Oracle® Internet Directory

Installation Guide

Release 2.1.1 for UNIX

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ORACLE®

Oracle Internet Directory Installation Guide, Release 2.1.1 AIX-Based Systems, Compaq Tru64 UNIX, HP 9000 Series HP-UX, Linux Intel, Solaris Intel, and Sun SPARC Solaris

Part No. A88797-01

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Preface

The *Oracle Internet Directory Installation Guide* describes how to install the Oracle Internet Directory product.

This preface contains these topics:

Audience

This release of *Oracle Internet Directory Installation Guide* is for anyone responsible for the installation of the Oracle Internet Directory, Release 2.1.1 on AIX-Based Systems, Compaq Tru64 UNIX, HP 9000 Series HP-UX, Linux Intel, Solaris Intel, and Sun SPARC Solaris. This Oracle Internet Directory installation is bundled with Oracle9*i* Application Server, Release 1.0.2.1.

This guide assumes that you are already familiar with your operating system. Use the Oracle Universal Installer to install Oracle Internet Directory.

Organization

This document contains:

Chapter 1, "System Requirements"

This chapter describes the requirements for installing Oracle Internet Directory on AIX-Based Systems, Compaq Tru64 UNIX, HP 9000 Series HP-UX, Linux Intel, Solaris Intel, and Sun SPARC Solaris and any restrictions with this release.

Chapter 2, "Pre-Installation"

This chapter explains how to prepare your system for installing Oracle Internet Directory.

Chapter 3, "Installation"

This chapter describes how to start the Oracle Universal Installer and install Oracle Internet Directory on your system.

Chapter 4, "Post-Installation"

After completing the Oracle Universal Installer session, you must perform certain post-installation steps and configure Oracle8*i*. This chapter describes the required steps, as well as some optional ones.

Related Documentation

For more information, see the following documentation:

- *Oracle Internet Directory Administrator's Guide*
- *Oracle Internet Directory Application Developer's Guide*

In North America, printed documentation is available for sale in the Oracle Store at

`http://oraclestore.oracle.com/`

Customers in Europe, the Middle East, and Africa (EMEA) can purchase documentation from

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

`http://technet.oracle.com/membership/index.htm`

If you already have a username and password for OTN, then you can go directly to the documentation section of the OTN Web site at

`http://technet.oracle.com/docs/index.htm`

For additional information, see:

- Chadwick, David. *Understanding X.500—The Directory.* Thomson Computer Press, 1996.
- Howes, Tim and Mark Smith. *LDAP: Programming Directory-enabled Applications with Lightweight Directory Access Protocol.* Macmillan Technical Publishing, 1997.
- Howes, Tim, Mark Smith and Gordon Good, *Understanding and Deploying LDAP Directory Services.* Macmillan Technical Publishing, 1999.
- Internet Assigned Numbers Authority home page, `http://www.iana.org`, for information about object identifiers
- Internet Engineering Task Force (IETF) documentation, especially:
  - `http://www.ietf.org` for the IETF home page
  - `http://www.ietf.org/html.charters/ldapext-charter.html` for the ldapext charter and LDAP drafts)
  - `http://www.ietf.org/html.charters/ldup-charter.html` for the LDUP charter and drafts
  - `http://www.ietf.org/rfc/rfc2254.txt`, "The String Representation of LDAP Search Filters"

- `http://www.ietf.org/rfc/rfc1823.txt`, "The LDAP Application Program Interface"
- The OpenLDAP Community, `http://www.openldap.org`

Conventions

This section describes the conventions used in the text and code examples of this documentation set. It describes:

- Conventions in Text
- Conventions in Code Examples

Conventions in Text

We use various conventions in text to help you identify special terms. The following table describes those conventions and provides examples of their use.

Convention	Meaning	Example
Bold	Bold typeface indicates terms that are defined in the text.	The C datatypes such as **ub4**, **sword**, or **OCINumber** are valid. When you specify this clause, you create an **index-organized table**.
Italics	Italic typeface indicates book titles or emphasis.	*Oracle8i Concepts* Ensure that the recovery catalog and target database do *not* reside on the same disk.
`UPPERCASE MONOSPACE (FIXED-WIDTH FONT)`	Uppercase monospace typeface indicates elements supplied by the system. Such elements include parameters, privileges, datatypes, RMAN keywords, SQL keywords, SQL*Plus or utility commands, packages and methods, as well as system-supplied column names, database objects and structures, usernames, and roles.	You can specify this clause only for a `NUMBER` column. You can back up the database by using the `BACKUP` command. Query the `TABLE_NAME` column in the `USER_TABLES` data dictionary view. Use the `DBMS_STATS.GENERATE_STATS` procedure.

