Oracle® Database

Client Installation Guide

12*c* Release 1 (12.1) for Oracle Solaris

E55099-03

August 2015

ORACLE®

Oracle Database Client Installation Guide, 12*c* Release 1 (12.1) for Oracle Solaris

E55099-03

Primary Author: Prakash Jashnani

Contributing Authors: Douglas Williams, Aparna Kamath

Contributor: The Oracle Database 12*c* documentation is dedicated to Mark Townsend, who was an inspiration to all who worked on this release.

Contributors: David Austin, Subhranshu Banerjee, Preethi Vallam, Janelle Simmons, Gurumurthy Ramamurthy, Mark Bauer, Robert Chang, Jonathan Creighton, Sudip Datta, Thirumaleshwara Hasandka, Joel Kallman, George Kotsovolos, Sagar Jadhav, Simon Law, Shekhar Vaggu, Richard Long, Rolly Lv, Padmanabhan Manavazhi, Sreejith Minnanghat, Krishna Mohan, Rajendra Pingte, Hanlin Qian, Roy Swonger, Ranjith Kundapur, Aneesh Khandelwal , Barb Lundhild, Barbara Glover, Binoy Sukumaran, Hema Ramamurthy, Prasad Bagal, Martin Widjaja, Ajesh Viswambharan, Eric Belden, Sivakumar Yarlagadda, Rudregowda Mallegowda , Matthew McKerley, Trivikrama Samudrala, Akshay Shah, Sue Lee, Sangeeth Kumar, James Spiller, Saar Maoz, Rich Long, Mark Fuller, Sunil Ravindrachar, Sergiusz Wolicki, Eugene Karichkin, Joseph Francis, Srinivas Poovala, David Schreiner, Neha Avasthy, Dipak Saggi, Sudheendra Sampath, Mohammed Shahnawaz Quadri, Shachi Sanklecha, Zakia Zerhouni, Jai Krishnani, Darcy Christensen, Clara Jaeckel, Emily Murphy, Terri Winters, Kevin Flood.

Contents

D Frequently Asked Questions About Installation

Index

Preface

This guide provides instructions about installing and configuring Oracle Database Client on Oracle Solaris on SPARC (64-Bit)Oracle Solaris on x86-64 (64-Bit). 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
- Related Documentation
- Conventions

Audience

This guide is intended for anyone responsible for installing Oracle Database Client 12*c* Release 1 (12.1). Additional installation guides for Oracle Database, Oracle Real Application Clusters, Oracle Clusterware, Oracle Database Examples, and Oracle Enterprise Manager Cloud Control are available on Oracle Technology Network at:

http://www.oracle.com/technetwork/indexes/documentation/index.html

> **See Also:** *Oracle Database Installation Guide* to install Oracle Database using the default settings

Documentation Accessibility

For information about Oracle's commitment to accessibility, visit the Oracle Accessibility Program website at http://www.oracle.com/pls/topic/lookup?ctx=acc&id=docacc.

Access to Oracle Support

Oracle customers that have purchased support have access to electronic support through My Oracle Support. For information, visit http://www.oracle.com/pls/topic/lookup?ctx=acc&id=info or visit http://www.oracle.com/pls/topic/lookup?ctx=acc&id=trs if you are hearing impaired.

Related Documentation

The related documentation for Oracle Database products includes the following manuals:

- *Oracle Database Installation Guide*

- *Oracle Database Release Notes for Oracle Solaris*

- *Oracle Database Client Quick Installation Guide for Oracle Solaris on SPARC (64-Bit)*

- *Oracle Real Application Clusters Installation Guide for Linux and UNIX*

- *Oracle Grid Infrastructure Installation Guide*

- *Oracle Database Quick Installation Guide for Oracle Solaris on SPARC (64-Bit)*

- *Oracle Database Quick Installation Guide for Oracle Solaris on x86-64 (64-Bit)*

- *Oracle Database Client Quick Installation Guide for Oracle Solaris on x86-64 (64-Bit)*

For information about Oracle error messages, see *Oracle Database Error Messages Reference*. Oracle error message documentation is available only in HTML. If you have access to the Oracle Database 12*c* Release 1 (12.1) 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.

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

http://www.oracle.com/technetwork/community/join/overview/index.html

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

http://www.oracle.com/technetwork/indexes/documentation/index.html

See *Oracle Database Release Notes for Oracle Solaris* for important information that was not available when this book was released. The release notes for Oracle Database is updated regularly. The most recent version is available on Oracle Technology Network at:

http://www.oracle.com/technetwork/indexes/documentation/index.html

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.
italic	Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.

Convention	Meaning
`monospace`	Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter.

x

1

Overview of Oracle Database Client Installation

This chapter describes the different installation types of Oracle Database Client and issues to consider before you install Oracle Database Client:

- Planning Your Installation
- Installation Considerations
- Oracle Database Client Installation Methods
- Oracle Database Client Installation Types
- Oracle Database Client and Oracle Database Interoperability

Planning Your Installation

The Oracle Database installation process consists of the following phases:

1. **Read the release notes:** Read *Oracle Database Installation Guide for Oracle Solaris* 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/technetwork/indexes/documentation/index.html

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 Database Client if the site uses Oracle applications or if you need multiple Oracle Database 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 Database Client.

- Appendix B describes globalization support information.

- Appendix A provides information on performing silent installations, which you may want to use if you must perform multiple installations of Oracle Database Client.

- Appendix C provides troubleshooting advice in case you encounter problems with the installation.

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

- Separate 32-Bit Client Software for 64-Bit Platforms

- Simplified Patching of Timestamp with Time Zone Data Type

Hardware and Software Certification

The platform-specific hardware and software requirements included in this guide were current when 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 My Oracle Support website for the most up-to-date list of certified hardware platforms and operating system versions. The My Oracle Support website is available at the following URL:

https://support.oracle.com/

You must register online before using My Oracle Support. After logging in, from the menu options, select the **Certifications** tab. On the **Certifications** page, use the **Certification Search** options to search by Product, Release, and Platform. You can also search using the **Certification Quick Link** options such as Product Delivery, and Lifetime Support.

Multiple Oracle Homes Support

Oracle Database supports multiple Oracle homes. You can install this release or earlier releases of the software more than once on the same system, in different Oracle home directories.

This section contains the following topics:

- Installing the Software on a System with an Existing Oracle Installation

- Updating the Existing Software with the Current Version

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 12.1 software into an existing Oracle9*i* Oracle home directory.

Oracle Database Client can be installed in the same Oracle Database home if both products are at the same release level. For example, you can install Oracle Database Client 12.1.0.1 into an existing Oracle Database 12.1.0.1 home but you cannot install Oracle Database Client 12.1.0.1 into an existing Oracle Database 12.1.0.2 home. If you apply a patch set before installing the client, then you must apply the patch set again.

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

Updating the Existing Software with the Current Version

Use the In-Place Upgrade feature to upgrade an existing client installation to the latest release by installing the new client software into an existing client home with the same installation type. For example, if release 12.1.0.1 is installed, then use Oracle Universal Installer to upgrade to release 12.1.0.2.

Consider the following before selecting this option:

- This upgrade is only possible in a client home and not in any other Oracle home that contains non-client installations, such as Database installations.

- This upgrade does not delete files in the client home that are commonly updated by other users. For example, configuration data files.

- This upgrade cannot be performed if processes associated with the Oracle Database Client home are running.

> **See Also:** "Performing an In-place Oracle Database Client Upgrade" on page 3-9

Separate 32-Bit Client Software for 64-Bit Platforms

See "Separate 32-Bit Client Software for 64-Bit Platforms" on page 2-12 for more information.

Simplified Patching of Timestamp with Time Zone Data Type

Oracle Database simplifies the patching process of `TIMESTAMP WITH TIMEZONE` data type.

> **See Also:** *Oracle Database Globalization Support Guide* for more information about datetime data types and time zone support

Oracle Database Client Installation Methods

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

- Interactive Installation Methods
- Automated Installation Methods Using Response Files

Interactive Installation Methods

When you use the interactive method to install Oracle Database Client, Oracle Universal Installer displays a series of screens that enable you to specify all of the required information to install the Oracle Database 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 must 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, and specify the `-silent` option when starting Oracle Universal Installer. None of the Oracle Universal Installer screens are displayed.

- **Response File Mode:** Oracle Universal Installer runs in response file mode if you do not specify all required information in the response file.

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

Oracle Database Client Installation Types

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

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

    Instant Client Light is included in the Instant Client installation and you may want to use Instant Client Light if the applications generate error messages in American English only. Instant Client Light is beneficial to applications that use any 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 platforms only

    - WE8EBCDIC1047 for EBCDIC platforms 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.

Oracle Database Client and Oracle Database Interoperability

For information about interoperability between Oracle Database Client and Oracle Database releases, see Note 207303.1 on the My Oracle Support website at the following URL:

https://support.oracle.com/

2

Oracle Database Client Preinstallation Tasks

This guide contains information required to install Oracle Database Client 12*c*. Ensure that you review information related to the platform on which you intend to install Oracle Database Client.

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
- Configuring Servers for Oracle Database
- Reviewing Operating System Security Common Practices
- About Operating System Requirements
- Operating System Requirements for Oracle Solaris on SPARC (64-Bit)
- Operating System Requirements for Oracle Solaris on x86-64 (64-Bit)
- Additional Drivers and Software Packages for Oracle Solaris
- Checking the Software Requirements
- Verifying Operating System Packages on Oracle Solaris 11
- Verifying Operating System Patches on Oracle Solaris 10
- Installation Requirements for Instant Client Light
- Separate 32-Bit Client Software for 64-Bit Platforms
- Creating Required Operating System Groups and Users
- Identifying Required Software Directories
- Identifying or Creating an Oracle Base Directory
- Configuring Oracle Software Owner 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.

■ Following are the steps for installing the software from an X Window System workstation or X terminal:

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`:

```
$ sudo sh
password:
#
```

■ Following are the steps for installing the software from a PC or other system with X server software:

> **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 have 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`:

```
$ sudo sh
password:
#
```

Configuring Servers for Oracle Database

This section describes the following operating system tasks you must complete before you install Oracle Database:

■ Checking Server Hardware and Memory Configuration

■ General Server Minimum Requirements

■ Server Storage Minimum Requirements

■ Server Memory Minimum Requirements

Checking Server Hardware and Memory Configuration

Run the following commands to check your current system information:

1. To determine the available RAM and swap space, enter the following command to obtain the system activity report:

```
# sar -r n i
```

For example:

```
# sar -r 2 10
```

Where, *n* is the number of seconds to delay for the next iterations and *i* is the number of iterations you want to test

If the size of the physical RAM installed in the system is less than the required size, then install more memory before continuing.

