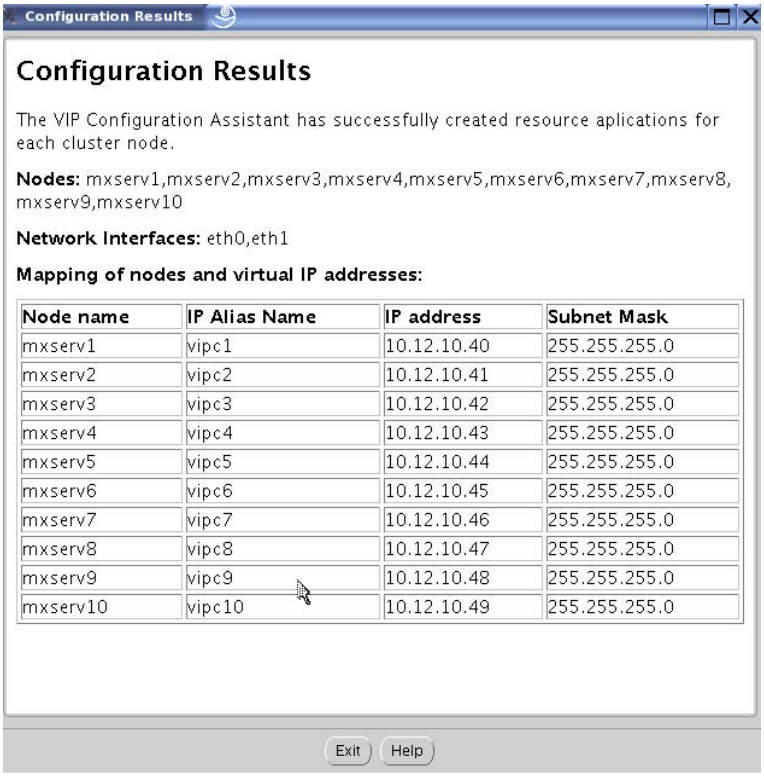

Figure 4.13

The End of Installation page shown in Figure 4.14 then appears.

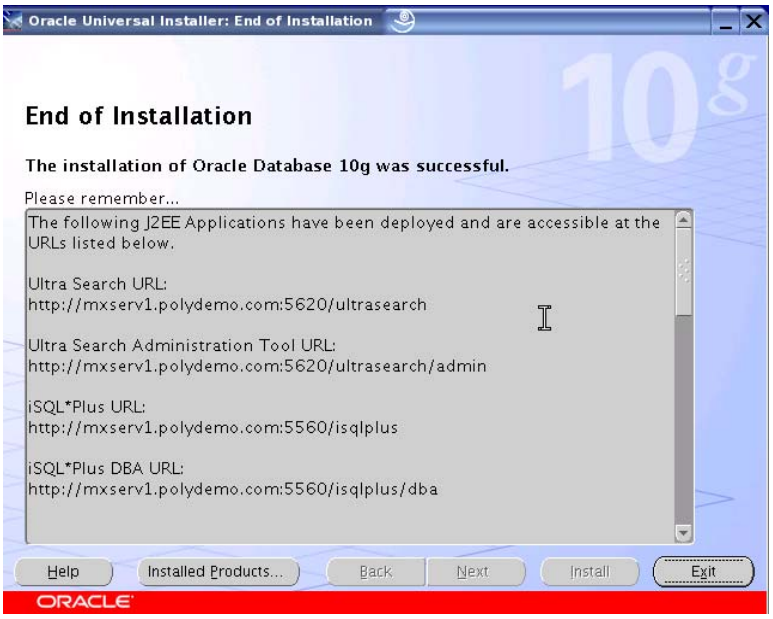

Figure 4.14

Step 5: Upgrade Oracle10g Enterprise Edition to 10.1.0.4

Return to the *Disk1* subdirectory where you extracted the 10.1.0.4 patchset distribution medium and execute **runInstaller**.

Supply the path to your Oracle Home in the File Locations screen (Figure 5.1) and click Next.

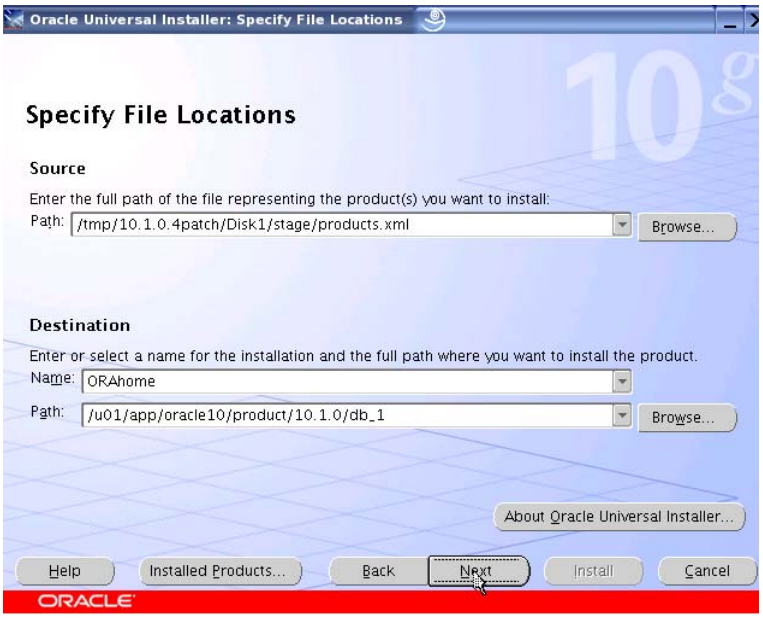

Figure 5.1

CRS detects of all the nodes and shows them on the Selected Node list (Figure 5.2). Select all nodes and click Next.

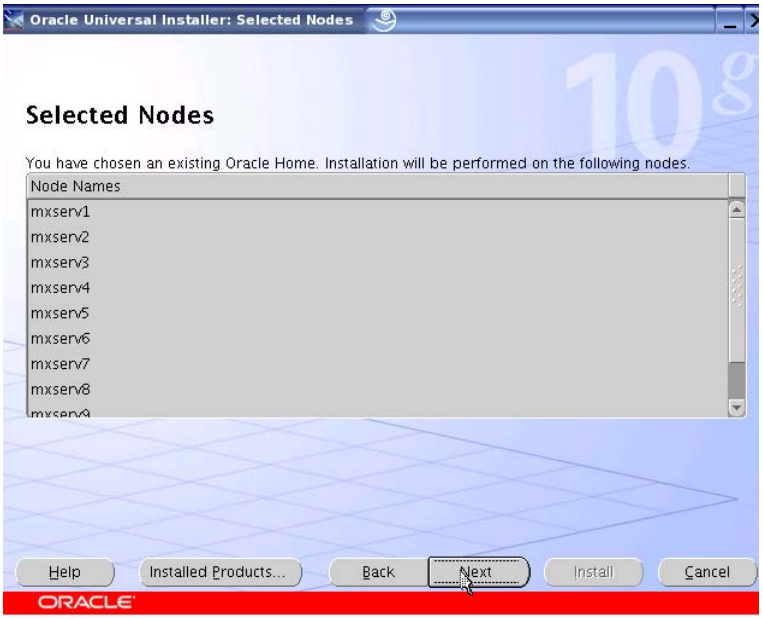

Figure 5.2

On the Summary screen (Figure 5.3), click Install.