Convention	Meaning	Example
`lowercase monospace (fixed-width font)`	Lowercase monospace typeface indicates executables, filenames, directory names, and sample user-supplied elements. Such elements include computer and database names, net service names, and connect identifiers, as well as user-supplied database objects and structures, column names, packages and classes, usernames and roles, program units, and parameter values. **Note:** Some programmatic elements use a mixture of UPPERCASE and lowercase. Enter these elements as shown.	Enter `sqlplus` to open SQL*Plus. The password is specified in the `orapwd` file. Back up the datafiles and control files in the `/disk1/oracle/dbs` directory. The `department_id`, `department_name`, and `location_id` columns are in the `hr.departments` table. Set the `QUERY_REWRITE_ENABLED` initialization parameter to `true`. Connect as `oe` user. The `JRepUtil` class implements these methods.
`lowercase monospace (fixed-width font) italic`	Lowercase monospace italic font represents placeholders or variables.	You can specify the *`parallel_clause`*. Run `U`*`old_release`*`.SQL` where *`old_release`* refers to the release you installed prior to upgrading.

Conventions in Code Examples

Code examples illustrate SQL, PL/SQL, SQL*Plus, or other command-line statements. They are displayed in a monospace (fixed-width) font and separated from normal text as shown in this example:

```
SELECT username FROM dba_users WHERE username = 'MIGRATE';
```

The following table describes typographic conventions used in code examples and provides examples of their use.

Convention	Meaning	Example
[ ]	Brackets enclose one or more optional items. Do not enter the brackets.	`DECIMAL (`*`digits`*` [ , `*`precision`*` ])`
{ }	Braces enclose two or more items, one of which is required. Do not enter the braces.	`{ENABLE | DISABLE}`
|	A vertical bar represents a choice of two or more options within brackets or braces. Enter one of the options. Do not enter the vertical bar.	`{ENABLE | DISABLE}` `[COMPRESS | NOCOMPRESS]`

Convention	Meaning	Example
. . .	Horizontal ellipsis points indicate either: ■ That we have omitted parts of the code that are not directly related to the example ■ A series in the code	`CREATE TABLE ... AS subquery;` `SELECT col1, col2, ... , coln FROM employees;`
. . .	Vertical ellipsis points indicate that we have omitted several lines of code not directly related to the example.	
Other notation	You must enter symbols other than brackets, braces, vertical bars, and ellipsis points as shown.	`acctbal NUMBER(11,2);` `acct CONSTANT NUMBER(4) := 3;`
Italics	Italicized text indicates placeholders or variables for which you must supply particular values.	`CONNECT SYSTEM/system_password` `DB_NAME = database_name`

UPPERCASE	Uppercase typeface indicates elements supplied by the system. We show these terms in uppercase in order to distinguish them from terms you define. Unless terms appear in brackets, enter them in the order and with the spelling shown. However, because these terms are not case sensitive, you can enter them in lowercase.	`SELECT last_name, employee_id FROM employees;`
		`SELECT * FROM USER_TABLES;`
		`DROP TABLE hr.employees;`

lowercase	Lowercase typeface indicates programmatic elements that you supply. For example, lowercase indicates names of tables, columns, or files.
	Note: Some programmatic elements use a mixture of UPPERCASE and lowercase. Enter these elements as shown.
		`SELECT last_name, employee_id FROM employees;`
		`sqlplus hr/hr`
		`CREATE USER mjones IDENTIFIED BY ty3MU9;`

1

System Requirements

Completing a quick, successful installation depends on the local system satisfying the software dependencies and space requirements for Oracle software. This chapter describes the requirements for installing Oracle Internet Directory on AIX-Based Systems, Compaq Tru64 UNIX, HP 9000 Series HP-UX, Linux Intel, Solaris Intel, and Sun SPARC Solaris and any restrictions with this release. Before starting the installation, verify that your system meets the requirements described in this chapter.

This chapter contains these topics:

Installation Overview

Installing Oracle Internet Directory involves the following steps:

1. *Satisfy Prerequisites:* Make sure the local system satisfies the hardware, software, memory, and disk space requirements for the products you want to install. These requirements and restrictions are described in this chapter.
2. *Pre-Installation:* Make sure the UNIX environment is properly set up and complete the pre-installation tasks for the products you want to install. See Chapter 2, "Pre-Installation".
3. *Install:* Use the Oracle Universal Installer provided on your software CD-ROM to install Oracle Internet Directory. See Chapter 3, "Installation".
4. *Post-Installation:* Create database objects, establish the user environment, and configure the installed Oracle products for the local system. See Chapter 4, "Post-Installation".

