

Oracle® Database

Client Installation Guide

11g Release 1 (11.1) for AIX 5L Based Systems (64-Bit)

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Oracle Database Client Installation Guide, 11g Release 1 (11.1) for AIX 5L Based Systems (64-Bit)

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Contents

Preface	vii
Audience	vii
Documentation Accessibility	vii
Command Syntax	viii
Accessing Documentation	viii
Related Documentation	ix
Typographic Conventions	x
1 Overview of Oracle Client Installation	
Planning Your Installation	1-1
Installation Considerations	1-2
Hardware and Software Certification	1-2
Multiple Oracle Homes Support	1-2
Installing the Software on a System with an Existing Oracle Installation	1-2
Oracle Client Installation Methods	1-2
Interactive Installation Methods	1-3
Automated Installation Methods Using Response Files	1-3
Oracle Client Installation Types	1-3
2 Preinstallation Tasks	
Logging In to the System as root	2-1
Checking the Hardware Requirements	2-2
Memory Requirements	2-2
System Architecture	2-3
Disk Space Requirements	2-3
Checking the Software Requirements	2-4
Operating System Requirements	2-4
Compiler Requirements	2-5
Patch Requirement	2-6
Instant Client Light Requirements	2-6
Additional Software Requirements	2-7
Oracle JDBC/OCI Drivers	2-7
Programming languages	2-7
Browser Requirements	2-8
Creating Required Operating System Groups and Users	2-8

Creating the Oracle Inventory Group	2-9
Creating the Oracle Software Owner User	2-9
Determining Whether an Oracle Software Owner User Exists	2-10
Creating an Oracle Software Owner User	2-10
Modifying an Oracle Software Owner User	2-11
Identifying or Creating an Oracle Base Directory	2-11
Identifying an Existing Oracle Base Directory	2-11
Creating an Oracle Base Directory	2-12
Configuring the oracle User's Environment	2-13

3 Installing Oracle Database Client

Reviewing Installation Guidelines.....	3-1
Accessing the Installation Software	3-1
Downloading Oracle Software from the Oracle Technology Network Web Site	3-2
Downloading the Installation Archive Files	3-2
Extracting the Installation Files.....	3-2
Copying the Software to the Hard Disk	3-3
Mounting Disks	3-3
Copying the Oracle Client Software to a Hard Disk	3-4
Installing the Oracle Client Software.....	3-4
Running Oracle Universal Installer	3-4

4 Oracle Database Postinstallation Tasks

Required Postinstallation Tasks.....	4-1
Downloading and Installing Patches	4-1
Updating Instant Client.....	4-2
Connecting with Instant Client	4-2
Recommended Postinstallation Tasks.....	4-3
Configuring Instant Client Light	4-3
Creating a Backup of the root.sh Script.....	4-3
Connecting Instant Client or Instant Client Light to an Oracle Database	4-3
Specifying a Connection by Using the Easy Connect Naming Method	4-4
Specifying a Connection by Configuring a tnsnames.ora File	4-4
Specifying a Connection by Using an Empty Connect String and the TWO_TASK Environment Variable	4-5
Setting Up User Accounts	4-5
Setting the NLS_LANG Environment Variable.....	4-5
Generating the Client Static Library	4-6
Required Product-Specific Postinstallation Tasks.....	4-6
Configuring Oracle Net Services	4-6
Configuring Oracle Precompilers.....	4-6
Configuring Pro*C/C++	4-7
Configuring Pro*FORTRAN	4-7

5 Removing Oracle Software

Removing Oracle Software.....	5-1
--------------------------------------	------------

A	Installing and Configuring Oracle Database Using Response Files	
	How Response Files Work?	A-1
	Reasons for Using Silent Mode or Noninteractive Mode.....	A-2
	General Procedure for Using Response Files.....	A-2
	Preparing a Response File	A-3
	Editing a Response File Template.....	A-3
	Recording a Response File	A-4
	Running Oracle Universal Installer Using a Response File	A-5
B	Configuring Oracle Database Globalization Support	
	About NLS_LANG Environment Variable.....	B-1
	Running Oracle Universal Installer in Different Languages	B-2
C	Troubleshooting	
	Verify Requirements.....	C-1
	X Window Display Errors	C-1
	What to Do If an Installation Error Occurs?.....	C-2
	Reviewing the Log of an Installation Session	C-2
	Troubleshooting Configuration Assistants	C-3
	Configuration Assistant Failure	C-3
	Fatal Errors	C-4
	Silent-Mode Response File Error Handling.....	C-4
	Cleaning Up After a Failed Installation.....	C-4
D	Frequently Asked Questions About Installation	
	Installing Oracle Database or Oracle Client	D-1
	Installing Oracle Database Tools	D-3
	Installing Oracle Database with Oracle Applications	D-7
	Installing Oracle Database Heterogeneous Connectivity Tools (Gateways).....	D-8
	Index	

Preface

This guide provides instructions about installing and configuring Oracle Database for AIX. This guide also talks about installing and configuring database using response files, globalization support, ports, and troubleshooting.

The preface contains the following topics:

- [Audience](#)
- [Documentation Accessibility](#)
- [Command Syntax](#)
- [Accessing Documentation](#)
- [Related Documentation](#)
- [Typographic Conventions](#)

Audience

This guide is intended for anyone responsible for installing Oracle Client 11g Release 1 (11.1) on a single AIX system. Additional installation guides for Oracle Database, Oracle Real Application Clusters, Oracle Clusterware, Oracle Database Examples, and Oracle Enterprise Manager Grid Control are available on the relevant installation media.

See Also: *Oracle Database Installation Guide for AIX 5L Based Systems (64-Bit)* to install Oracle Database using the default settings

Documentation Accessibility

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Accessibility of Code Examples in Documentation

Screen readers may not always correctly read the code examples in this document. The conventions for writing code require that closing braces should appear on an otherwise empty line; however, some screen readers may not always read a line of text that consists solely of a bracket or brace.

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Command Syntax

UNIX command syntax appears in `monospace` font. The dollar character (\$), number sign (#), or percent character (%) are UNIX command prompts. Do not enter them as part of the command. The following command syntax conventions are used in this guide:

Convention	Description
backslash \	A backslash is the UNIX command continuation character. It is used in command examples that are too long to fit on a single line. Enter the command as displayed (with a backslash) or enter it on a single line without a backslash: <pre>dd if=/dev/rdisk/c0t1d0s6 of=/dev/rst0 bs=10b \ count=10000</pre>
braces { }	Braces indicate required items: <pre>.DEFINE {macro1}</pre>
brackets []	Brackets indicate optional items: <pre>cvtcrt termname [outfile]</pre>
ellipses ...	Ellipses indicate an arbitrary number of similar items: <pre>CHKVAL fieldname value1 value2 ... valueN</pre>
<i>italics</i>	Italic type indicates a variable. Substitute a value for the variable: <pre>library_name</pre>
vertical line	A vertical line indicates a choice within braces or brackets: <pre>FILE filesize [K M]</pre>

Accessing Documentation

The documentation for this release includes platform-specific documentation and generic product documentation.

Platform-Specific Documentation

Platform-specific documentation includes information about installing and using Oracle products on particular platforms.

This guide contains information required to install Oracle Database 11g Release 1 (11.1) on various platforms of AIX. Ensure that you review information related to the platform on which you intend to install Oracle Database 11g.

The platform-specific documentation for this product is available in both Adobe portable document format (PDF) and HTML format on the product media. To access the platform-specific documentation on media:

1. Use a Web browser to open the `welcome.htm` file in the top-level directory of the media.
2. For DVD only, select the appropriate product link.
3. Select the **Documentation** tab.

If you prefer paper documentation, then open and print the PDF files.

Product Documentation

Product documentation includes information about configuring, using, or administering Oracle products on any platform. The product documentation for Oracle Database 11g products is available in both HTML and PDF formats in the Oracle Database 11g Release 1 (11.1) Online Documentation Library. To check for updates to this document and to view other Oracle documentation, select the Documentation link or the Software & Patches link on the Oracle Database 11g Release 1 Beta Program Web site.

Related Documentation

The platform-specific documentation for Oracle Database 11g products includes the following manuals:

- *Oracle Database Release Notes for AIX 5L Based Systems (64-Bit)*
- *Oracle Database Client Installation Guide for AIX 5L Based Systems (64-Bit)*
- *Oracle Database Examples Installation Guide*
- *Oracle Real Application Clusters Installation Guide for AIX Based Systems*
- *Oracle Database Quick Installation Guide for AIX 5L Based Systems (64-Bit)*
- *Oracle Database Client Quick Installation Guide for AIX 5L Based Systems (64-Bit)*
- *Oracle Enterprise Manager Grid Control Installation and Basic Configuration*
- *Oracle Database Administrator's Reference for Linux and UNIX*
- *Oracle Database Storage Administrator's Guide*
- *Oracle Clusterware Installation Guide for AIX Based Systems*
- *Oracle Database Upgrade Guide*
- *Oracle Database 2 Day DBA*

For information about Oracle error messages, see *Oracle Database Error Messages*. Oracle error message documentation is available only in HTML. If you only have access to the Oracle Database 10g Release 2 (10.2) Online Documentation Library, then you can browse the error messages by range. Once you find the specific range, use your browser's "find in page" feature to locate the specific message. When connected to the Internet, you can search for a specific error message using the error message search feature of the Oracle online documentation.

Many books in the documentation set use the sample schemas of the seed database, which is installed by default when you install Oracle. Refer to *Oracle Database Sample Schemas* for information on how these schemas were created and how you can use them yourself.

Printed documentation is available for sale in the Oracle Store at:

<http://oraclestore.oracle.com/>

To download free release notes, installation documentation, white papers, or other collateral, please visit the Oracle Technology Network. You must register online before using OTN; registration is free and can be done at:

<http://www.oracle.com/technology/membership/>

If you already have a user name and password for Oracle Technology Network, then you can go directly to the documentation section of the Oracle Technology Network Web site at:

<http://www.oracle.com/technology/documentation/>

Refer to *Oracle Database Release Notes for AIX 5L Based Systems (64-Bit)* or important information that was not available when this book was released. The release notes for Oracle Database 11g are updated regularly. The most recent version is available on Oracle Technology Network at:

<http://www.oracle.com/technology/documentation/index.html>

Typographic Conventions

The following text conventions are used in this document:

Convention	Meaning
boldface	Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.
<i>italic</i>	Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.
monospace	Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter.

Overview of Oracle Client Installation

This chapter describes the different installation types of Oracle Client for AIX 5L Based Systems (64-Bit) and issues to consider before you install Oracle Database:

- [Planning Your Installation](#)
- [Installation Considerations](#)
- [Oracle Client Installation Methods](#)
- [Oracle Client Installation Types](#)

Planning Your Installation

The Oracle Database installation process consists of the following phases:

1. **Read the release notes:** Read *Oracle Database Release Notes for AIX 5L Based Systems (64-Bit)* before you begin the installation. The release notes are available with the platform-specific documentation. The latest version of the release notes is available on Oracle Technology Network at:

<http://www.oracle.com/technology/documentation>

2. **Review the licensing information:** Although the installation media in your media pack contain many Oracle components, you are permitted to use only those components for which you have purchased licenses.

Oracle Support Services does not provide support for components for which licenses have not been purchased.

See Also: *Oracle Database Licensing Information*

3. **Plan the installation:** This chapter describes the Oracle products that you can install and issues that you must consider before starting the installation.

You can also refer to [Appendix D](#), which covers frequently asked questions about installing Oracle Database components, such as how to install Oracle client if the site uses Oracle applications or if you need multiple Oracle client connections.

4. **Complete preinstallation tasks:** [Chapter 2](#) describes preinstallation tasks that you must complete before installing the product.
5. **Install the software:** Use the following sections to install Oracle Database:
 - [Chapter 3](#) describes how to use Oracle Universal Installer to install Oracle Client.

- [Appendix A](#) provides information on performing noninteractive (silent) installations, which you may want to use if you need to perform multiple installations of Oracle Client.
 - [Appendix B](#) describes globalization support information.
 - [Appendix C](#) provides troubleshooting advice in case you encounter problems with the installation.
 - [Chapter 5](#) describes how to remove Oracle Client.
6. **Complete postinstallation tasks:** [Chapter 4](#) describes recommended and required postinstallation tasks.

Installation Considerations

This section contains information that you should consider before deciding how to install this product. It contains the following sections:

- [Hardware and Software Certification](#)
- [Multiple Oracle Homes Support](#)

Hardware and Software Certification

The platform-specific hardware and software requirements included in this installation guide were current at the time this guide was published. However, because new platforms and operating system software versions might be certified after this guide is published, review the certification matrix on the *OracleMetaLink* Web site for the most up-to-date list of certified hardware platforms and operating system versions. The *OracleMetaLink* Web site is available at the following URL:

<https://metalink.oracle.com>

You must register online before using *OracleMetaLink*. After logging in, click **Certify** from the top right-hand side of the screen. The *Certifications* page appears. Other options include *Product Availability*, *Desupport Notices*, and *Alerts*.

Multiple Oracle Homes Support

This product supports multiple Oracle homes. This means that you can install this release or earlier releases of the software more than once on the same system, in different Oracle home directories.

Installing the Software on a System with an Existing Oracle Installation

You must install this product into a new Oracle home directory. You cannot install products from one release of Oracle Database into an Oracle home directory of a different release. For example, you cannot install release 11.1 software into an existing Oracle9i Oracle home directory. If you attempt to install this release into an Oracle home directory that contains software from an earlier Oracle release, then the installation fails.

You can install this release more than once on the same system if each installation is installed in a separate Oracle home directory.

Oracle Client Installation Methods

You can choose different installation methods to install Oracle Client, as follows:

- [Interactive Installation Methods](#)
- [Automated Installation Methods Using Response Files](#)

Interactive Installation Methods

When you use the interactive method to install Oracle Client, Oracle Universal Installer displays a series of screens that enable you to specify all of the required information to install the Oracle Client software.

Automated Installation Methods Using Response Files

By creating a response file and specifying this file when you start Oracle Universal Installer, you can automate some or all of the Oracle Database installation. These automated installation methods are useful if you need to perform multiple installations on similarly configured systems or if the system where you want to install the software does not have X Window system software installed.

When you use a response file, you can run Oracle Universal Installer in the following modes, depending on whether you specify all of the required information or not:

- **Silent Mode:** Oracle Universal Installer runs in silent mode if you use a response file that specifies all required information. None of the Oracle Universal Installer screens are displayed.
- **Suppressed Mode:** Oracle Universal Installer runs in suppressed mode if you do not specify all required information in the response file. Oracle Universal Installer displays only the screens that prompt for the information that you did not specify.

For more information about these modes and about how to complete an installation using response files, refer to [Appendix A](#).

Oracle Client Installation Types

You can choose one of the following installation types when installing Oracle Client:

- **Instant Client:** Enables you to install only the shared libraries required by Oracle Call Interface (OCI), Oracle C++ Call Interface (OCCI), Pro*C, or Java database connectivity (JDBC) OCI applications. This installation type requires much less disk space than the other Oracle Client installation types.