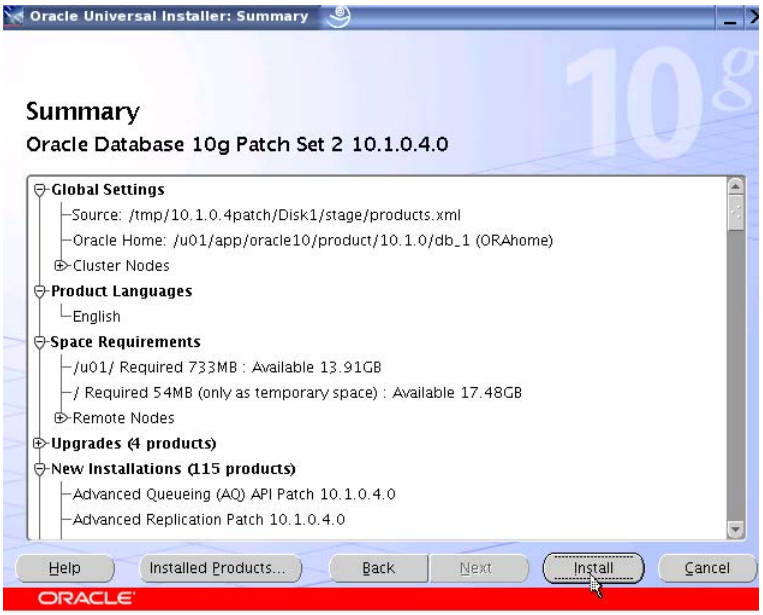

Figure 5.3

An Install screen appears (Figure 5.4) and displays a progress bar.

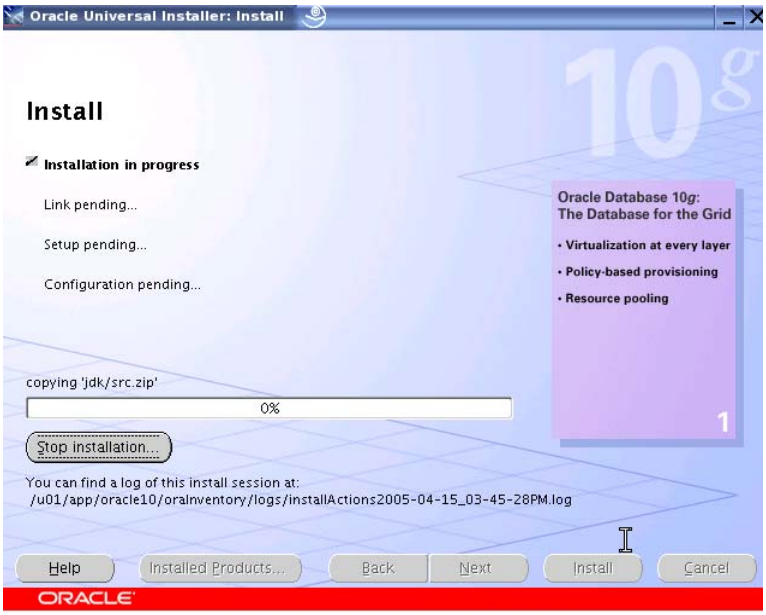

Figure 5.4

The Setup Privileges dialog (Figure 5.5) now directs you to execute the **$ORACLE_HOME/root.sh** script as superuser on each node.

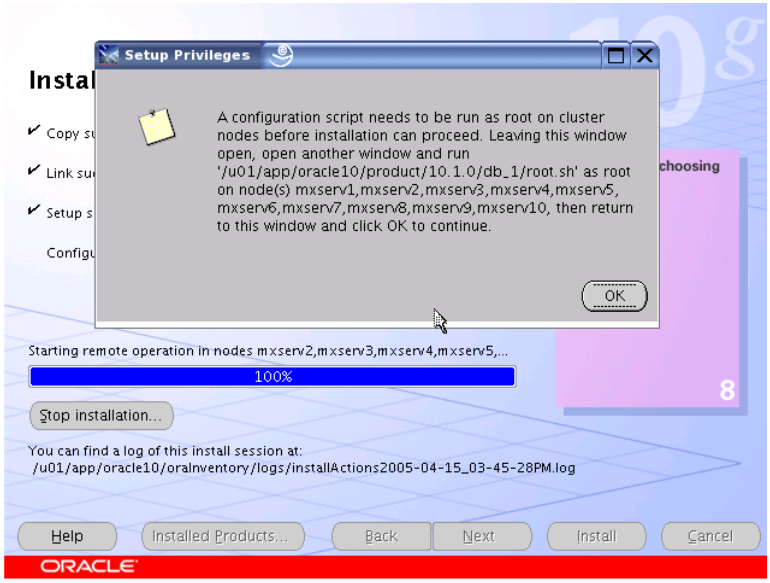

Figure 5.5

Tip! Since this is a shared Oracle Home, there is one unnecessary, time-consuming step that can be removed from the **root.sh** script. After running **root.sh** on the first node in the cluster, edit the script and comment out the line that executes the **chmod**(1) command recursively. There are, after all, over 35,000 files in the Oracle Home for 10.1.0.4.

Again, make sure that you have already run the script on the first node before implementing the tip. After you implement the tip, you still must execute the script on every node in the cluster. It will now complete nearly instantly.

Edit **$ORACLE_HOME/root.sh** and pattern search for the text CHMOD. Implement the change as shown in this sample cut from the file:

```
#
# Change mode to remove group write permission on Oracle home
#
$CHMOD -R g-w $ORACLE_HOME
$ECHO "Finished running generic part of root.sh script."| $TEE -a $LOG
$ECHO "Now product-specific root actions will be performed."| $TEE -a $LOG
```

After running **root.sh** on each node, click OK.

When the End of Installation screen appears (Figure 5.6), click Exit.

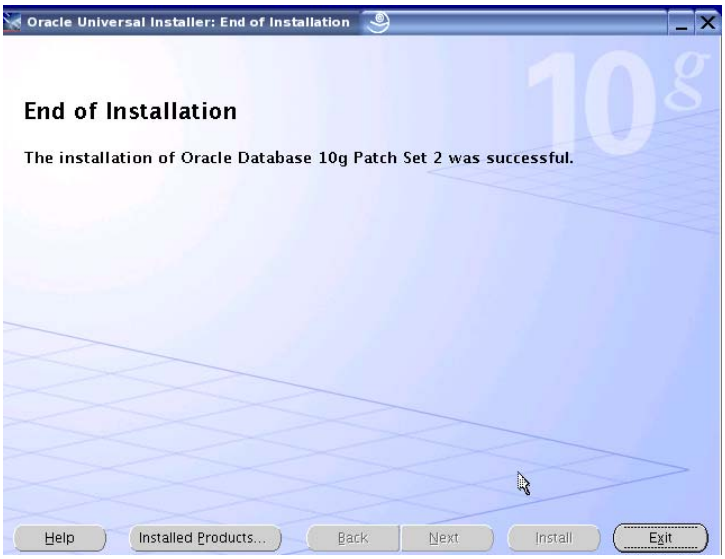

Figure 5.6

Step 6: Execute Database Create Assistant

The DBCA utility complies with the Optimal Flexible Architecture for database layout and configuration. To prepare the PolyServe Matrix Server environment, the following configuration actions are required:

- Establish a DB Optimized location for the *oradata* directory. By default, DBCA places datafiles in *$ORACLE_BASE/oradata/<DBNAME>*. Since this is a shared install, the ORACLE_BASE directory is not DB Optimized. Create a directory on a DB Optimized directory and create a symbolic link to the ORACLE_BASE directory.
- Establish a DB Optimized Location for the Flash Recovery area. By default, DBCA places the Flash Recovery Area in *$ORACLE_BASE/<DBNAME>*. As this is a shared install, the ORACLE_BASE directory is not DB Optimized. Create a directory on a DB Optimized directory and create a symbolic link to the ORACLE_BASE directory.

Figure 6-1 shows an example of configuring DB Optimized *oradata* and *flash_recov*ery directories into the ORACLE_BASE.