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

```
# /usr/sbin/swap -l
```

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

> **Note:** Review your Oracle Solaris documentation for swap space allocation guidance for your server. The Oracle Solaris documentation guidelines supersede the swap space requirements listed in this guide.

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

```
# df -k /tmp
```

The `df -k` command displays disk space in 1 kilobyte blocks. On most systems, you can use the `df` command with the `-h` flag (`df -h`) to display output in "human-readable" format.

4. To determine the amount of free disk space on the system, enter one of the following commands:

```
# df -k
# df -h
```

5. To determine the RAM size, enter the following command:

```
# /usr/sbin/prtconf | grep "Memory size"
```

6. To determine if the system architecture can run the Oracle software, enter the following command:

```
# /bin/isainfo -kv
```

This command displays the processor type. The following is the expected output of this command:

Oracle Solaris on SPARC (64-Bit):

```
64-bit sparcv9 kernel modules
```

Oracle Solaris on x86-64 (64-Bit):

```
64-bit amd64 kernel modules
```

If you do not see the expected output, then you cannot install the software on this system. Obtain the correct software for your system architecture before proceeding further

General Server Minimum Requirements

Ensure the following general minimum requirements on your system:

- Ensure that the system is started with run level 3.

- Ensure display cards provide at least 1024 x 768 display resolution, so that Oracle Universal Installer displays correctly while performing a system console-based installation.

Server Storage Minimum Requirements

Ensure that your Oracle Solaris system meets the following storage requirements:

- Ensure that your Oracle Solaris system meets the disk space requirement for software files as described in the following tables:

Table 2–1   Disk Space Requirements for Software Files on Oracle Solaris on SPARC (64-Bit)

Installation Type	Disk Space
Instant Client	255 MB
Administrator	1.9 GB
Runtime	1.5 GB
Custom (maximum)	1.9 GB

Table 2–2   Disk Space Requirements for Software Files on Oracle Solaris on x86-64 (64-Bit)

Installation Type	Disk Space
Instant Client	264 MB
Administrator	1.8 GB
Runtime	1.4 GB
Custom (maximum)	1.9 GB

- 180 MB of space in the /tmp directory.

  If the free space available in the /tmp directory is less than what is required, 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.

> **See Also:** "Configuring Oracle Software Owner Environment" on page 2-20 for more information about setting `TMP` and `TMPDIR`

- Extend the file system that contains the `/tmp` directory.

Server Memory Minimum Requirements

Ensure that your Oracle Solaris system meets the following memory requirements:

At least 256 MB of RAM.

Table 2–3 describes the relationship between the installed RAM and the configured swap space recommendation:

Table 2–3   Swap Space Requirement for Oracle Solaris

RAM	Swap Space
256 MB	3 times the size of RAM
Between 256 MB and 512 MB	2 times the size of RAM
Between 512 MB and 2 GB	1.5 times the size of RAM
Between 2 GB and 16 GB	Equal to the size of RAM
More than 16 GB	16 GB

Reviewing Operating System Security Common Practices

Secure operating systems are an important basis for general system security. Ensure that your operating system deployment is in compliance with common security practices as described in your operating system vendor security guide.

About Operating System Requirements

Depending on the products that you intend to install, verify that you have the required operating system kernel and packages installed.

Requirements listed in this document are current as of the date listed on the title page. To obtain the most current information about kernel requirements, see the online version on the Oracle Technology Network at the following URL:

http://www.oracle.com/technetwork/indexes/documentation/index.html

Oracle Universal Installer performs checks your system to verify that it meets the listed operating system package requirements. To ensure that these checks complete successfully, verify the requirements before you start Oracle Universal Installer.

Operating System Requirements for Oracle Solaris on SPARC (64-Bit)

The following Oracle Solaris kernels and packages listed in this section are supported on SPARC 64-bit systems for Oracle Database and Oracle Grid Infrastructure 12*c*:

- Supported Oracle Solaris 11 Releases for SPARC (64-Bit)
- Supported Oracle Solaris 10 Releases for SPARC (64-Bit)

Supported Oracle Solaris 11 Releases for SPARC (64-Bit)

Use the following information to check supported Oracle Solaris 11 releases:

Table 2–4   SPARC 64-Bit Supported Oracle Solaris 11 Operating System Requirements

Item	Requirements
SSH Requirement	Secure Shell is configured at installation for Oracle Solaris.
Oracle Solaris 11 operating system	Oracle Solaris 11 SRU 14.5 or later SRUs and updates
Packages for Oracle Solaris 11	The following packages must be installed: ■ `pkg://solaris/system/dtrace` ■ `pkg://solaris/developer/assembler` ■ `pkg://solaris/developer/build/make` ■ `pkg://solaris/system/xopen/xcu4` (if not already installed as part of standard Oracle Solaris 11 installation) ■ `pkg://solaris/x11/diagnostic/x11-info-clients` ■ `pkg://solaris/compress/unzip`

Supported Oracle Solaris 10 Releases for SPARC (64-Bit)

Use the following information to check supported Oracle Solaris 10 releases:

Table 2–5   SPARC 64-Bit Supported Oracle Solaris 10 Operating System Requirements

Item	Requirements
SSH Requirement	Ensure that OpenSSH is installed on your servers. OpenSSH is the required SSH software.
Oracle Solaris 10 operating system	Oracle Solaris 10 Update 11 (Oracle Solaris 10 1/13 s10s_u11wos_24a) or later updates

Packages and Patches for Oracle Solaris 10	The following packages and patches (or later versions) must be installed:
	`SUNWarc`
	`SUNWbtool`
	`SUNWcsl`
	`SUNWdtrc`
	`SUNWeu8os`
	`SUNWhea`
	`SUNWi1cs (ISO8859-1)`
	`SUNWi15cs (ISO8859-15)`
	`SUNWi1of`
	`SUNWlibC`
	`SUNWlibm`
	`SUNWlibms`
	`SUNWsprot`
	`SUNWtoo`
	`SUNWxwfnt`
	`147440-25`
	
	Note: You may also require additional font packages for Java, depending on your locale. Refer to the following website for more information:
	`http://www.oracle.com/technetwork/java/javase/solaris-font-requirements-142758.html`

Operating System Requirements for Oracle Solaris on x86-64 (64-Bit)

The following Oracle Solaris kernels and packages listed are supported on x86-64 (64-bit) systems for Oracle Database and Oracle Grid Infrastructure 12*c*:

- Supported Oracle Solaris 11 Releases for x86-64 (64-Bit)
- Supported Oracle Solaris 10 Releases for x86-64 (64-Bit)

Supported Oracle Solaris 11 Releases for x86-64 (64-Bit)

Use the following information to check supported Oracle Solaris 11 releases:

Table 2–6   x86-64 (64-Bit) Supported Oracle Solaris 11 Operating System Requirements

Item	Requirements
SSH Requirement	Secure Shell is configured at installation for Oracle Solaris.
Oracle Solaris 11 operating system	Oracle Solaris 11 SRU 14.5 or later SRUs and updates
Packages for Oracle Solaris 11	The following packages must be installed: ■ `pkg://solaris/system/dtrace` ■ `pkg://solaris/developer/assembler` ■ `pkg://solaris/developer/build/make` ■ `pkg://solaris/system/xopen/xcu4` (if not already installed as part of standard Oracle Solaris 11 installation) ■ `pkg://solaris/x11/diagnostic/x11-info-clients` ■ `pkg://solaris/compress/unzip`

Supported Oracle Solaris 10 Releases for x86-64 (64-Bit)

Use the following information to check supported Oracle Solaris 10 releases:

Table 2–7   x86-64 (64-Bit) Supported Oracle Solaris 10 Operating System Requirements

Item	Requirements
SSH Requirement	Ensure that OpenSSH is installed on your servers. OpenSSH is the required SSH software.
Oracle Solaris 10 operating system	Oracle Solaris 10 Update 11 (Oracle Solaris 10 1/13 s10x_u11wos_24a) or later updates

Packages and Patches for Oracle Solaris 10	The following packages and patches (or later versions) must be installed:
	
	`SUNWarc`
	`SUNWbtool`
	`SUNWcsl`
	`SUNWdtrc`
	`SUNWeu8os`
	`SUNWhea`
	`SUNWlibC`
	`SUNWlibm`
	`SUNWlibms`
	`SUNWsprot`
	`SUNWtoo`
	`SUNWi1of`
	`SUNWi1cs (ISO8859-1)`
	`SUNWi15cs (ISO8859-15)`
	`SUNWxwfnt`
	`147441-25`
	
	Note: You may also require additional font packages for Java, depending on your locale. Refer to the following website for more information:
	
	http://www.oracle.com/technetwork/java/javase/solaris-font-requirements-142758.html

Additional Drivers and Software Packages for Oracle Solaris

You are not required to install additional drivers and packages, but you may choose to install or configure drivers and packages in the following list:

- Installation Requirements for Open Database Connectivity

- Installation Requirements for Programming Environments for Oracle Solaris

- Installation Requirements for Web Browsers

Installation Requirements for Open Database Connectivity

Review the following sections if you plan to install Open Database Connectivity (ODBC):

- About ODBC Drivers and Oracle Database

- Installing ODBC Drivers for Oracle Solaris

About ODBC Drivers and Oracle Database

Open Database Connectivity (ODBC) is a set of database access APIs that connect to the database, prepare, and then run SQL statements on the database. An application that uses an ODBC driver can access non-uniform data sources, such as spreadsheets and comma-delimited files.

Installing ODBC Drivers for Oracle Solaris

To use ODBC on Oracle Solaris, you require the following package:

`unixODBC-2.3.1 or later`

Download and install the ODBC Driver from the following website:

http://www.unixodbc.org/

Installation Requirements for Programming Environments for Oracle Solaris

Review the following sections to install programming environments:

- About Programming Environments and Oracle Database
- Configuring Support for Programming Environments

About Programming Environments and Oracle Database

Oracle Database supports multiple programming languages for application development in different environments. Some languages require that you install additional compiler packages for the operating system.

Programming environments are options. They are not required for Oracle Database.