See Also: *Oracle Call Interface Programmer's Guide* or *Oracle Database JDBC Developer's Guide and Reference* for more information about Instant Client

Included in the Instant Client installation is Instant Client Light. You may want to use this version of Instant Client if the applications generate error messages in American English only. Instant Client Light is beneficial to application that use one of the supported character sets and can accept error messages in American English. The following are the supported character sets:

- US7ASCII
- WE8DEC
- WE8ISO8859P1
- WE8EBCDIC37C for EBCDIC platform only
- WE8EBCDIC1047 for EBCDIC platform only

- WE8MSWIN1252
- UTF8
- AL32UTF8
- AL16UTF16

The advantage of using Instant Client Light is that it has a smaller footprint than the regular Instant Client. The shared libraries, which an application must load, are only 34 MB as opposed to the 110 MB that regular Instant Client uses. Therefore, the applications use less memory.

- **Administrator:** Enables applications to connect to an Oracle Database instance on the local system or on a remote system. It also provides tools that enable you to administer Oracle Database.
- **Runtime:** Enables applications to connect to an Oracle Database instance on the local system or on a remote system.
- **Custom:** Enables you to select individual components from the list of Administrator and Runtime components.

Caution: AL32UTF8 is the Oracle Database character set that is appropriate for XMLType data. It is equivalent to the IANA registered standard UTF-8 encoding, which supports all valid XML characters.

Do not confuse Oracle Database database character set UTF8 (no hyphen) with database character set AL32UTF8 or with character encoding UTF-8. Database character set UTF8 has been superseded by AL32UTF8. Do not use UTF8 for XML data. UTF8 supports only Unicode version 3.0 and earlier; it does not support all valid XML characters. AL32UTF8 has no such limitation.

Using database character set UTF8 for XML data could potentially cause a fatal error or affect security negatively. If a character that is not supported by the database character set appears in an input-document element name, then a replacement character (usually "?") is substituted for it. This terminates parsing and raises an exception.

Preinstallation Tasks

This chapter describes the tasks that you must complete before you start Oracle Universal Installer. It includes information about the following tasks:

- [Logging In to the System as root](#)
- [Checking the Hardware Requirements](#)
- [Checking the Software Requirements](#)
- [Creating Required Operating System Groups and Users](#)
- [Identifying or Creating an Oracle Base Directory](#)
- [Configuring the oracle User's Environment](#)

Logging In to the System as root

Before you install the Oracle software, you must complete several tasks as the `root` user. To log in as the `root` user, complete one of the following procedures:

Note: Unless you intend to complete a silent-mode installation, you must install the software from an X Window System workstation, an X terminal, or a PC or other system with X server software installed.

For more information about silent-mode installations, refer to [Appendix A](#).

- If you are installing the software from an X Window System workstation or X terminal, then:
 1. Start a local terminal session, for example, an X terminal (`xterm`).
 2. If you are not installing the software on the local system, then enter the following command to enable the remote host to display X applications on the local X server:

```
$ xhost fully_qualified_remote_host_name
```

For example:

```
$ xhost somehost.us.example.com
```
 3. If you are not installing the software on the local system, then use the `ssh`, `rlogin`, or `telnet` command to connect to the system where you want to install the software:

```
$ telnet fully_qualified_remote_host_name
```

4. If you are not logged in as the `root` user, then enter the following command to switch user to `root`:

```
$ su -
password:
#
```

- If you are installing the software from a PC or other system with X server software installed, then:

Note: If necessary, refer to your X server documentation for more information about completing this procedure. Depending on the X server software that you are using, you may need to complete the tasks in a different order.

1. Start the X server software.
2. Configure the security settings of the X server software to permit remote hosts to display X applications on the local system.
3. Connect to the remote system where you want to install the software and start a terminal session on that system, for example, an X terminal (`xterm`).
4. If you are not logged in as the `root` user on the remote system, then enter the following command to switch user to `root`:

```
$ su -
password:
#
```

Checking the Hardware Requirements

The system must meet the following minimum hardware requirements:

- [Memory Requirements](#)
- [System Architecture](#)
- [Disk Space Requirements](#)

Memory Requirements

The following are the memory requirements for installing Oracle Database 11g Release 1:

- At least 256 MB of RAM

To determine the RAM size, enter the following command:

```
# /usr/sbin/lssattr -E -l sys0 -a realmem
```

If the size of the RAM is less than the required size, then you must install more memory before continuing.

- The following table describes the relationship between installed RAM and the configured swap space requirement:

RAM	Swap Space
Between 257 MB and 512 MB	Double the size of RAM
Between 513 MB and 2048 MB	1.5 times the size of RAM
Between 2049 MB and 8192 MB	Equal to the size of RAM
More than 8192 MB	0.75 times the size of RAM

To determine the size of the configured swap space, enter the following command:

```
# /usr/sbin/lspv -a
```

If necessary, refer to the operating system documentation for information about how to configure additional swap space.

Note: Oracle recommends that you take multiple values for the available RAM and swap space before finalizing a value. This is because the available RAM and swap space keep changing depending on the user interactions with the computer.

System Architecture

To determine whether the system architecture can run the software, enter the following command:

```
# /usr/bin/getconf HARDWARE_BITMODE
```

Note: The expected output of this command is 64. If you do not see the expected output, then you cannot install the software on this system.

To determine if the system is started in 64-bit mode, enter the following command:

```
# bootinfo -K
```

The result of this command should be 64, indicating that the 64-bit kernel is enabled.

Disk Space Requirements

The following are the disk space requirements for installing Oracle Database 11g Release 1:

- The minimum disk space requirement for a client install in the `/tmp` directory is 190 MB

To determine the amount of disk space available in the `/tmp` directory, enter the following command:

```
# df -m /tmp
```

If there is less than 400 MB of free disk space available in the `/tmp` directory, then complete one of the following steps:

- Delete unnecessary files from the `/tmp` directory to meet the disk space requirement.

- Set the `TMP` and `TMPDIR` environment variables when setting the `oracle` user's environment (described later).
- Extend the file system that contains the `/tmp` directory. If necessary, contact the system administrator for information about extending file systems.
- To determine the amount of free disk space on the system, enter the following command:
 - GPFS:

```
# df -m
```
 - Raw Logical Volumes in Concurrent VG (HACMP); in the following example, the variable `lv_name` is the name of the raw logical volume whose space you want to verify:

```
# lslv lv_name
```
 - Raw hard disks; in the following example, the variable `rhdisk#` is the raw hard disk number that you want to verify, and the variable `size_mb` is the size in megabytes of the partition that you want to verify:

```
# lsattr -El rhdisk# -a size_mb
```

Installation Type	Requirement for Software Files (MB)
Instant Client	340
Administrator	3.5 (GB)
Runtime	2.3 (GB)
Custom (maximum)	3.7 (GB)

Checking the Software Requirements

Depending on the products that you intend to install, verify that the following software are installed on the system.

Note: Oracle Universal Installer performs checks on the system to verify that it meets the listed requirements. To ensure that these checks pass, verify the requirements before you start Oracle Universal Installer.

- [Operating System Requirements](#)
- [Compiler Requirements](#)
- [Patch Requirement](#)
- [Instant Client Light Requirements](#)
- [Additional Software Requirements](#)

Operating System Requirements

The following is the operating stem requirements for Oracle Database 11g Release 1:
AIX 5L version 5.3, Maintenance Level 05 or later

The following operating system filesets are required for Oracle Database 11g Release 1:

- bos.adt.base
 - bos.adt.lib
 - bos.adt.libm
 - bos.perf.libperfstat
 - bos.perf.perfstat
 - bos.perf.proctools
 - xlc.aix50.rte:8.0.0.3 or later
 - xlc.rte:8.0.0.0 or later
1. To determine the distribution and version of AIX installed, enter the following command:

```
# oslevel -r
```

If the operating system version is lower than AIX 5.3.0.0 Maintenance Level 5 (5300-05), then upgrade your operating system to this level. AIX 5L version 5.3 maintenance packages are available from the following Web site:

<http://www-912.ibm.com/eserver/support/fixes/>

2. To determine whether the required filesets are installed and committed, enter a command similar to the following:

```
# lspp -l bos.adt.base bos.adt.lib bos.adt.libm bos.perf.perfstat \
bos.perf.libperfstat bos.perf.proctools
```

Compiler Requirements

The following are the compiler requirements for Pro*C/C++, Oracle Call Interface, Oracle C++ Call Interface, and Oracle XML Developer's Kit (XDK), and GNU Compiler Collection (GCC) with Oracle Database 11g Release 1:

- XL C/C++ Enterprise Edition V8.0 for AIX:

You can download this software from the following link:

<http://www-1.ibm.com/support/docview.wss?uid=swg24009787>

- gcc 3.4.5

Note: If you do not install the IBM XL C/C++ Enterprise Edition V8.0 compiler, then you need to install this compiler for AIX Runtime Environment Component. The runtime environment file sets can be downloaded with no license requirements from the following link:

<http://www-1.ibm.com/support/docview.wss?uid=swg24009788>

Patch Requirement

In addition, you need to verify that the following patches are installed on the system.

Note: There may be more recent versions of the patches listed installed on the system. If a listed patch is not installed, then determine whether a more recent version is installed before installing the version listed.

Authorized Problem Analysis Reports (APARs) for AIX 5L v5.3:

- IY89080
- IY92037
- IY94343
- IZ01060 or efix for IZ01060
- IZ03260, or efix for IZ03260

The following procedure describes how to check these requirements:

- To determine whether an APAR is installed, enter a command similar to the following:

```
# /usr/sbin/instfix -i -k "IY58143 IY59386 IY60930 IY66513 IY70159 \
IY64361 IY65305 IY58350 IY63533"
```

If an APAR is not installed, then download it from the following Web site and install it:

<http://www-912.ibm.com/eserver/support/fixes/>

- If you require a CSD for WebSphere MQ, then refer to the following Web site for download and installation information:

<http://www-306.ibm.com/software/integration/wmq/support>

Instant Client Light Requirements

In addition to the requirements described in the preceding section, if you plan to use Instant Client Light, then the applications must use the following languages and character sets:

- **Language:** Any language that is supported by Oracle
- **Territory:** Any territory that is supported by Oracle
- **Character sets:**
 - Single byte
 - * US7ASCII
 - * WE8DEC
 - * WE8MSWIN1252
 - * WE8ISO8859P1
 - Unicode
 - * UTF8
 - * AL16UTF16

- * AL32UTF8

Instant Client Light can connect to databases having one of the following database character sets:

- * US7ASCII
- * WE8DEC
- * WE8MSWIN1252
- * WE8ISO8859P1
- * WE8EBCDIC37C
- * WE8EBCDIC1047
- * UTF8
- * AL32UTF8

The language, territory, and character sets are determined by the `NLS_LANG` environment variable.

Additional Software Requirements

Depending on the components you want to use, you must ensure that the following software are installed:

- [Oracle JDBC/OCI Drivers](#)
- [Programming languages](#)
- [Browser Requirements](#)

Oracle JDBC/OCI Drivers

You can use the following optional IBM JDK versions with the Oracle Java Database Connectivity and Oracle Call Interface drivers. However, they are not mandatory for the installation:

- JDK 1.5 (32 bit)
- JDK 1.5 (64 Bit)

Note: IBM JDK 1.5 (64-bit) is installed with this release.

Programming languages

The following products are certified for use with:

- Pro*COBOL
 - Micro Focus Server Express 4.0 SP1
 - AcuCobol 6.1
- Pro*FORTRAN
 - IBM XL Fortran V9.1
- SQL*Module for Ada
 - OC Systems PowerAda 5.3 or later

Note: For more information about OC Systems and PowerAda 5.3, refer to <http://www.ocsystems.com/contact.html>

Browser Requirements

Web browsers must support Java Script and the HTML 4.0 and CSS 1.0 standards. The following browsers meet these requirements:

- Netscape Navigator 7.2
- Netscape Navigator 8.1
- Mozilla version 1.7
- Microsoft Internet Explorer 6.0 SP2
- Microsoft Internet Explorer 7.0
- Firefox 1.0.4
- Firefox 1.5
- Firefox 2.0

Creating Required Operating System Groups and Users

Depending on whether this is the first time Oracle software is being installed on this system and on the products that you are installing, you may need to create several operating system groups and users.

- The Oracle Inventory group (`oinstall`)

You must create this group the first time you install Oracle software on the system. The usual name chosen for this group is `oinstall`. This group owns the Oracle inventory, which is a catalog of all Oracle software installed on the system.

Note: If Oracle software is already installed on the system, then the existing Oracle Inventory group must be the primary group of the operating system user that you use to install new Oracle software.

- The Oracle software owner user (typically, `oracle`)

You must create this user the first time you install Oracle software on the system. This user owns all of the software installed during the installation. This user must have the Oracle Inventory group as its primary group. It must also have the `OSDBA` and `OSOPER` groups as secondary groups.

Note: In Oracle documentation, this user is referred to as the `oracle` user.

A single Oracle Inventory group is required for all installations of Oracle software on the system. After the first installation of Oracle software, you must use the same Oracle Inventory group for all subsequent Oracle software installations on that system. However, you can choose to create different Oracle software owner users for separate installations.

Note: The following sections describe how to create local users and groups. As an alternative to creating local users and groups, you could create the appropriate users and groups in a directory service, for example, Network Information Services (NIS). For information about using directory services, contact the system administrator or refer to the operating system documentation.

The following sections describe how to create the required operating system users and groups:

- [Creating the Oracle Inventory Group](#)
- [Creating the Oracle Software Owner User](#)

Creating the Oracle Inventory Group

Log in as root, and use the following instructions to locate or create the Oracle Inventory group and a software owner:

- [Determining Whether the Oracle Inventory Group Exists](#)
- [Creating the Oracle Inventory Group](#)

Determining Whether the Oracle Inventory Group Exists

When you install Oracle software on the system for the first time, Oracle Universal Installer creates the `oraInst.loc` file. This file identifies the name of the Oracle Inventory group (typically, `oinstall`), and the path of the Oracle Inventory directory.

If the `oraInst.loc` file exists, then the output from this command is similar to the following:

```
# more /etc/oraInst.loc

inventory_loc=/u01/app/oraInventory
inst_group=oinstall
```

In the previous output example:

- The `inventory_loc` group shows the location of the Oracle Inventory
- The `inst_group` parameter shows the name of the Oracle Inventory group (in this example, `oinstall`).