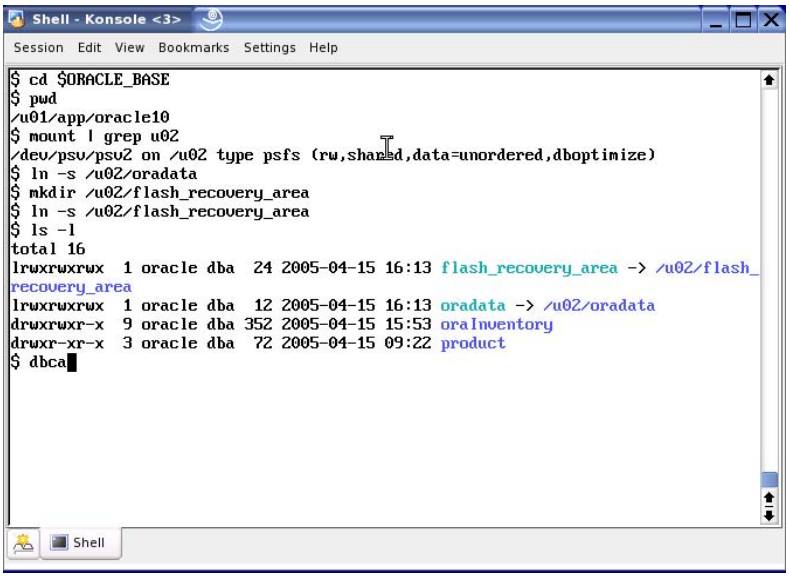

Figure 6.1

Next, invoke **dbca** from the command line as the *oracle* user. Because CRS is running, the Welcome screen (Figure 6.2) offers the choice of RAC or non-RAC database. Choose Real Application Cluster database and click Next.

Tip! If the Real Application Clusters database configuration screen depicted in Figure 6.2 does not appear, there is something wrong with the configuration. Oddly, testing has proven that DBCA will omit this screen and not create a RAC database if the */etc/oraInst.loc* file is missing or incorrect. If this problem is encountered, verify that:

- The file exists
- The file is readable by the user executing OUI
- The inventory_loc parameter in the file points to your Oracle10g inventory

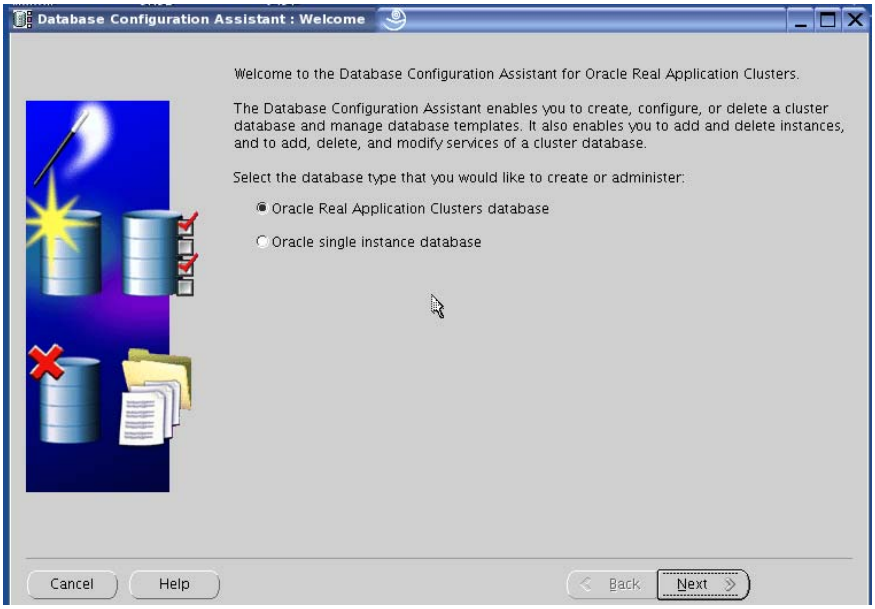

Figure 6.2

On the Operations screen (Figure 6.3), choose Create a Database and click Next.

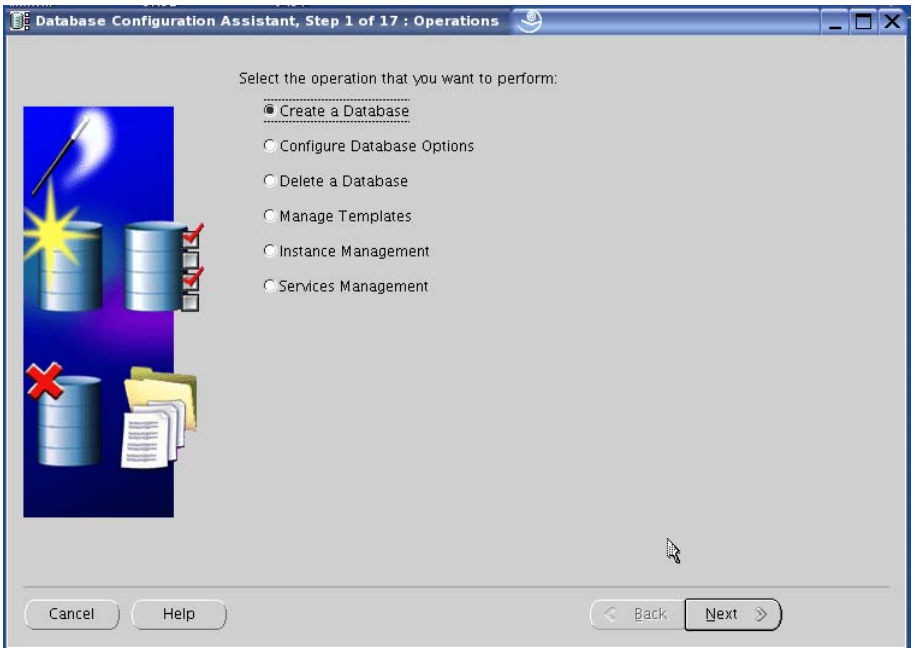

Figure 6.3

dbca now queries CRS for the nodes of the cluster. All nodes configured during the Cluster Ready Services installation should be listed as shown in Figure 6.4. Click Select All and then click Next.

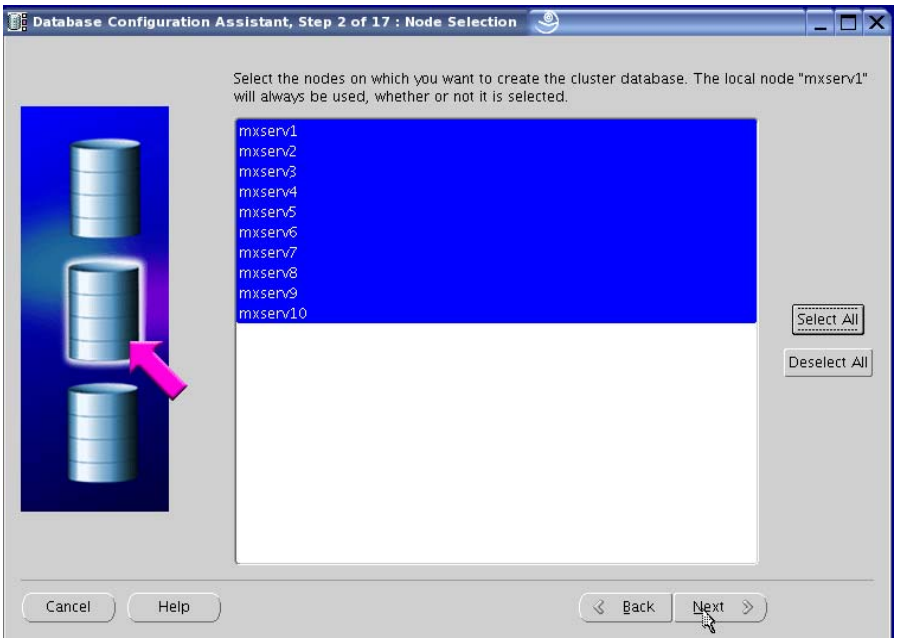

Figure 6.4

Select a template from the list of database types on the Database Templates screen as shown in Figure 6.5. General Purpose is a good default. Click Next.