> **See Also :** *Oracle Database Development Guide* for an overview of programming environments

Configuring Support for Programming Environments

Ensure that your system meets the requirements for the programming environment you want to configure:

Table 2–8   Requirements for Programming Environments for Oracle Solaris

Programming Environments	Support Requirements
Java Database Connectivity	JDK 6 (Java SE Development Kit release 1.6.0_37 or later updates to 1.6) with the JNDI extension with Oracle Java Database Connectivity.
	Supported on Solaris 11: JDK 7 (Java SE Development Kit release 1.7.0)
	Supported on Solaris 10: JDK 7 (Java SE Development Kit release 1.7.0)
	JDK 1.6 is installed with this release.
Oracle Call Interface (OCI)	JDK 6 (Java SE Development Kit release 1.6.0_37 or later updates to 1.6) with the JNDI extension, and Oracle Call Interface drivers. JDK 1.6 is installed with this release.
Oracle C++ Oracle C++ Call Interface Pro*C/C++ Oracle XML Developer's Kit (XDK)	Oracle Solaris Studio 12 (formerly Sun Studio)
	Additional patches may be needed depending on applications you deploy.
	Download Oracle Solaris Studio from the following URL:
	http://www.oracle.com/technetwork/server-storage/solarisstudio/overview/index.html
Pro*COBOL	Micro Focus Server Express 5.1
Pro*FORTRAN	Oracle Solaris Studio 12 (Fortran 95)

Installation Requirements for Web Browsers

Web browsers are required only if you intend to use Oracle Enterprise Manager Database Express and Oracle Enterprise Manager Cloud Control. Web browsers must support Java Script, and the HTML 4.0 and CSS 1.0 standards.

For a list of browsers that meet these requirements see the Enterprise Manager certification matrix on My Oracle Support:

https://support.oracle.com

> **See Also:** *Oracle Enterprise Manager Cloud Control Basic Installation Guide* for steps on how to access the Enterprise Manager certification matrix

Checking the Software Requirements

To ensure that the system meets these requirements, follow these steps:

1. To determine which version of Oracle Solaris is installed, enter the following command:

   ```
   # uname -r
   5.11
   ```

   In this example, the version shown is Oracle Solaris 11 (5.11).

2. To determine the release level enter the following command:

   ```
   # cat /etc/release
   Oracle Solaris 11.1 SPARC
   ```

3. To determine if the required packages are installed, enter the following command:

   On Oracle Solaris 10

   ```
   pkginfo -i pkg_name
   ```

   On Oracle Solaris 11

   ```
   pkg list pkg_name
   ```

   Where *pkg_name* is the name of the package to check.

   For example, to determine if the required Oracle Solaris 10 packages are installed, enter a command similar to the following:

   ```
   # pkginfo -i SUNWarc SUNWbtool SUNWhea SUNWlibC SUNWlibm SUNWlibms SUNWsprot \
    SUNWtoo SUNWi1of SUNWi1cs SUNWi15cs SUNWxwfnt SUNWcsl SUNWdtrc
   ```

   If a package that is required for your system architecture is not installed, then install it. Refer to your operating system or software documentation for information about installing packages.

   > **See Also:** "Verifying Operating System Packages on Oracle Solaris 11"

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

Verifying Operating System Packages on Oracle Solaris 11

Use the following command to check if you have the required packages:

```
# /usr/bin/pkg verify [-Hqv] [pkg_pattern ...]
```

The -H option omits the headers from the verification output.

The -q option prints nothing but return failure if any fatal errors are found.

The -v option includes informational messages regarding packages.

If a package that is required for your system architecture is not installed, then download install it from My Oracle Support:

https://support.oracle.com

> **See Also:**
>
> - *The Adding and Updating Oracle Solaris 11 Software Packages* guide for more information.
> - *Oracle Solaris 11 Product Documentation*
> - My Oracle Support note 1021281.1 for update information on support repositories:
>
>   https://support.oracle.com/CSP/main/article?cmd=show&type=NOT&id=1021281.1

Verifying Operating System Patches on Oracle Solaris 10

> **Note:** Your system may have more recent versions of the listed patches installed on it. If a listed patch is not installed, then determine if a more recent version is installed before installing the version listed.

Verify that you have the required operating system patches. To ensure that the system meets these requirements, use the following procedure:

1. To determine whether an operating system patch is installed, and whether it is the correct version of the patch, enter a command similar to the following:

   ```
   # /usr/sbin/patchadd -p | grep patch_number
   ```

   For example, to determine if any version of the 119963 patch is installed, use the following command:

   ```
   # /usr/sbin/patchadd -p | grep 119963
   ```

   If an operating system patch is not installed, then download it from the following website and install it:

   https://support.oracle.com

Installation Requirements for Instant Client Light

In addition to the requirements described in the preceding sections, 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.

Separate 32-Bit Client Software for 64-Bit Platforms

The 64-bit Oracle Database Client software does not contain any 32-bit client binaries. If you require 32-bit client binaries on 64-bit platforms, then install the 32-bit binaries from the respective 32-bit client software into a separate Oracle home.

The 64-bit Oracle Database Client preinstallation requirements apply to 32-bit Oracle Database Client also.

> **See Also:** My Oracle Support note 883702.1 for more information:
>
> https://support.oracle.com/CSP/main/article?cmd=show&type=NO T&id=883702.1

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 have to create the following operating system group and user:

- The Oracle Inventory group (typically, `oinstall`)

  You must have a group whose members are given access to write to the Oracle Central Inventory (`oraInventory`).

Installation logs and trace files from installations of Oracle software. These files are also copied to the respective Oracle homes for future reference.

Other metadata inventory information regarding Oracle installations are stored in the individual Oracle home inventory directories, and are separate from the Central Inventory.

For new installations, Oracle recommends that you allow Oracle Universal Installer to create the Central Inventory directory. By default, if you create an Oracle path in compliance with OFA structure, such as `/u01/app`, then the Central Inventory is created in the path `u01/app/oraInventory`, using correct permissions to allow all Oracle installation owners to write to this directory.

■ 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, the user created to own the Oracle Database installations is referred to as the `oracle` user.
>
> ■ An Oracle Database installation must be owned by the Oracle software owner user (`oracle`) and the primary group of the Oracle software owner user must be the Oracle Inventory group (`oinstall`).

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

You must create the Oracle Inventory group if it does not exist. The following sections describe how to determine the Oracle Inventory group name, if it exists, and how to create it if necessary:

■ 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.

An `oraInst.loc` file has content similar to the following:

```
inventory_loc=central_inventory_location
inst_group=group
```

In the preceding example, `central_inventory_location` is the location of the Oracle Central Inventory, and `group` is the name of the group that has permissions to write to the central inventory.

If you have an existing Oracle Inventory, then ensure that you use the same Oracle Inventory for all Oracle software installations, and ensure that all Oracle software users you intend to use for installation have permissions to write to this directory.

To determine whether the Oracle Inventory group exists, enter the following command:

```
# more /var/opt/oracle/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
```

Creating the Oracle Inventory Group

If the `oraInst.loc` file does not exist, then create the Oracle Inventory group as follows:

```
# /usr/sbin/groupadd oinstall
```

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

Determining If an Oracle Software Owner User Exists

To determine if an Oracle software owner user (`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=54321(oracle) gid=54321(oinstall) groups=54322(dba),54323(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. 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 the existing Oracle software owner user, and the user's primary group is the Oracle Inventory group, then refer to the "Identifying Required Software Directories" section on page 2-15.

- To modify an existing user, refer to the "Modifying an Oracle Database Client Software Owner User" section on page 2-15.

- To create a user, refer to the following section.

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 exists.

1. To create the `oracle` user, enter a command similar to the following:

   ```
   # /usr/sbin/useradd -g oinstall[ -G dba]oracle
   ```

   In this command:

   - The `-g` option specifies the primary group, which must be the Oracle Inventory group, for example, `oinstall`

   - The `-G` option specifies optional secondary groups. It must include the OSDBA group, and if required the OSOPER group. For example, `dba, osoper`.

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

   ```
   # passwd -r files oracle
   ```

Refer to the "Identifying Required Software Directories" section on page 2-15 to continue.

Modifying an Oracle Database Client Software Owner User

If the `oracle` user exists, but its primary group is not `oinstall`, then enter a command similar to the following to modify it:

```
# /usr/sbin/usermod -g oinstall -G dba oracle
```

Specify the primary group using the `-g` option and any required secondary group using the `-G` option.

> **Note:** Oracle does not support modifying existing Oracle Database server or other Oracle software installation owners. Oracle only supports modifying an Oracle Database Client software owner.

Identifying Required Software Directories

You must identify or create the following directories for the Oracle software:

- Oracle Base Directory

- Oracle Inventory Directory
- Oracle Home Directory

> **Note:** Ensure that the paths you select for Oracle software, such as the Oracle home path and the Oracle base path, use only ASCII characters. Because installation owner names are used by default for some paths, this ASCII character restriction applies to user names, file names, and directory names.

Oracle Base Directory

The Oracle base directory is a top-level directory for Oracle software installations. On UNIX systems, the Optimal Flexible Architecture (OFA) guidelines recommend that you use a path similar to the following for the Oracle base directory:

```
/mount_point/app/software_owner
```

In this example:

- *mount_point* is the mount point directory for the file system that contains the Oracle software.

  The examples in this guide use `/u01` for the mount point directory.

- *software_owner* is the operating system user name of the software owner installing the Oracle software, for example `oracle`.

You must specify the `ORACLE_BASE` folder that contains all Oracle products.

> **Note:** If you have an existing Oracle base, then you can select it from the Use existing drop down box. By default, the drop down box contains the existing value for Oracle base selected. Refer to "Installing the Oracle Database Client Software" on page 3-5 for information.
>
> If you do not have an Oracle base, then you can create a new one by editing the text in the list box.

You can use the same Oracle base directory for multiple installations or you can create separate Oracle base directories for different installations. If different operating system users install Oracle software on the same system, then each user must create a separate Oracle base directory. The following example Oracle base directories could all exist on the same system:

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

The following sections describe how to identify existing Oracle base directories that may be suitable for the installation and how to create an Oracle base directory if necessary.

Regardless of whether you create an Oracle base directory or decide to use an existing one, you must set the `ORACLE_BASE` environment variable to specify the full path to this directory.

Oracle Inventory Directory

The Oracle Inventory directory (`oraInventory`) stores an inventory of all software installed on the system. It is required, and shared by all Oracle software installations on a single system. If you have an existing Oracle Inventory path, then Oracle Universal Installer continues to use that Oracle Inventory.