Creating the Oracle Inventory Group

If the `oraInst.loc` file does not exist, then create the Oracle Inventory group by using the following procedure:

1. Enter the following command:

```
# smit security
```

2. Choose the appropriate menu items to create the `oinstall` group.
3. Press **F10** to exit.

Creating the Oracle Software Owner User

You must create an Oracle software owner user in the following circumstances:

- If an Oracle software owner user does not exist, for example, if this is the first installation of Oracle software on the system
- If an Oracle software owner user exists, but you want to use a different operating system user, with different group membership, to give database administrative privileges to those groups in a new Oracle Database installation

Determining Whether an Oracle Software Owner User Exists

To determine whether an Oracle software owner user named `oracle` exists, enter the following command:

```
# id oracle
```

If the `oracle` user exists, then the output from this command is similar to the following:

```
uid=440(oracle) gid=200(oinstall) groups=201(dba),202(oper)
```

If the user exists, then determine whether you want to use the existing user or create another `oracle` user. If you want to use the existing user, then ensure that the user's primary group is the Oracle Inventory group and that it is a member of the appropriate OSDBA and OSOPER groups. Refer to one of the following sections for more information:

Note: If necessary, contact the system administrator before using or modifying an existing user.

- If you want to use an existing Oracle software owner user, and the user's primary group is the Oracle Inventory group, then refer to the ["Determining Whether an Oracle Software Owner User Exists"](#) section on page 2-10.
- To modify an existing user, refer to the ["Modifying an Oracle Software Owner User"](#) on page 2-11.
- To create a user, refer to ["Creating an Oracle Software Owner User"](#) on page 2-10.

Creating an Oracle Software Owner User

If the Oracle software owner user does not exist or if you require a new Oracle software owner user, then create it as follows. In the following procedure, use the user name `oracle` unless a user with that name already exists.

1. Enter the following command:

```
# smit security
```

2. Choose the appropriate menu items to create the `oracle` user, specifying the following information:
 - In the **Primary GROUP** field, specify the Oracle Inventory group, for example `oinstall`.
 - In the **Group SET** field, specify the OSDBA group and if required, the OSOPER group. For example, `dba` or `dba,oper`.

Note: The UID for the `oracle` user must be less than 65536.

3. Press F10 to exit.

4. Set the password of the `oracle` user:

```
# passwd oracle
```

Modifying an Oracle Software Owner User

If the `oracle` user exists, but its primary group is not `oinstall` or it is not a member of the appropriate OSDBA or OSOPER groups, then you can modify it as follows:

1. Enter the following command:

```
# smit security
```

2. Choose the appropriate menu items to modify the `oracle` user.
3. In the **Primary GROUP** field, specify the Oracle Inventory group, for example `oinstall`.
4. In the **Group SET** field, specify the required secondary groups, for example `dba` and `oper`.
5. Press F10 to exit.

Identifying or Creating an Oracle Base Directory

Before starting the installation, you must either identify an existing Oracle base directory or if required, create one. This section contains information about the following:

- [Identifying an Existing Oracle Base Directory](#)
- [Creating an Oracle Base Directory](#)

Note: You can choose to create an Oracle base directory, even if other Oracle base directories exist on the system.

Identifying an Existing Oracle Base Directory

Existing Oracle base directories may not have paths that comply with OFA guidelines. However, if you identify an existing Oracle Inventory directory or existing Oracle home directories, then you can usually identify the Oracle base directories, as follows:

- Identifying an existing Oracle Inventory directory

Enter the following command to view the contents of the `oraInst.loc` file:

```
# more /etc/oraInst.loc
```

If the `oraInst.loc` file exists, then the output from this command is similar to the following:

```
inventory_loc=/u01/app/oraInventory
inst_group=oinstall
```

The `inventory_loc` parameter identifies the Oracle Inventory directory (`oraInventory`). The parent directory of the `oraInventory` directory is typically an Oracle base directory. In the previous example, `/u01/app/oracle` is an Oracle base directory.

- Identifying existing Oracle home directories

Enter the following command to view the contents of the `oratab` file:

```
# more /etc/oratab
```

If the `oratab` file exists, then it contains lines similar to the following:

```
*:/u03/app/oracle/product/11.1.0/db_1:N
*/opt/orauser/infra_904:N
*/oracle/9.2.0:N
```

The directory paths specified on each line identify Oracle home directories. Directory paths that end with the user name of the Oracle software owner that you want to use are valid choices for an Oracle base directory. If you intend to use the `oracle` user to install the software, then you could choose one of the following directories from the previous example:

```
/u03/app/oracle
/oracle
```

Note: If possible, choose a directory path similar to the first (`/u03/app/oracle`). This path complies with the OFA guidelines.

To continue:

- If an Oracle base directory exists and you want to use it, then refer to the ["Configuring the oracle User's Environment"](#) section on page 2-13.

When you configure the `oracle` user's environment later in this chapter, set the `ORACLE_BASE` environment variable to specify the directory you chose.

- If an Oracle base directory does not exist on the system or if you want to create an Oracle base directory, then refer to the following section.

Creating an Oracle Base Directory

Before you create an Oracle base directory, you must identify an appropriate file system with disk space.

To identify an appropriate file system:

1. Use the `df -m` command to determine the free disk space on each mounted file system.
2. From the display, identify a file system that has appropriate free space.
3. Note the name of the mount point directory for the file system that you identified.

To create the Oracle base directory and specify the correct owner, group, and permissions for it:

1. Enter commands similar to the following to create the recommended subdirectories in the mount point directory that you identified and set the appropriate owner, group, and permissions on them:

```
# mkdir -p /mount_point/app
# chown -R oracle:oinstall /mount_point/app
# chmod -R 775 /mount_point/app
```

For example:

```
# mkdir -p /u01/app
# chown -R oracle:oinstall /u01/app
```

```
# chmod -R 775 /u01/app
```

```
/u01/app/oracle
```

2. When you configure the `oracle` user's environment later in this chapter, set the `ORACLE_BASE` environment variable to specify the Oracle base directory that you have created.

Configuring the oracle User's Environment

You run Oracle Universal Installer from the `oracle` account. However, before you start Oracle Universal Installer you must configure the environment of the `oracle` user. To configure the environment, you must:

- Set the default file mode creation mask (`umask`) to 022 in the shell startup file.
- Set the `DISPLAY` environment variable.

To set the `oracle` user's environment:

1. Start a new terminal session, for example, an X terminal (`xterm`).
2. Enter the following command to ensure that X Window applications can display on this system:

```
$ xhost fully_qualified_remote_host_name
```

For example:

```
$ xhost somehost.us.example.com
```

3. If you are not already logged in to the system where you want to install the software, then log in to that system as the `oracle` user.
4. If you are not logged in as the `oracle` user, then switch user to `oracle`:

```
$ su - oracle
```

5. To determine the default shell for the `oracle` user, enter the following command:

```
$ echo $SHELL
```

6. Open the `oracle` user's shell startup file in any text editor:

C shell (`csh` or `tcsh`):

```
% vi .profile
```

7. Enter or edit the following line, specifying a value of 022 for the default file mode creation mask:

```
umask 022
```

8. If the `ORACLE_SID`, `ORACLE_HOME`, or `ORACLE_BASE` environment variable is set in the file, then remove the appropriate lines from the file.
9. Save the file, and exit from the editor.
10. To run the shell startup script, enter one of the following commands:

- Bash shell:

```
$ . ~/.bash_profile
```

- Bourne or Korn shell:

```
$ . ~/.profile
```

- C shell:

```
% source ~/.login
```

11. If you are not installing the software on the local system, then enter a command similar to the following to direct X applications to display on the local system:

- Bourne, Bash, or Korn shell:

```
$ DISPLAY=local_host:0.0 ; export DISPLAY
```

- C shell:

```
% setenv DISPLAY local_host:0.0
```

In this example, *local_host* is the host name or IP address of the system that you want to use to display Oracle Universal Installer (your workstation or PC).

12. If you determined that the /tmp directory has less than 400 MB of free disk space, then identify a file system with at least 400 MB of free space and set the TMP and TMPDIR environment variables to specify a temporary directory on this file system:

- a. Use the `df -m` command to identify a suitable file system with sufficient free space.

- b. If necessary, enter commands similar to the following to create a temporary directory on the file system that you identified, and set the appropriate permissions on the directory:

```
$ sudo mkdir /mount_point/tmp
$ sudo chmod a+wr /mount_point/tmp
# exit
```

- c. Enter commands similar to the following to set the TMP and TMPDIR environment variables:

- * Bourne, Bash, or Korn shell:

```
$ TMP=/mount_point/tmp
$ TMPDIR=/mount_point/tmp
$ export TMP TMPDIR
```

- * C shell:

```
% setenv TMP /mount_point/tmp
% setenv TMPDIR /mount_point/tmp
```

13. Enter commands similar to the following to set the ORACLE_BASE environment variable:

- Bourne, Bash, or Korn shell:

```
$ ORACLE_BASE=/u01/app/oracle
$ export ORACLE_BASE
```

- C shell:

```
% setenv ORACLE_BASE /u01/app/oracle
```

In these examples, /u01/app/oracle is the Oracle base directory that you created or identified earlier.

14. Enter the following commands to ensure that the ORACLE_HOME and TNS_ADMIN environment variables are not set:

- Bourne, Bash, or Korn shell:

```
$ unset ORACLE_HOME
$ unset TNS_ADMIN
```

- C shell:

```
% unsetenv ORACLE_HOME
% unsetenv TNS_ADMIN
```

Note: If the ORACLE_HOME environment variable is set, then Oracle Universal Installer uses the value that it specifies as the default path for the Oracle home directory. However, if you set the ORACLE_BASE environment variable, then Oracle recommends that you unset the ORACLE_HOME environment variable and choose the default path suggested by Oracle Universal Installer.

15. To verify that the environment has been set correctly, enter the following commands:

```
$ umask
$ env | more
```

Verify that the umask command displays a value of 22, 022, or 0022 and the environment variables that you set in this section have the correct values.

Installing Oracle Database Client

The Oracle Client software is available on installation media or you can download it from the Oracle Technology Network Web site. In most cases, you use the graphical user interface (GUI) provided by Oracle Universal Installer to install the software. However, you can also use Oracle Universal Installer to complete silent-mode installations, without using the GUI.

- [Reviewing Installation Guidelines](#)
- [Accessing the Installation Software](#)
- [Installing the Oracle Client Software](#)

See Also: [Appendix A](#) for information about silent-mode installations

Reviewing Installation Guidelines

Review the following guidelines before starting Oracle Universal Installer:

- Oracle Universal Installer
Do not use Oracle Universal Installer from an earlier Oracle release to install components from this release.
- Reinstalling Oracle Software
If you reinstall Oracle software into an Oracle home directory where Oracle Database is already installed, you must also reinstall any components, such as Oracle Partitioning, that were installed before you begin the reinstallation.

Accessing the Installation Software

The Oracle Client software is available on installation media or you can download it from the Oracle Technology Network Web site. To install the software from the hard disk, you must either download it from Oracle Technology Network and unpack it, or copy it from the installation media, if you have it.

You can access and install Oracle Database by using one of the following methods:

- To install the software from a installation media or from an existing hard disk location, refer to ["Installing the Oracle Client Software"](#) on page 3-4
- To copy the software to a hard disk, refer to ["Copying the Software to the Hard Disk"](#) on page 3-3

- To download the software from Oracle Technology Network, refer to ["Downloading Oracle Software from the Oracle Technology Network Web Site"](#) on page 3-2

Downloading Oracle Software from the Oracle Technology Network Web Site

This section describes how to download the installation archive files and extract them on to the hard disk. It contains the following topics:

- [Downloading the Installation Archive Files](#)
- [Extracting the Installation Files](#)

Downloading the Installation Archive Files

To download the installation archive files from Oracle Technology Network:

1. Use any browser to access the software download page from Oracle Technology Network:
<http://www.oracle.com/technology/software/>
2. Navigate to the download page for the product that you want to install.
3. On the download page, identify the required disk space by adding the file sizes for each required file.

The file sizes are listed next to the file names.

4. Select a file system with enough free space to store and expand the archive files.
In most cases, the available disk space must be at least twice the size of all of the archive files.
5. On the file system that you selected in step 4, create a parent directory for each product, for example `OraDB11g`, to hold the installation directories.
6. Download all of the installation archive files to the directory that you created in step 5.
7. Verify that the files you downloaded are the same size as the corresponding files on Oracle Technology Network.

Extracting the Installation Files

To extract the installation archive files, perform the following steps:

1. If necessary, change directory to the directory that contains the downloaded installation archive files.
2. If the downloaded file has the `zip` extension, use the following command to extract the content:

```
unzip file_name.zip
```

If the downloaded file has the `cpio.gz` extension, use the following command:

```
$ gunzip filename.cpio.gz
```

This command creates files with names similar to the following:

```
filename.cpio
```

To extract the installation files, enter a command similar to the following:


```
$ cpio -idcmv < filename.cpio
```

Note: Refer to the download page for information about the correct options to use with the `cpio` command.

Some browsers uncompress files while downloading them, but leave the `.gz` file extension.

For each file, this command creates a subdirectory named `Diskn`, where `n` is either 1 or the disk number identified in the file name.

When you have extracted all of the required installation files, refer to ["Installing the Oracle Client Software"](#) on page 3-4.

Copying the Software to the Hard Disk

Before installing Oracle Database, you might want to copy the software to the hard disk. This enables the installation process to run a bit faster. Before copying the installation media content to the hard disk, you must mount the disk. The following sections describe to mount disk and copy its content to the hard disk.

Mounting Disks

On most AIX systems, the disk mounts automatically when you insert it into the installation media. If the disk does not mount automatically, then follow these steps to mount it:

1. Switch user to `root`:

```
$ sudo - root
```

2. If necessary, enter a command similar to following to unmount the currently mounted disc, then remove it from the drive:

```
# umount /dvd
```

In this example, `/dvd` is the mount point directory for the disc drive.

3. Insert the appropriate disc into the disc drive, then enter a command similar to the following to mount it:

```
# /usr/sbin/mount -rv cdrfs /dev/cd0 /dvd
```

In this example, `/dev/cd0` is the device name of the disc drive and `/dvd` is the mount point directory.

4. If Oracle Universal Installer displays the Disk Location dialog box, enter the disc mount point directory path, for example:

```
/dvd
```

To continue, go to one of the following sections:

- If you want to copy software to a hard disk, refer to ["Copying the Oracle Client Software to a Hard Disk"](#) on page 3-4.
- If you want to install the software from the installation media, refer to ["Installing the Oracle Client Software"](#) on page 3-4.

Copying the Oracle Client Software to a Hard Disk

If the system does not have an installation media, you can copy the software from the installation media to a file system on another system, then either mount that file system using NFS, or use FTP to copy the files to the system where you want to install the software.

To copy the contents of the installation media to a hard disk:

1. Create a directory on the hard disk to hold the Oracle software:

```
$ mkdir OraCl11g
```

2. Change directory to the directory you created in step 1:

```
$ cd OraCl11g
```

3. Mount the disk, if it is not already mounted.

Some platforms automatically mount the disk when you insert it into the drive. If the disk does not mount automatically, refer to the "[Mounting Disks](#)" section on page 3-3 for platform-specific information about mounting it.

