



Installing your Oracle Software

Objectives

After completing this lesson, you should be able to:

- Describe your role as a database administrator (DBA) and explain typical tasks and tools
- Plan an Oracle software installation
- Install Oracle Grid Infrastructure for a standalone server
- Install the Oracle database software

Tasks of an Oracle Database Administrator

The approach for designing, implementing, and maintaining an Oracle database involves the following tasks:

1. Evaluating the database server hardware
2. Installing the Oracle software
3. Planning the database and security strategy
4. Creating, migrating, and opening the database
5. Backing up the database
6. Enrolling system users and planning for their Oracle Network access
7. Implementing the database design
8. Recovering from database failure
9. Monitoring database performance



ORACLE

Tools for Administering an Oracle Database

- Oracle Universal Installer
- Database Configuration Assistant
- Database Upgrade Assistant
- Oracle Net Manager
- Oracle Net Configuration Assistant
- Oracle Enterprise Manager
- Server Control Utility
- SQL*Plus
- Recovery Manager
- Data Pump
- SQL*Loader

Planning Your Installation

- What Oracle software are you installing?
- Does the hardware involved meet the minimum required specifications?
- Is there a recommended order of installation when multiple products are involved?
- Are there prerequisite steps that must be performed by someone other than the DBA?



Oracle Grid Infrastructure and Oracle Database Installation: System Requirements

- Memory requirements:
 - 1 GB for the database instance with Oracle Enterprise Manager Database Control
 - 1.5 GB for the ASM instance and Oracle Restart
- Disk space requirements:
 - 3 GB of swap space (based on 2 GB RAM)
 - 1 GB of disk space in the /tmp directory
 - 3.8 GB for the Oracle Database software
 - 4.5 GB for the Grid Infrastructure software
 - 1.7 GB for the preconfigured database (optional)
 - 3.4 GB for the fast recovery area (optional)
- Operating system (see documentation)



Preparing the Operating System

Create the required operating system users and groups:

- Groups:
 - `oinstall`
 - `dba`
 - Optional groups (if doing separation of duty across multiple users):
 - `oper`
 - `asmdba`
 - `asmoper`
 - `asmadmin`
- Users:
 - Software owner, usually `oracle`
 - Can create multiple users for multiple product installations

Setting Environment Variables

Oracle environment variables:

- `ORACLE_BASE`: Base of the Oracle directory structure. Recommended to set this before installation.
- `ORACLE_HOME`: The environment in which Oracle products run. Not required before installation if `ORACLE_BASE` is set.
- `ORACLE_SID`: Not required before installation, but useful afterwards for ease of interaction with a particular instance
- `NLS_LANG`: Optional environment variable that controls language, territory, and client character set settings



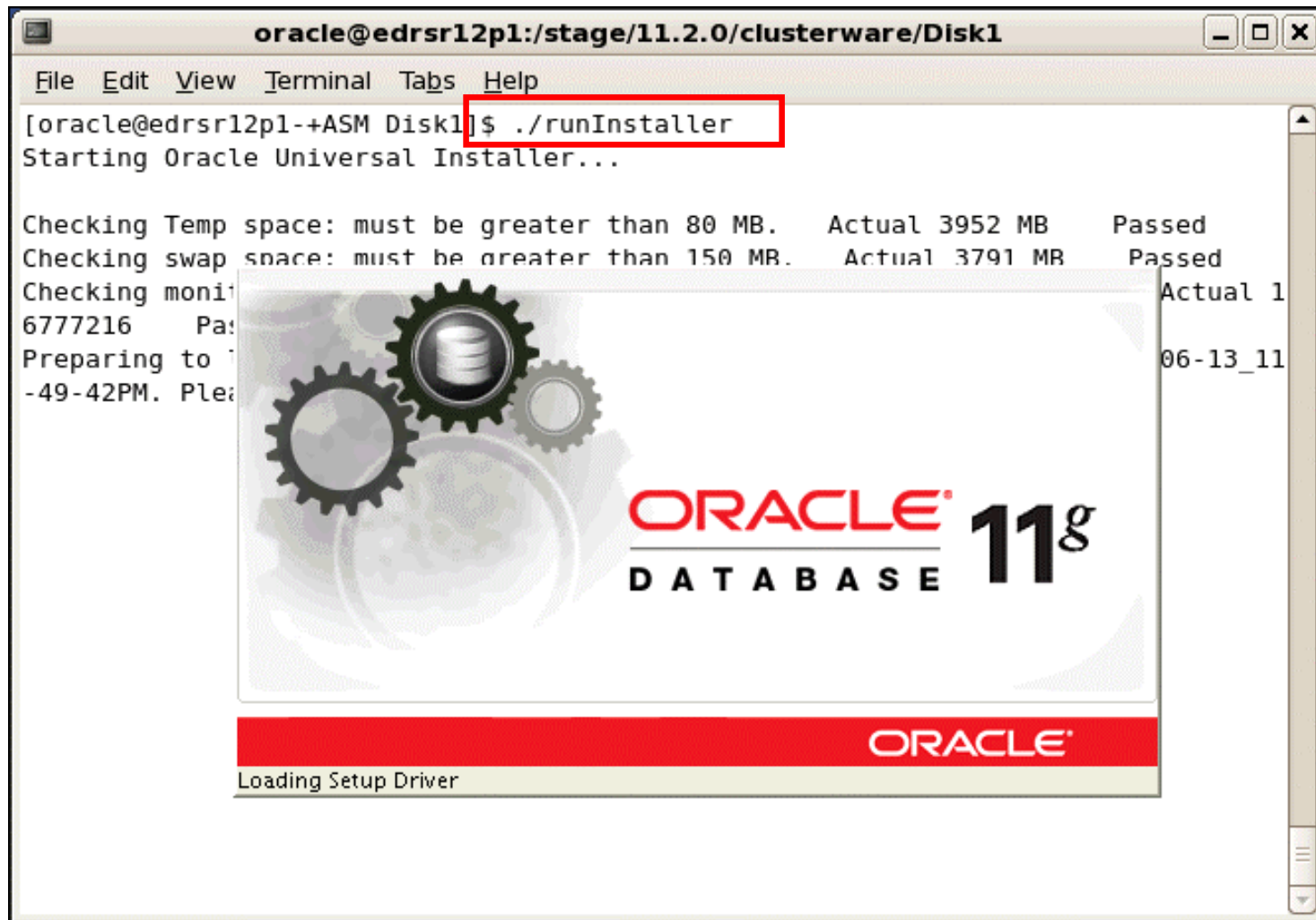
Checking the System Requirements

- Adequate temporary space
- 64-bit versus 32-bit issues
- Correct operating system (OS)
- OS patch level
- System packages
- System and kernel parameters
- X Server permissions
- Sufficient swapping
- ORACLE_HOME status

```
[oracle@edrsrl2pl-+ASM Disk1]$ ./runInstaller
Starting Oracle Universal Installer...

Checking Temp space: must be greater than 80 MB.    Actual 15067 MB    Passed
Checking swap space: must be greater than 150 MB.    Actual 4000 MB    Passed
Checking monitor: must be configured to display at least 256 colors.    Actual 65536    Passed
Preparing to launch Oracle Universal Installer from /tmp/OraInstall2009-05-15_12-04-10AM. Please wait ...
```

Oracle Universal Installer (OUI)