The first time you install Oracle software on a system, Oracle Universal Installer provides an OFA-compliant path in the format `u[01-09]/app`, such as `/u01/app`. The user running the installation has permissions to write to that path. If this is true, then Oracle Universal Installer creates the Oracle Inventory directory in the path `/u[01-09]/app/oraInventory`. For example:

`/u01/app/oraInventory`

If you have set `ORACLE_BASE` for the `oracle` user during installation, then Oracle Universal Installer creates the Oracle Inventory directory in the path `ORACLE_BASE/../oraInventory`. For example, if `ORACLE_BASE` is set to `/u01/app/oracle/`, then the Oracle Inventory directory is created in the path `/u01/app/oraInventory`.

If you have created neither an OFA-compliant path nor set `ORACLE_BASE`, then the Oracle Inventory directory is placed in the home directory of the user that is performing the installation. For example:

`/home/oracle/oraInventory`

Oracle Universal Installer creates the directory that you specify and sets the correct owner, group, and permissions for it. You do not have to create it.

Note:

- All Oracle software installations rely on this directory. Ensure that you back it up regularly.

- Do not delete this directory unless you have completely removed all Oracle software from the system.

- By default, the Oracle Inventory directory is not installed under the Oracle Base directory. This is because all Oracle software installations share a common Oracle Inventory, so there is only one Oracle Inventory for all users. Whereas, there is a separate Oracle Base for each user.

Oracle Home Directory

The Oracle home directory is the directory where you choose to install the software for a particular Oracle product. You must install different Oracle products, or different releases of the same Oracle product, in separate Oracle home directories. When you run Oracle Universal Installer, it prompts you to specify the path to this directory, and a name that identifies it. In accordance with the OFA guidelines, Oracle strongly recommends that the Oracle home directory you specify is a subdirectory of the Oracle base directory for the user account performing the installation. Oracle recommends that you specify a path similar to the following for the Oracle home directory:

`$ORACLE_BASE/product/12.1.0/client_1`

Oracle Universal Installer creates the directory path that you specify under the Oracle base directory. It also sets the correct owner, group, and permissions on it. You do not have to create this directory.

> **Caution:** During installation, you must not specify an existing directory that has predefined permissions applied to it as the Oracle home directory. If you do, then you may experience installation failure due to file and group ownership permission errors.

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 follow 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 /var/opt/oracle/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 /var/opt/oracle/oratab
  ```

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

  ```
  *:/u03/app/oracle/product/12.1.0/dbhome_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 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.

■   Identifying existing Oracle base directories

After you have located the Oracle home directory, run a similar command to
confirm the location of Oracle base:

```
cat /u01/app/oraInventory/ContentsXML/inventory.xml
```

To continue:

■   If an Oracle base directory exists and you want to use it, then refer to the
"Configuring Oracle Software Owner Environment" section on page 2-20.

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 to create an Oracle base
directory, 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. To determine the free disk space on each mounted file system use the following
    command:

    ```
    # df -k
    ```

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/
    ```

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 Oracle Software Owner 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.

> **Caution:** Use shell programs supported by your operating system vendor. If you use a shell program that is not supported by your operating system, then you can encounter errors during installation.

To set the `oracle` user's environment:

1. Start a new X terminal session (`xterm`).

2. Enter the following command to ensure that X Window applications can display on this system:

   ```
   $ xhost + RemoteHost
   ```

   where `RemoteHost` is the fully qualified remote host name. For example:

   ```
   $ xhost + somehost.example.com
   ```

3. If you are not 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. 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
     ```

7. 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
     ```

   - C shell:

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

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

8. 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. To determine the free disk space on each mounted file system, use the following command:

   ```
   # df -k
   ```

   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
   ```

9. If you have had an existing installation on your system, and you are using the same user account to install this installation, then unset the `ORACLE_HOME`, `ORACLE_BASE`, `ORACLE_SID`, `TNS_ADMIN` environment variables and any other environment variable set for the Oracle installation user that is connected with Oracle software homes.

   Enter the following commands to ensure that the `ORACLE_HOME`, `ORACLE_BASE`, `ORACLE_SID` and `TNS_ADMIN` environment variables are not set:

   ■ Bourne, Bash, or Korn shell:

   ```
   $ unset ORACLE_HOME
   $ unset ORACLE_BASE
   $ unset ORACLE_SID
   $ unset TNS_ADMIN
   ```

   ■ C shell:

   ```
   % unsetenv ORACLE_HOME
   % unsetenv ORACLE_BASE
   % unsetenv ORACLE_SID
   % unsetenv TNS_ADMIN
   ```

   Use the following command to check the `PATH` environment variable:

   ```
   $ echo $PATH
   ```

   Ensure that the `$ORACLE_HOME/bin` path is removed from your `PATH` environment variable.

> **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. 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.

10. 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.

3

Installing Oracle Database Client

The Oracle Database Client software is available on installation media or you can download it from the Oracle Technology Network website. 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 Database 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 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 Database Client software is available on installation media or you can download it from the Oracle Technology Network website, or the Oracle Software Delivery Cloud portal. To install the software from the hard disk, you must either download it and unpack it, or copy it from the installation media.

You can access and install Oracle Database Client 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 Database Client Software" on page 3-5

- To copy the software to a hard disk, refer to "Copying the Software to the Hard Disk" on page 3-4

- To download the software from Oracle Technology Network, refer to "Downloading Oracle Software" on page 3-2

Downloading Oracle Software

You can download the trial version of the installation files from the Oracle Technology Network (OTN) or the Oracle Software Delivery Cloud portal and extract them on your hard disk. Make sure that you completely review and understand the terms of the license. Most downloads include the development license. This section contains the following topics:

- Downloading the Installation Archive Files from OTN
- Downloading the Software from Oracle Software Delivery Cloud
- Extracting the Installation Files

Downloading the Installation Archive Files from OTN

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/technetwork/indexes/downloads/index.html

2. Navigate to the download page for the product 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 `OraDB12c`, 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. Also verify the checksums are the same as noted on Oracle Technology Network using a command similar to the following:

   `cksum filename.zip`

8. Extract the files in each directory that you just created.

9. After you have extracted the required installation files, see "Installing the Oracle Database Client Software" on page 3-5.

Downloading the Software from Oracle Software Delivery Cloud

You can download the software from Oracle Software Delivery Cloud as Media Packs. A Media Pack is an electronic version of the software that is also available to Oracle customers on CD-ROM or DVD. To download the Media Pack:

1. Use any browser to access the Oracle Software Delivery Cloud portal:

   https://edelivery.oracle.com/

2. Complete the Export Validation process by entering information (name, company, e-mail address, and country) in the online form.

3. In the Media Pack Search page, specify the Product Pack and Platform to identify the Media Pack you want to download. If you do not know the name of the Product Pack, you can search for it using the License List.

4. Optionally, select the relevant product to download from the **Results** list.

5. In the search results page, click **Readme** to download and review the Readme file for download instructions and product information.

6. After you review the Readme, choose the appropriate Media Pack from the search results to download the individual zip files. Follow the Download Notes instructions in this page. Once you download and extract the contents of the required zip files, proceed with the installation of the software.

> **Note:** Print the page with the list of downloadable files. It contains a list of part numbers and their corresponding descriptions that you may have to reference during the installation process.

7. After you download the files, click **View Digest** to verify that the MD5 or SHA-1 checksum matches with what is listed in the media download page.

> **See Also:**
> - My Oracle Support note 549617.1 for information on how to verify the integrity of a software download at:
>
>   https://support.oracle.com/CSP/main/article?cmd=show&type=NOT&id=549617.1
>
> - *Frequently Asked Questions* section on the Oracle Software Delivery Cloud portal for more information about Media Packs

Extracting the Installation Files

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

1. If necessary, change to the directory that contains the downloaded installation archive files.

2. Oracle Database software is available as two archive files. Ensure that you extract both the archive files to the same directory.

   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 the disk number identified in the file name.

When you have extracted all of the required installation files, refer to "Installing the Oracle Database Client Software" on page 3-5.

Copying the Software to the Hard Disk

Before installing Oracle Database Client, Oracle recommends that you copy the software to the hard disk to enable 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 how to mount the disk and copy its content to the hard disk:

- Mounting Disks
- Copying the Oracle Database Client Software to a Hard Disk

Mounting Disks

On most Oracle Solaris systems, the disk mounts automatically when you insert it into the disc drive. If the disk does not mount automatically, then follow these steps to mount it:

1. Switch user to `root`:

   ```
   $ sudo sh
   password:
   ```

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

   ```
   # eject
   ```

3. Insert the appropriate disc into the disc drive.

4. To verify that the disc mounted automatically, enter the following command:

   ```
   # ls /dvd/dvd0
   ```

5. If this command fails to display the contents of the disc, enter a command similar to the following to mount it:

   ```
   # /usr/sbin/mount -r -F hsfs /dev/dsk/cxtydzs2 /dvd
   ```

   In this example, `/dvd` is the disc mount point directory and `/dev/dsk/cxtydzs2` is the device name for the disc device, for example `/dev/dsk/c0t2d0s2`.

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

   - Disc mounted automatically:

     ```
     /dvd/dvd0
     ```

   - Disc mounted manually:

```
/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 Database Client Software to a Hard Disk" on page 3-5.

- If you want to install the software from the installation media, refer to "Installing the Oracle Database Client Software" on page 3-5.

Copying the Oracle Database Client Software to a Hard Disk

If the system does not have a 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 OraCl12c
    ```

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

    ```
    $ cd OraCl12c
    ```

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

    Some platforms automatically mount the disk when you insert it into the drive. If the disk does not mount automatically, refer to "Mounting Disks" on page 3-4 for information about mounting it.

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

    ```
    $ cp -R /directory_path OraCl12c
    ```

5. If necessary, mount the next disk and repeat Step 4.

Installing the Oracle Database Client Software

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

- Running Oracle Universal Installer

- Using Oracle Net Configuration Assistant

- Performing an In-place Oracle Database Client Upgrade

    See Also: "Installation Considerations" on page 1-2 for information you should consider before deciding how to install the client

Running Oracle Universal Installer

For any type of installation process, start Oracle Universal Installer (OUI) and install the software, as follows:

1. Log on as the Oracle software owner user (typically, oracle) to the computer on which to install Oracle components.

2. If you are installing the software from installation media, mount the disk if it is not mounted.

If the disk does not mount automatically, refer to "Mounting Disks" on page 3-4 for 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.