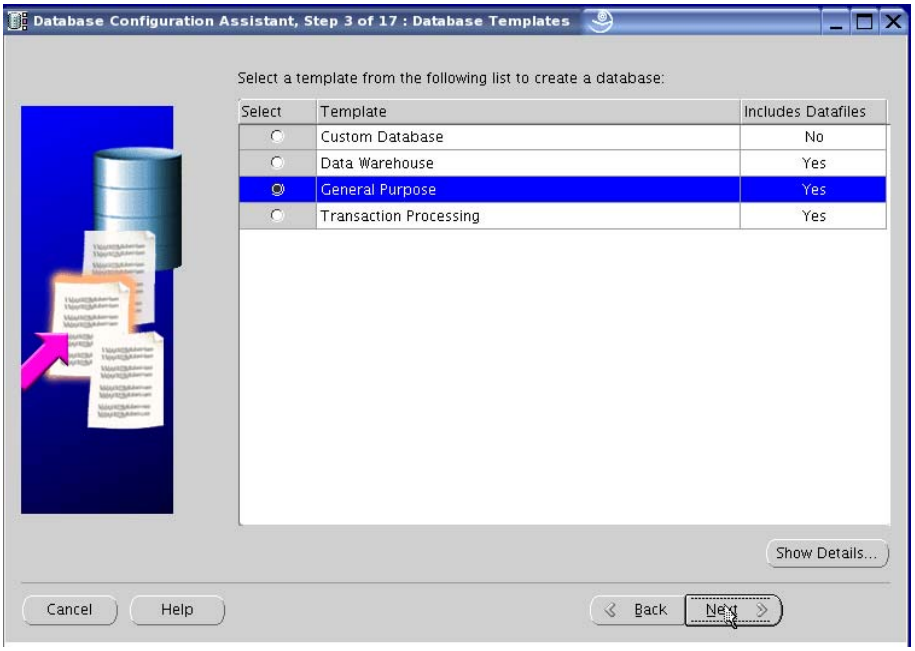

Figure 6.5

In the Database Identification screen (Figure 6.6), enter your Global Database Name and click Next.

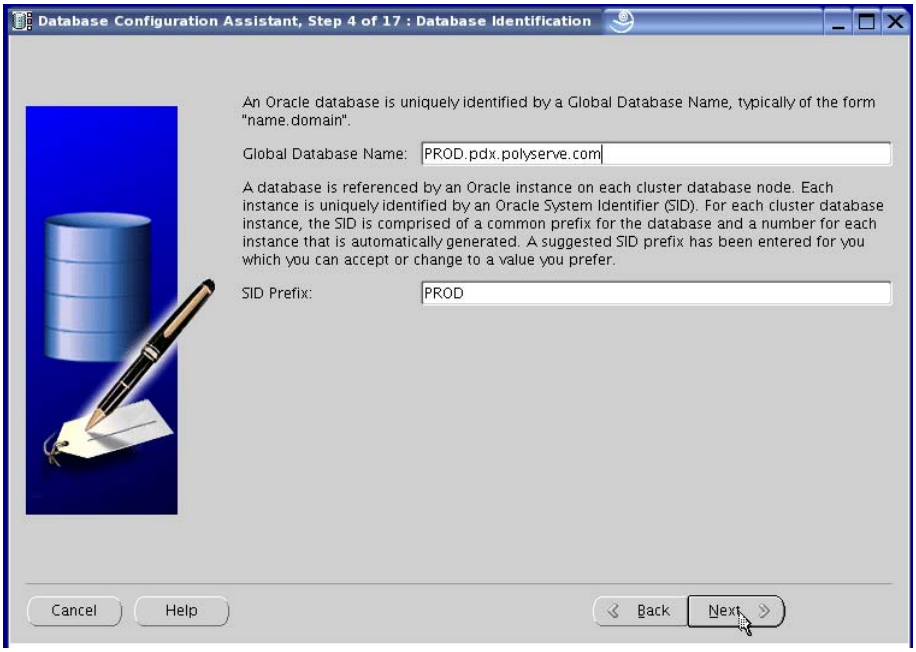

Figure 6.6

In the Management Options screen (Figure 6.7), choose the management type appropriate for your environment and click Next.

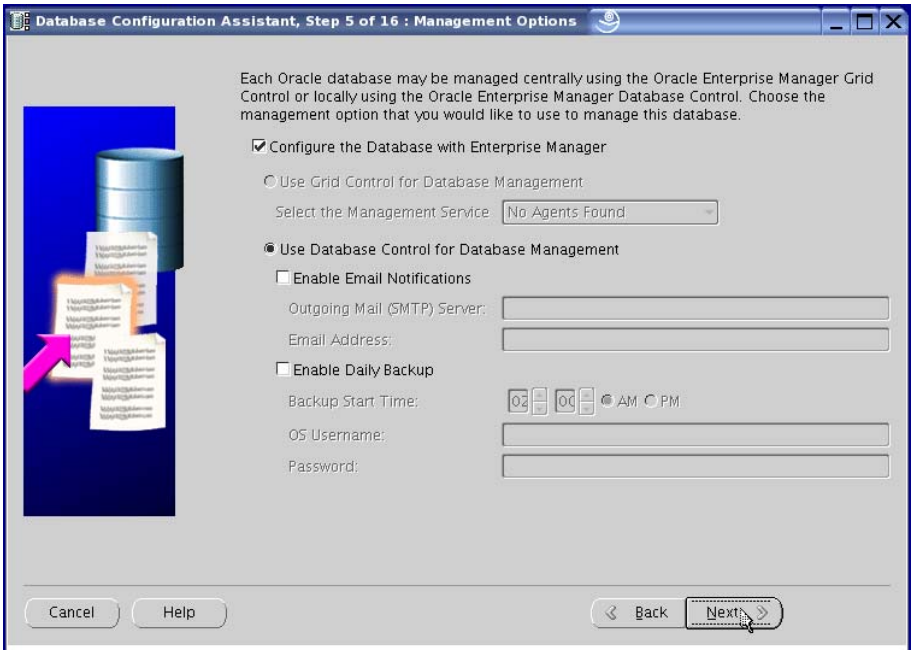

Figure 6.7

Enter passwords in the Database Credentials screen (Figure 6.8) and click Next.