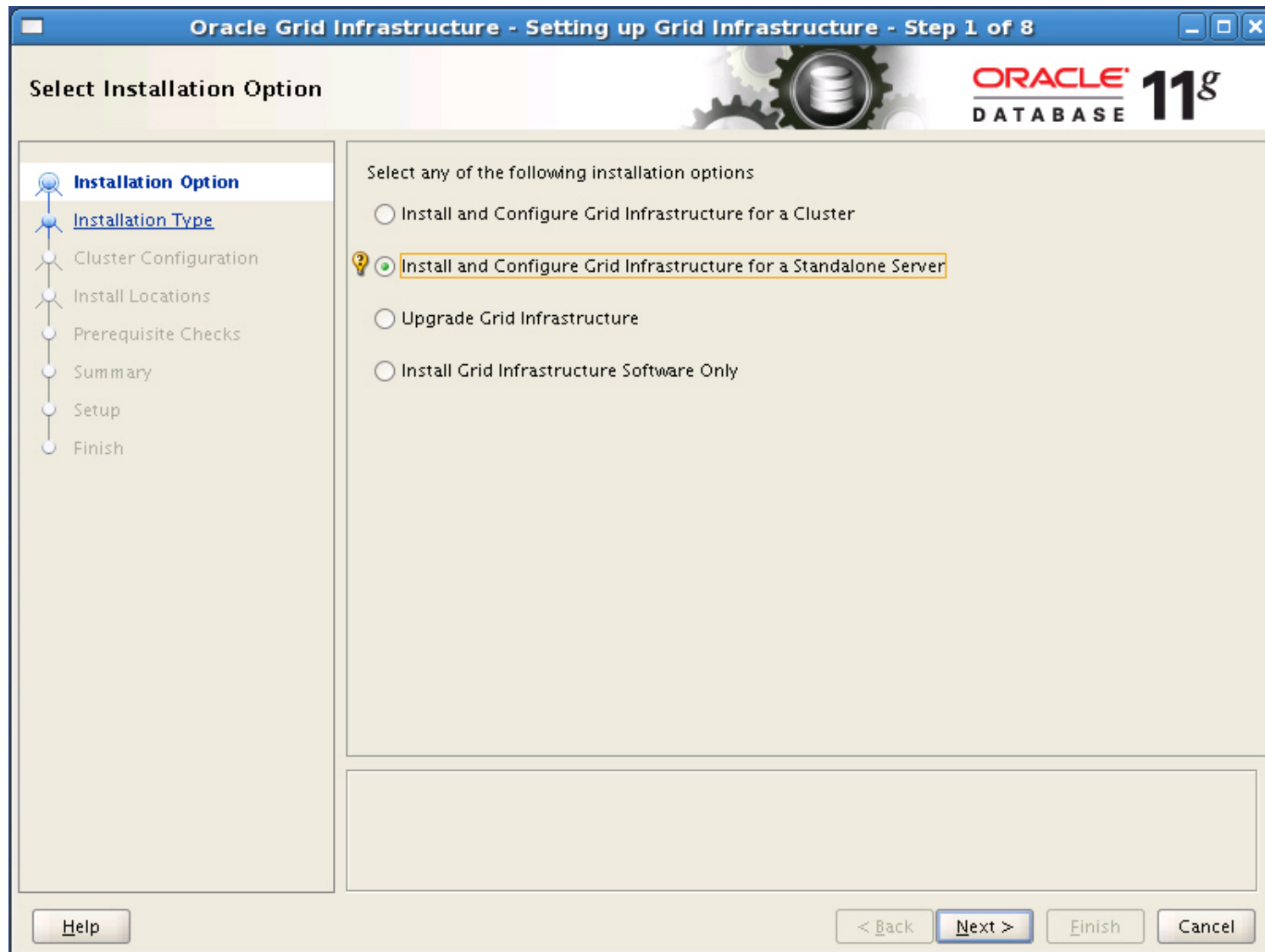


Example: Installation Scenario

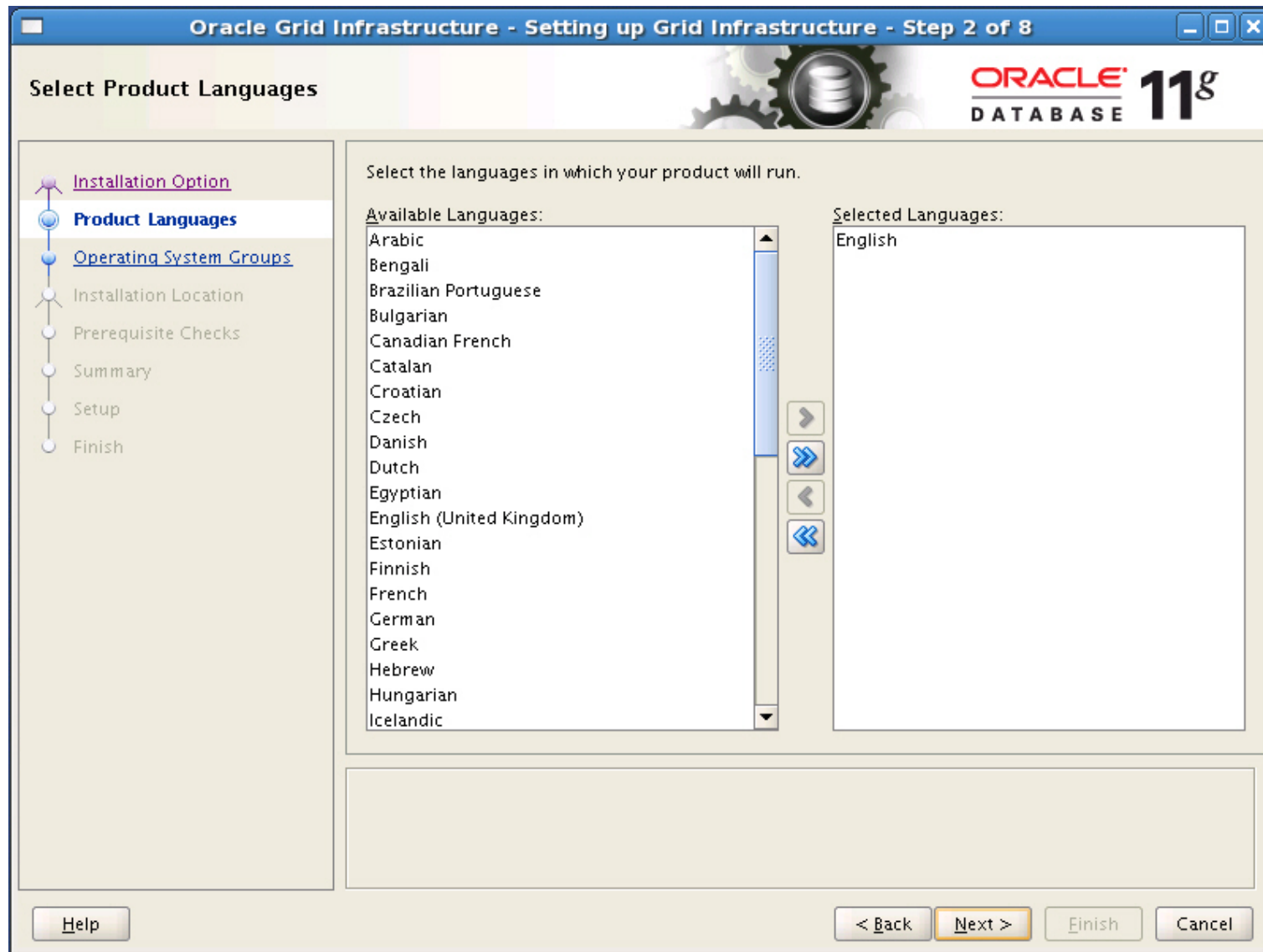
The installation scenario being presented in this lesson is divided into two parts:

- Part One: Install Oracle Grid Infrastructure for standalone server
- Part Two: Install Oracle Database software

Part One: Installing the Oracle Grid Infrastructure for Standalone Server



Selecting Product Languages



Creating an ASM Disk Group

Oracle Grid Infrastructure - Setting up Grid Infrastructure - Step 3 of 10

Create ASM Disk Group

ORACLE 11g DATABASE

Installation Option

Product Languages

Create ASM Disk Group

ASM Password

Operating System Groups

Installation Location

Prerequisite Checks

Summary

Setup

Finish

Select Disk Group Characteristics and select disks

Disk Group Name: DATA

Redundancy: ☐ High ☒ Normal ☐ External

Add Disks

☒ Candidate Disks ☐ All Disks

<input type="checkbox"/>	Disk Path	Size (in MB)	Status
<input checked="" type="checkbox"/>	ORCL:ASMDISK1	2304	Candidate
<input type="checkbox"/>	ORCL:ASMDISK10	2304	Candidate
<input type="checkbox"/>	ORCL:ASMDISK11	2304	Candidate
<input type="checkbox"/>	ORCL:ASMDISK12	2304	Candidate
<input type="checkbox"/>	ORCL:ASMDISK13	2304	Candidate
<input checked="" type="checkbox"/>	ORCL:ASMDISK2	2304	Candidate
<input checked="" type="checkbox"/>	ORCL:ASMDISK3	2304	Candidate
<input checked="" type="checkbox"/>	ORCL:ASMDISK4	2304	Candidate
<input type="checkbox"/>	ORCL:ASMDISK5	2304	Candidate

Change Discovery Path

Help

< Back Next > Finish Cancel

Defining ASM Passwords

Oracle Grid Infrastructure - Setting up Grid Infrastructure - Step 4 of 10

Specify ASM Password

The new Automatic Storage Management (ASM) instance requires its own SYS user with SYSASM privileges for administration. Oracle recommends that you create a less privileged ASMSNMP user with SYSDBA privileges to monitor the ASM instance.

Specify the password for these user accounts.

☒ Use different passwords for these accounts

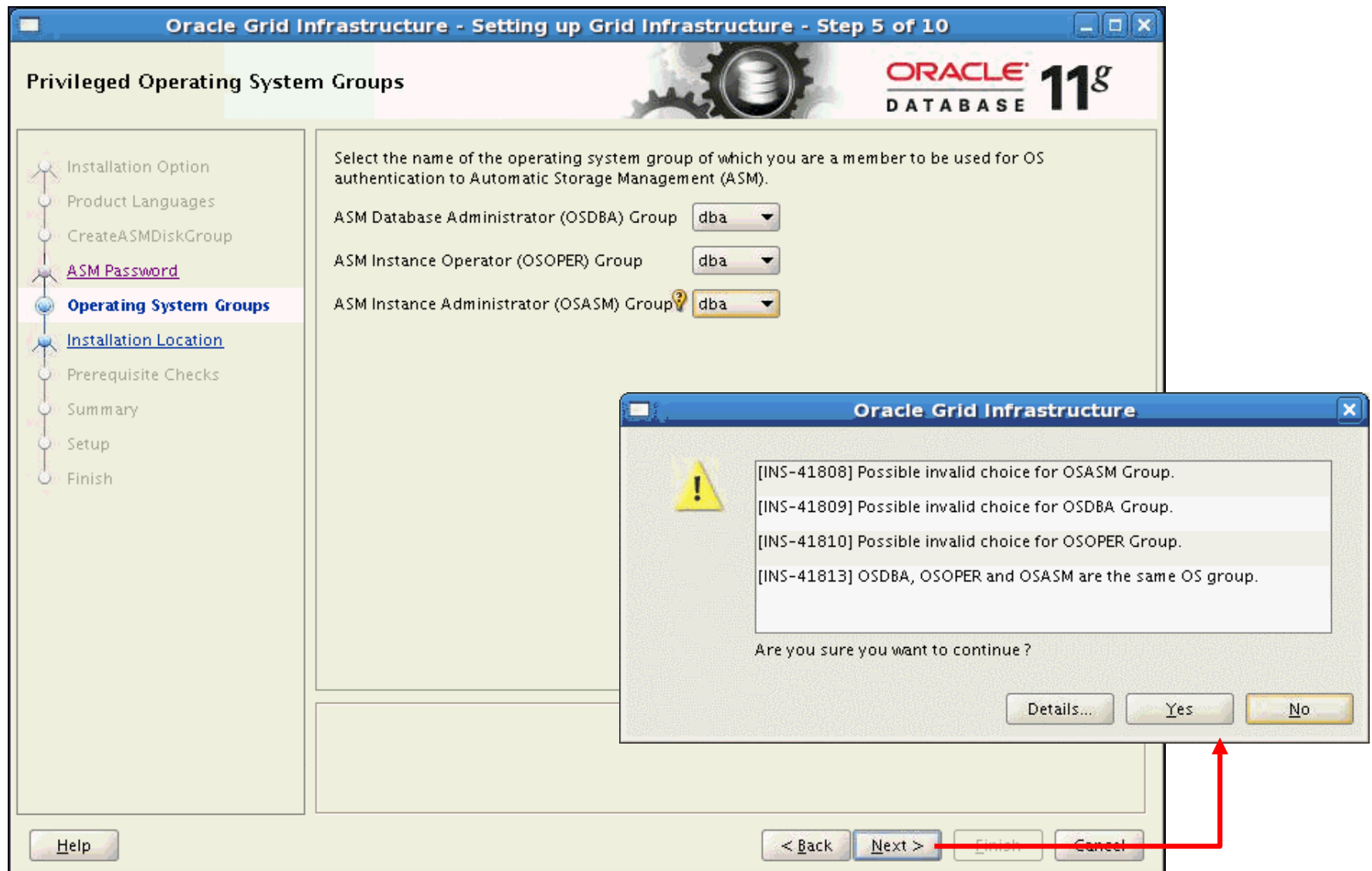
	Password	Confirm Password
SYS	*****	*****
ASMSNMP	*****	*****