> **See Also:** "Configuring Oracle Software Owner Environment" on page 2-20 for information about setting the `oracle` user's environment

- 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. If you have an existing Oracle Database Client 12*c* Release 1 (12.1.0.1) or later installed on your system, the Select Installation Mode screen is displayed. Select **New Install** to install Oracle Database Client software in a new location, or select **Upgrade** and follow the instructions in "Performing an In-place Oracle Database Client Upgrade" on page 3-9 to upgrade an earlier release of Oracle Database Client.

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

6. The Select Product Languages screen enables you to select the language in which you want to run the product.

Select the product language from the Available Languages list, transfer it to the Selected Languages list. Click **Next.**

This screen is not displayed if you select Instant Client as the type of installation in Step 5.

7. In the Specify Installation Location screen, enter the following details:

Oracle Base: This path appears by default. You can change the path based on your requirement. The Oracle Base section is not displayed if you select Instant Client as the type of installation in Step 5.

In the **Software Location** section, accept the default value or enter the Oracle home directory path in which you want to install Oracle components. The directory path should not contain spaces. Click **Next.**

> **See Also:** "Identifying Required Software Directories" on page 2-15 for information about Oracle base directory and Oracle home directory

8. In the Create Inventory screen, you are prompted by the installer to specify the directory path for central inventory the first time you install Oracle Database on your computer.

   Select the **oraInventory Group Name** of the operating system group that should own the Oracle Inventory directory (the Oracle Inventory group). Click **Next.**

   Note: By default, the Oracle Inventory directory is not installed under the Oracle Base directory. This is because all Oracle software installations share a common Oracle Inventory, so there is only one Oracle Inventory for all users, whereas there is a separate Oracle Base for each user.

9. If you selected Custom as the type of installation in Step 5, then the Available Product Components screen is displayed. Select the products to install and click **Next.**

   > **Note:** Starting with Oracle Database 11*g* Release 2 (11.2), you can install Oracle Connection Manager, Oracle Net Listener, and Oracle Scheduler Agent using the Custom install option.

10. In Step 9, if you select Oracle Scheduler Agent as one of the components to install, then the Oracle Database Scheduler Agent screen is displayed with the default host name and default port number. Enter the Scheduler Agent Hostname, and the Scheduler Agent Port Number. Click **Next.**

11. The Perform Prerequisite Checks screen verifies if your computer meets the minimum system requirements to install the desired product. Click **Next.**

    Note: Oracle recommends that you use caution in checking the Ignore All option. If you check this option, then Oracle Universal Installer may not confirm if your system can install Oracle Database successfully.

12. Review the information displayed in the Summary screen, and click **Install.**

    > **Note:** You can save all the installation steps into a response file by clicking **Save Response File** in the Summary screen. Later, this file can be used for a silent installation.

13. The Install Product screen displays the progress of the client installation. Oracle Universal Installer prompts you to execute the root configuration script only if you selected Oracle Net Listener or Oracle Scheduler Agent using the Custom install option. If prompted, execute the `root.sh` script as the `root` user.

    If this is the first time you are installing Oracle software on your system, Oracle Universal Installer prompts you to run the `orainstRoot.sh` script. Execute this script as the `root` user.

    Click **OK.**

14. If you are performing a Custom installation, and selected Oracle Net Listener from the list of components to install in Step 9, then go to "Using Oracle Net Configuration Assistant" on page 8 for instructions.

15. In the Finish screen, click **Close** to exit Oracle Universal Installer.

Using Oracle Net Configuration Assistant

During a Custom Oracle Database Client installation, if you select Oracle Net Listener from the list of components to install in Step 9, then Oracle Universal Installer automatically starts Oracle Net Configuration Assistant as part of the Oracle Database Client installation. Perform the following to configure the listener and naming methods using Oracle Net Configuration Assistant:

1. In the Welcome screen, click **Next.**

> **Note:** You can also select **Perform typical configuration** for default network configuration.

2. In the Listener Configuration, Listener Name screen, enter a **Listener name** or accept the default value. Click **Next.**

3. In the Listener Configuration, Select Protocols screen, select one or more protocols from the Available Protocols list, and move it to the Selected Protocols list. Click **Next.**

4. In the Listener Configuration, TCP/IP Protocol screen, select the standard port number, or enter a different port number. Click **Next.**

5. Select **No** if you do not want to configure an additional listener, and click **Next.**

6. The listener configuration is now complete, click **Next** to proceed.

> **Note:** If you have more than one listener, then you can select and start a listener from the list provided in the Listener Configuration, Select Listener screen.

7. In the Naming Methods Configuration screen, select **Yes** to configure naming methods. Click **Next.**

8. In the Naming Methods Configuration, Select Naming Methods screen, select the naming method you want from the list of Available Naming Methods and move it to the Selected Naming Methods list. Click **Next.**

Typically, Local Naming is sufficient.

9. In the Net Service Name Configuration, Service Name screen, enter Service Name, and click **Next.**

10. In the Net Service Name Configuration, Select Protocols screen, select the protocol for the database you want to access, and click **Next.**

11. In the Net Service Name Configuration, TCP/IP Protocol screen, enter the **Host name** of the computer where the Oracle database is installed. Use the standard port number, or specify a different port number, and click **Next.**

12. In the Net Service Name Configuration, Test screen, click **Yes, perform a test** to test the database connection. Click **Next.**

13. In the Net Service Name Configuration, Connecting screen, 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**, reenter the user name and password, and click **OK.**

14. In the Net Service Name Configuration, Net Service Name screen, enter the **Net Service Name**, and click **Next.**

15. Answer the remaining prompts to complete the configuration.

16. In the Finish screen, click **Close** to exit Oracle Universal Installer.

You can also run Oracle Net Configuration Assistant after the installation in standalone mode to configure the listener, naming methods, net service names, and directory server usage.

To start Oracle Net Configuration Assistant in standalone mode run `netca` from the `ORACLE_HOME/bin` directory.

> **See Also:** "Using Oracle Net Configuration Assistant to Configure Network Components" in *Oracle Database Net Services Administrator's Guide*

Performing an In-place Oracle Database Client Upgrade

You can perform an in-place upgrade of Oracle Database Client 12*c* Release 1 (12.1) using the following instructions:

> **Note:** You can perform an in-place Oracle Database Client upgrade only if you have an existing Oracle Database Client 12*c* Release 1 (12.1.0.1) or later client home installed on your system.

1. Perform Steps 1 through 3 listed in "Running Oracle Universal Installer" on page 3-5.

2. The Select Installation Mode screen is displayed only if you have an existing Oracle Database Client 12*c* Release 1 (12.1.0.1) or later installed on your system. Select **Upgrade** to upgrade the existing Oracle Database Client software to the latest version.

3. In the Specify Installation Location screen, accept the default Software Location value. If multiple client installations exist on your system, then select the client Oracle home directory path from which you want to upgrade to the latest version. The directory path should not contain spaces. Click **Next**.

4. The Select Product Languages screen enables you to select the language in which you want to run the product.

    Select the product language from the Available Languages list, transfer it to the Selected Languages list. Click **Next.**

5. The Perform Prerequisite Checks screen verifies if your computer meets the minimum system requirements to install the desired product. Click **Next**.

6. Review the information displayed in the Summary screen, and click **Install**.

7. The Install Product screen displays the progress of the client upgrade. Oracle Universal Installer prompts you to execute the root configuration script only if the existing Oracle Database Client home was installed with Oracle Scheduler Agent.

If prompted, execute the `root.sh` script as the `root` user to complete the installation, and click **OK.**

8. Review the information in the Finish screen and click **Close** to exit Oracle Universal Installer.

> **See Also:**
>
> - "Updating the Existing Software with the Current Version" on page 1-3
> - "Performing an In-place Oracle Database Client Upgrade Using the Response File" on page A-6

4

Oracle Database Client Postinstallation Tasks

This chapter describes how to complete postinstallation tasks after you install the Oracle database client 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 "Required Postinstallation Tasks" on page 4-1. Oracle recommends that you perform the tasks listed in "Recommended Postinstallation Tasks" on page 4-3 after all installations.

If you install and intend to use any of the products listed in "Required Product-Specific Postinstallation Tasks" on page 4-6, 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-Based Operating Systems*, *Oracle Database Administrator's Guide* and product-specific administration and tuning guides for exhaustive 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 My Oracle Support website 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 My Oracle Support website:

    https://support.oracle.com/

2. Log in to My Oracle Support.

    > **Note:** If you are not a My Oracle Support registered user, click **Register here** and follow the registration instructions.

3. On the main My Oracle Support page, click the **Patches & Updates** tab.

4. In the Patch Search group, select **Product or Family (Advanced).**

5. In the Product field, select **Oracle Database.**

6. In the Release field select one or more release numbers. For example, Oracle 12.1.0.1.0.

7. Click **Search.**

8. Any available patch updates are displayed in the Patch Search page.

9. Select the patch number and click **ReadMe.** The README page is displayed and contains information about the patch set and how to apply the patches to your installation.

10. Return to the Patch Search page, click **Download**, and save the file on your system.

11. Use the unzip utility provided with Oracle Database 12*c* to uncompress the Oracle patch updates that you downloaded from My Oracle Support. The unzip utility is located in the `$ORACLE_HOME/bin` directory.

Updating Instant Client

To update Instant Client:

1. Download Instant Client from Oracle Technology Network:

    http://www.oracle.com/technetwork/database/features/instant-client/index-097480.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 Instant Client or Instant Client Light is that you cannot perform patch upgrades using the `opatch` utility because the Instant Client installation does not create an inventory, which the patch upgrade process must access for patch upgrades. The absence of an inventory also means that the 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/12.1.0/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/libociei.so` file with the `ORACLE_HOME/light/libociicus.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, ensure 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/12.1.0/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 Using an Empty Connect String and TWO_TASK

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 as you do not have to create and manage a `tnsnames.ora` file. However, the application users must specify the host name and port number when they want to log in to the application.

For example, if you run 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:

```
sqlplus 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 `OCIServerAttach()` 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, to shield users from having to specify actual host names and port numbers, 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 Available Product Components screen, select **Oracle Net Listener**.

4. In the Summary screen, click **Install**, click **Exit**, and then click **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 ensure 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 Using an Empty Connect String and TWO_TASK

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 have to specify the `tnsnames.ora` entry. Instead, when a user starts 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 must 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-Based Operating Systems*.

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 user session. 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/12.1.0/client_1
   $ export ORACLE_HOME
   ```

   - C shell:

   ```
   % setenv ORACLE_HOME /u01/app/oracle/product/12.1.0/client_1
   ```

3. Enter the following command:

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

Required Product-Specific Postinstallation Tasks

The following sections describe 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 must perform postinstallation tasks only 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.