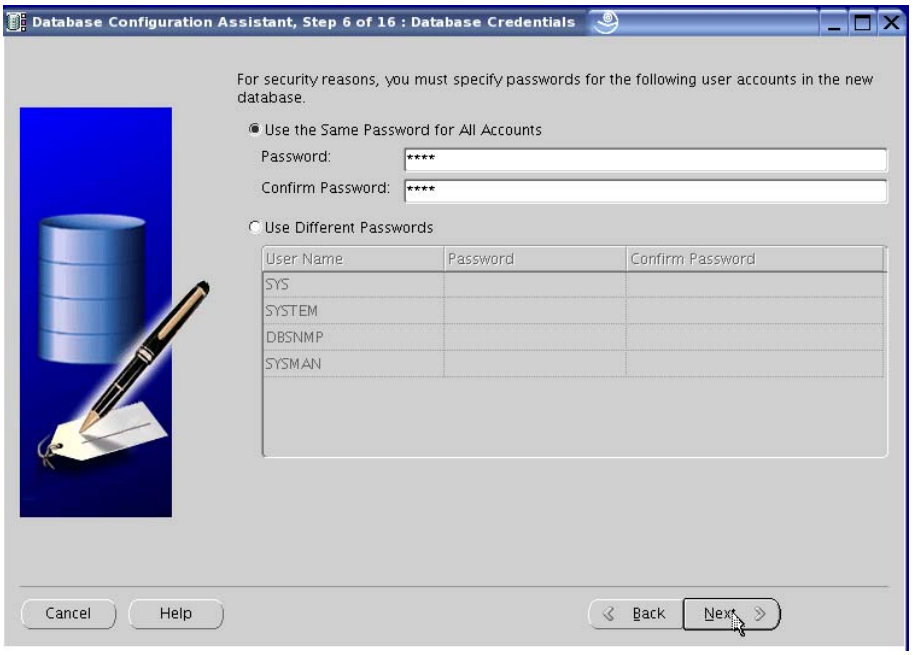

Figure 6.8

As shown in Figure 6.9, choose the default Storage Option, which is Cluster File System. Click Next.

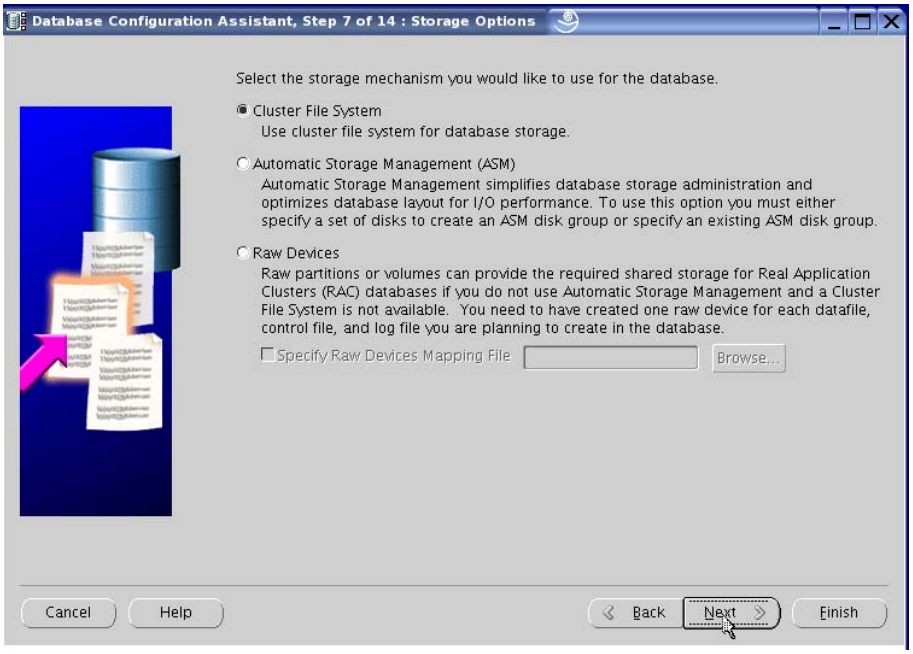

Figure 6.9

Choose Oracle Managed Files on the Database File Locations screen (Figure 6.10) and click Finish.

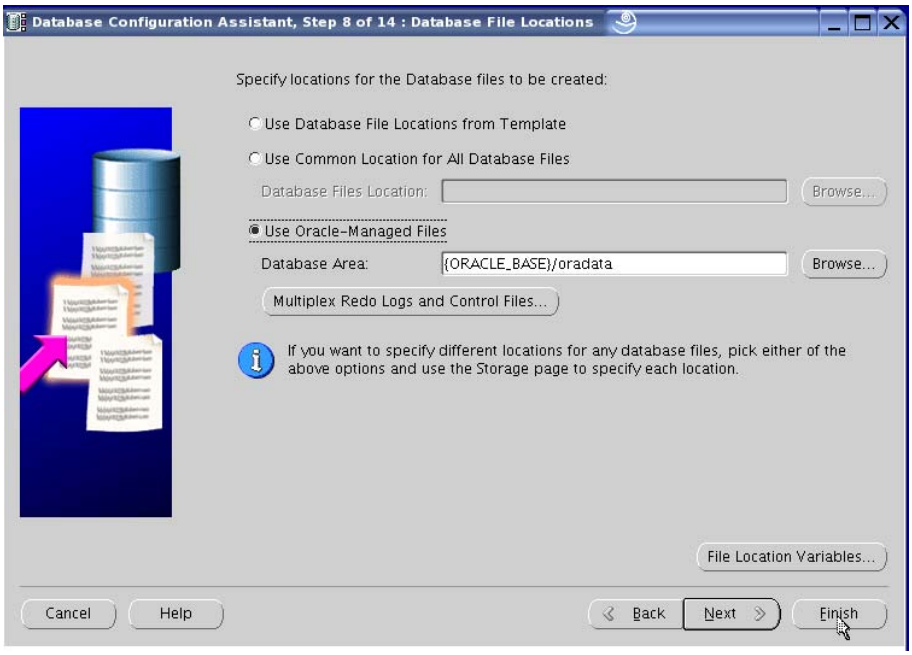

Figure 6.10

Since a DB Optimized location has been configured for Flash Recovery, accept the default by clicking Next as shown in Figure 6.11.

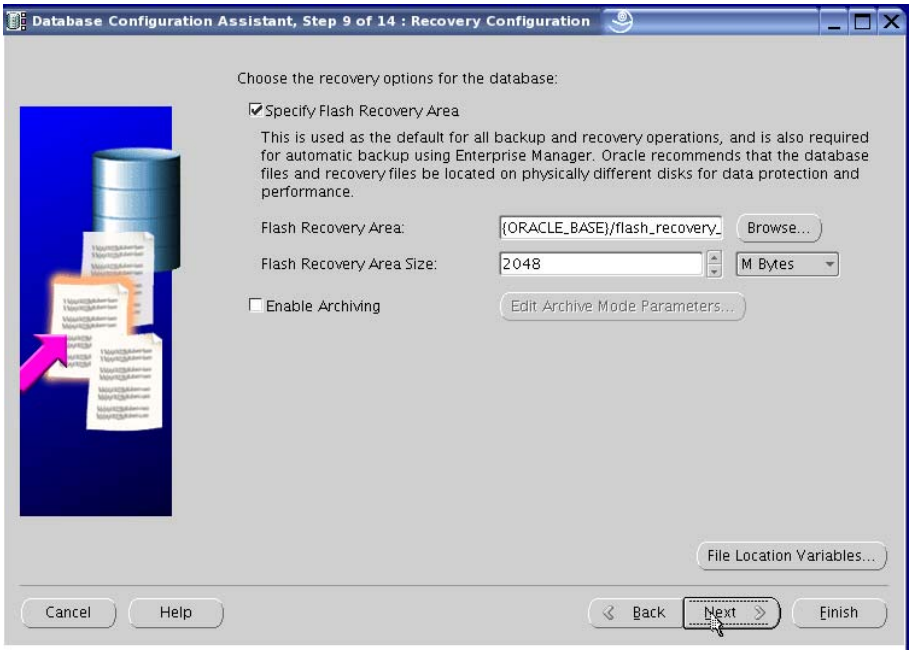

Figure 6.11

PolyServe recommends that you have DBCA create the sample schemas. Click Next as shown in Figure 6.12.