☐ Use same passwords for these accounts

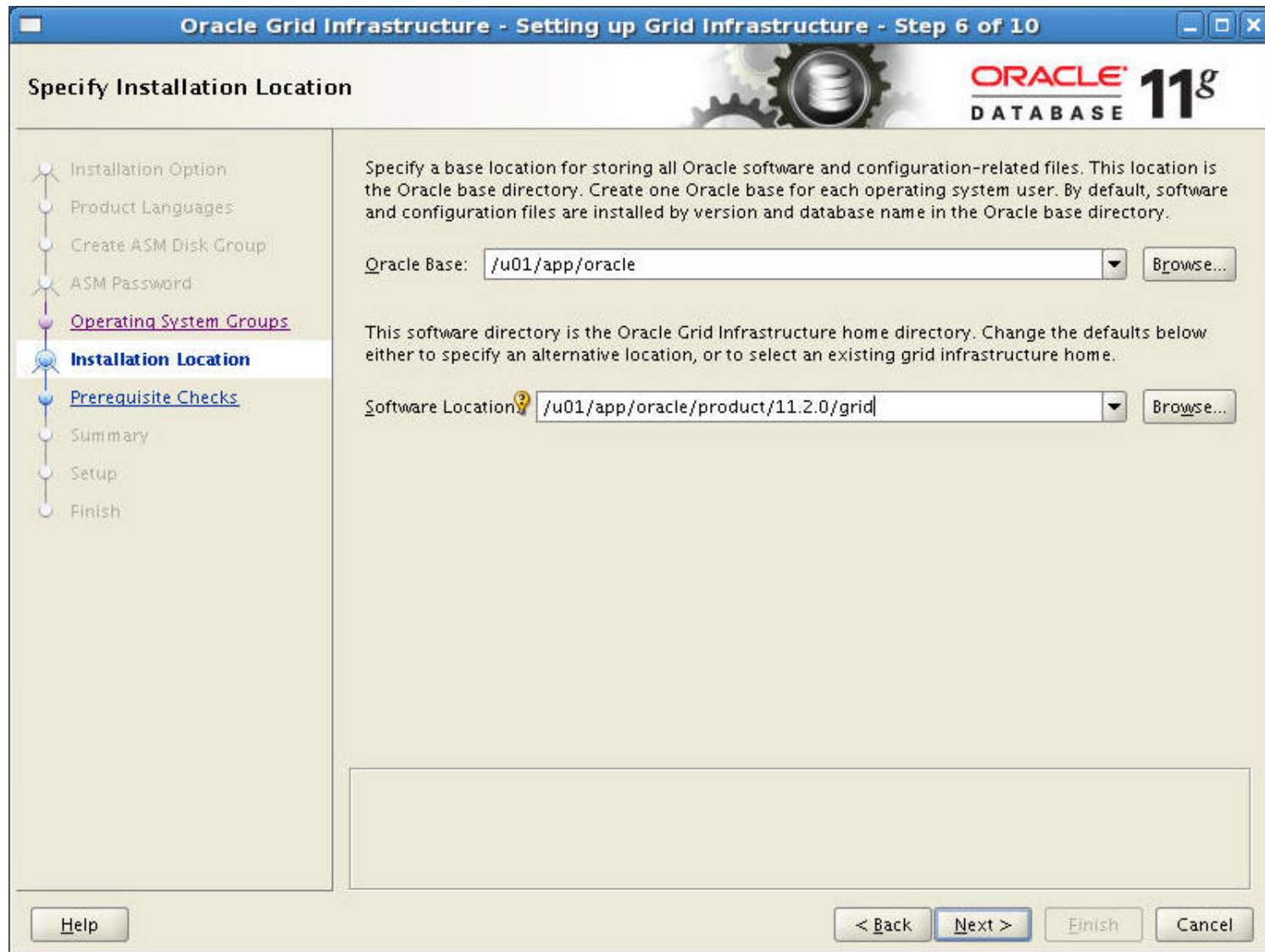
Specify Password: Confirm Password:

Help < Back Next > Finish Cancel

Defining Privileged Operating System Groups



Specifying Installation Location



The screenshot shows the 'Specify Installation Location' window in the Oracle Grid Infrastructure setup. The window title is 'Oracle Grid Infrastructure - Setting up Grid Infrastructure - Step 6 of 10'. The Oracle 11g Database logo is in the top right. On the left, a vertical list of steps includes 'Installation Option', 'Product Languages', 'Create ASM Disk Group', 'ASM Password', 'Operating System Groups', 'Installation Location' (highlighted), 'Prerequisite Checks', 'Summary', 'Setup', and 'Finish'. The main area contains instructions: 'Specify a base location for storing all Oracle software and configuration-related files. This location is the Oracle base directory. Create one Oracle base for each operating system user. By default, software and configuration files are installed by version and database name in the Oracle base directory.' Below this, the 'Oracle Base' is set to '/u01/app/oracle' with a 'Browse...' button. Further down, instructions state: 'This software directory is the Oracle Grid Infrastructure home directory. Change the defaults below either to specify an alternative location, or to select an existing grid infrastructure home.' The 'Software Location' is set to '/u01/app/oracle/product/11.2.0/grid' with a 'Browse...' button. At the bottom, there is a 'Help' button on the left and '< Back', 'Next >', 'Finish', and 'Cancel' buttons on the right.

Oracle Grid Infrastructure - Setting up Grid Infrastructure - Step 6 of 10

Specify Installation Location

Installation Option
Product Languages
Create ASM Disk Group
ASM Password
Operating System Groups
Installation Location
Prerequisite Checks
Summary
Setup
Finish

Specify a base location for storing all Oracle software and configuration-related files. This location is the Oracle base directory. Create one Oracle base for each operating system user. By default, software and configuration files are installed by version and database name in the Oracle base directory.

Oracle Base: /u01/app/oracle Browse...

This software directory is the Oracle Grid Infrastructure home directory. Change the defaults below either to specify an alternative location, or to select an existing grid infrastructure home.

Software Location: /u01/app/oracle/product/11.2.0/grid Browse...

Help < Back Next > Finish Cancel

Creating Inventory

Oracle Grid Infrastructure - Setting up Grid Infrastructure - Step 7 of 11

Create Inventory

ORACLE **11g**
DATABASE

You are starting your first installation on this host. Specify a directory for installation files. This directory is called the "inventory directory". The installer automatically sets up subdirectories for each product to contain inventory data. The subdirectory for each product typically requires 150 kilobytes of disk space.

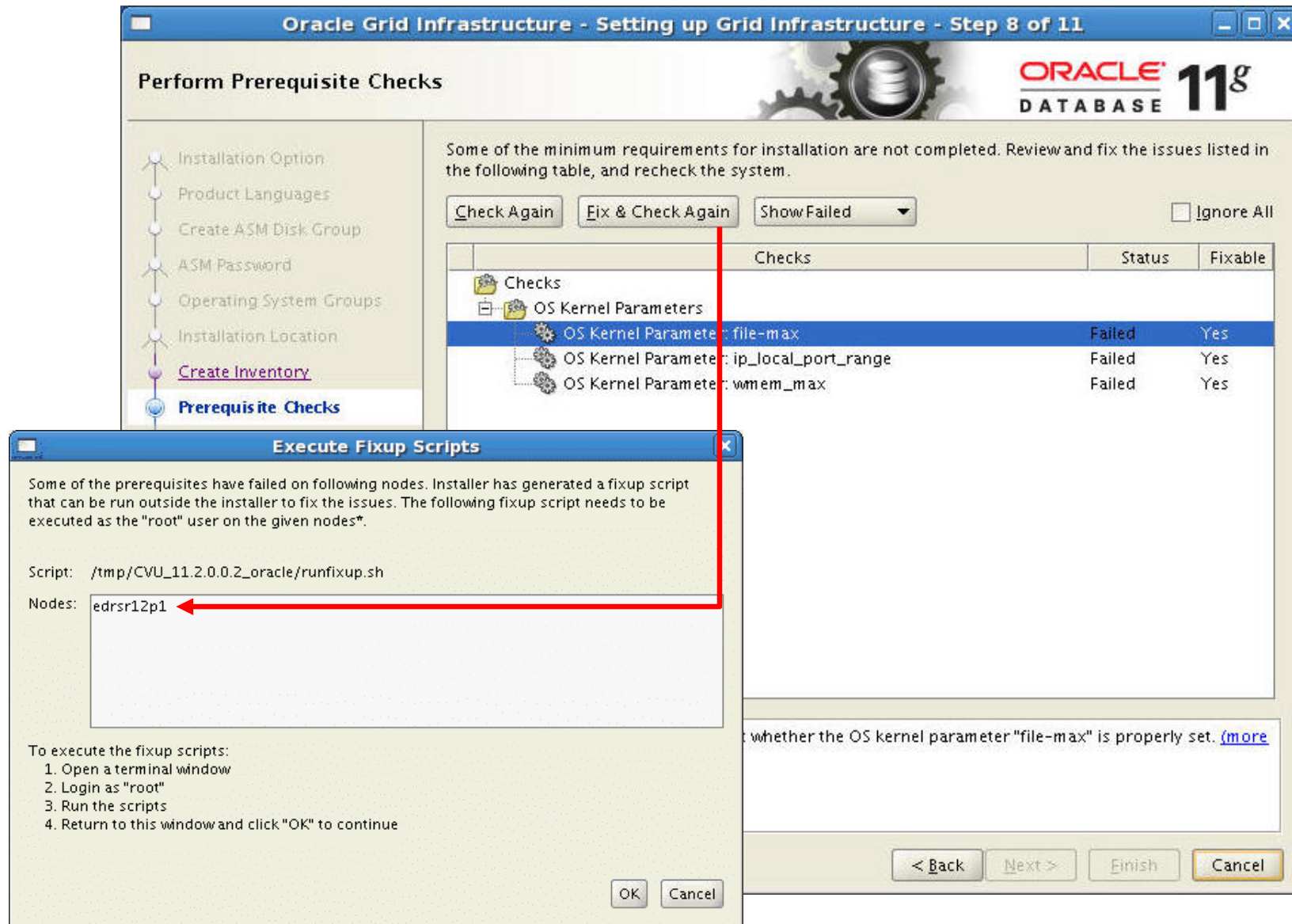
Inventory Directory:

Specify an operating system group whose members have write permission to the inventory directory (oralInventory).

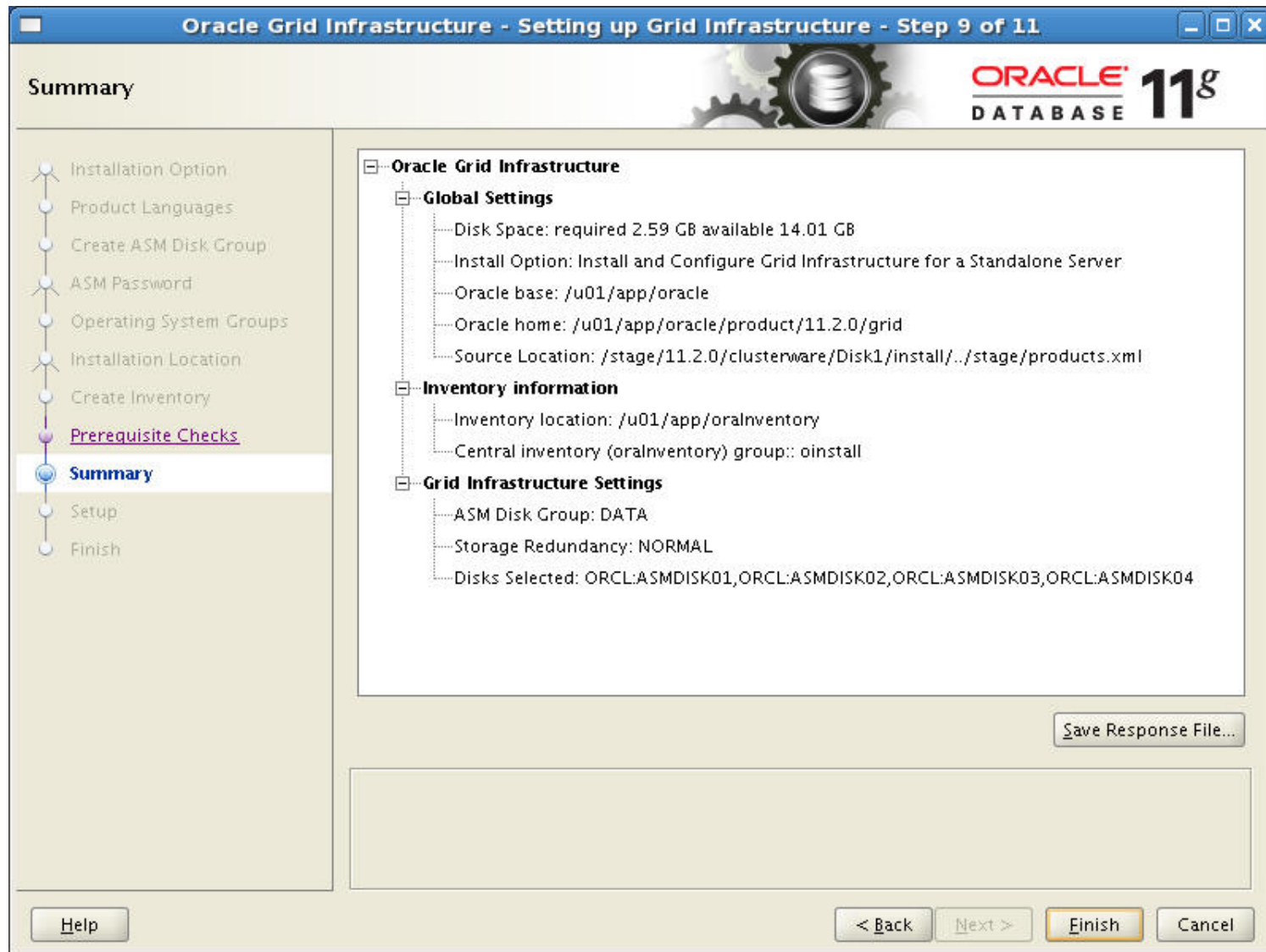
oralInventory Group Name:

[Installation Option](#)
[Product Languages](#)
[CreateASMDiskGroup](#)
[ASM Password](#)
[Operating System Groups](#)
[Installation Location](#)
[Create Inventory](#)
[Prerequisite Checks](#)
[Summary](#)
[Setup](#)
[Finish](#)

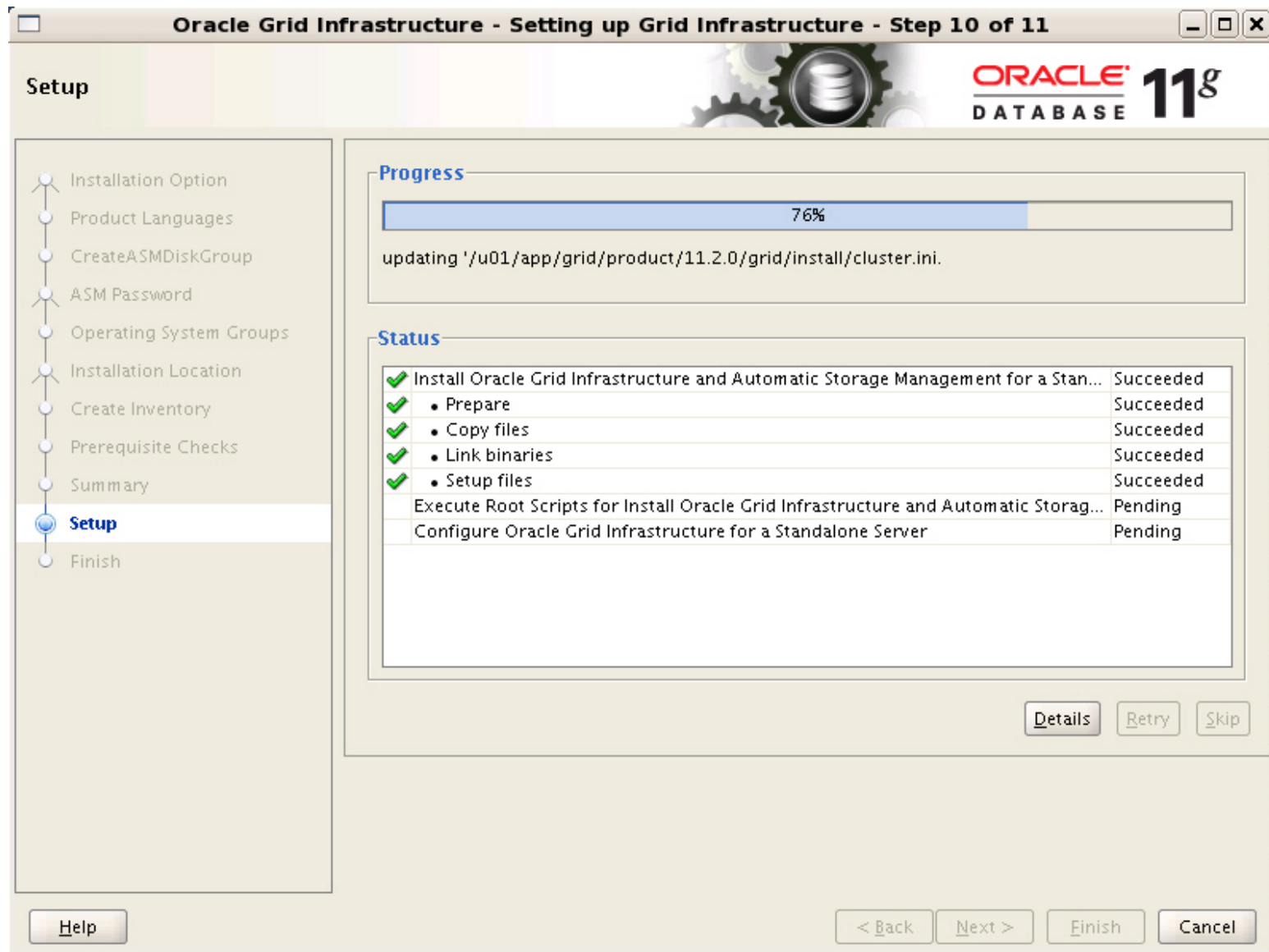
Performing Prerequisite Checks



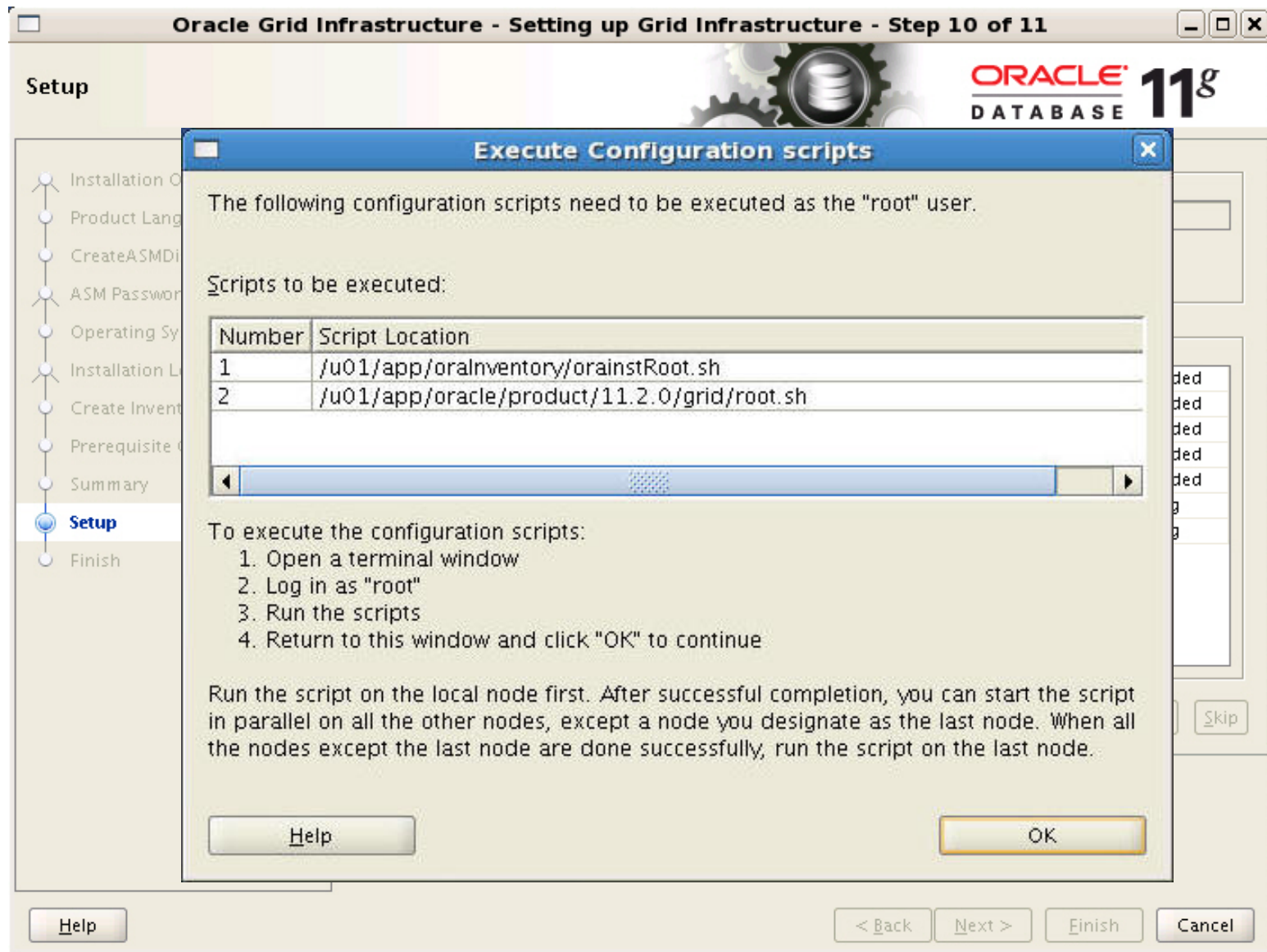
Verifying Installation Summary Data



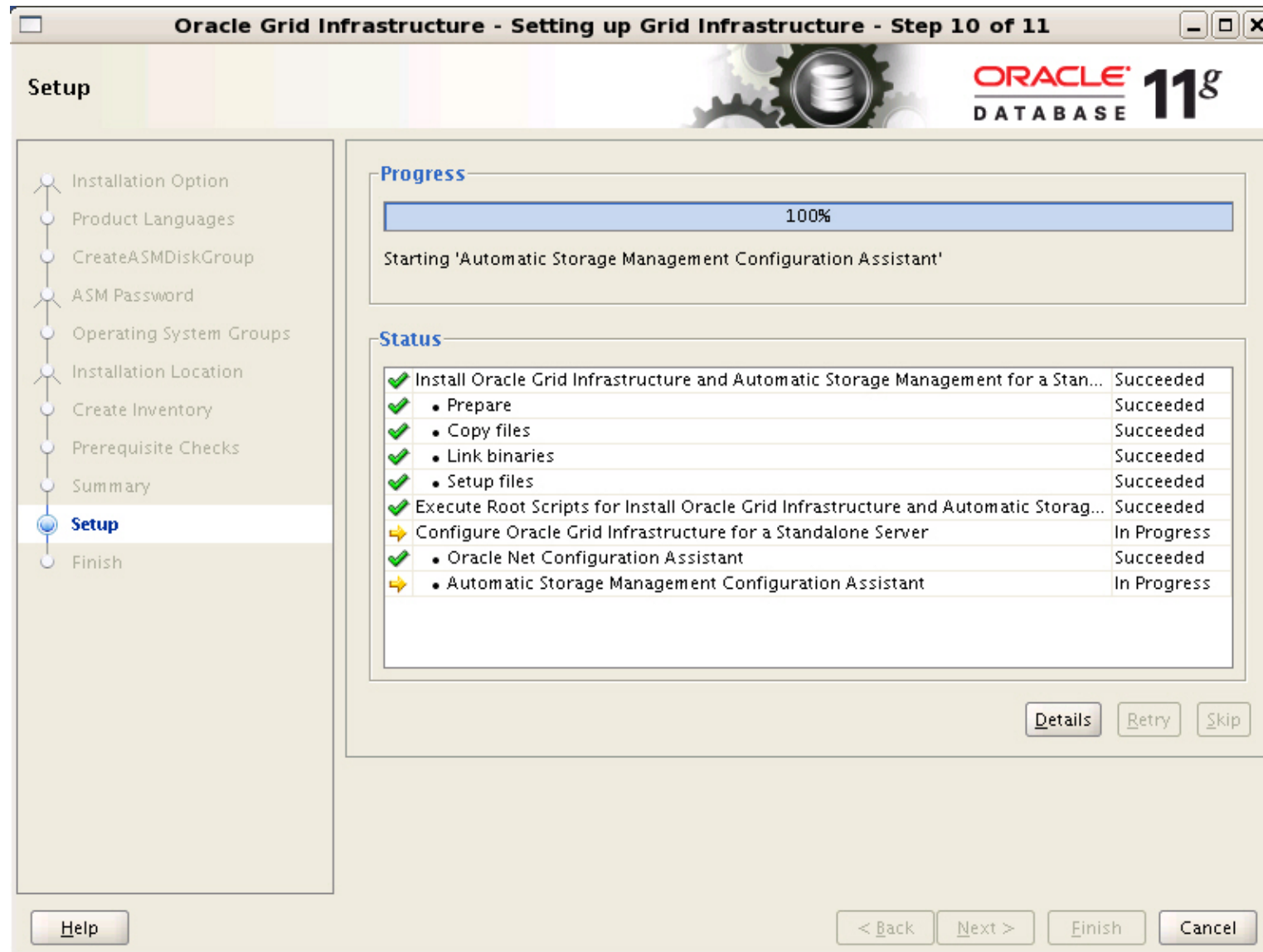
Monitoring Installation Progress



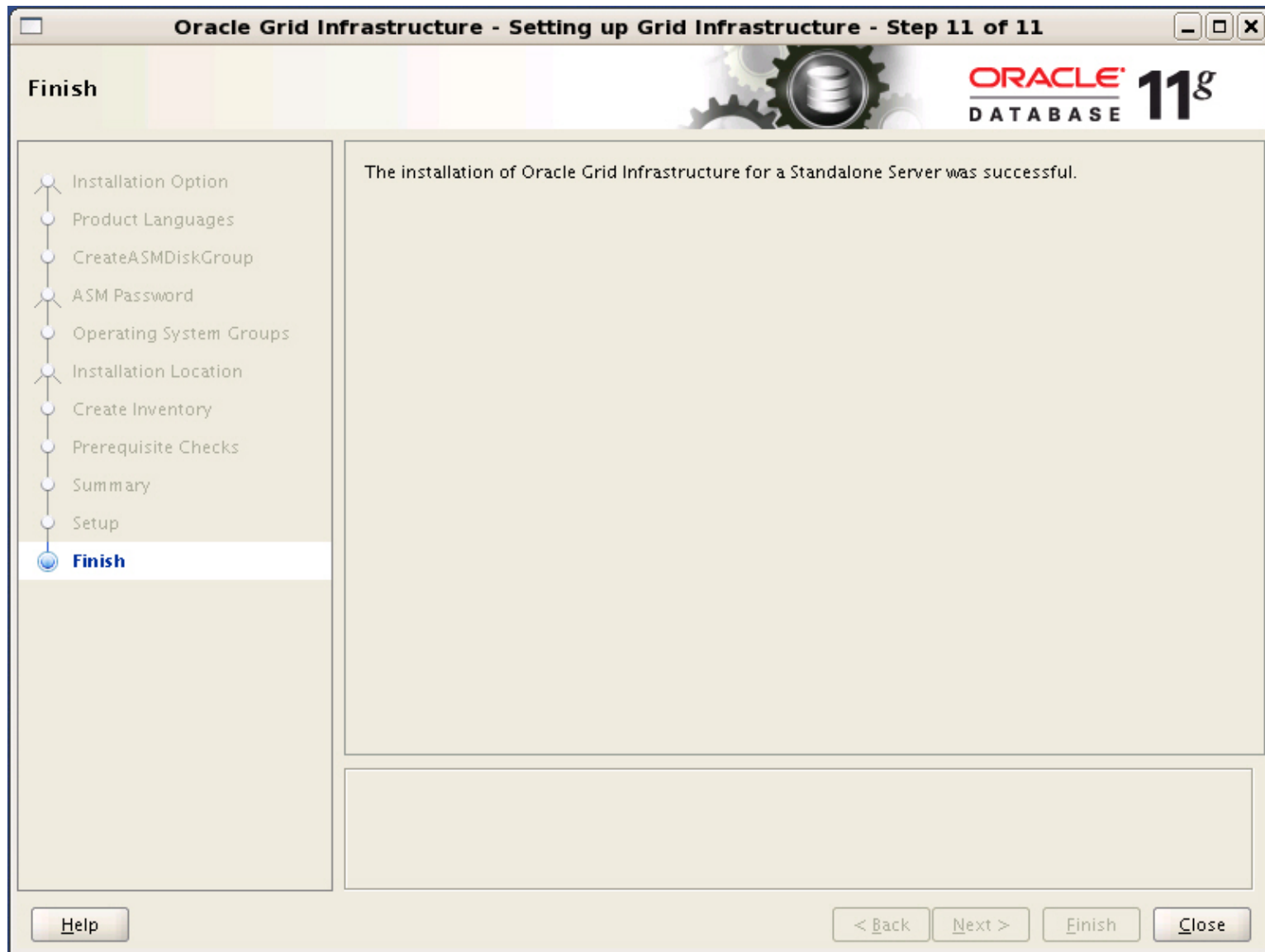
Executing root Configuration Scripts



Executing Configuration Assistants



Finishing Installation



Configuring the FRA Disk Group

The screenshot shows the 'ASM Configuration Assistant: Configure ASM: Disk Groups' window. The 'Disk Groups' tab is selected, showing a table with one disk group named 'DATA'. A red arrow points from the 'Create' button in the main window to the 'Create Disk Group' dialog box.

ASM Instance: +ASM

Tab: Disk Groups | Volumes | ASM Cluster File Systems

You can choose to create a new disk group or add disks to an existing disk group. To create dynamic volumes, you need disk groups with 11.2 ASM compatibility.

Tip: To perform operations on a disk group, right mouse click on the row.

Disk Group Name	Size (GB)	Free (GB)	Usable (GB)	Redundancy	State
DATA	9.00	8.82	3.29	NORMAL	MOUNTED

Buttons: Create, Mount All, Dismount All, Help

Create Disk Group Dialog:

Disk Group Name: FRA

Redundancy: ☐ High ☐ Normal ☒ External (None)

Select Member Disks: ☒ Show Eligible ☐ Show All

<input type="checkbox"/>	Disk Path	Header Status	Disk Name	Size (MB)