4. Copy the contents of the mounted disk to the corresponding new subdirectory as follows:

```
$ cp -R /directory_path OraCl11g
```

In this example, */directory_path* is the disk mount point directory, for example */mnt/dvd* on Red Hat Enterprise Linux systems, or the path of the client directory on the installation media. The mount point directory is */dvd*.

5. If necessary, mount the next disk and repeat step 5.

Installing the Oracle Client Software

Use Oracle Universal Installer to install the Oracle Client software. The following section describes how to install the Oracle software:

Running Oracle Universal Installer

This section describes the Basic Installation as a default setting. For any type of installation process, start Oracle Universal Installer and install the software, as follows:

1. Log on as a member of the Administrators group to the computer on which to install Oracle components.
2. If you are installing the software from installation media, mount the Client DVD if it is not already mounted.

If the disk does not mount automatically, refer to the "[Mounting Disks](#)" section on page 3-3 for platform-specific information about mounting it.

Some platforms automatically mount the disk when you insert the installation media into the drive.

3. To start Oracle Universal Installer, complete one of the following steps depending on the location of the installation files:

Note: Start Oracle Universal Installer from the terminal session where you logged in as the `oracle` user and set the user's environment (described in [Chapter 2](#)).

- If the installation files are on disk, enter a command similar to the following, where *directory_path* is the path of the `client` directory on the installation media:

```
$ /directory_path/runInstaller
```

- If the installation files are on the hard disk, change directory to the `client` directory and enter the following command:

```
$ ./runInstaller
```

If Oracle Universal Installer is not displayed, refer to the "[X Window Display Errors](#)" on page C-1 for information about troubleshooting.

4. The Oracle Universal Installer guides you through the installation and configuration of various Oracle products.

In the Welcome screen, you can scan the installed products list and de-install the products if required. Click **Next** to proceed with the installation.

5. In the Select Installation Type screen, select the type of installation that you want: **Instant Client**, **Administrator**, **Runtime**, or **Custom** and click **Next**.

See Also: "[Oracle Client Installation Types](#)" for more information on these installation types.

6. In the Install Location screen, enter the following details:

- Oracle base path: Enter the directory location for Oracle base. Do not include spaces in the path name.
- Name: Enter the name of the Oracle home.

Do not install Oracle Client 11g release 1(11.1) software into an existing Oracle home that contains Oracle Database 11g or earlier software. You can install Oracle Client into an existing Oracle home that contains Oracle Database Client 11g release 1(11.1) or later software, so long as Oracle Database is not installed in the same home.

- Oracle home path: This field is populated by default in concurrence with Oracle base location.

7. Click **Next**.

8. If you selected Custom in Step 5, in the Available Product Components screen, select the components you want to install and click **Next** or **Install**.

9. In the Product-specific Prerequisite Checks screen, correct any errors that Oracle Universal Installer may have found, and then click **Next**.

10. In the Summary screen, check the installed components listing and click **Install**.

11. If you have selected Custom installation types, follow steps 12 to 20 to complete the Oracle Net Configuration Assistant procedure.

If you have selected the Administrator or Runtime installation type, then Net Configuration Assistant is invoked as a part of the installation. Click **Next** to complete the installation. You should then start the Net Configuration Assistant and follow steps 12 to 20 to complete configuration process.

If you selected the Instant Client installation type, go to Step 21. After you complete the installation, you can follow the steps under "[Connecting Instant Client or Instant Client Light to an Oracle Database](#)" on page 4-3 to configure the database connection.

12. In the Oracle Net Configuration Assistant: Welcome screen, either select **Perform typical configuration** to use a default configuration, or select the **Naming Methods** configuration option. Then click **Next**. (The remaining steps in this procedure assume you are using Naming Methods.)

13. In the Naming Methods Configuration, Select Naming Methods screen, select the naming method you want and then click **Next**.

In most cases, Local Naming is sufficient.

14. In the Net Service Name Configuration, Service Name screen, enter the name of the database service to which you want to connect. Click **Next**.

For example, to connect to a database named `sales`, enter `sales`.

15. In the Net Service Name Configuration, Select Protocol screen, depending on the protocol you selected, enter the appropriate information and click **Next**.

16. In the Net Service Name Configuration, TCP/IP Protocol screen, enter the host name of the computer where the Oracle database is installed. Specify the port number, then click **Next**.

For example, to connect to the computer `shobeen`, you would enter `shobeen`.

17. In the Net Service Name Configuration, Test screen, click **Yes** to perform a test of the connection. Then click **Next**.

In most cases, the test fails only because the default user name and password Oracle Universal Installer supplies in the dialog box do not match the user name and password for the target database. Click **Change Login**, re-enter the user name and password, and then click **OK**.

18. In the Connecting screen, click **Next**.

19. In the Net Service Name screen, enter the name of the net service name to use.

20. Answer the remaining prompts to complete the configuration.

21. In the End of Installation screen, click **Exit**, then click **Yes** to exit from Oracle Universal Installer.

22. Go to [Chapter 4, "Oracle Database Postinstallation Tasks"](#) to complete the postinstallation tasks.

Oracle Database Postinstallation Tasks

This chapter describes how to complete postinstallation tasks after you have installed the software. It includes information about the following topics:

- [Required Postinstallation Tasks](#)
- [Recommended Postinstallation Tasks](#)
- [Required Product-Specific Postinstallation Tasks](#)

You must perform the tasks listed in the "[Required Postinstallation Tasks](#)" section. Oracle recommends that you perform the tasks listed in the "[Recommended Postinstallation Tasks](#)" section after all installations.

If you install and intend to use any of the products listed in the "[Required Product-Specific Postinstallation Tasks](#)" section, then you must perform the tasks listed in the product-specific subsections.

Note: This chapter describes basic configuration only. Refer to *Oracle Database Administrator's Reference for Linux and UNIX* and product-specific administration and tuning guides for more detailed configuration and tuning information.

Required Postinstallation Tasks

You must perform the tasks described in the following sections after completing an installation:

- [Downloading and Installing Patches](#)
- [Updating Instant Client](#)
- [Connecting with Instant Client](#)

Downloading and Installing Patches

Check the *OracleMetaLink* Web site for required patches for the installation.

Note: You cannot update Instant Client by downloading a patch. Use the procedure under "[Updating Instant Client](#)" on page 4-2 to update Instant Client.

To download required patches:

1. Use a Web browser to view the *OracleMetaLink* Web site:

<https://metalink.oracle.com>

2. Log in to Oracle*MetaLink*.

Note: If you are not an Oracle*MetaLink* registered user, click **Register For MetaLink** and follow the registration instructions.

3. On the main Oracle*MetaLink* page, click **Patches and Updates**.
4. Select **Simple Search**.
5. Specify the following information, then click **Go**:
 - In the **Search By** field, choose Product or Family, then specify RDBMS Server.
 - In the **Release** field, specify the current release number.
 - In the **Patch Type** field, specify Patchset/Minipack.
 - In the **Platform or Language** field, select your platform.

Updating Instant Client

To update Instant Client:

1. Download Instant Client from Oracle Technology Network
<http://www.oracle.com/technology/index.html>.
2. If you want to place the files in the existing directory, then ensure that the directory is empty.

If you want to place the files into a different directory (and remove the previous files), ensure that you update the `PATH` environment variable setting to reflect the new location.

Note: A restriction on using Instant Client or Instant Client Light is that you cannot perform patch upgrades on it using the `opatch` utility. The reason is that the Instant Client installation does not create an inventory, which the patch upgrade process needs in order to perform. The absence of an inventory also means that installed intern patch reporting and conflict detection before a patch attempt are not possible.

Connecting with Instant Client

If you installed the Instant Client installation type, you can configure users' environments to enable dynamically linked client applications to connect to a database as follows:

1. Set the appropriate shared library path environment variable for the platform to specify the directory that contains the Instant Client libraries. For the Instant Client installation type, this directory is the Oracle home directory that you specified during the installation, for example:

```
/u01/app/oracle/product/11.1.0/client_1
```

2. Use one of the following methods to specify database connection information for the client application:
 - Specify a SQL connect URL string using the following format:

```
//host:port/service_name
```

- Set the TNS_ADMIN environment variable to specify the location of the tnsnames.ora file and specify a service name from that file.
- Set the TNS_ADMIN environment variable and set the TWO_TASK environment variable to specify a service name from the tnsnames.ora file.

Note: You do *not* have to specify the ORACLE_HOME environment variable.

Recommended Postinstallation Tasks

Oracle recommends that you perform the tasks described in the following section after completing an installation:

- [Configuring Instant Client Light](#)
- [Creating a Backup of the root.sh Script](#)
- [Connecting Instant Client or Instant Client Light to an Oracle Database](#)
- [Setting Up User Accounts](#)
- [Setting the NLS_LANG Environment Variable](#)
- [Generating the Client Static Library](#)

Configuring Instant Client Light

When you install Instant Client, the Instant Client libraries are installed under the ORACLE_HOME directory and the Instant Client Light specific library is installed under the ORACLE_HOME/light directory. To configure Instant Client Light, you must replace the ORACLE_HOME/liboci11.so file with the ORACLE_HOME/light/liboci11c.so file.

After replacing the library file, you must set the LD_LIBRARY_PATH environment variable to point to the location of the Instant Client shared library files.

Creating a Backup of the root.sh Script

Oracle recommends that you back up the root.sh script after you complete an installation. If you install other products in the same Oracle home directory, then Oracle Universal Installer updates the contents of the existing root.sh script during the installation. If you require information contained in the original root.sh script, then you can recover it from the backed up root.sh file.

Connecting Instant Client or Instant Client Light to an Oracle Database

Before you can connect Instant Client (including Instant Client Light) to an Oracle database, make sure that the LD_LIBRARY_PATH environment variable specifies the directory that contains the Instant Client libraries. This directory is the ORACLE_HOME directory that you specified during installation.

For example, the shared libraries for Instant Client or Instant Client Light (if you have configured Instant Client Light), are in:

```
/u01/app/oracle/product/11.1.0/client_1
```

After you have checked the `LD_LIBRARY_PATH` environment variable, you can use any of the following methods to specify Oracle Database connection information for client applications:

- [Specifying a Connection by Using the Easy Connect Naming Method](#)
- [Specifying a Connection by Configuring a `tnsnames.ora` File](#)
- [Specifying a Connection by Using an Empty Connect String and the `TWO_TASK` Environment Variable](#)

Specifying a Connection by Using the Easy Connect Naming Method

You can specify a connection address to an Oracle Database directly from a client application, without having to configure a `tnsnames` setting for the Instant Client. This method is convenient in that you do not have to create and manage a `tnsnames.ora` file. However, the application users will need to specify the host name and port number when they want to log in to the application.

For example, you are running SQL*Plus on the client computer and want to connect to the `sales_us` database, which is located on a server whose host name is `shobeen` and port number is 1521, then you can log in as follows:

```
Enter user-name: system@admin@//shobeen:1521/sales_us
```

Similarly, in the application code, you can use Oracle Call Interface net naming methods to create the Instant Client-to-Oracle Database connection. For example, the following formats in the `OCI ServerAttach()` call specify the connection information:

- Specify a SQL connect URL string using the following format:

```
//host[:port][//service_name]
```

For example:

```
//shobeen:1521/sales_us
```

- Alternatively, you can specify the SQL connect information as an Oracle Net keyword-value pair. For example:

```
"(DESCRIPTION=(ADDRESS=(PROTOCOL=tcp) (HOST=shobeen) (PORT=1521))
(CONNECT_DATA=(SERVICE_NAME=sales_us)))"
```

See Also: *Oracle Call Interface Programmer's Guide* for more information on using Oracle Call Interface Instant Client

Specifying a Connection by Configuring a `tnsnames.ora` File

By default, when you install Instant Client, Oracle Universal Installer does not include a sample `tnsnames.ora` file nor the Oracle Net Configuration Assistant utility normally used to create it. However, if you want to shield users from having to specify actual host names and port numbers, you may want to consider using a `tnsnames.ora` file to set the Client-to-Oracle Database connection.

You can create the `tnsnames.ora` file manually by copying and modifying a version of this file from another Oracle installation, or you can use Oracle Net Configuration Assistant to create and manage it for you.

To install Oracle Net Configuration Assistant:

1. Run Oracle Universal Installer.
2. Select the **Custom** installation type.

3. In the Summary screen, click **Install**, then click **Exit** and **Yes** to exit Oracle Universal Installer.

On each client computer, configure either of the following settings:

- Set the `TNS_ADMIN` environment variable to specify the location of the `tnsnames.ora` file and specify a service name from that file.
- Place the `tnsnames.ora` file in the `$ORACLE_HOME/network/admin` directory, and make sure that the `ORACLE_HOME` environment has been set to this Oracle home.

See Also: *Oracle Call Interface Programmer's Guide* for more information on Oracle Call Interface Instant Client connection strings

Specifying a Connection by Using an Empty Connect String and the TWO_TASK Environment Variable

You can set the connect string to an empty connect string (""), and then set the `TWO_TASK` environment variable to one of the following values:

- A direct address, as described under ["Specifying a Connection by Using the Easy Connect Naming Method"](#) on page 4-4
- Oracle Net keyword-value pair
- A `tnsnames.ora` entry and `TNS_ADMIN` is set to the location of `tnsnames.ora`
- A `tnsnames.ora` entry and the following:
 - `tnsnames.ora` file located in `$ORACLE_HOME/network/admin`
 - The `ORACLE_HOME` environment variable set to this Oracle home

This method allows the applications to specify internally a connection string if the application code itself uses an empty connection string. The benefit of an empty connect string is that the application itself does not need to specify the `tnsnames.ora` entry. Instead, when a user invokes the application, the location of the database is determined by a script or the environment, depending on where you have set the `TWO_TASK` environment variable. The disadvantage of using empty strings is that you need to configure this additional information in order for the application to connect to the database.

Setting Up User Accounts

For information about setting up additional user accounts, refer to *Oracle Database Administrator's Reference for Linux and UNIX*.

Setting the NLS_LANG Environment Variable

`NLS_LANG` is an environment variable that specifies the locale behavior for Oracle software. This variable sets the language and territory used by the client application and the database server. It also declares the character set of the client, which is the character set of data entered or displayed by an Oracle client program, such as SQL*Plus.

See Also: [Appendix B, "Configuring Oracle Database Globalization Support"](#) for more information about the `NLS_LANG` environment variable

Note: The character set of the data displayed is determined by the environment of the operating system, such as keyboard driver and fonts in use. The `NLS_LANG` character set should match the operating system.