> **Note:** The default location for the `tnsnames.ora` and `listener.ora` files is the `$ORACLE_HOME/network/admin/` directory. However, you can also use a central location for these files.

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
/opt/SunProd/studio11/bin	$ which cc

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 f95` command.

5

Removing Oracle Database Client Software

This chapter describes how to completely remove Oracle software and configuration files related to the specified Oracle home using the deinstallation tool.

The deinstallation tool removes the Oracle Database Client installations.

Oracle recommends that you use the deinstallation tool to remove the entire Oracle home associated with the Oracle Database, Oracle Clusterware, Oracle ASM, Oracle RAC, or Oracle Database client installation. Oracle does not support the removal of individual products or components.

The following sections describe the deinstallation tool, and provide information about additional options to use the tool:

- About the Deinstallation Tool
- Example of Running the Deinstallation Tool
- Example of Running the Deinstall Command
- Deinstallation Response File Example

About the Deinstallation Tool

Starting with Oracle Database 12*c*, the deinstallation tool is integrated with the database installation media. You can run the deinstallation tool using the `runInstaller` command with the `-deinstall` and `-home` options from the base directory of the Oracle Database, Oracle Database Client or Oracle Grid Infrastructure installation media.

The deinstallation tool is also available as a separate command (`deinstall`) in Oracle home directories after installation. It is located in the `$ORACLE_HOME/deinstall` directory.

The deinstallation tool uses the information you provide, plus information gathered from the software home to create a response file. You can alternatively supply a response file generated previously by the `deinstall` command using the `-checkonly` option, or by editing the response file template.

If the software in the Oracle home is not running (for example, after an unsuccessful installation), then the deinstallation tool cannot determine the configuration, and you must provide all the configuration details either interactively or in a response file.

> **Caution:** When you run the `deinstall` command, if the central inventory (oraInventory) contains no other registered homes besides the home that you are deconfiguring and removing, then the deinstall command removes the following files and directory contents in the Oracle base directory of the Oracle Database installation owner:
>
> - `admin`
> - `cfgtoollogs`
> - `checkpoints`
> - `diag`
> - `oradata`
> - `fast_recovery_area`
>
> Oracle strongly recommends that you configure your installations using an Optimal Flexible Architecture (OFA) configuration, and that you reserve Oracle base and Oracle home paths for exclusive use of Oracle software. If you have any user data in these locations in the Oracle base that is owned by the user account that owns the Oracle software, then the `deinstall` command deletes this data.

Oracle recommends that you run the deinstallation tool as the Oracle software installation owner. The default method for running the deinstall tool is from the deinstall directory in the Oracle home as the installation owner:

```
$ $ORACLE_HOME/deinstall/deinstall
```

The `deinstall` command uses the following syntax, where variable content is indicated in italics:

```
./deinstall [-silent] [-checkonly] [-paramfile complete path of input response
file] [-params name1=value
name2=value . . .] [-o complete path of directory for saving files]
[-tmpdir complete path of temporary directory to use]
[-logdir complete path of log directory to use] [-help]
```

To run the deinstallation tool from the database installation media, use the `runInstaller` command with the `-deinstall` option, followed by the `-home` option to specify the path of the Oracle home you want to remove using the following syntax, where variable content is indicated in italics:

```
./runInstaller -deinstall -home complete path of Oracle home [-silent]
[-checkonly] [-paramfile complete path of input response file] [-params
name1=value
name2=value . . .] [-o complete path of directory for saving files]
[-tmpdir complete path of temporary directory to use]
[-logdir complete path of log directory to use] [-help]
```

Provide information about your servers as prompted or accept the defaults.

The deinstallation tool stops Oracle software, and removes Oracle software and configuration files on the operating system.

> **Note:** You must run the deinstallation tool from the same release to remove Oracle software. Do not run the deinstallation tool from a later release to remove Oracle software from an earlier release. For example, do not run the deinstallation tool from the 12.1.0.1 installation media to remove Oracle software from an existing 11.2.0.4 Oracle home.

In addition, you can run the deinstallation tool with a response file, or select the following options to run the tool:

- `-home`

  Use this flag to indicate the home path of the Oracle home to check or deinstall.

  To deinstall Oracle software using the `deinstall` command, located in the Oracle home you plan to deinstall, provide a response file located outside the Oracle home, and do not use the `-home` flag.

  If you run deinstall from the `$ORACLE_HOME/deinstall` path, then the `-home` flag is not required because the tool identifies the location of the home from which it is run. If you use `runInstaller -deinstall` from the installation media, then `-home` is mandatory.

- `-silent`

  Use this flag to run the deinstallation tool in noninteractive mode. This option requires one of the following:

  - A working system that it can access to determine the installation and configuration information. The `-silent` flag does not work with failed installations.

  - A response file that contains the configuration values for the Oracle home that is being deinstalled or deconfigured.

  You can generate a response file to use or modify by running the tool with the `-checkonly` flag. The tool then discovers information from the Oracle home to deinstall and deconfigure. It generates the response file that you can then use with the `-silent` option.

  You can also modify the template file `deinstall.rsp.tmpl`, located in the `$ORACLE_HOME/deinstall/response` directory.

- `-checkonly`

  Use this flag to check the status of the Oracle software home configuration. Running the tool with the `-checkonly` flag does not remove the Oracle configuration. The `-checkonly` flag generates a response file which you can then use with the deinstallation tool and `-silent` option.

- `-paramfile` *complete path of input response file*

  Use this flag to run the deinstallation tool with a response file in a location other than the default. When you use this flag, provide the complete path where the response file is located.

  The default location of the response file depends on the location of the deinstallation tool:

  - From the installation media or stage location: `/response`.

- – After installation from the installed Oracle home: `$ORACLE_HOME/deinstall/response`.

- ■ `-params [name1=value name2=value name3=value ...]`

  Use this flag with a response file to override one or more values to change in a response file you have already created.

- ■ `-o complete path of directory for saving response files`

  Use this flag to provide a path other than the default location where the response file (`deinstall.rsp.tmpl`) is saved.

  The default location of the response file depends on the location of the deinstallation tool:

  - – From the installation media or stage location before installation: `/response`

  - – After installation from the installed Oracle home: `$ORACLE_HOME/deinstall/response`.

- ■ `-tmpdir complete path of temporary directory`

  Use this flag to specify a non-default location where Oracle Deinstallation Tool writes the temporary files for the deinstallation.

- ■ `-logdir complete path of log directory`

  Use this flag to specify a non-default location where Oracle Deinstallation Tool writes the log files for the deinstallation.

- ■ `-help`

  Use the help option (`-help`) to obtain additional information about the command option flags.

  > **See Also:** *Oracle Real Application Clusters Installation Guide for Linux and UNIX* for information about the `-local` option

Example of Running the Deinstallation Tool

If you run the deinstallation tool using the `runInstaller` command with the `-deinstall` option from the installation media, then help is displayed unless you enter a `-home` flag and provide a path to the home directory of the Oracle software to remove from your system.

Use the optional flag `-paramfile` to provide a path to a response file.

In the following example, the `runInstaller` command is in the path `/directory_path`, where `directory_path` is the path to the `client` directory on the installation media, and `/u01/app/oracle/product/12.1.0/client_1/` is the path to the Oracle home to remove:

```
$ cd /directory_path/
$ ./runInstaller -deinstall -home /u01/app/oracle/product/12.1.0/client_1/
```

The following example uses a response file in the software owner location `/home/usr/oracle`:

```
$ cd /directory_path/
$ ./runInstaller -deinstall -paramfile /home/usr/oracle/myparamfile.tmpl
```

Example of Running the Deinstall Command

If you run the deinstallation tool using the deinstall command from the $ORACLE_ HOME/deinstall folder, then the deinstallation starts without prompting you for the Oracle home path.

Use the optional flag -paramfile to provide a path to a response file.

In the following example, the deinstall command is in the path /u01/app/oracle/product/12.1.0/client_1/deinstall, and it uses a response file in the software owner location /home/usr/oracle:

```
$ cd /u01/app/oracle/product/12.1.0/client_1/deinstall
$ ./deinstall -paramfile /home/usr/oracle/myparamfile.tmpl
```

Deinstallation Response File Example

You can run the deinstall command with the -paramfile option to use the values you specify in the response file. The following is an example of a response file, in which the Oracle Database binary owner is oracle, the Oracle Database home (Oracle home) is in the path /u01/app/oracle/product/12.1.0/client_1/, the Oracle base (where other Oracle software is installed) is /u01/app/oracle/, the central Oracle Inventory home (oraInventory) is /u01/app/oraInventory, and the client is client1:

```
ORACLE_BASE=/u01/app/oracle
INVENTORY_LOCATION=/u01/app/oraInventory
CRS_HOME=false
HOME_TYPE=CLIENT
silent=false
local=false
LOCAL_NODE=node1
ObaseCleanupPtrLoc=/var/tmp/install/orabase_cleanup.lst.
LOGDIR=/u01/app/oraInventory/logs/
ORACLE_HOME=/u01/app/oracle/product/12.1.0/client_1
```

A

Installing Oracle Database Client Using Response Files

This appendix describes how to use response files to perform a silent or response file installation of Oracle Database Client. It includes information about the following topics:

- How Response Files Work
- Preparing a Response File
- Running Oracle Universal Installer Using a Response File
- Performing an In-place Oracle Database Client Upgrade Using the 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 prompts. It includes information about the following topics:

- Reasons for Using Silent Mode or Response File 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.

- Response file 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 response file mode. During a response file mode installation, Oracle Universal Installer displays all the screens, screens for which you specify information in the response file and also screens for which you did not specify the required information in the response file. The allows you to validate values in the screens for which you have

already provided the information in the response file and continue with the installation.

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

```
ORACLE_HOME=/u01/app/oracle/product/12.1.0/dbhome_1
```

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

```
 -silent directory_path
```

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

> **See Also:**
>
> - *Oracle Universal Installer User's Guide* for more information about response file formats
>
> - My Oracle Support website for more information on response files:
>
>   https://support.oracle.com/

Reasons for Using Silent Mode or Response File Mode

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

Mode	Uses
Silent	Use silent mode to:
	- Complete an unattended installation, which you might schedule using an operating system utility such as `cron`.
	- 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.
	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.
Response file	Use response file mode to complete similar Oracle software installations on more than one system, providing default answers to some, but not all of Oracle Universal Installer prompts.
	In response file mode, all the installer screens are displayed, but defaults for the fields in these screens are provided by the response file. You have to provide information for the fields in screens where you have not provided values in the response file.