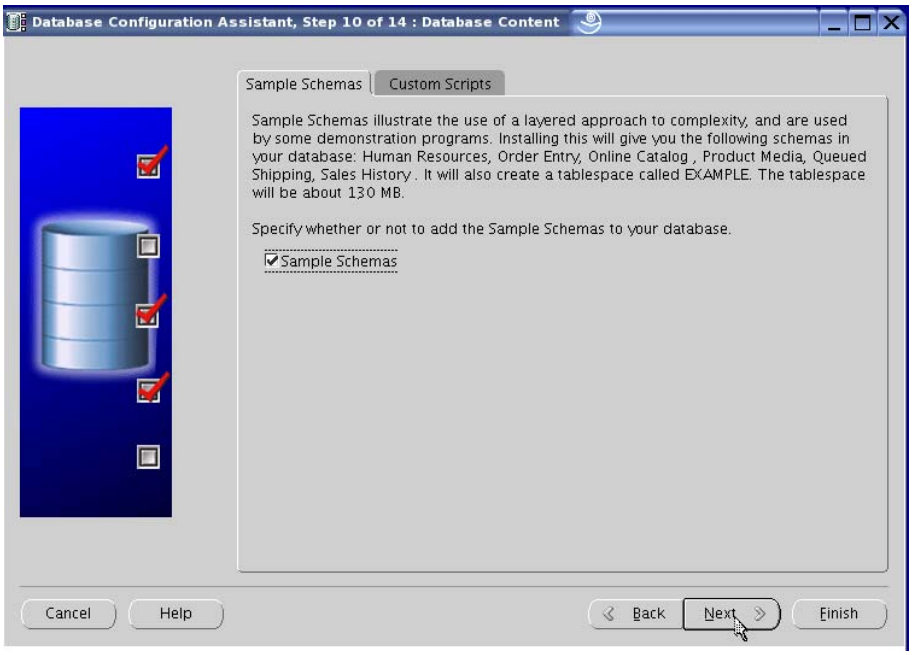

Figure 6.12

On the Database Services screen (Figure 6.13), select your Global Database and click Add.

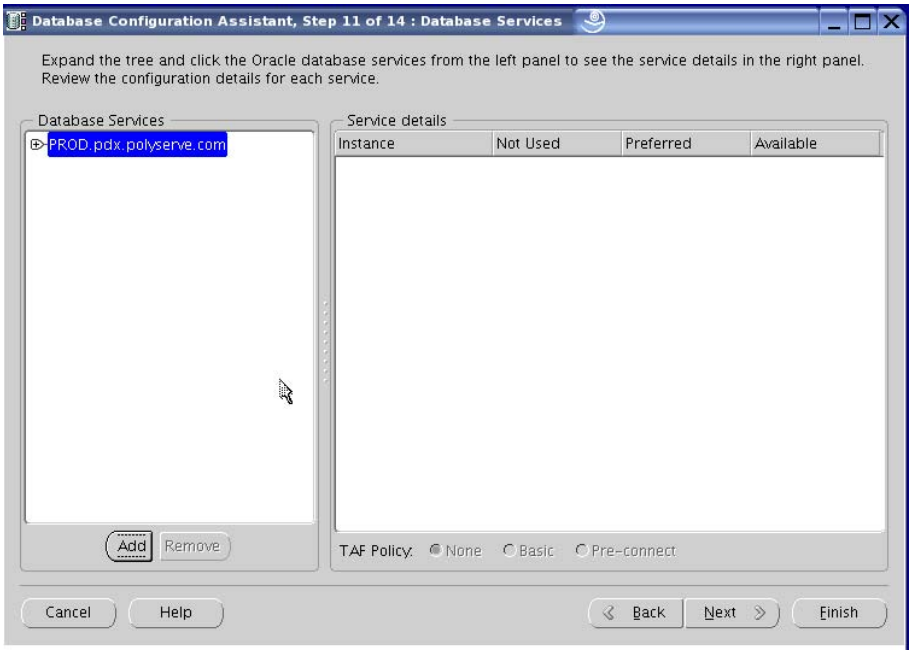

Figure 6.13

Enter a Service name in the Add a Service dialog (Figure 6.14) and click OK.

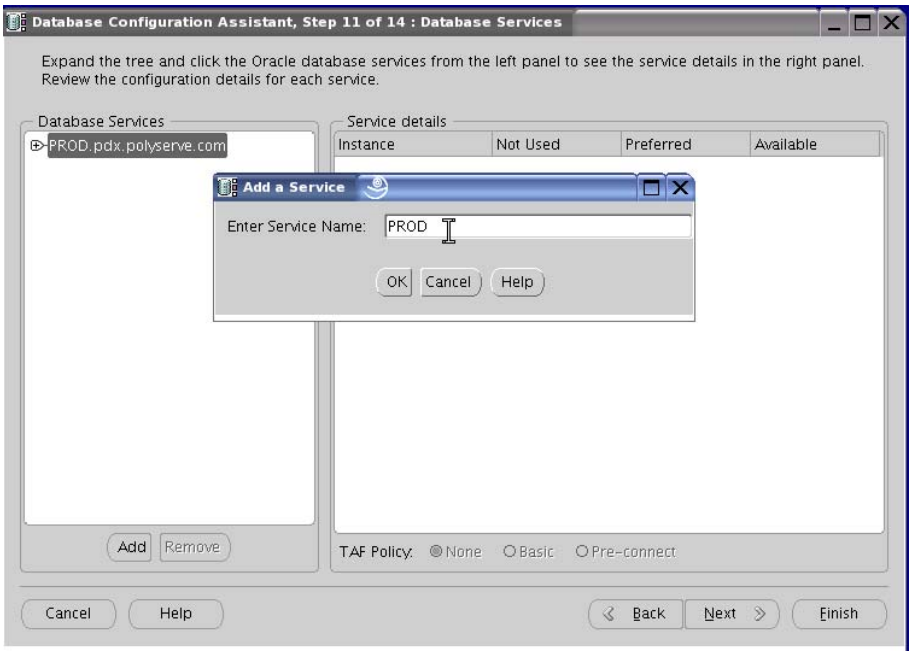

Figure 6.14

DBCA then fills the box with the names of the servers known by CRS as shown in Figure 6.15. Click Next.

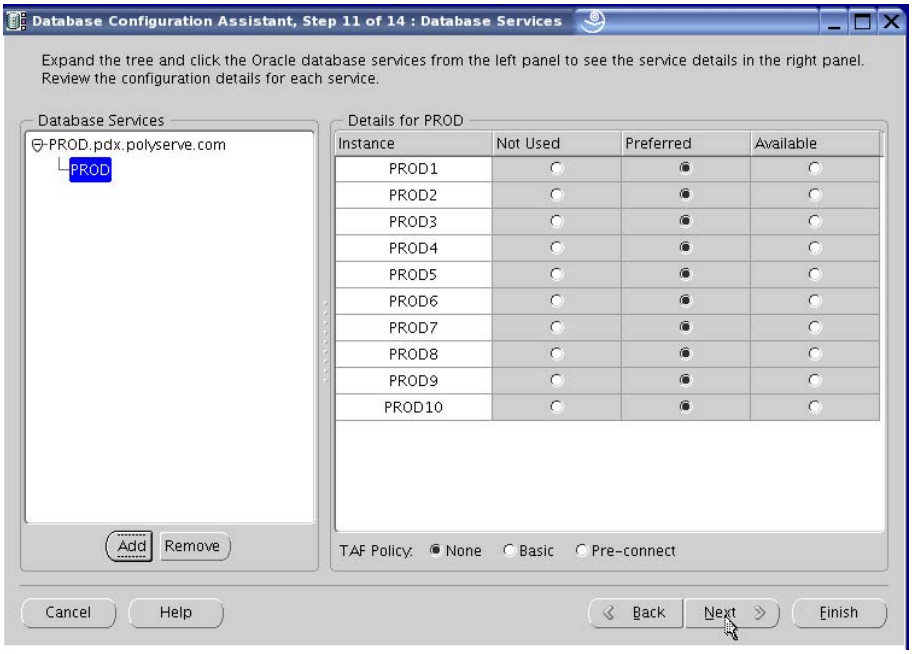

Figure 6.15

If you are satisfied with the settings for Memory, Sizing, Character Sets, and so on that are shown in the Initialization Parameters Box (Figure 6.16), click Next.