Generating the Client Static Library

The client static library (`libclntst11.a`) is not generated during installation. If you want to link the applications to the client static library, you must first generate it as follows:

1. Switch user to `oracle`.
2. Set the `ORACLE_HOME` environment variable to specify the Oracle home directory used by the Oracle Database installation. For example:

- Bourne, Bash, or Korn shell:

```
$ ORACLE_HOME=/u01/app/oracle/product/11.1.0/db_1
$ export ORACLE_HOME
```

- C shell:

```
% setenv ORACLE_HOME /u01/app/oracle/product/11.1.0/db_1
```

3. Enter the following command:

```
$ $ORACLE_HOME/bin/genclntst
```

Required Product-Specific Postinstallation Tasks

The following sections describe platform-specific postinstallation tasks that you must perform if you install and intend to use the products mentioned:

- [Configuring Oracle Net Services](#)
- [Configuring Oracle Precompilers](#)

Note: You need only perform postinstallation tasks for products that you intend to use.

Configuring Oracle Net Services

If you have an earlier release of Oracle software installed on this system, you might want to copy information from the Oracle Net `tnsnames.ora` and `listener.ora` configuration files from the earlier release to the corresponding files for the new release.

If necessary, you can also add connection information for additional database instances to the new file.

Configuring Oracle Precompilers

This section describes postinstallation tasks for Oracle precompilers:

- [Configuring Pro*C/C++](#)
- [Configuring Pro*FORTRAN](#)

Note: All precompiler configuration files are located in the
\$ORACLE_HOME/precomp/admin directory.

Configuring Pro*C/C++

Verify that the PATH environment variable setting includes the directory that contains the C compiler executable.

Table 4–1 shows the default directories and the appropriate command to verify the path setting of the compiler.

Table 4–1 C/C++ Compiler Directory

Path	Command
/usr/bin	\$ which gcc
/usr/vac/bin	\$ which xlc

Configuring Pro*FORTRAN

Verify that the PATH environment variable setting includes the directory that contains the FORTRAN compiler executable. You can verify the path setting by using the which xlf command..

Removing Oracle Software

This chapter describes how to completely remove all Oracle software from an Oracle home directory.

Removing Oracle Software

The following steps describe how to use Oracle Universal Installer to remove Oracle software from an Oracle home:

Note: Always use Oracle Universal Installer to remove Oracle software. Do not delete any Oracle home directories without first using Oracle Universal Installer to remove the software.

1. If necessary, log in as the `oracle` user:

```
$ su - oracle
```
2. Set the `ORACLE_HOME` environment variable to specify the path of the Oracle home directory that you want to remove:
 - Bourne, Bash, or Korn shell:

```
$ ORACLE_HOME=/u01/app/oracle/product/11.1.0/db_1  
$ export ORACLE_HOME
```
 - C shell:

```
$ setenv ORACLE_HOME /u01/app/oracle/product/11.1.0/db_1
```
3. Start Oracle Universal Installer as follows:

```
$ $ORACLE_HOME/oui/bin/runInstaller
```
4. In the Welcome window, click **Deinstall Products**.
The Inventory screen appears, listing all of the Oracle homes on the system.
5. In the Inventory screen, select the Oracle home and the products that you want to remove, then click **Remove**.

Note: If you choose to remove Oracle JVM, Oracle Universal Installer removes all installed products that depend on Oracle JVM, including Oracle Database 11g.

Oracle Universal Installer displays a confirmation window asking you to confirm that you want to deinstall the products and their dependent components.

6. Click **Yes**.

Oracle Universal Installer displays a progress indicator as it removes the software.

7. Click **Close** on the Inventory screen.
8. When the products have been deleted, click **Cancel** to exit from Oracle Universal Installer, and then click **Yes**.

Installing and Configuring Oracle Database Using Response Files

This appendix describes how to install and configure Oracle products using response files. It includes information about the following topics:

- [How Response Files Work?](#)
- [Preparing a Response File](#)
- [Running Oracle Universal Installer Using a Response File](#)

How Response Files Work?

You can automate the installation and configuration of Oracle software, either fully or partially, by specifying a response file when you start Oracle Universal Installer. Oracle Universal Installer uses the values contained in the response file to provide answers to some or all of Oracle Universal Installer prompt. It includes information about the following topics:

- [Reasons for Using Silent Mode or Noninteractive Mode](#)
- [General Procedure for Using Response Files](#)

Typically, Oracle Universal Installer runs in interactive mode, which means that it prompts you to provide information in graphical user interface (GUI) screens. When you use response files to provide this information, you run Oracle Universal Installer at a command prompt using either of the following modes:

- Silent mode

If you include responses for all of the prompts in the response file and specify the `-silent` option when starting Oracle Universal Installer, then Oracle Universal Installer runs in silent mode. During a silent-mode installation, Oracle Universal Installer does not display any screens. Instead, it displays progress information in the terminal that you used to start it.

- Noninteractive (or suppressed) mode

If you include responses for some or all of the prompts in the response file and omit the `-silent` option, then Oracle Universal Installer runs in suppressed mode. During a suppressed-mode installation, Oracle Universal Installer displays only the screens for which you did not specify all required information. You can also use variables in the response file or command-line options to suppress other installer screens, such as the Welcome screen or Summary screen, that do not prompt for information.

You define the settings for a silent or noninteractive installation by entering values for the variables listed in the response file. For instance, to specify the Oracle home name, you would supply the appropriate value for the `ORACLE_HOME_NAME` variable, as in the following example:

```
ORACLE_HOME_NAME="OraCLHome1"
```

Another way of specifying the response file's variable settings is to pass them as command line arguments when you run Oracle Universal Installer. For example:

```
-silent "ORACLE_HOME_NAME=OraDBHome1" ...
```

In this command, *directory_path* is the path of the database directory on the DVD or the path of the `Disk1` directory on the hard drive.

This method is particularly useful if you do not want to embed sensitive information, such as passwords, in the response file. For example:

```
-silent "s_dlgRBOPassword=binks342" ...
```

Ensure that you enclose the variable and its setting in quotes.

See Also: *Oracle Universal Installer and OPatch User's Guide* for more information about response file formats.

Reasons for Using Silent Mode or Noninteractive Mode

The following table describes several reasons why you might want to run Oracle Universal Installer in silent mode or suppressed mode.

Mode	Uses
Silent	<p>Use silent mode if you want to:</p> <ul style="list-style-type: none">■ Complete an unattended installation, which you might schedule using operating system utilities such as <code>at</code>■ Complete several similar installations on multiple systems without user interaction■ Install the software on a system that does not have X Window System software installed on it <p>Oracle Universal Installer displays progress information in the terminal that you used to start it, but it does not display any of Oracle Universal Installer screens.</p>
Suppressed (noninteractive)	<p>Use suppressed mode if you want to complete similar Oracle software installations on more than one system, providing default answers to some, but not all of Oracle Universal Installer prompts.</p> <p>If you do not specify information required for a particular Installer screen in the response file, then Oracle Universal Installer displays that screen. It suppresses screens for which you have provided all of the required information.</p>

General Procedure for Using Response Files

The following are the general steps to install and configure Oracle products using Oracle Universal Installer in silent or suppressed mode:

Note: You must complete all required preinstallation tasks on a system before running Oracle Universal Installer in silent or suppressed mode.

1. Create the `oraInst.loc` file.
2. Prepare a response file.
3. Run Oracle Universal Installer in silent or suppressed mode.
4. If you completed a software-only installation, then run Net Configuration Assistant and Database Configuration Assistant in silent or noninteractive mode if required.

These steps are described in the following sections.

Preparing a Response File

This section describes the following methods to prepare a response file for use during silent-mode or suppressed-mode installations:

- [Editing a Response File Template](#)
- [Recording a Response File](#)

Editing a Response File Template

This method is most useful for the Enterprise Edition or Standard Edition installation types.

Oracle provides response file templates for each product and installation type, and for each configuration tool. These files are located at `database/response` directory on the installation media.

Note: If you copied the software to a hard disk, the response files are located in the `database/response` directory.

[Table A-1](#) lists the response files provided with Oracle Database.

Table A-1 Response Files

Response File	Description
<code>instantClient.rsp</code>	Instant Client installation of Oracle Client
<code>clientadmin.rsp</code>	Administrator installation of Oracle Client
<code>clientruntime.rsp</code>	Runtime installation of Oracle Client
<code>clientcustom.rsp</code>	Custom installation of Oracle Client

To copy and modify a response file:

1. Copy the response file from the response file directory to a directory on your system:

```
$ cp /directory_path/response/response_file.rsp local_directory
```

In this example, *directory_path* is the path to the database directory on the installation media. If you have copied the software to a hard drive, then you can edit the file in the response directory if you prefer.

2. Open the response file in a text editor:

```
$ vi /local_dir/response_file.rsp
```

In addition to editing settings specific to the Oracle Database installation, check that the `FROM_LOCATION` path is correct and points to the `products.xml` file in the stage directory in the installation media. You may want to set this variable to point to an absolute path, for example:

```
FROM_LOCATION="/directory_path/stage/products.xml"
```

Remember that you can specify sensitive information, such as passwords, at the command line rather than within the response file. ["How Response Files Work?"](#) on page A-1 explains this method.

See Also: *Oracle Universal Installer and OPatch User's Guide* for detailed information on creating response files

3. Follow the instructions in the file to edit it.

Note: Oracle Universal Installer or configuration assistant fails if you do not correctly configure the response file. Refer to ["Silent-Mode Response File Error Handling"](#) section on page C-4 for more information about troubleshooting a failed silent-mode installation.

Recording a Response File

You can use Oracle Universal Installer in interactive mode to record a response file, which you can edit and then use to complete silent-mode or suppressed-mode installations. This method is useful for custom or software-only installations.

When you record the response file, you can either complete the installation, or you can exit from Oracle Universal Installer on the Summary page, before it starts to copy the software to the system.

If you use record mode during a noninteractive mode installation, then Oracle Universal Installer records the variable values that were specified in the original source response file into the new response file.

Note: You cannot use record mode to create a response file during an installation that uses the Basic installation method.

To record a response file:

1. Complete the preinstallation tasks listed in [Chapter 2](#).

When you run Oracle Universal Installer to record a response file, it checks the system to verify that it meets the requirements to install the software. For this reason, Oracle recommends that you complete all of the required preinstallation tasks and record the response file while completing an installation.

2. If you have not installed Oracle software on this system previously, create the `oraInst.loc` file, as described in the previous section.
3. Ensure that the Oracle software owner user (typically `oracle`) has permissions to create or write to the Oracle home path that you will specify when you run Oracle Universal Installer.
4. To record a response file, enter a command similar to the following to start Oracle Universal Installer:

Note: Do not specify a relative path to the response file. If you specify a relative path, then Oracle Universal Installer fails.

```
$ /directory_path/runInstaller -record -destinationFile response_filename
```

In this command:

- *directory_path* is the path of the database directory on the DVD or the path of the `Disk1` directory on the hard drive
 - The `-record` parameter specifies that you want to record the responses that you enter in a response file
 - *response_filename* is the full path and file name of the response file that you want to record
5. On each Oracle Universal Installer screen, specify the required information.
 6. When Oracle Universal Installer displays the Summary screen, perform one of the following actions:
 - Click **Install** to create the response file, then continue with the installation.
 - Click **Cancel** and then **Yes** to create the response file but exit from Oracle Universal Installer without installing the software.
- The response file is saved in the location that you specified using the `-destinationFile` option.
7. If you do not complete the installation, then delete the Oracle home directory that Oracle Universal Installer created using the path you specified on the Specify File Locations screen.
 8. Before using the recorded response file on another system, edit the file and make any required changes.

Use the instructions in the file as a guide when editing it.

Running Oracle Universal Installer Using a Response File

Now, you are ready to run Oracle Universal Installer at the command line, specifying the response file you created, to perform the installation. The Oracle Universal Installer executable, `runInstaller`, provides several options. For help information on the full set of these options, run the `runInstaller` command with the `-help` option, for example:

```
$ directory_path/runInstaller -help
```

The help information appears in a window after some time.

To run Oracle Universal Installer using a response file:

1. Complete the preinstallation tasks listed in [Chapter 2](#).
2. Log in as the Oracle software owner user (typically `oracle`).
3. If you are completing a suppressed-mode installation, set the `DISPLAY` environment variable.

Note: You do not have to set the `DISPLAY` environment variable if you are completing a silent-mode installation.

4. To start Oracle Universal Installer in silent or suppressed mode, enter a command similar to the following:

```
$ /directory_path/runInstaller [-silent] [-noconfig] \  
-responseFile responsefilename
```

Note: Do not specify a relative path to the response file. If you specify a relative path, then Oracle Universal Installer fails.

In this example:

- *directory_path* is the path of the database directory on the DVD or the path of the `Disk1` directory on the hard drive.
- `-silent` indicates that you want to run Oracle Universal Installer in silent mode.
- `-noconfig` suppresses running the configuration assistants during installation, and a software-only installation is performed instead.
- *responsefilename* is the full path and file name of the installation response file that you configured.

Note: For more information about other options for the `runInstaller` command, enter the following command:

```
$ /directory_path/runInstaller -help
```

5. When the installation completes, log in as the `root` user and run the `root.sh` script:

```
$ sudo sh  
password:  
# /oracle_home_path/root.sh
```

Configuring Oracle Database Globalization Support

This appendix describes these Globalization Support topics:

- [About NLS_LANG Environment Variable](#)
- [Running Oracle Universal Installer in Different Languages](#)

About NLS_LANG Environment Variable

Oracle provides Globalization Support that enables users to interact with a database in their preferred locale and character set settings. Setting the NLS_LANG environment variable specifies locale behavior for Oracle software. It sets the language and territory used by the client application and the database server. It also declares to Oracle the character set of data entered and displayed by a client program, such as SQL*Plus.

The NLS_LANG environment variable uses the following format:

`NLS_LANG=language_territory.characterset`

where:

Parameter	Description
<i>language</i>	Specifies the language used for displaying Oracle messages, sorting, day names, and month names.
<i>territory</i>	Specifies the conventions for default date, monetary and numeric formats.
<i>characterset</i>	Specifies the encoding used by the client application (normally the Oracle character set that corresponds to the character set of the user terminal or the operating system)

The NLS_LANG environment variable is set as a local environment variable for the shell on all UNIX-based platforms. For example, if the operating system locale setting is `en_US.UTF-8`, then the corresponding NLS_LANG environment variable should be set to `AMERICAN_AMERICA.AL32UTF8`.

Caution: AL32UTF8 is the Oracle Database character set that is appropriate for XMLType data. It is equivalent to the IANA registered standard UTF-8 encoding, which supports all valid XML characters.

Do not confuse Oracle Database database character set UTF8 (no hyphen) with database character set AL32UTF8 or with character encoding UTF-8. Database character set UTF8 has been superseded by AL32UTF8. Do not use UTF8 for XML data. UTF8 supports only Unicode version 3.1 and earlier; it does not support all valid XML characters. AL32UTF8 has no such limitation.

Using database character set UTF8 for XML data could potentially cause a fatal error or affect security negatively. If a character that is not supported by the database character set appears in an input-document element name, a replacement character (usually "?") is substituted for it. This will terminate parsing and raise an exception.

See Also: *Oracle Database Globalization Support Guide* for information about the NLS_LANG parameter and Globalization Support initialization parameters

The following table lists some of the valid values for the NLS_LANG environment variable.