System Installation Requirements

Verify that your system meets the requirements described in the following sections before you install Oracle Internet Directory Release 2.1.1.

- Hardware Requirements
- Operating System Software Requirements
- Additional Oracle Internet Directory-Specific Installation Requirements

Hardware Requirements

To install Oracle Internet Directory, your system must meet the minimum hardware requirements listed in Table 1–1.

Table 1–1 Hardware Requirements

Hardware Items	AIX-Based Systems	HP 9000 Series HP-UX	Compaq Tru64 UNIX	Solaris Intel	Sun SPARC Solaris	Linux Intel
CD-ROM Device	ISO 9660 format CD-ROM disks with RockRidge extensions	ISO 9660 format CD-ROM disks with RockRidge extensions	ISO 9660 format CD-ROM disks with RockRidge extensions	A RockRidge format CD-ROM drive supported by Solaris Intel	ISO 9660 format CD-ROM disks with RockRidge extensions	ISO 9660 format CD-ROM disks with RockRidge extensions
Hard Disk Space	1050 MB	970 MB	960 MB	699 MB	810 MB	810 MB
Memory	256 MB	256 MB	A minimum of 128 MB RAM	A minimum of 128 MB RAM	A minimum of 128 MB RAM is required to install Oracle8*i* products. Oracle8*i* Client products require 64 MB of RAM	A minimum of 128 MB RAM.
Swap Space	Twice the amount of RAM	Twice the amount of RAM	Twice the amount of RAM or at least 400 MB, whichever is greater	Twice the amount of RAM	Twice the amount of RAM or at least 400 MB, whichever is greater	Twice the amount of RAM or at least 400 MB, whichever is greater

Use the appropriate commands listed in Table 1–2 to determine the RAM memory and bytes of swap space required for your platform.

Table 1–2 Commands to determine RAM memory and bytes of swap space

Platforms	RAM Memory
AIX-Based Systems	`$ /etc/lsattr -El mem0`
HP 9000 Series HP-UX	Use the HP-UX 11.0 performance monitor tool glance `$ glance`

Table 1–2 Commands to determine RAM memory and bytes of swap space

Platforms	RAM Memory
Compaq Tru64 UNIX	`$ vmstat -p`
Solaris Intel	`$ /usr/sbin/prtconf | grep size`
Sun SPARC Solaris	`$ /usr/sbin/prtconf | grep size`
Linux Intel	`$ cat /proc/meminfo | grep Memtotal`

Temporary Disk Space Required by the Oracle Universal Installer

The Oracle Universal Installer requires up to 75 MB of space in the `/tmp` directory. If you do not have enough space in `/tmp`, set the environment variable TMP_DIR to point to a directory with sufficient space.

Operating System Software Requirements

Table 1–3 lists the operating system software requirements for AIX-Based Systems.

Table 1–3 Operating System Software Requirements for AIX Based Systems

Software Item	AIX-Based Systems Requirement
Operating System	■ AIX 4.3.2 or higher. AIX Versions 4.1, 4.2, 4.3.0, and 4.3.1 are no longer supported.
Operating System Patch	■ IX72696 Segmentation fault can occur in `WALK_LIBS (LOADANDINIT())` ■ IX81863 AIX process hangs in `listlio` and `liowait` ■ IX85104 `msgget()` returns a negative number ■ IX87313 64-bit application buffer cannot cross segment boundary ■ IX87382 Socket lock problem for `AF_UNIX` ■ IX89087 Thread doing `AIO` hangs in stress test ■ IX89552 System crashes with corrupted stack ■ IY02407 `AIO` bug in `v_movep` ■ IY03412 `aio_nwait` system call ■ 1Y05995 Thread missed wakeup in `aio_nwait()` ■ 1Y07276 `aio_suspend` returns without I/O completion on 00/03/09 PTF pechange ■ 1Y01050 Support for non-root access to kernel perf stat.
Window Manager	■ Use any supported IBM AIX window manager that supports Motif; for example, `dtwm`, `twm`, and `olwm`.

Table 1–4 lists the operating system software requirements for Compaq Tru64 UNIX.

Table 1–4 Operating System Software Requirements for Compaq Tru64 UNIX

Software Items	Compaq Tru64 UNIX Requirement
Operating System	■ Compaq Tru64 UNIX 4.0D, 4.0E, 4.0F, 4.0G, 5.0A, or 5.0.