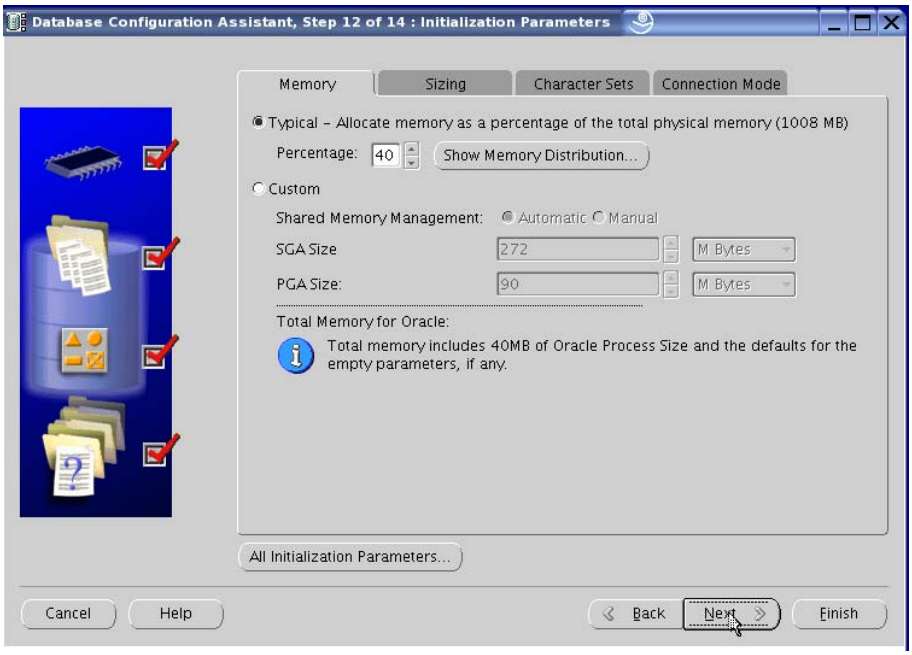

Figure 6.16

Review the Options as shown in Figure 6.17 and click OK.

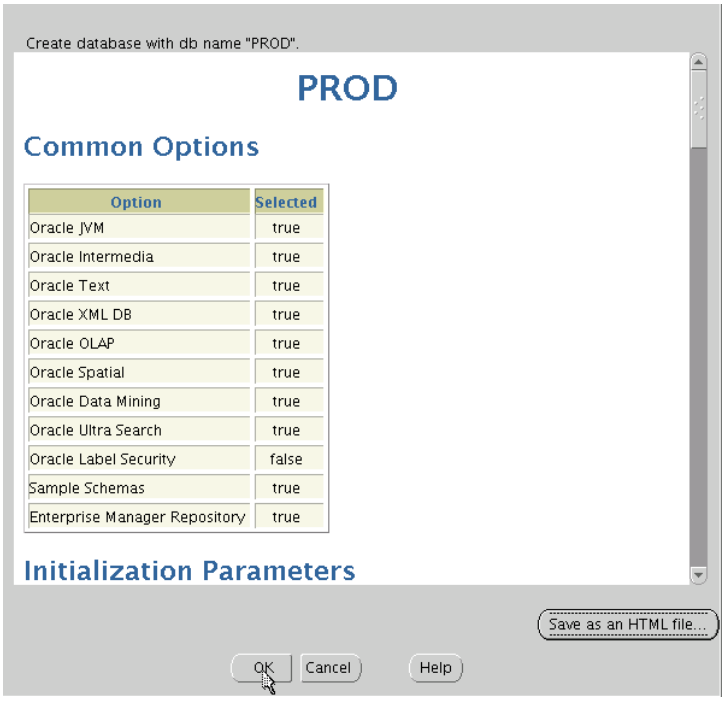

Figure 6.17

DBCA now creates the database. A progress bar appears as shown in Figure 6.18.

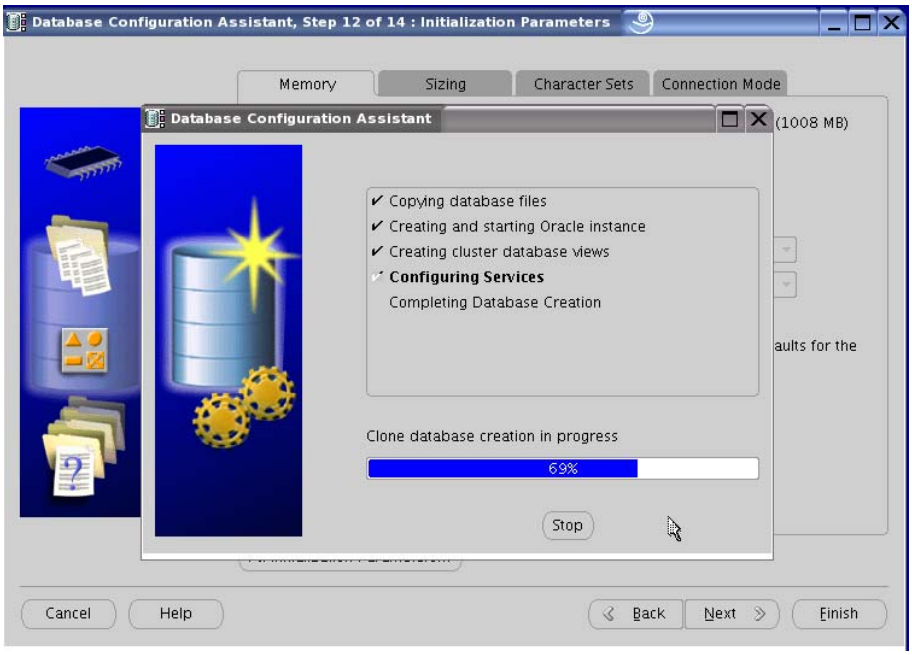

Figure 6.18

When DBCA has completed creating the database, an information dialog appears as shown in Figure 6.19. Examine it and click Exit.

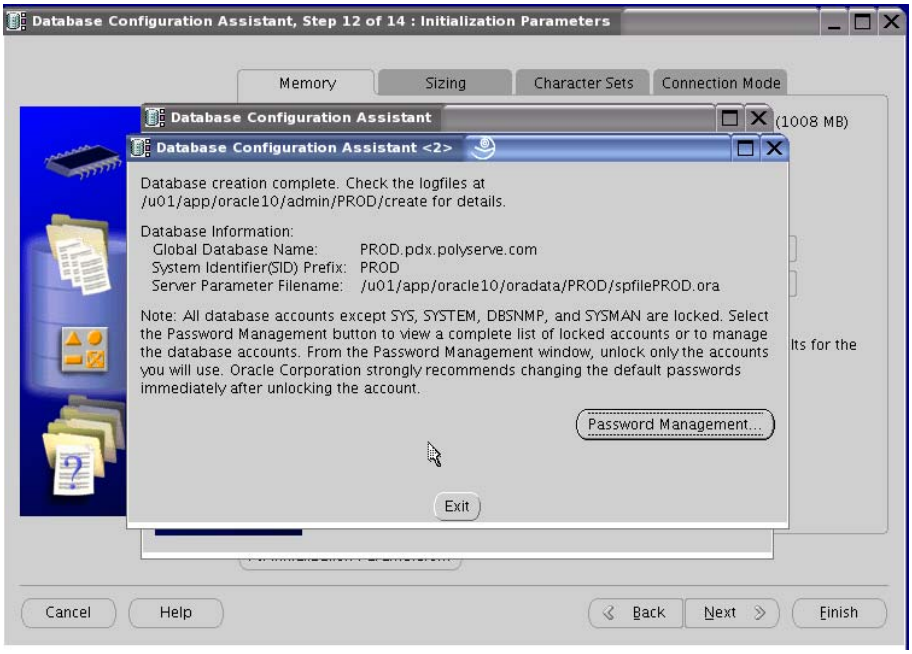

Figure 6.19

Another dialog box (Figure 6.20) states that database instances are being started.