Note: Refer to the operating system specific documentation on how to determine the operating system locale environment setting.

Operating system locale	NLS_LANG values
French (France)	FRENCH_FRANCE.WE8ISO8859P15, FRENCH_FRANCE.WE8ISO8859P1, FRENCH_FRANCE.WE8MSWIN1252, FRENCH_FRANCE.AL32UTF8
Japanese (Japan)	JAPANESE_JAPAN.JA16EUC, JAPANESE_JAPAN.JA16SJIS, JAPANESE_JAPAN.AL32UTF8

Running Oracle Universal Installer in Different Languages

Oracle Universal Installer runs by default in the selected language of your operating system. You can also run Oracle Universal Installer in the following languages:

- Brazilian Portuguese
- German
- Japanese
- Simplified Chinese
- Traditional Chinese
- French
- Italian
- Korean

- Spanish

Note: If the language set for the operating system is not supported by Oracle Universal Installer, then Oracle Universal Installer, by default, runs in the English language.

To run Oracle Universal Installer in a different language, you can use any of the following methods:

- Change the language in which the operating system is running before you run Oracle Universal Installer. You can change the language in which the operating system is running by clicking **Language** on the Login screen and selecting the required language from the list.
- To run Oracle Universal Installer in another language from the shell prompt, use a command similar to the following after changing to the Disk1 directory (or to the directory that contains the runInstaller file):

```
# LANG=language_territory.characterset ./runInstaller
```

For example, to run Oracle Universal Installer in German, use the following command:

```
# LANG=de_DE.UTF-8 ./runInstaller
```

Note: The language, territory, and character_set parameters of the LANG environment variable are based on the operating system. Refer to the operating system specific documentation for the values that you can use for the locale setting.

See Also: *Oracle Universal Installer and OPatch User's Guide* for information about running Oracle Universal Installer in different languages

Troubleshooting

This appendix contains information about troubleshooting. It includes information about the following topics:

- [Verify Requirements](#)
- [X Window Display Errors](#)
- [What to Do If an Installation Error Occurs?](#)
- [Reviewing the Log of an Installation Session](#)
- [Troubleshooting Configuration Assistants](#)
- [Silent-Mode Response File Error Handling](#)
- [Cleaning Up After a Failed Installation](#)

Verify Requirements

Before performing any of the troubleshooting steps in this appendix, ensure that the system meets the requirements and that you have completed all of the preinstallation tasks specified in [Chapter 2](#).

Read the Release Notes

Read the release notes for the product before installing it. The release notes are available on the Oracle Database 11g DVD. The latest version of the release notes is also available on the Oracle Technology Network Web site:

<http://www.oracle.com/technology/documentation/>

X Window Display Errors

If you are running Oracle Universal Installer on a remote system and you want to display Oracle Universal Installer's user interface on your local system, you might see error messages similar to the following:

```
"Failed to connect to server"  
"Connection refused by server"  
"Can't open display"
```

If you see one of these error messages, follow these steps:

Note: This procedure applies only to users of UNIX workstations. If you are using a PC or other system with X server software installed, refer to the X server documentation for information about how to permit remote systems to display X applications on the local system.

1. In a local terminal window, log in as the user that started the X Window session.
2. Enter the following command:

```
$ xhost fully_qualified_remote_host_name
```

For example:

```
$ xhost somehost.us.example.com
```
3. Enter the following commands, where *workstation_name* is the host name or IP address of your workstation:
 - Bourne, Bash, or Korn shell:

```
$ DISPLAY=workstation_name:0.0  
$ export DISPLAY
```
 - C shell:

```
% setenv DISPLAY workstation_name:0.0
```
4. To determine whether X Window applications display correctly on the local system, enter the following command:

```
$ xclock
```

The X clock should appear on your monitor.
5. If the X clock appears, close the X clock and start Oracle Universal Installer again.

What to Do If an Installation Error Occurs?

If you encounter an error during installation:

- Do not exit Oracle Universal Installer.
- If you clicked **Next** after you entered incorrect information on one of the installation screens, click **Back** to return to the screen and correct the information.
- If you encounter an error while Oracle Universal Installer is copying or linking files, refer to "[Reviewing the Log of an Installation Session](#)" section on page C-2.
- If you encounter an error while a configuration assistant is running, refer to "[Troubleshooting Configuration Assistants](#)" section on page C-3.
- If you cannot resolve the problem, remove the failed installation by following the steps listed in the "[Cleaning Up After a Failed Installation](#)" section on page C-4.

Reviewing the Log of an Installation Session

During an installation, Oracle Universal Installer records all of the actions that it performs in a log file. If you encounter problems during the installation, review the log file for information about possible causes of the problem.

To view the log file, follow these steps:

1. If necessary, enter the following command to determine the location of the `oraInventory` directory:

```
$ cat /etc/oraInst.loc
```

The `inventory_loc` parameter in this file specifies the location of the `oraInventory` directory.

2. Enter the following command to change directory to Oracle Universal Installer log file directory, where `orainventory_location` is the location of the `oraInventory` directory:

```
$ cd /orainventory_location/logs
```

3. Enter the following command to determine the name of the log file:

```
$ ls -ltr
```

This command lists the files in the order of creation, with the most recent file shown last. Installer log files have names similar to the following, where `date_time` indicates the date and time that the installation started:

```
installActionsdate_time.log
```

4. To view the most recent entries in the log file, where information about a problem is most likely to appear, enter a command similar to the following:

```
$ tail -50 installActionsdate_time.log | more
```

This command displays the last 50 lines in the log file.

5. If the error displayed by Oracle Universal Installer or listed in the log file indicates a relinking problem, refer to the following file for more information:

```
$ORACLE_HOME/install/make.log
```

Troubleshooting Configuration Assistants

To troubleshoot an installation error that occurs when a configuration assistant is running:

- Review the installation log files listed in the ["Reviewing the Log of an Installation Session"](#) section on page C-2.
- Review the specific configuration assistant log file located in the `$ORACLE_HOME/cfgtoollogs` directory. Try to fix the issue that caused the error.
- If you see the "Fatal Error. Reinstall" message, look for the cause of the problem by reviewing the log files. Refer to ["Fatal Errors"](#) on page C-4 for further instructions.

Configuration Assistant Failure

Oracle configuration assistant failures are noted at the bottom of the installation screen. The configuration assistant interface displays additional information, if available. The configuration assistant execution status is stored in the following file:

```
oraInventory_location/logs/installActionsdate_time.log
```

The execution status codes are listed in the following table:

Status	Result Code
Configuration assistant succeeded	0
Configuration assistant failed	1
Configuration assistant cancelled	-1

Fatal Errors

If you receive a fatal error while a configuration assistant is running, you must remove the current installation and reinstall the Oracle software, as follows:

1. Remove the failed installation as described in the ["Cleaning Up After a Failed Installation"](#) section on page C-4.
2. Correct the cause of the fatal error.
3. Reinstall the Oracle software.

Silent-Mode Response File Error Handling

To determine whether a silent-mode installation succeeds or fails, refer to the following log file:

```
/oraInventory_location/logs/silentInstalldate_time.log
```

If necessary, refer to the previous section for information about determining the location of the `oraInventory` directory.

A silent installation fails if:

- You do not specify a response file
- You specify an incorrect or incomplete response file
For example, a common problem is that while all the product-specific data is filled out correctly, the staging area location may be incorrect. If this is the case, check the `FROM_LOCATION` variable and make sure that it points to the `products.xml` file in the installation media. In the installation media, this `products.xml` is in `response/stage`.
- Oracle Universal Installer encounters an error, such as insufficient disk space

Oracle Universal Installer or configuration assistant validates the response file at run time. If the validation fails, the silent-mode installation or configuration process ends. Oracle Universal Installer treats values for parameters that are of the wrong context, format, or type as if no value was specified in the file.

Cleaning Up After a Failed Installation

If an installation fails, you must remove files that Oracle Universal Installer created during the attempted installation and remove the Oracle home directory. Perform the following steps to remove the files:

1. Start Oracle Universal Installer as described in ["Installing the Oracle Client Software"](#) on page 3-4.
2. Click **Deinstall Products** on the Welcome window or click **Installed Products** on any Installer window.

The Inventory window appears, listing installed products.

3. Select the Oracle home that contains the products that you want to remove, then click **Remove**.
4. Manually remove the Oracle home directory created during the failed installation.
5. Reinstall the Oracle software.

To reinstall, you need to drop either one or two database schemas, depending upon the installation type.

Frequently Asked Questions About Installation

Use the following guidelines to decide how to install Oracle Database components:

- [Installing Oracle Database or Oracle Client](#)
- [Installing Oracle Database Tools](#)
- [Installing Oracle Database with Oracle Applications](#)
- [Installing Oracle Database Heterogeneous Connectivity Tools \(Gateways\)](#)

Installing Oracle Database or Oracle Client

The following are frequently asked questions with respect to installing Oracle database:

- [I only need one instance of Oracle Database or I just want to install a test database to get familiar with the product. How do I install Oracle Database for these situations?](#)
- [How can I create an Oracle database that can handle transaction-heavy or data warehousing applications?](#)
- [What's the best way to install multiple Oracle databases?](#)
- [How do I configure client connections to an Oracle database?](#)
- [What is the best way to install Oracle Client if my client nodes have limited disk space?](#)
- [How do I upgrade Oracle Database?](#)
- [The computers at my site have been configured to run as a cluster. How should I install Oracle Database?](#)
- [How do I migrate my non-Oracle databases to Oracle Database?](#)

I only need one instance of Oracle Database or I just want to install a test database to get familiar with the product. How do I install Oracle Database for these situations?

- If you want a quick installation using the default installation settings, then refer to the platform-specific *Oracle Database Quick Installation Guide*.
- If your site has special requirements, then refer to platform-specific *Oracle Database Installation Guide* for more information.

How can I create an Oracle database that can handle transaction-heavy or data warehousing applications?

If you want to create a starter database designed for transaction-heavy or data warehousing applications, then refer to platform-specific *Oracle Database Installation Guide* for more details. Select the **Advanced Installation** method, and then select the database type you want on the Select Database Configuration screen.

See Also: *Oracle Database Data Warehousing Guide* after installation

Alternatively, you can install Oracle OLAP during the Oracle Database installation. Oracle OLAP provides optimal support for database environments that must meet OLAP requirements. To do so, select **Advanced Installation**, then **Custom**, and on the Available Product Components screen, select **Oracle OLAP**.

See Also:

- *Oracle OLAP User's Guide*
- *Oracle OLAP DML Reference*
- *Oracle OLAP Java API Reference*

What's the best way to install multiple Oracle databases?

Use platform-specific *Oracle Database Installation Guide* to install Oracle Database using either of the following methods:

- **Installing with response files:** This method lets you run Oracle Universal Installer at a command line using a response file that contains settings specific to each computer.
- **Cloning an existing Oracle home:** Install Oracle Database in one computer using interactive mode. Afterwards, you can clone its existing Oracle home in each location and then create a new database from there. You can also clone databases, which is described in *Oracle Database Administrator's Guide*.

How do I configure client connections to an Oracle database?

1. Install Oracle Database on a server by using platform-specific *Oracle Database Installation Guide* for more information.
2. Use this guide to install Oracle Client on each client node, and select the Instant Client installation type.

If you have many client nodes, consider staging the software centrally, mapping the drive, and running Oracle Universal Installer in the noninteractive mode.

If the client nodes only require a default installation into a new Oracle home directory, consider using platform-specific *Oracle Database Installation Guide* for more information.

What is the best way to install Oracle Client if my client nodes have limited disk space?

1. Install Oracle Database onto a server by using platform-specific *Oracle Database Installation Guide* for more details.
2. Use this guide to install Oracle Client on each client node, and select the Instant Client installation type.

If you have many client nodes, then consider running Oracle Universal Installer in noninteractive mode.

How do I upgrade Oracle Database?

Refer to *Oracle Database Upgrade Guide*.

See Also: *Oracle Database Administrator's Guide* if you want to use software cloning to upgrade Oracle Database

The computers at my site have been configured to run as a cluster. How should I install Oracle Database?

Use any of the following installation scenarios:

- If you want to run a single-instance Oracle Database in a clustered environment, then install Oracle Clusterware either before or after you install Oracle Database.
- If you want a consolidated pool of storage for all databases in a cluster, then install Oracle Clusterware first and use Automatic Storage Management to manage this storage. Afterwards, install Oracle Database (which can be either single instance or Real Application Clusters).
- If you plan to use Oracle Real Application Clusters, first install Oracle Clusterware, and then install Oracle Real Application Clusters.

Refer to platform-specific *Oracle Clusterware Installation Guide* and *Oracle Real Application Clusters Installation Guide for AIX Based Systems* for the platform to install Oracle Clusterware or Oracle Real Application Clusters. Oracle Clusterware is available on the Oracle Clusterware installation media. Refer to platform-specific *Oracle Database Installation Guide* which explains how to install Automatic Storage Management as well as Oracle Database.

Oracle Clusterware is a key component required by Oracle Real Application Clusters installations. Oracle Clusterware is an integrated cluster management solution that can bind multiple servers together to act as a single system. This is referred to as a cluster. It performs workload management and component restart. For example, when an instance supporting a particular service fails, Oracle Clusterware restarts the service on the next available instance that you have configured for that service. Oracle Clusterware can monitor non-Oracle programs, as long as they are defined within the Oracle Clusterware environment using the High Availability API.

How do I migrate my non-Oracle databases to Oracle Database?

Use Oracle Migration Workbench to migrate your non-Oracle databases and applications to Oracle. Oracle Migration Workbench software and documentation are available at:

<http://www.oracle.com/technology/tech/migration/index.html>

Installing Oracle Database Tools

The following are frequently asked questions with respect to installing Oracle database tools:

- [How do I install Oracle Application Server?](#)
- [How can I administer and monitor my Oracle Database products?](#)
- [How do I manage security for my Oracle Database products?](#)
- [How do I use Oracle Database to manage my XML data?](#)
- [Does Oracle Database provide OLAP tools so that I can analyze data such as trends and time series in my database?](#)

- Does Oracle Database provide data mining tools that I can use to discover hidden meaning in my data and predict likely outcomes based on my data?
- How do I perform backup and recovery operations for Oracle Database?
- Is Oracle Workflow included with Oracle Database 11g?
- Is there a migration plan for customers that have built solutions using Oracle Workflow?

How do I install Oracle Application Server?

Refer to *Oracle Application Server Installation Guide*. How you install Application Server depends on whether you already have Oracle Database installed:

- If you do not have Oracle Database installed or you do not want Oracle Application Server to use any of your existing Oracle Databases, then Oracle Universal Installer lets you install a separate Oracle Application Server instance. This database is populated with the metadata that Oracle Application Server needs to run.
- If you want Oracle Application Server to use an existing Oracle Database, then do the following:
 1. From the Oracle Application Server installation media, run Oracle Application Server Repository Creation Assistant to populate your database with the metadata that Application Server needs.
 2. Install the remaining Oracle Application Server components by following the instructions in the *Oracle Application Server Installation Guide*.