<input type="checkbox"/>	ORCL:ASMDISK12	PROVISIONED		2304
<input type="checkbox"/>	ORCL:ASMDISK13	PROVISIONED		2304
<input checked="" type="checkbox"/>	ORCL:ASMDISK5	PROVISIONED		2304
<input checked="" type="checkbox"/>	ORCL:ASMDISK6	PROVISIONED		2304
<input checked="" type="checkbox"/>	ORCL:ASMDISK7	PROVISIONED		2304
<input checked="" type="checkbox"/>	ORCL:ASMDISK8	PROVISIONED		2304
<input type="checkbox"/>	ORCL:ASMDISK9	PROVISIONED		2304

Note: If you do not see the disks which you believe are available, check Disk Discovery Path and read/write permissions on the disks. The Disk Discovery Path limits set of disks considered for discovery.

Disk Discovery Path: <default> Change Disk Discovery Path

Click on the Show Advanced Options button to change the default Diskgroup Compatibility attributes.

Buttons: Show Advanced Options, OK, Cancel, Help

Quiz

The universal installer performs all required configuration for installing Oracle software.

1. True
2. False

Quiz

During Grid infrastructure setup it is a possible to:

1. Specify exact location of datafiles for ASM instance
2. Create only one DISKGROUP
3. Specify size of SGA for ASM instance
4. Create several DISKGROUPS

Part Two: Installing the Oracle Database Software

Oracle Database 11g Release 2 Installer - Installing Database - Step 1 of 9

Specify Oracle Direct Connect Identification

Provide your email address to be informed of security issues, install the product and initiate configuration manager. [View details.](#)

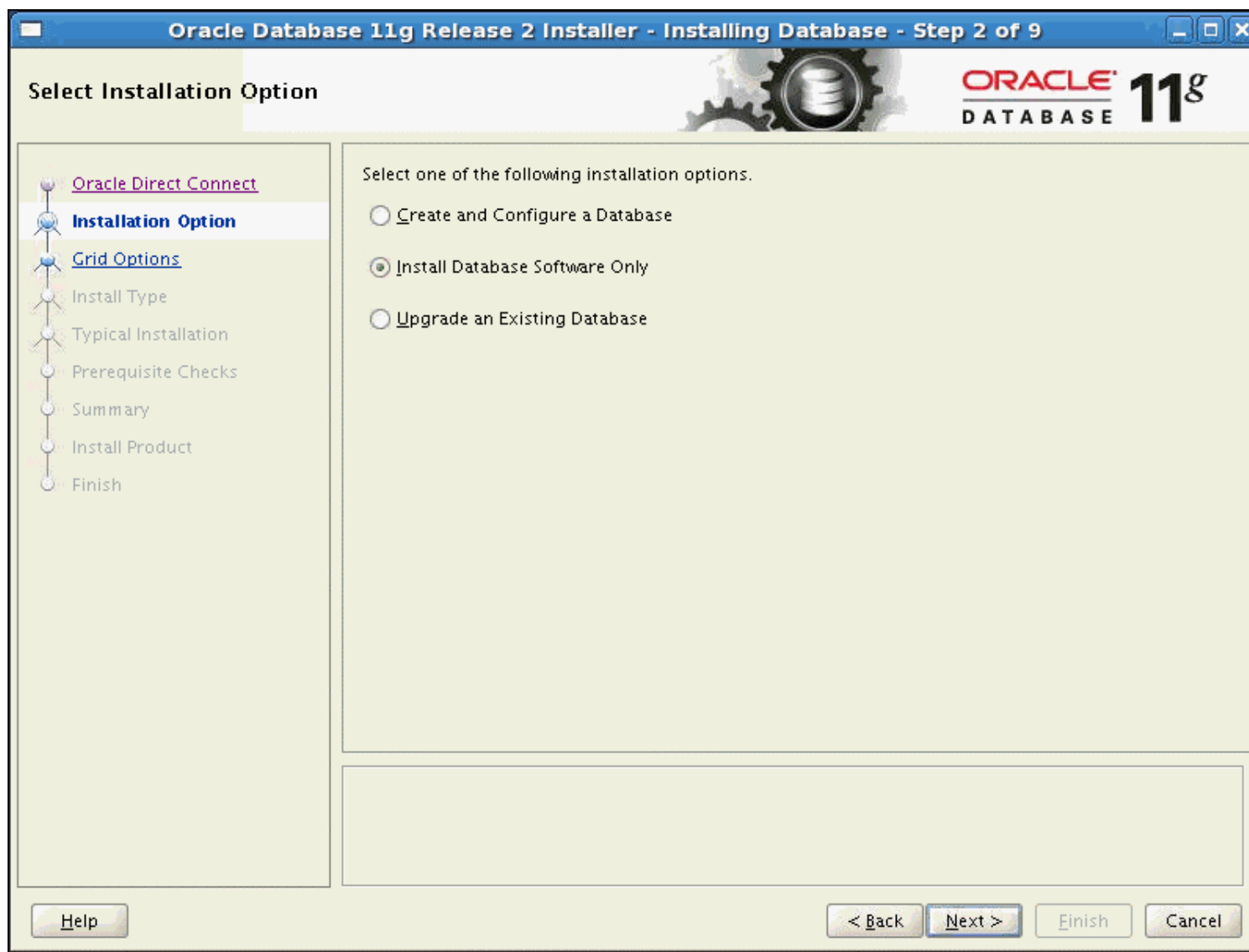
Email:
Easier for you if you use your My Oracle Support email address/username.