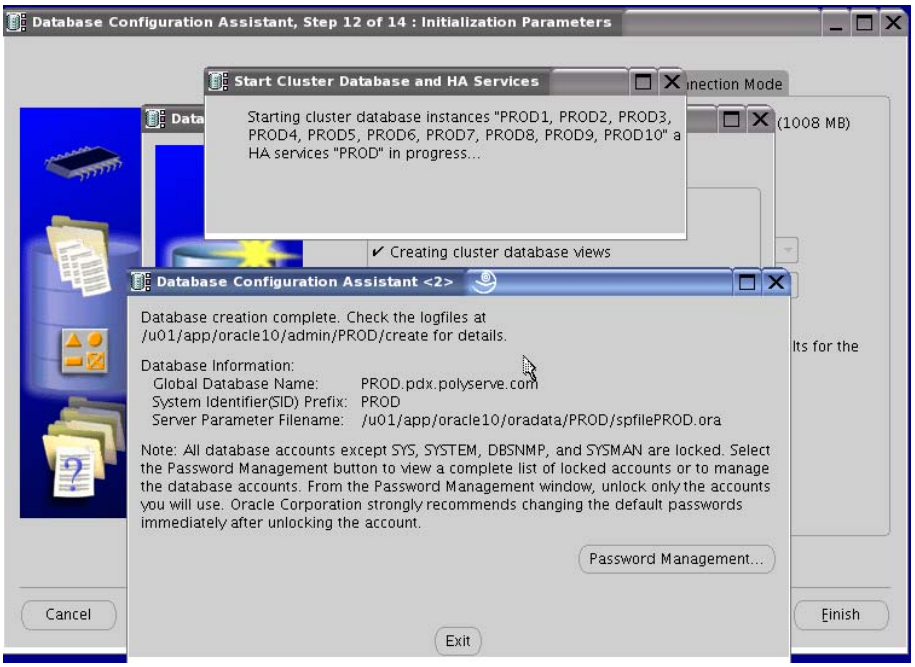

Figure 6.20

Step 7: Enterprise Manager Configuration

If your installation of steps 1-6 has not been interrupted by a system configuration violation, the Enterprise Manager Configuration will have started automatically. However, if problems were encountered, you can re-run Enterprise Manager Configuration Assistant (**emca**) at this time.

As shown in Figure 7.1, invoke **emca** with the -**c** and -**r** options. Answer the questions with appropriate values for your setup.

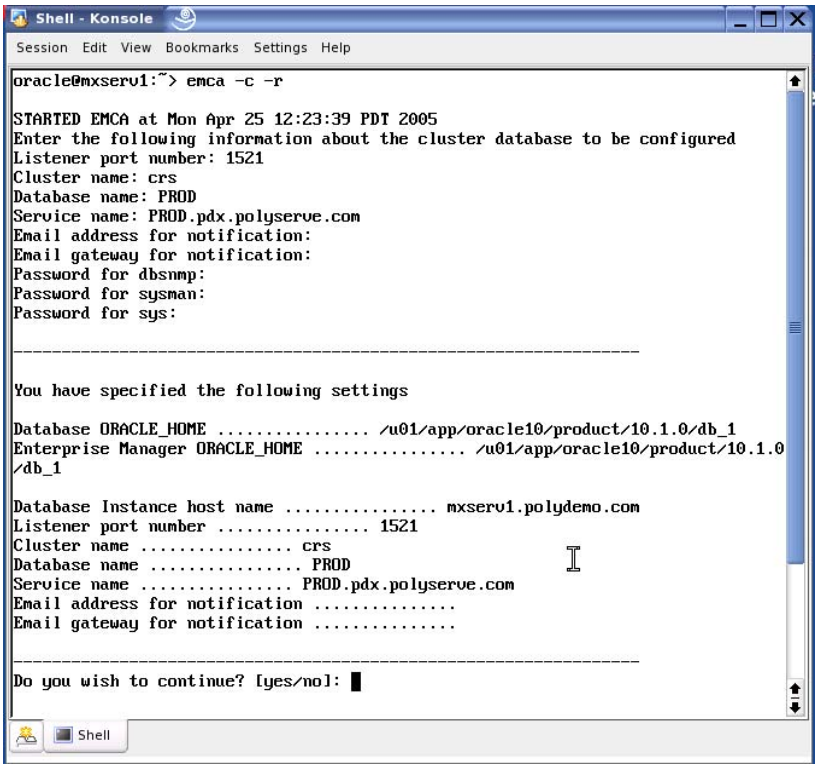

Figure 7.1

After answering yes as in Figure 7.1, **emca** performs a great deal of configuration activity, logging progress to the screen.

As shown in Figure 7.2, the end of the procedure will report success and report how to connect to Enterprise Manager for this RAC setup.

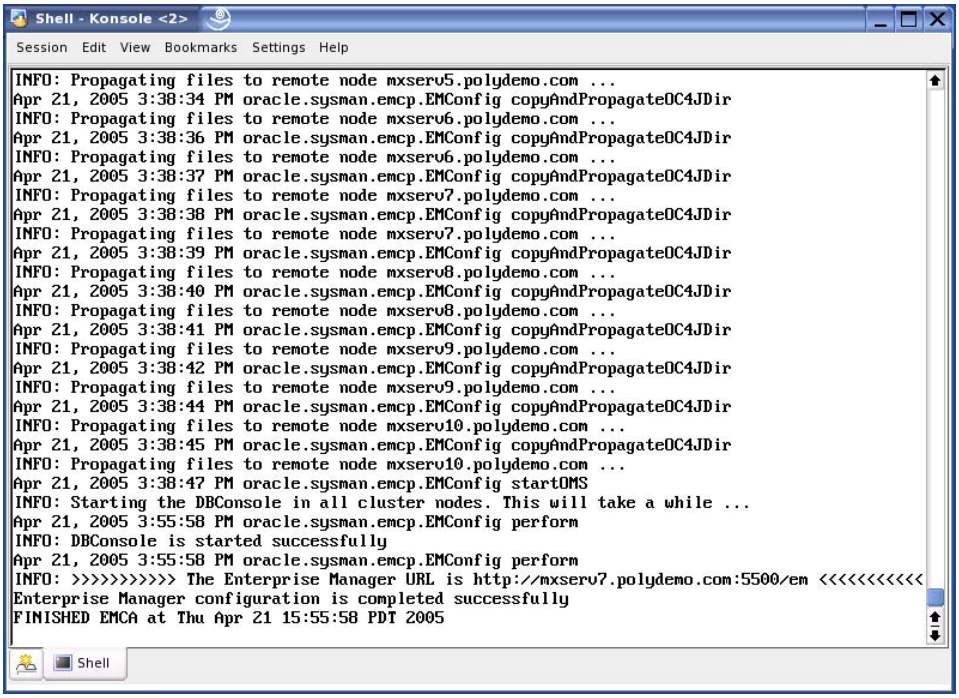

Figure 7.2