How can I administer and monitor my Oracle Database products?

To perform regular administrative functions such as creating, configuring, or deleting databases, or managing database templates, use one of the following methods:

To manage only the single database and listener that you are installing:

1. Use platform-specific *Oracle Database Installation Guide* to install Oracle Database.
2. From Oracle Database, use Database Configuration Assistant to manage your databases.

You can also administer and monitor the database with Oracle Enterprise Manager Grid Control, which is installed by default with Oracle Database. Oracle Enterprise Manager Grid Control includes the Oracle Management Agent, Oracle Management Service, and Oracle Management Repository, as well as Grid Control, a browser-based central console through which administrators can perform all monitoring, administration, and configuration tasks for the enterprise.

See Also: *Oracle Enterprise Manager Grid Control Installation and Basic Configuration* available on the Enterprise Manager Grid Control installation media

To perform advanced administration tasks, such as monitoring Oracle Database and managing multiple hosts, application servers, and databases including the one that you are installing, install Oracle Enterprise Manager as follows:

1. Use platform-specific *Oracle Database Installation Guide* to install Oracle Database.

If you plan to use Oracle Real Application Clusters, then install Oracle Database by using platform-specific *Oracle Clusterware Installation Guide* and *Oracle Real Application Clusters Installation Guide for AIX Based Systems*.

2. Use *Oracle Enterprise Manager Grid Control Installation and Basic Configuration* to install and configure Oracle Enterprise Manager. For postconfiguration tasks, use *Oracle Enterprise Manager Advanced Configuration*.

How do I manage security for my Oracle Database products?

Oracle provides a wide range of security solutions for your enterprise environment, including centralized administration and security features integrated with Oracle Internet Directory. The set of Oracle security services called Oracle Platform Security integrates the security features built into Oracle Database, Oracle Application Server, and the Oracle Identity Management infrastructure. Combined, these features enable the development and deployment of secure e-business applications.

Oracle Identity Management includes Oracle Internet Directory, a centralized repository that simplifies administration of users and applications in the Oracle environment by means of the following components:

- Oracle Internet Directory client tools, including LDAP command-line tools, the Oracle Internet Directory SDK, and Oracle Directory Manager.
- Oracle Internet Directory server components, including the directory server, the directory replication server, the directory integration server, and various tools for starting and stopping them.

Oracle Database includes the Oracle Internet Directory client tools, but not the Oracle Internet Directory server components. To install the Oracle Internet Directory server components, run Oracle Universal Installer from an Oracle 10g Application Server installation.

See Also:

- *Oracle Application Server Installation Guide* (to install Oracle Identity Management)
- *Oracle Database Security Guide*
- *Oracle Database Advanced Security Administrator's Guide*
- *Oracle Database Enterprise User Security Administrator's Guide*
- *Oracle Label Security Administrator's Guide*
- *Oracle Application Server Security Guide*
- Oracle Technology Network topics on database security
<http://www.oracle.com/technology/deploy/security/index.html>

How do I use Oracle Database to manage my XML data?

Use Oracle XML DB, which is installed as part of Oracle Database. Oracle XML DB enables you to efficiently store, generate, retrieve, query, and manage XML data on your site. Oracle XML DB provides all the advantages of a relational database, for example, allowing you to control the referential integrity of XML data with constraints and triggers. It works well with large amounts of XML data by storing it in a parsed, relational form, which improves access performance.

Oracle XML DB supports XML Type, which is a native data type for XML data, for which you can choose various storage options depending on your needs. In addition, Oracle XML DB supports XML Schema processing, structured and unstructured storage, a content repository that you can access by using common protocols (FTP, HTTP(S), and WebDAV), and SQL/XML, which is a standard for SQL with XML. For Oracle Database 11g Release 1 (11.1), Oracle XML DB introduced support for the

XQuery language for querying, transforming, and constructing XML; the ability for users to define their own metadata for schema-based XML; a set of new SQL functions for DML operations on XML data; and more.

You can use Oracle XML DB in conjunction with Oracle XML Developer's Kit (XDK) to build applications that run on either Oracle Database or Oracle Application Server.

See Also:

- *Oracle XML DB Developer's Guide*
- *Oracle XML Developer's Kit Programmer's Guide*

Does Oracle Database provide OLAP tools so that I can analyze data such as trends and time series in my database?

Yes, install Oracle OLAP, which is provided in the Oracle Database installation. Oracle OLAP provides optimal support for database environments that must meet OLAP requirements.

Use either of the following methods in *Oracle Database Installation Guide* to install Oracle OLAP:

- When you run Oracle Universal Installer, select the **Custom** installation type, and in the Available Product Components screen, select **Oracle OLAP**.

See Also:

- *Oracle OLAP User's Guide*
 - *Oracle OLAP DML Reference*
 - *Oracle OLAP Java API Reference*
- Select the **Enterprise Edition** installation type, and then on the Select Database Configuration screen, select the **Data Warehouse** configuration.

See Also: *Oracle Database Data Warehousing Guide* after installation

Does Oracle Database provide data mining tools that I can use to discover hidden meaning in my data and predict likely outcomes based on my data?

Yes. Install Oracle Data Mining, which is provided in the Oracle Database installation. With the Oracle Data Mining option, you can create and execute predictive and descriptive data mining models that use a variety of algorithms.

Use the following method in platform-specific *Oracle Database Installation Guide* to install Oracle Data Mining:

1. When you run Oracle Universal Installer, select the **Enterprise Edition** installation type.
2. In the Select Database Configuration screen, select the **General Purpose/Transaction Processing** configuration.

See Also: The following manuals after you have installed Oracle Data Mining:

- *Oracle Data Mining Concepts*
- *Oracle Data Mining Administrator's Guide*
- *Oracle Data Mining Application Developer's Guide*
- *Oracle Data Mining Java API Reference*
- *Oracle Database PL/SQL Packages and Types Reference* (search for Data Mining)

How do I perform backup and recovery operations for Oracle Database?

Use Oracle Database Recovery Manager (RMAN), which is a backup and recovery tool integrated into Oracle Database. This tool satisfies the pressing demands of high-performance, manageable backup, and recovery. Recovery Manager is native to the database server, automatically tracks database structure changes, and optimizes operations accordingly. In addition, Recovery Manager is integrated with leading tape media management products, so that Oracle database backups can be integrated with your existing networked data protection infrastructure.

See Also:

- *Oracle Database Backup and Recovery User's Guide*
- *Oracle Database Backup and Recovery Reference*

Is Oracle Workflow included with Oracle Database 11g?

Starting with Oracle Database 11g, Oracle Workflow is no longer released with the database. Oracle Workflow will be available with the Oracle E-Business Suite releases.

See Also: Oracle Workflow statement of direction

http://www.oracle.com/technology/products/ias/workflow/workflow_sod.html

Is there a migration plan for customers that have built solutions using Oracle Workflow?

Starting January 2006, customers are encouraged to re-create and implement workflows using Oracle BPEL Process Manager. Oracle is in the process of creating a technical migration guide that will provide detailed recommendations for migrating Oracle Workflow processes to Oracle BPEL Process Manager.

See Also: Oracle Workflow statement of direction

http://www.oracle.com/technology/products/ias/workflow/workflow_sod.html

Installing Oracle Database with Oracle Applications

The following are frequently asked questions with respect to installing Oracle database with Oracle applications:

- [How do I install my Oracle applications with Oracle Database?](#)
- [How can I create Web applications that communicate with Oracle Database?](#)
- [Which Web server can my Oracle applications use?](#)
- [How can I migrate my non-Oracle applications to Oracle?](#)

How do I install my Oracle applications with Oracle Database?

In most cases, install Oracle Database itself, then install the Oracle application. The Oracle Universal Installer for that application prompts you for the connection information. Check the application documentation requirements.

If you need to implement your applications with Oracle Real Applications Clusters databases, refer to *Oracle Real Application Clusters Installation Guide for AIX Based Systems* and platform-specific *Oracle Clusterware Installation Guide*.

How can I create Web applications that communicate with Oracle Database?

Install Oracle Application Express and a web server:

Use platform-specific *Oracle Database Installation Guide* to install Oracle Database. Oracle Application Express is automatically installed, when you install Oracle database.

Which Web server can my Oracle applications use?

Install Oracle HTTP Server:

Use platform-specific *Oracle Database Installation Guide* to install Oracle Database.

How can I migrate my non-Oracle applications to Oracle?

Use Oracle Migration Workbench to migrate your non-Oracle applications to Oracle. Oracle Migration Workbench software and documentation are available at:

<http://www.oracle.com/technology/tech/migration/index.html>

Installing Oracle Database Heterogeneous Connectivity Tools (Gateways)

The following section discusses about Gateway products:

[How can my Oracle applications access data in a non-Oracle database system?](#)

How can my Oracle applications access data in a non-Oracle database system?

You can use Oracle Database Gateway as the connectivity tool to enable Oracle applications to access data in non-Oracle databases. The following are the functions of Oracle Database Gateway:

- Integrates a non-Oracle database into your Oracle Database environment.
- Enables Oracle PL/SQL applications to integrate with APPC-enabled transactions, or access messages in IBM Websphere MQ.

You can install the Gateway product on a computer independent of the Oracle application, Oracle database, and non-Oracle database.

For example, suppose you have the following scenario:

- Oracle Database is installed on an UNIX computer.
- The Oracle application is installed on a Microsoft Windows computer and accesses data from the Oracle database on the UNIX computer.
- The Oracle application needs to join data in a DB2 database on Solaris Operating System and an Oracle Database on UNIX.

You have the option of installing the Database Gateway for DRDA on the Solaris computer where DB2 is running, on UNIX where Oracle is running, or on a third computer.

Table D–1 lists the non-Oracle database systems that you can access from Oracle applications, and the Gateways products that are available for those systems.

Table D–1 Oracle Gateway Products

Non-Oracle Database	Oracle Gateway Products and Documentation
IBM DB2 Universal Database (UDB)	Oracle Database Gateway for DRDA. <i>Use Oracle Database Gateway Installation and Configuration Guide for AIX 5L Based Systems (64-Bit), HP-UX PA-RISC (64-Bit), HP-UX Itanium, Solaris Operating System (SPARC 64-Bit), Linux x86, and Linux x86-64 and Oracle Database Gateway for DRDA User's Guide.</i>
IBM DB2 z/OS	Oracle Database Gateway for DRDA. <i>Use Oracle Database Gateway Installation and Configuration Guide for AIX 5L Based Systems (64-Bit), HP-UX PA-RISC (64-Bit), HP-UX Itanium, Solaris Operating System (SPARC 64-Bit), Linux x86, and Linux x86-64 and Oracle Database Gateway for DRDA User's Guide.</i>
IBM DB2/400	Oracle Database Gateway for DRDA. <i>Use Oracle Database Gateway Installation and Configuration Guide for AIX 5L Based Systems (64-Bit), HP-UX PA-RISC (64-Bit), HP-UX Itanium, Solaris Operating System (SPARC 64-Bit), Linux x86, and Linux x86-64 and Oracle Database Gateway for DRDA User's Guide.</i>
WebSphere MQ	Oracle Database Gateway for WebSphere MQ. <i>Oracle Database Gateway for WebSphere MQ Installation and User's Guide.</i>
CICS/TS IMSTM	Oracle Database Gateway for APPC. <i>Use Oracle Database Gateway for APPC Installation and Configuration Guide for AIX 5L Based Systems (64-Bit), HP-UX PA-RISC (64-Bit), Solaris Operating System (SPARC 64-Bit), and Linux x86.</i>
SQL Server	Oracle Database Gateway for SQL Server. <i>Use Oracle Database Gateway Installation and Configuration Guide for AIX 5L Based Systems (64-Bit), HP-UX PA-RISC (64-Bit), HP-UX Itanium, Solaris Operating System (SPARC 64-Bit), Linux x86, and Linux x86-64 and Oracle Database Gateway for SQL Server User's Guide.</i>
Sybase Adaptive Server	Oracle Database Gateway for Sybase. <i>Use Oracle Database Gateway Installation and Configuration Guide for AIX 5L Based Systems (64-Bit), HP-UX PA-RISC (64-Bit), HP-UX Itanium, Solaris Operating System (SPARC 64-Bit), Linux x86, and Linux x86-64 and Oracle Database Gateway for Sybase User's Guide.</i>
Teradata	Oracle Database Gateway for Teradata. <i>Use Oracle Database Gateway Installation and Configuration Guide for AIX 5L Based Systems (64-Bit), HP-UX PA-RISC (64-Bit), HP-UX Itanium, Solaris Operating System (SPARC 64-Bit), Linux x86, and Linux x86-64 and Oracle Database Gateway for Teradata User's Guide.</i>
Informix Server	Oracle Database Gateway for Informix. <i>Use Oracle Database Gateway Installation and Configuration Guide for AIX 5L Based Systems (64-Bit), HP-UX PA-RISC (64-Bit), HP-UX Itanium, Solaris Operating System (SPARC 64-Bit), Linux x86, and Linux x86-64 and Oracle Database Gateway for Informix User's Guide.</i>

Table D–1 (Cont.) Oracle Gateway Products

Non-Oracle Database	Oracle Gateway Products and Documentation
IMS	<p>Oracle Database Gateway for IMS.</p> <p>Use <i>Oracle Database Gateway for IMS, VSAM, and Adabas Installation and Configuration Guide for AIX 5L Based Systems (64-Bit)</i>, <i>HP-UX PA-RISC (64-Bit)</i>, <i>Solaris Operating System (SPARC 64-Bit)</i>, <i>Linux x86</i>, and <i>Linux x86-64</i>, <i>Oracle Database Gateway for IMS User's Guide</i> and <i>Oracle Connect for IMS, VSAM, and Adabas Gateways Installation and Configuration Guide for IBM z/OS</i>.</p>
VSAM	<p>Oracle Database Gateway for VSAM.</p> <p>Use <i>Oracle Database Gateway for IMS, VSAM, and Adabas Installation and Configuration Guide for AIX 5L Based Systems (64-Bit)</i>, <i>HP-UX PA-RISC (64-Bit)</i>, <i>Solaris Operating System (SPARC 64-Bit)</i>, <i>Linux x86</i>, and <i>Linux x86-64</i>, <i>Oracle Database Gateway for VSAM User's Guide</i> and <i>Oracle Connect for IMS, VSAM, and Adabas Gateways Installation and Configuration Guide for IBM z/OS</i>.</p>
Adabas	<p>Oracle Database Gateway for Adabas.</p> <p>Use <i>Oracle Database Gateway for IMS, VSAM, and Adabas Installation and Configuration Guide for AIX 5L Based Systems (64-Bit)</i>, <i>HP-UX PA-RISC (64-Bit)</i>, <i>Solaris Operating System (SPARC 64-Bit)</i>, <i>Linux x86</i>, and <i>Linux x86-64</i>, <i>Oracle Database Gateway for Adabas User's Guide</i> and <i>Oracle Connect for IMS, VSAM, and Adabas Gateways Installation and Configuration Guide for IBM z/OS</i>.</p>