☒ I wish to receive security updates via My Oracle Support.

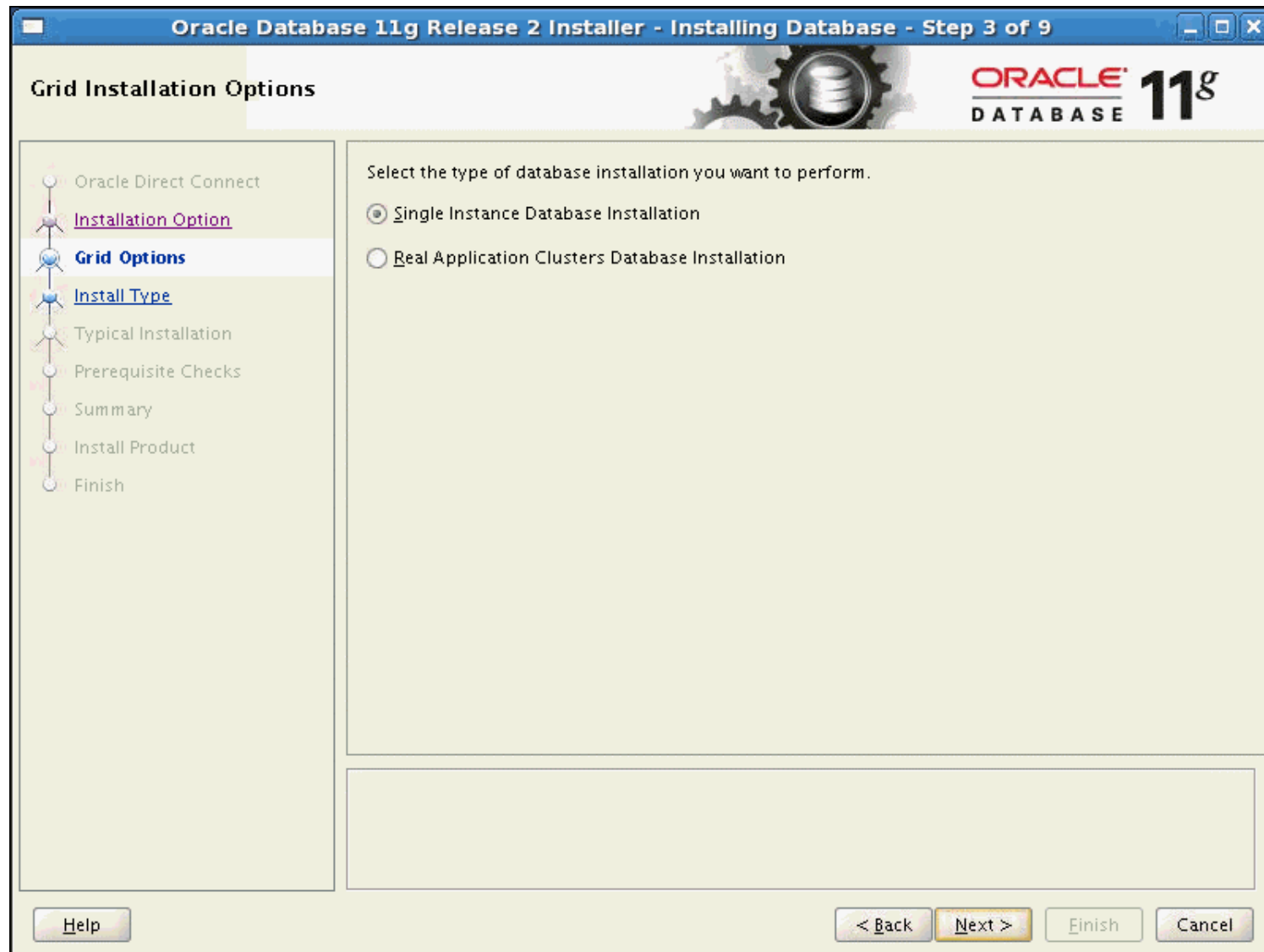
My Oracle Support Password:

[Help](#) [< Back](#) [Next >](#) [Finish](#) [Cancel](#)