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 response file mode:

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

1. Prepare a response file.

2. Run Oracle Universal Installer in silent or response file mode.

3. Run the root scripts as prompted by Oracle Universal Installer.

4. If you completed a software-only installation, then run Net Configuration Assistant and Database Configuration Assistant in silent or response file 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 response file mode installations:

- Editing a Response File Template
- Saving a Response File

Editing a Response File Template

Oracle provides response file templates for each product and installation type, and for each configuration tool. These files are located in the `ORACLE_HOME/assistants/` directory, and the `client/response` directory on the Oracle Database installation media.

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

Table A–1 lists the response files provided with Oracle Database.

Table A–1   Response Files

Response File	Description
`client_install.rsp`	Client installation of Oracle Database Client.
`netca.rsp`	Oracle Net Configuration Assistant to perform the configuration with the client installation types.

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 `client` 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:

Preparing a Response File

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

> **See Also:** *Oracle Universal Installer 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" on page C-5 for information about troubleshooting a failed silent-mode installation.

Saving a Response File

You can use Oracle Universal Installer in interactive mode to save a response file, which you can edit and then use to complete silent mode or response file mode installations.

Starting with Oracle Database 11*g* Release 2 (11.2), you can save all the installation steps into a response file during installation. You can click the **Save Response File** button on the Summary page to do this. Later, this file can be used for a silent installation.

When you save 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 save a response file during a silent installation, then Oracle Universal Installer saves the variable values that were specified in the original source response file into the new response file.

> **Note:** Oracle Universal Installer does not save passwords in the response file.

To save a response file:

1. Complete the preinstallation tasks listed in Chapter 2.

    When you run Oracle Universal Installer to save 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 save the response file while completing an installation.

2. Ensure that the Oracle software owner user (typically, `oracle`) has permissions to create or write to the Oracle home path that you specify when you run Oracle Universal Installer.

3. On each Oracle Universal Installer screen, specify the required information.

4. When Oracle Universal Installer displays the Summary screen, perform the following actions:

    1. Click **Save Response File** and specify a file name and location for the response file. Then, click **Save** to save the values to the file.

    2. Click **Finish** to continue with the installation.

A-4 Oracle Database Client Installation Guide

Click **Cancel** if you do not want to continue with the installation. The installation stops, but the saved response file is retained.

5. Before using the saved 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 response file 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 response file 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 client directory on the DVD or on the hard drive.

- -silent runs Oracle Universal Installer in silent mode.

  "Silent-Mode Response File Error Handling" on page C-5

- -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:

   ```
   $ su - root
   password:
   # /oracle_home_path/root.sh
   ```

6. If this is the first time you are installing Oracle software on your system, then
   Oracle Universal Installer prompts you to run the `orainstRoot.sh` script. Log in as
   the `root` user and run the `orainstRoot.sh` script:

   ```
   $ su - root
   password:
   # /oracle_home_path/orainstRoot.sh
   ```

Performing an In-place Oracle Database Client Upgrade Using the Response File

You can perform an in-place Oracle Database Client upgrade using the response file:

1. Edit the `oracle.install.client.upgrading` entry in the `client_install.rsp` file
   and set it to `true`. By default, the `oracle.install.client.upgrading` entry is set
   to `false`.

2. Run Oracle Universal Installer in silent mode as described in "Running Oracle
   Universal Installer Using a Response File" on page A-5.

   > **See Also:** "Performing an In-place Oracle Database Client Upgrade"
   > on page 3-9

B

Configuring Oracle Database Globalization Support

This appendix describes the following Globalization Support topics:

- Installing and Using Oracle Components in Different Languages
- Running Oracle Universal Installer in Different Languages

> **See Also:** *Oracle Database Globalization Support Guide* for an overview of globalization support for Oracle Database

Installing and Using Oracle Components in Different Languages

This section describes the following procedures:

- Configuring Oracle Components to Run in Different Languages
- Installing Translation Resources

Configuring Oracle Components to Run in Different Languages

You can specify the language and the territory, or locale, in which you want to use Oracle components. The locale setting of a component determines the language of the user interface of the component and the globalization behavior, such as date and number formatting. Depending on the Oracle component, the locale of the component is either inherited from the operating system session that started the component, or is defined by the `NLS_LANG` environment variable.

The operating system locale usually influences Oracle components that are based on Java technology. The `NLS_LANG` environment variable usually influences Oracle components that use Oracle Database Client libraries such as OCI.

> **Note:** The user interface of an Oracle component is displayed in a selected language only if the appropriate translation is available and has been installed. Else, the user interface is be displayed in English.

Determining the Operating System Locale by Using the LANG Environment Variable

The locale setting of your operating system session determines the language of the user interface and the globalization behavior for components such as Oracle Universal Installer, Oracle Net Configuration Assistant, and Oracle Database Configuration Assistant. It also determines the globalization behavior of Oracle Database sessions created by a user application through Oracle JDBC driver, unless overridden by the application.

The operating system locale is determined by the value of the LANG environment variable. Depending on your desktop environment, such as KDE, GNOME, or telnet, you can select a default session locale on a login screen, in a configuration panel, or in a configuration file.

> **Note:** Refer to the operating system documentation on how to select a locale for the operating system session in your desktop environment.

You can modify the LANG variable in the environment of your shell to start an Oracle component in a selected language. For example, to start Oracle Database Configuration Assistant in German, enter one of the following commands:

- Bourne shell (sh), or Korn shell (ksh), or Bash shell (bash):

  ```
  $ LANG=de_DE.iso88591 dbca
  ```

- C shell (csh):

  ```
  % (setenv LANG de_DE.iso88591; dbca)
  ```

To modify the operating system locale for all Oracle components started from now on by the given shell, modify the LANG variable using one of the following commands:

- Bourne shell (sh), or Korn shell (ksh), or Bash shell (bash):

  ```
  $ LANG=de_DE.iso88591; export LANG
  $ ...
  ```

- C shell (csh):

  ```
  $ setenv LANG de_DE.iso88591
  $ ...
  ```

The value of the LANG environment variable must be a valid operating system locale. To see the list of valid locales, enter the following command:

```
$ locale -a
```

> **Note:** Refer to the operating system documentation for a mapping between values of the LANG environment variable and the languages and territories that they represent.

Configuring Locale and Character Sets Using NLS_LANG

The NLS_LANG environment variable determines the language of the user interface and the globalization behavior for components such as SQL*Plus, exp, and imp. It sets the language and territory used by the client application and the database user session. It also declares the character set for entering and displaying data by the client application.

The NLS_LANG environment variable uses the following format:

```
NLS_LANG=language_territory.characterset
```

In this format:

- *language* specifies the language used for displaying Oracle messages, sorting, day names, and month names

- *territory* specifies the conventions for default date, monetary and numeric formats

- *characterset* specifies the encoding used by the client application

  In most cases, this is the Oracle character set that corresponds to the character set of the user terminal or the operating system.

  > **Note:** To install additional languages for a component, you must reinstall this component.

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 value of NLS_LANG environment variable is AMERICAN_AMERICA.AL32UTF8.

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

The following examples illustrate some valid values for the NLS_LANG environment variable.

  > **Note:** Refer to the operating system 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

Installing Translation Resources

To view the user interface of Oracle components in different languages, you must install the appropriate language translations along with the component.

To install the translation resources:

1. Start Oracle Universal Installer.

2. In the Configure Security Updates screen enter the relevant information and click **Next.**

3. In the Select Installation Option screen, select the installation option and click **Next.**

4. In the System Class screen, select the type of system class for installing the database, and click **Next.**

5. In the Grid Installation Options screen, select the type of database installation you want to perform, and click **Next.**

6. In the Select Product Languages screen, select the language in which you want to use Oracle components from the Available Languages field.

> **Note:** The Available Languages field lists all languages supported by Oracle globalization libraries. The set of languages for which a translation is actually available is usually smaller and depends on a particular component. The scope of translation for a given component may differ between languages. For example, some translations may include all user interface text, while others may include only error messages and no help files.

7. Use the **>** arrow to move the selected language to the Selected Languages field, and then click **Next.**

> **Note:** Oracle Universal Installer ignores languages in the Selected Languages field for which translation is not available.

Running Oracle Universal Installer in Different Languages

Your operating system locale determines the language in which Oracle Universal Installer runs. Oracle Universal Installer may run in one of the following languages:

- Brazilian Portuguese (`pt_BR`)
- French (`fr`)
- German (`de`)
- Italian (`it`)
- Japanese (`ja`)
- Korean (`ko`)
- Simplified Chinese (`zh_CN`)
- Spanish (`es`)
- Traditional Chinese (`zh_TW`)

To run Oracle Universal Installer in one of the available languages, change the locale in which your operating system session is running before you start Oracle Universal Installer with the `./runInstaller` command. If the selected language is not one of the listed earlier, then Oracle Universal Installer runs in English.

You must ensure that the selected value for the `LANG` environment variable starts with the appropriate language abbreviation. In the aforementioned list of languages, in which Oracle Universal Installer can run, the required abbreviation appears in parentheses beside the language name. For example, fr_FR and fr_CA are valid values to run the Oracle Universal Installer in French.

C

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
- Troubleshooting Inventory Issues
- Troubleshooting Screen Display Issues
- 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 latest version of the release notes is available on the Oracle Technology Network website:

http://www.oracle.com/technetwork/indexes/documentation/index.html

X Window Display Errors

If you run 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, or contact your X server vendor or system administrator 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 errors while Oracle Universal Installer (OUI) is copying or linking files, then review the installation logs for more information.

  For copy file errors review:

  ```
  /u01/app/oraInventory/logs/timestamp for date of install.log
  /u01/app/oraInventory/logs/timestamp for date of install.err
  /u01/app/oraInventory/logs/timestamp for date of install.out
  ```

  For errors during linking review:

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

  If you encounter errors when you run the OUI, then rerun the OUI with the `-debug` option:

```
$./runInstaller -debug
```

Check the log file for details. Refer to "Reviewing the Log of an Installation Session" section on page C-3.

- 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-5.