Index

Symbols

/, C-3

A

Acucorp ACUCOBOL-GT
 requirement on Linux, 2-7
Administrator
 disk space requirements, 2-4
Administrator installation type, 1-4
administrator.rsp file, A-3
APPC-enabled databases, D-9
applications, empty connection strings, 4-5
applications, migrating non-Oracle applications to
 Oracle, D-8
authorized problem analysis report
 See APAR

B

backups of database
 Oracle Database Recovery Manager, D-7
Bash shell
 default user startup file, 2-13
.bash_profile file, 2-13
Basic installation type
 noninteractive installations, A-4
Bourne shell
 default user startup file, 2-13

C

C compiler
 requirement, 2-5
 See also Pro*C/C++
C shell
 default user startup file, 2-13
certification, hardware and software, 1-2
character set
 AL16UTF16, 2-6
 AL32UTF8, 2-7
 UTF8, 2-6
checking distribution of the operating system, 2-5
checking version of the operating system, 2-5
chmod command, 2-12
chown command, 2-12

client static library, generating, 4-6
Cluster Ready Services (CSS). *See* Oracle Clusterware
clusters
 See also Oracle Clusterware, Oracle Real
 Application Clusters
configuration assistants
 failure, C-3
 troubleshooting, C-3
Custom
 disk space requirements, 2-4
Custom installation type, 1-4
custom.rsp file, A-3

D

data mining tools
 Oracle Data Mining, D-6
data warehousing tool
 Oracle OLAP, D-6
Database Configuration Assistant
 troubleshooting, C-3
databases
 non-Oracle
 APPC-enabled, D-9
 non-Oracle, listed, D-9
 OLAP support (Oracle OLAP), D-6
 recovery with Oracle Backup and Recovery, D-7
 security management, D-5
DB2 database, D-9
DB2 z/OS database, D-9
DB2/400 database, D-9
default file mode creation mask
 setting, 2-13
disc
 mounting, 3-3
disk space
 checking, 2-4
disk space requirements
 Administrator, 2-4
 Custom, 2-4
 Instant Client, 2-4
 Runtime, 2-4
DISPLAY environment variable
 setting, 2-13, 2-14

E

- easy connect naming method for Instant Client-to-database connection, 4-4
- empty connect strings, 4-5
- env command, 2-15
- environment
 - checking settings, 2-15
 - configuring for oracle user, 2-13
- environment variables
 - DISPLAY, 2-13, 2-14
 - NLS_LANG, B-1
 - ORACLE_BASE, 2-13
 - ORACLE_HOME, 2-13, 2-15
 - PATH, 2-13
 - removing from shell startup file, 2-13
 - SHELL, 2-13
 - TMP and TMPDIR, 2-3, 2-14
 - TNS_ADMIN, 2-15, 4-5
 - TWO_TAKS, 4-5
- errors
 - configuration assistants, C-3
 - installation, C-2, C-4
 - noninteractive installation, C-4
 - silent mode, C-4
 - X Window, C-1
 - X Window display errors, C-1

F

- fatal errors, C-4
- file mode creation mask
 - setting, 2-13
- file sets, 2-4
- file system
 - appropriate for Oracle base directory, 2-12
- files
 - administrator.rsp, A-3
 - .bash_profile, 2-13
 - custom.rsp, A-3
 - editing shell startup file, 2-13
 - instantclient.rsp, A-3
 - .login, 2-13
 - oraInst.loc, 2-11
 - oratab, 2-12
 - .profile, 2-13
 - response files, A-3
 - runtime.rsp, A-3
 - tnsnames.ora, 4-6

G

- Gateways products FAQ, D-8
- globalization support, B-1
- Grid Control. *See* Oracle Enterprise Manager Grid Control
- groups
 - checking for existing oinstall group, 2-9
 - creating the oinstall group, 2-9

H

- hardware certification, 1-2
- hardware requirements, 2-2

I

- IBM DB2 database, D-9
- IBM DB2 z/OS database, D-9
- IBM DB2/400 database, D-9
- IBM WebSphere MQ Series databases, D-9
- Informix Server database, D-9
- installation
 - accessing installation software, 3-1
 - available products, 1-3
 - cleaning up after a failed installation, C-4
 - component-specific guidelines, 3-1
 - considerations, 1-2
 - errors, C-2, C-4
 - silent mode, C-4
 - log files, C-2
 - noninteractive
 - error handling, C-4
 - overview, 1-1 to ??
 - procedure, 3-6
 - reinstalling Oracle software, 3-1
 - response files, A-1, A-3
 - preparing, A-3, A-4
 - silent mode, C-4
 - templates, A-3
 - silent mode, A-5, A-6
 - upgrading, D-3
- installation errors
 - steps to resolve, C-2
- installation overview, 1-1
- installation software
 - copying to a hard disk, 3-4
 - extracting, 3-2
- installation software, accessing, 3-1
- installation types
 - Administrator, 1-4
 - Custom, 1-4
 - Instant Client, 1-3
 - Runtime, 1-4
- Instant Client
 - connecting to database with Oracle Call Interface, 4-4
 - connecting to Oracle Database, 4-3
 - disk space requirements, 2-4
 - easy connect naming method, 4-4
 - empty connect strings, 4-5
 - Instant Client Light
 - about, 1-3
 - connecting to database, 4-3
 - requirements, 2-6
 - restrictions, 4-2
 - updates, 4-2
 - patch upgrades, 4-2
 - restrictions, 4-2
 - TNS_ADMIN environment variable, connecting to database, 4-5

- tnsnames.ora file connection method, 4-4
- TWO_TASK environment variable, connecting to database, 4-5
- updates, 4-2
- Instant Client installation type, 1-3
- Instant Client Light
 - about, 1-3
 - connecting to database, 4-3
 - requirements, 2-6
 - restrictions, 4-2
 - updates, 4-2
- Instant Client Light, configuring, 4-3
- Instant Client, connecting with, 4-2
- instantclient.rsp file, A-3

J

- JDK requirements, 2-4

K

- Korn shell
 - default user startup file, 2-13

L

- languages
 - installing Oracle components in different languages, B-2
- log files, C-2
 - troubleshooting, C-2
- .login file, 2-13

M

- mask
 - setting default file mode creation mask, 2-13
- memory requirements, 2-2
- Microsoft SQL Server database, D-9
- migrating applications to Oracle, D-8
- migrating non-Oracle databases to Oracle, D-3
- mkdir command, 2-12
- mode
 - setting default file mode creation mask, 2-13
- mount point directories, 3-4
- multiple Oracle homes, 1-2

N

- Net Configuration Assistant
 - troubleshooting, C-3
- NLS_LANG environment variable, B-1
- NLS_LANG parameter
 - about, B-1
- noninteractive installation
 - response files
 - preparing, A-3, A-4
 - templates, A-3
 - silent mode, A-5, A-6
 - errors, C-4
- noninteractive mode

- about, A-1
 - reasons for using, A-2
- See also* response files, silent mode, A-1
- non-Oracle databases, listed, D-9

O

- oinstall group
 - checking for existing, 2-9
 - creating, 2-9
 - description, 2-8
- OLAP tools
 - about, D-6
 - Oracle OLAP, D-6
- opatch utility, 4-2
- operating system
 - checking distribution and version, 2-5
- operating system groups
 - creating the oinstall group, 2-9
 - oinstall, 2-8
 - requirements, 2-8
- operating system requirements, 2-4
- operating system users
 - creating the oracle user, 2-9
 - oracle, 2-8
 - requirements, 2-8
- Oracle Application Server, D-4
- Oracle applications
 - installing with Oracle Database, D-8
- Oracle base directory
 - creating, 2-12
 - creating new, 2-12
 - identifying appropriate file system, 2-12
 - identifying existing, 2-11
- Oracle Call Interface
 - Instant Client connection method, 4-4
 - See also* Instant Client
- Oracle Clusterware
 - about, D-3
 - used with Oracle Real Application Clusters, D-3
- Oracle Data Mining
 - about, D-6
 - installing, D-6
- Oracle Database
 - administering and monitoring, D-4
 - connecting to Instant Client, 4-3
 - installing with Oracle applications, D-8
 - security management, D-5
 - upgrading, D-3
 - Web servers, D-8
- Oracle Database Client
 - configuring connections, D-2
 - installation procedure, 3-6
- Oracle Database components
 - administering and monitoring, D-4
 - connectivity FAQ, D-8
 - FAQ on installing, D-1 to D-3
 - installing with Oracle applications, D-8
 - installing with Oracle Database tools, D-4
- Oracle Database Recovery Manager (RMAN)

- about, D-7
- Oracle home directory
 - using to identify Oracle base directory, 2-11
- Oracle Internet Directory, D-5
- Oracle Inventory group
 - checking for existing, 2-9
 - creating, 2-9
 - description, 2-8
- Oracle Migration Workbench
 - migrating non-Oracle applications to Oracle, D-8
 - migrating non-Oracle databases to Oracle, D-3
- Oracle Net Configuration Assistant
 - installing, 4-4
- Oracle Net Services
 - post-installation tasks, 4-6
- Oracle OLAP
 - about, D-6
- Oracle Precompilers
 - postinstallation tasks, 4-6
- Oracle Procedural Gateway
 - listed products, D-9
- Oracle Real Application Clusters (RAC)
 - installing with Oracle Enterprise Manager, D-4
- Oracle Clusterware
 - about, D-3
- Oracle Schemas, x
- Oracle software
 - removing, 5-1
- Oracle Software Owner user
 - creating, 2-10
- Oracle software owner user
 - configuring environment for, 2-13
 - creating, 2-9
 - description, 2-8
 - determining default shell, 2-13
- Oracle Technology Network (OTN)
 - downloading documentation from, x
- Oracle Transparent Gateway
 - listed products, D-9
- Oracle Universal Installer
 - guidelines for using, 3-1
 - installation guidelines, 3-1
 - response files, A-1
 - list of, A-3
 - running, 3-4
 - running in different languages, B-2
- oracle user
 - configuring environment for, 2-13
 - creating, 2-9, 2-10
 - description, 2-8
 - determining default shell, 2-13
- Oracle XML DB
 - about, D-5
- ORACLE_BASE environment variable, 2-13
 - removing from shell startup file, 2-13
 - setting, 2-13
- ORACLE_HOME environment variable
 - removing from shell startup file, 2-13
 - unsetting, 2-15
- ORACLE_SID environment variable

- removing from shell startup file, 2-13
- oraInst.loc file, 2-11
- oratab file, 2-12
 - formats, 2-12
 - location of, 2-12
- OTN Web site
 - downloading installation software from, 3-2

P

- passwd command, 2-11
- passwords
 - specifying for response files, A-2
 - See also* security
- patches
 - Instant Client/Instant Client Light
 - restrictions, 4-2
 - opatch utility, 4-2
- PATH environment variable
 - setting, 2-13
- permissions
 - for Oracle base directory, 2-12
- post-installation
 - recommended tasks
 - user accounts, setting up, 4-5
 - required tasks, 4-1
 - Oracle Net Services, configuring, 4-6
 - patches, installing and downloading, 4-1
- postinstallation
 - recommended tasks
 - client static library, generating, 4-6
 - Instant Client Light, configuring, 4-3
 - root.sh script, backing up, 4-3
 - required tasks
 - Instant Client, connecting with, 4-2
 - Oracle Precompilers, 4-6
- postinstallation tasks
 - Instant Client-to-database connection, 4-3
- Precompilers
 - requirements, 2-5
- Pro*C/C++
 - configuring, 4-7
 - requirements, 2-5
 - See also* C compiler
- .profile file, 2-13
- program technical fix
 - See* PTF

R

- RAM requirements, 2-2
- recovery of databases
 - Oracle Backup and Recovery, D-7
- reinstalling Oracle software, 3-1
- requirements
 - hardware, 2-2
- response files
 - about, A-1
 - administrator.rsp, A-3
 - creating with template, A-3

- custom.rsp, A-3
- general procedure, A-2
- instantclient.rsp, A-3
- passing values at command line, A-2
- passwords, A-2
- runtime.rsp, A-3
- security, A-2
- specifying with Oracle Universal Installer, A-5
- See also* silent mode, noninteractive mode, A-1
- response files installation
 - about, A-1
- root user
 - logging in as, 2-1
- root.sh script
 - backing up, 4-3
- Runtime
 - disk space requirements, 2-4
- Runtime installation type, 1-4
- runtime.rsp file, A-3

S

- schemas
 - Oracle Schemas, about, x
- security
 - management tools, D-5
 - See also* passwords
- shell
 - determining default shell for oracle user, 2-13
- SHELL environment variable
 - checking value of, 2-13
- shell startup file
 - editing, 2-13
 - removing environment variables, 2-13
- silent mode
 - about, A-1
 - reasons for using, A-2
 - See also* noninteractive mode, response files, A-1
- silent mode installation, A-5, A-6
- smit command, 2-9, 2-10
- software certification, 1-2
- software requirements, 2-4
- SQL Server database, D-9
- startup file
 - for shell, 2-13
- suppressed mode
 - reasons for using, A-2
- suppressed mode. *See* noninteractive mode
- swap space
 - checking, 2-3
 - requirements, 2-2
- Sybase Adapter Server database, D-9

T

- temporary disk space
 - requirements, 2-2
- Teradata database, D-9
- TMP environment variable, 2-3
 - setting, 2-14

- TMPDIR environment variable, 2-3
 - setting, 2-14
- TNS_ADMIN environment variable, 4-5
 - unsetting, 2-15
- tnsnames.ora file, 4-6
 - Instant Client-to-database connection, 4-4
- troubleshooting, C-1
 - fatal errors, C-4
- TWO_TASK environment variable, 4-5

U

- umask, 2-15
- umask command, 2-13, 2-15
- UNIX commands, 2-15
 - chmod, 2-12
 - chown, 2-12
 - env, 2-15
 - mkdir, 2-12
 - passwd, 2-11
 - smit, 2-9, 2-10
 - umask, 2-13
 - unset, 2-15
 - unsetenv, 2-15
 - xhost, 2-1
 - xterm, 2-2
- UNIX groups
 - checking for existing oinstall group, 2-9
- UNIX users
 - creating the oracle user, 2-10
- UNIX workstation
 - installing from, 2-1
- unset command, 2-15
- unsetenv command, 2-15
- updating Instant Client, 4-2
- users
 - creating the oracle user, 2-9, 2-10
 - Oracle software owner user, 2-8

W

- Web servers (Oracle HTTP Server), D-8
- WebSphere MQ Series database, D-9

X

- X Window
 - display errors, C-1
- X Window system
 - enabling remote hosts, 2-1, 2-2
- xhost command, 2-1
- XML data, D-5
- xterm command, 2-2