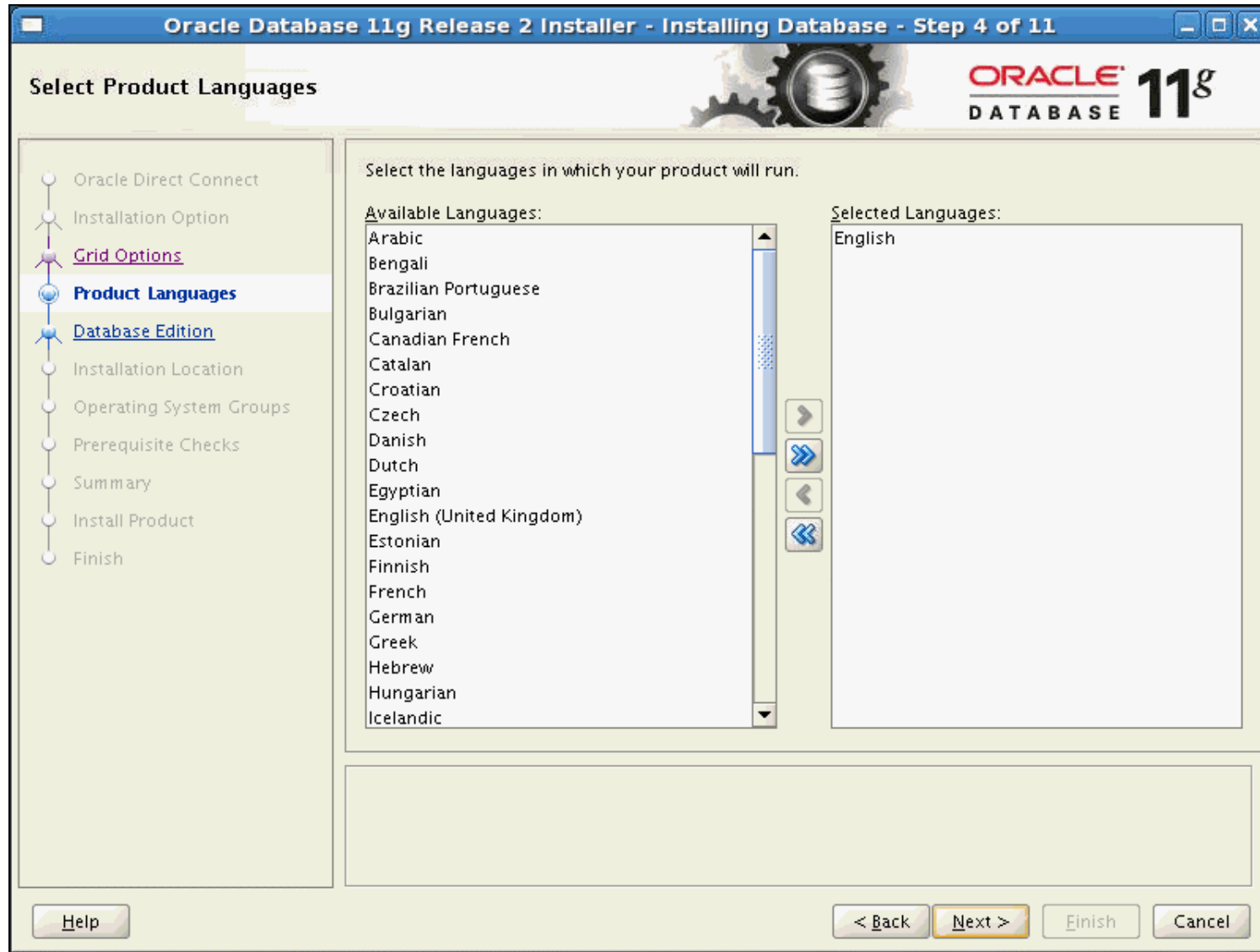
Choosing the Type of Installation



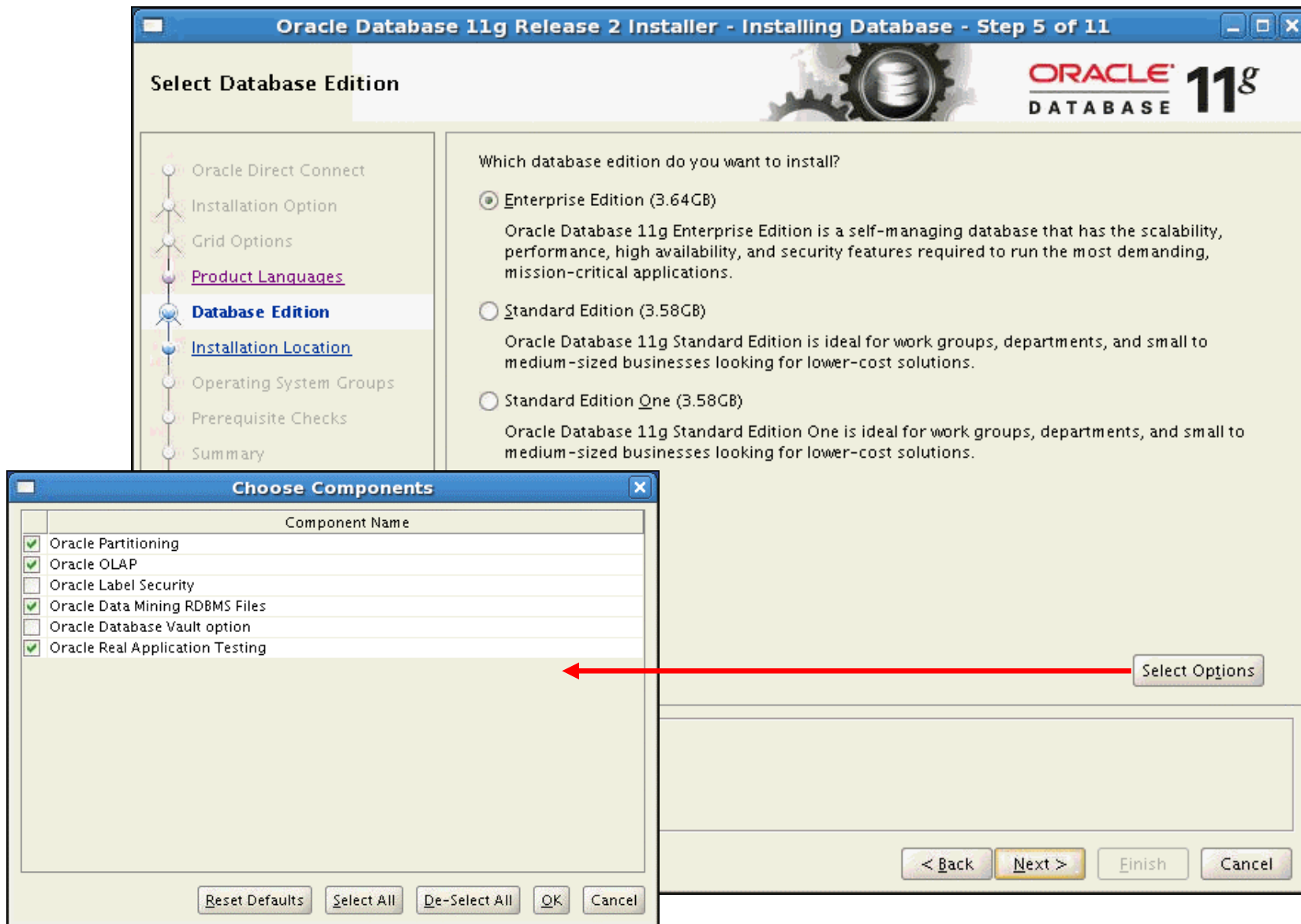
Choosing Grid Installation Options



Choosing Language Settings



Choosing the Database Edition



Specifying Installation Location

The screenshot shows the 'Specify Installation Location' window of the Oracle Database 11g Release 2 Installer. The window title is 'Oracle Database 11g Release 2 Installer - Installing database - Step 6 of 11'. The left sidebar contains a list of installation steps: 'Configure Security Updates', 'Installation Option', 'Grid Options', 'Product Languages', 'Database Edition', 'Installation Location' (highlighted), 'Operating System Groups', 'Prerequisite Checks', 'Summary', 'Install Product', and 'Finish'. The main area contains two sections for specifying paths. The first section, 'Specify an Oracle base path to place all Oracle software and configuration-related files. This location is the Oracle base directory.', has a text box for 'Oracle Base:' containing '/u01/app/oracle' and a 'Browse...' button. The second section, 'Specify a location for storing Oracle software files. This location is the Oracle home directory.', has a text box for 'Software Location:' containing '/u01/app/oracle/product/11.2.0/dbhome_1' and a 'Browse...' button. At the bottom, there are buttons for '< Back', 'Next >' (highlighted), 'Finish', and 'Cancel'. A 'Help' button is located in the bottom left corner.

Oracle Database 11g Release 2 Installer - Installing database - Step 6 of 11

Specify Installation Location

Configure Security Updates
Installation Option
Grid Options
Product Languages
Database Edition
Installation Location
Operating System Groups
Prerequisite Checks
Summary
Install Product
Finish

Specify an Oracle base path to place all Oracle software and configuration-related files. This location is the Oracle base directory.

Oracle Base: /u01/app/oracle Browse...

Specify a location for storing Oracle software files. This location is the Oracle home directory.

Software Location: /u01/app/oracle/product/11.2.0/dbhome_1 Browse...

Help < Back Next > Finish Cancel

Choosing Operating System Groups

The screenshot shows the Oracle Database 11g Release 2 Installer window at Step 7 of 11, titled "Privileged Operating System Groups". The window has a blue title bar and a sidebar on the left with a tree view of installation steps. The main area contains a text box explaining the required privileges and two dropdown menus for selecting OS groups.

Privileged Operating System Groups

Configure Security Updates
Installation Option
Grid Options
Product Languages
Database Edition
Installation Location
Operating System Groups
Prerequisite Checks
Summary
Install Product
Finish

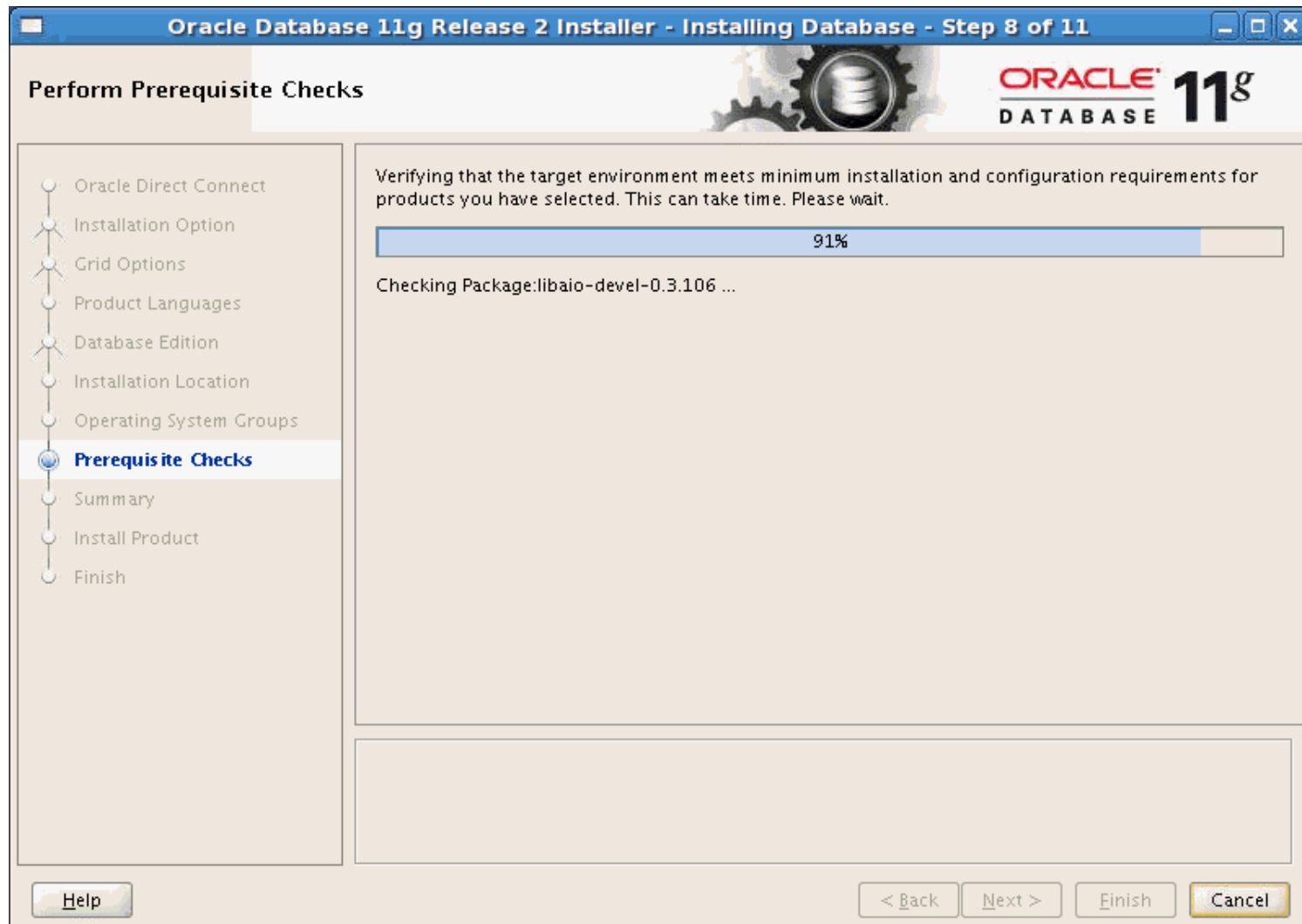
SYSDBA and SYSOPER privileges are required to create a database using operating system (OS) authentication. Membership in OSDBA grants the SYSDBA privilege, and membership in OSOPER grants the SYSOPER privilege, which is a subset of SYSDBA privileges. Select the name of the OSDBA group to grant the SYSDBA privilege. You must be a member of this group.