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/var/opt/oracle/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
   oraInstalldate_time.err
   oraInstalldate_time.out
   ```

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-3.

- 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/installActions*date_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 canceled	-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-5.

2. Correct the cause of the fatal error.

3. Reinstall the Oracle software.

Troubleshooting Inventory Issues

If you face any of the following situations for Oracle home, then run the `opatch lsinventory -detail` command to list the contents of the inventory and see section "Recovering from inventory corruption" in the *Oracle Universal Installer User's Guide* for information on fixing the issue.

- Oracle home is cloned without completing the inventory steps.

- There is bad inventory.

- Inventory is not available but it is created when the Oracle Enterprise Manager Agent is installed in a separate Oracle home.

Troubleshooting Screen Display Issues

If you connect to Oracle database with a screen resolution of 640X480 or 800X600, then the Next button in the GUI is not visible as it hides behind the Taskbar. To fix this problem, perform one of the following:

- Hide the Taskbar.

- Move the Oracle Universal Installer screen up.

- Set the screen resolution to 1024X768 or higher.

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
- 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.

Cleaning Up After a Failed Installation

If an installation fails, you must remove the files that Oracle Universal Installer created during the attempted installation using the Deinstallation Tool. For more information on how to run the Deinstallation Tool refer to "About the Deinstallation Tool" on page 5-1.

D

Frequently Asked Questions About Installation

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

- Installing Oracle Database or Oracle Database Client
- Installing Oracle Database Tools
- Installing Oracle Database with Oracle Applications
- Installing Oracle Database Heterogeneous Connectivity Tools (Gateways)

Installing Oracle Database or Oracle Database Client

The following are frequently asked questions about installing Oracle Database Client:

- 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 Database Client if my client nodes have limited disk space?
- How do I upgrade Oracle Database Client?
- 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 *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 *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 use Oracle OLAP. The OLAP option is provided with Oracle Database Enterprise Edition. Oracle OLAP provides optimal support for database environments that must meet OLAP requirements.

> **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 *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 a Database**: Install Oracle Database on one computer using interactive mode. You can also clone databases. Instructions for cloning databases are 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 *Oracle Database Installation Guide* for more information.

2. Refer to Chapter 3, "Installing Oracle Database Client" to install Oracle Database 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 response file mode.

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

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

1. Install Oracle Database onto a server by using *Oracle Database Installation Guide* for more details.

2. Refer to Chapter 3, "Installing Oracle Database Client" to install Oracle Database 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 response file mode.

How do I upgrade Oracle Database Client?

Refer to *Oracle Database Upgrade Guide*.

> **See Also:** *Oracle Database Administrator's Guide* 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 Grid Infrastructure 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 Grid Infrastructure, and use Oracle Automatic Storage Management (Oracle ASM) 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, then install Oracle Grid Infrastructure, and then install Oracle Real Application Clusters.

Refer to *Oracle Grid Infrastructure Installation Guide* and *Oracle Real Application Clusters Installation Guide for Linux and UNIX* for your platform to install Oracle Grid Infrastructure and Oracle Real Application Clusters. Refer to *Oracle Database Installation Guide* which explains how to install Oracle ASM and 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 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, if 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 SQL Developer to migrate your non-Oracle databases and applications to Oracle. Oracle SQL Developer software and documentation is available at:

http://www.oracle.com/technetwork/developer-tools/sql-developer/overview/index.html

Installing Oracle Database Tools

The following are frequently asked questions about installing Oracle database tools:

- How do I install Oracle WebLogic 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?

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

How do I install Oracle WebLogic Server?

Refer to *Oracle Fusion Middleware Installation Guide for Oracle WebLogic Server*.

For more information on Oracle WebLogic Server refer to the product documentation at:

http://www.oracle.com/technetwork/middleware/weblogic/documentation/index.html

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 *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 Cloud Control.

   Oracle Enterprise Manager Cloud Control includes the Oracle Management Agent, Oracle Management Service, and Oracle Management Repository, and also a browser-based central console through which administrators can perform all monitoring, administration, and configuration tasks for the enterprise.

   > **See Also:** *Oracle Enterprise Manager Cloud Control Basic Installation Guide* documentation available on the Oracle Technology Network website at:
   >
   > http://www.oracle.com/technetwork/indexes/documentation/index.html

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 *Oracle Database Installation Guide* to install Oracle Database.

   If you plan to use Oracle Real Application Clusters, then install Oracle Database by using *Oracle Grid Infrastructure Installation Guide* and *Oracle Real Application Clusters Installation Guide for Linux and UNIX*.

2. Use *Oracle Enterprise Manager Cloud Control Basic Installation Guide* to install and configure Oracle Enterprise Manager. For postconfiguration tasks, use *Oracle Enterprise Manager Cloud Control Advanced Installation and Configuration Guide*. Refer to the Oracle Enterprise Manager Cloud Control installation documentation on the Oracle Technology Network website at:

   http://www.oracle.com/technetwork/indexes/documentation/index.html

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 Services (OPSS) integrates the security features built into Oracle Database, Oracle WebLogic 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 with 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, see *Oracle Fusion Middleware Installation Guide for Oracle Identity and Access Management* and the Oracle Identity Management documentation at:

http://www.oracle.com/technetwork/middleware/id-mgmt/overview/index.html

> **See Also:**
>
> - *Oracle Database Security Guide*
>
> - *Oracle Database Enterprise User Security Administrator's Guide*
>
> - *Oracle Label Security Administrator's Guide*
>
> - Oracle Technology Network topics on database security:
>
>   http://www.oracle.com/technetwork/topics/security/whatsnew/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. Starting with Oracle Database 11*g* Release 2 (11.2), 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 with Oracle XML Developer's Kit (XDK) to build applications that run on either Oracle Database or Oracle WebLogic 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, Oracle OLAP is available as part of an Oracle Database Enterprise Edition installation. Oracle OLAP provides optimal support for database environments that must meet OLAP requirements.

See Also:

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

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, you must have an Enterprise Edition licence for the database installation. 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 *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 User's Guide*
> - *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?

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

> **See Also:** Oracle Workflow statement of direction:
>
> http://www.oracle.com/technetwork/middleware/ias/overview/index.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 SOA Suite. Refer to the following technical migration guide for detailed recommendations about migrating Oracle Workflow processes to Oracle SOA Suite (formerly known as Oracle BPEL Process Manager):

http://www.oracle.com/technetwork/middleware/ias/owf2bpel-132189.pdf

> **See Also:** Oracle Workflow statement of direction:
>
> http://www.oracle.com/technetwork/middleware/ias/workflow-sod-089843.html

Installing Oracle Database with Oracle Applications

The following are frequently asked questions about 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 must implement your applications with Oracle Real Applications Clusters databases, refer to *Oracle Grid Infrastructure Installation Guide* and *Oracle Real Application Clusters Installation Guide for Linux and UNIX.*

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

Install Oracle Application Express and a web server:

Use *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, which ships on separate media, or use the XML DB HTTP Protocol Server and the embedded PL/SQL Gateway that installs with Oracle Database.

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

Use Oracle SQL Developer to migrate your non-Oracle applications to Oracle. Oracle SQL Developer software and documentation is available at:

http://www.oracle.com/technetwork/developer-tools/sql-developer/overview/index.html

Installing Oracle Database Heterogeneous Connectivity Tools (Gateways)

The following section discusses the 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 must join data in a DB2 database on Oracle Solaris and an Oracle Database on UNIX.

You have the option of installing the Database Gateway for DRDA on the Oracle 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.
	Use *Oracle Database Gateway Installation and Configuration Guide for IBM AIX on POWER Systems (64-Bit), Linux x86-64, Oracle Solaris on SPARC (64-Bit), Oracle Solaris on x86-64 (64-Bit), and HP-UX Itanium* and *Oracle Database Gateway for DRDA User's Guide.*
IBM DB2 z/OS	Oracle Database Gateway for DRDA.
	Use *Oracle Database Gateway Installation and Configuration Guide for IBM AIX on POWER Systems (64-Bit), Linux x86-64, Oracle Solaris on SPARC (64-Bit), Oracle Solaris on x86-64 (64-Bit), and HP-UX Itanium* and *Oracle Database Gateway for DRDA User's Guide.*
IBM DB2/400	Oracle Database Gateway for DRDA.
	Use *Oracle Database Gateway Installation and Configuration Guide for IBM AIX on POWER Systems (64-Bit), Linux x86-64, Oracle Solaris on SPARC (64-Bit), Oracle Solaris on x86-64 (64-Bit), and HP-UX Itanium* and *Oracle Database Gateway for DRDA User's Guide.*
WebSphere MQ	Oracle Database Gateway for WebSphere MQ.
	Oracle Database Gateway for WebSphere MQ Installation and User's Guide.
CICS/TS	Oracle Database Gateway for APPC.
IMSTM	Use *Oracle Database Gateway for APPC Installation and Configuration Guide for IBM AIX on POWER Systems (64-Bit), Linux x86-64, Oracle Solaris on SPARC (64-Bit), and HP-UX Itanium*
	Use *Oracle Database Gateway for APPC User's Guide*
SQL Server	Oracle Database Gateway for SQL Server.
	Use *Oracle Database Gateway Installation and Configuration Guide for IBM AIX on POWER Systems (64-Bit), Linux x86-64, Oracle Solaris on SPARC (64-Bit), Oracle Solaris on x86-64 (64-Bit), and HP-UX Itanium* and *Oracle Database Gateway for SQL Server User's Guide.*
Sybase Adaptive Server	Oracle Database Gateway for Sybase.
	Use *Oracle Database Gateway Installation and Configuration Guide for IBM AIX on POWER Systems (64-Bit), Linux x86-64, Oracle Solaris on SPARC (64-Bit), Oracle Solaris on x86-64 (64-Bit), and HP-UX Itanium* and *Oracle Database Gateway for Sybase User's Guide.*
Teradata	Oracle Database Gateway for Teradata.
	Use *Oracle Database Gateway Installation and Configuration Guide for IBM AIX on POWER Systems (64-Bit), Linux x86-64, Oracle Solaris on SPARC (64-Bit), Oracle Solaris on x86-64 (64-Bit), and HP-UX Itanium* and *Oracle Database Gateway for Teradata User's Guide.*
Informix Server	Oracle Database Gateway for Informix.
	Use *Oracle Database Gateway Installation and Configuration Guide for IBM AIX on POWER Systems (64-Bit), Linux x86-64, Oracle Solaris on SPARC (64-Bit), Oracle Solaris on x86-64 (64-Bit), and HP-UX Itanium* and *Oracle Database Gateway for Informix User's Guide.*

Index