Database Addministrator (OSDBA) Group: dba ▼

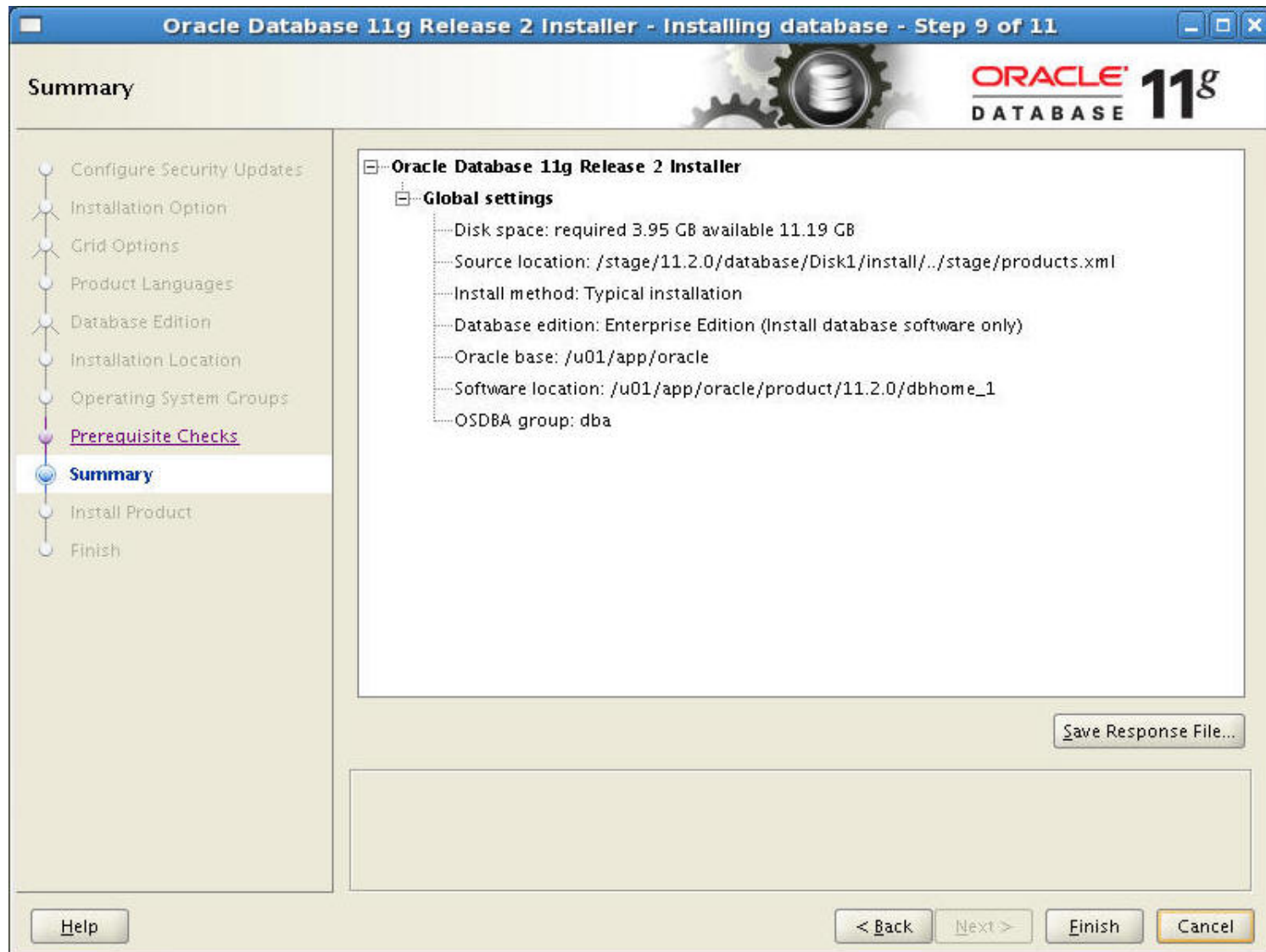
Database Operator (OSOPER) Group: dba ▼

Help < Back Next > Finish Cancel

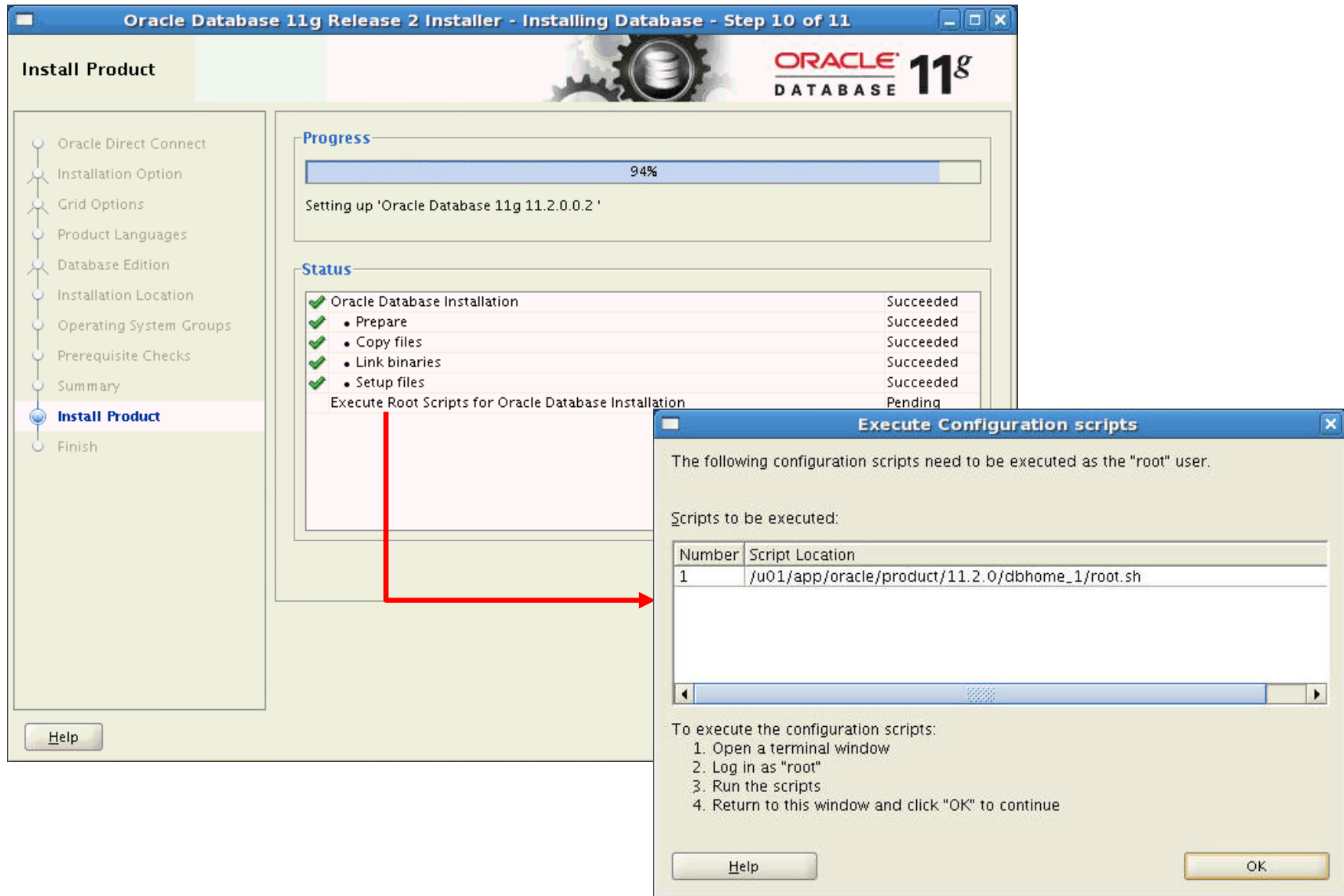
Performing Prerequisite Checks



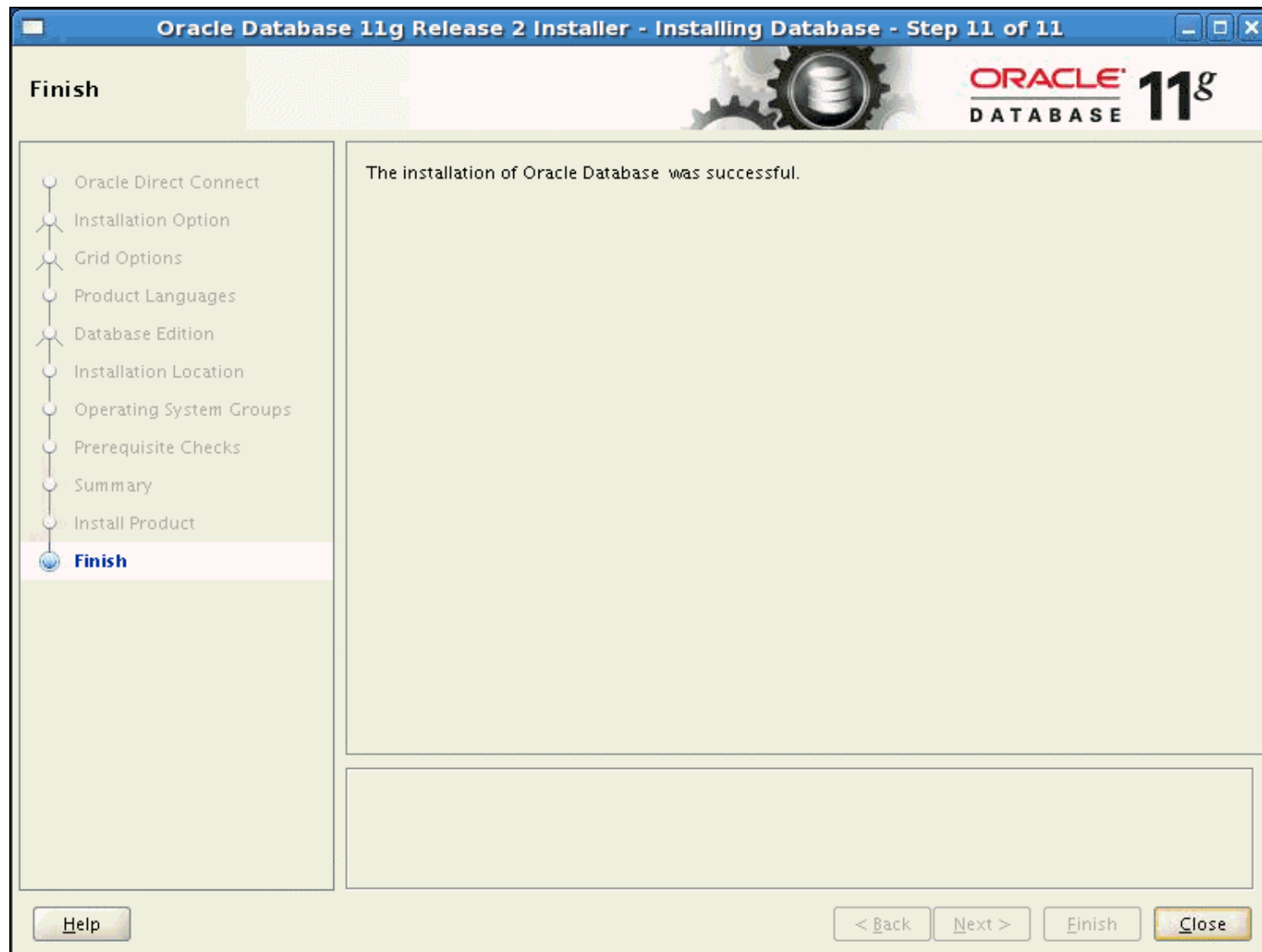
Installation Summary Page



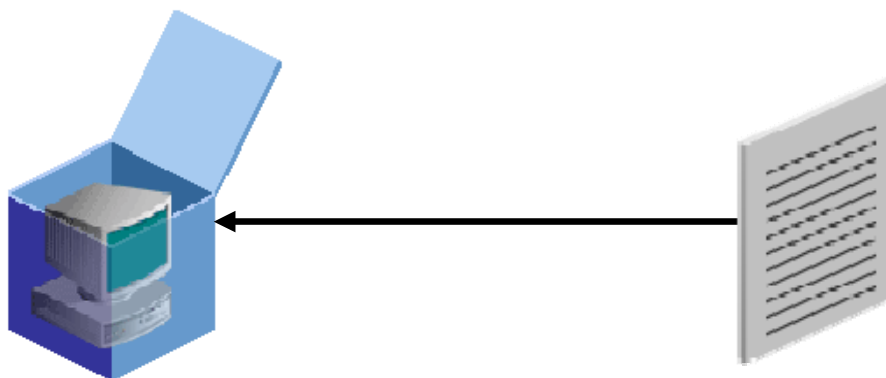
The Install Product Page



Installation Finished



Installation Option: Silent Mode



To install and configure Oracle products with OUI in silent mode, perform the following steps:

1. Prepare a response file:

- Using one of the file templates that are delivered with the Oracle software
- By recording a response file during an installation process using the OUI by clicking Save Response File on the summary page

2. Run OUI in silent or suppressed mode.

```
./runInstaller -silent -responsefile <filename>
```

If required, run NetCA and the DBCA in silent mode.

Quiz

A response file is:

1. A binary file that can be edited using a binary editing program
2. A binary file that can be created by the installer program
3. A text file that cannot be edited, but can be created by the installer program
4. A text file that can be edited with a text editor

Quiz

During Database software installation you can specify groups for:

1. the `osoper` group
2. the `osasm` group
3. the `osdba` group
4. the `osadmin` group

Summary

In this lesson, you should have learned how to:

- Describe your role as a database administrator (DBA) and explain typical tasks and tools
- Plan an Oracle software installation
- Install Oracle Grid Infrastructure for a standalone server
- Install the Oracle database software

Practice 2 Overview: Preparing the Database Environment

This practice covers installing the Oracle software by using Oracle Universal Installer.

Note: Completing this practice is critical for all subsequent practices.