Table 1–4 Operating System Software Requirements for Compaq Tru64 UNIX

Software Items	Compaq Tru64 UNIX Requirement
Operating System Patch	■ Use the latest patch kit from Compaq Tru64 UNIX. Compaq Tru64 UNIX provides patch information at: `http://www.compaq.com/support` ■ For successful installation of Release 2.1.1: Tru64 UNIX Version 4.0D requires Patch Kit 4 or higher. Tru64 UNIX, Version 4.0E requires Patch Kit 2 or higher. Tru64 UNIX, Version 4.0F requires Patch Kit 1 or higher.
Window Manager	■ X-windows installed on the system from where the Installer runs. Use any Compaq-supported X-windows server (for example, `dtwm`, `twm`, `mwm`) that supports Motif. The X environments, Basic X-environments (OSF11), and X Servers (OSFSER), are necessary to run graphical products.
Operating System Packages	■ The OSFLIBA, OSFPGMR, and OSFCMPLRS subsets. These subsets are part of the Compaq Tru64 UNIX operating system distribution.
Required Executables	■ The following executables must be present in the `/usr/ccs/bin` directory: `make`, `ar`, `ld`, and `nm`.

Table 1–5 lists the operating system software requirements for HP 9000 Series HP-UX.

Table 1–5 Operating System Software Requirements for HP 9000 Series HP-UX

Software Items	HP 9000 Series HP-UX Requirement
Operating System	■ HP-UX 11.0 (32-bit)
Operating System Patch	■ DART 49, June 2000
Window Manager	■ X-windows must be installed on the system from where the Installer is run. Use any HP-UX 11.0-supported X-windows server.
Required Executables	■ The following executables must be present in the `/usr/ccs/bin` directory: `make`, `ar`, `ld`, `nm`, `cc`.

Table 1–6 lists the operating system software requirements for Linux Intel.

Table 1–6 Operating System Software Requirements for Linux Intel

Software Items	Linux Intel Requirements
Operating System	■ Linux Kernel 2.2.16-3 or higher
Window Manager	■ Any window manager that supports motif version 1.2, such as `fvwm`. Character mode installations are not supported for Release 2.1.1. See Character Mode on page 1-16.
Required Executables	■ The following executables must be present in the `/usr/bin` directory: `make`, `ar`, `ld`, `nm`

Table 1–7 lists the operating system software requirements for Solaris Intel.

Table 1–7 Operating System Requirements for Solaris Intel

Software Items	Solaris Intel Requirements
Operating System	■ Solaris7 for Intel. The 11/99 patch is recommended. The C compiler is not required for installation, but it is required for compiling the C demonstration programs.
Operating System Patch	■ Use the latest kernel patch for Solaris Intel. Sun provides patch information at: `http://sunsolve.sun.com` Solaris Intel requires at least kernel jumbo patch revision #106542-09 to successfully install Oracle Internet Directory.
Remove ULIMIT Value	■ Before installing Oracle Internet Directory, you must remove the line containing the value for ULIMIT from the `/etc/default/login` file. You cannot install Oracle Internet Directory with the default value of ULIMIT in `/etc/default/login`.
GUI Requirements	■ Install the Motif Runtime Kit package `SUNWmfrun` bundled with Solaris Intel. Reconfigure UNIX Kernel Parameters: ■ Before installing the Solaris7 Server, you must reconfigure the UNIX kernel. You cannot install Oracle Internet Directory with the default UNIX kernel.

Table 1–8 lists the operating system software requirements for Sun SPARC Solaris.

Table 1–8 Operating System Software Requirements for Sun SPARC Solaris

Software Items	Sun SPARC Solaris Requirements
Operating System	■ Solaris 2.6 or 2.7
Operating System Packages	■ SUNWarc, SUNWbtool, SUNWhea, SUNWlibm, SUNWlibms, SUNWsprot, SUNWtoo
Operating System Patch	■ Use the latest kernel patch from Sun Microsystems. Sun provides patch information at: `http://sunsolve.sun.com` Sun SPARC Solaris 2.6 requires kernel jumbo patch revision #105181-15 for successful installation of Release 2.1.1. ■ See Table 1–14, "Solaris 2.6 (5.6) Patches for JRE 1.1.8_10" and Table 1–15, "Solaris 7 (5.7) Patches for JRE 1.1.8_10" on page 1-13 for patches required on Sun SPARC Solaris for the JRE.
Required Executables	■ The following executables must be present in the `/usr/ccs/bin` directory: `make`, `ar`, `ld`, and `nm`.
Window Manager	■ Install X-windows on the system from which the Installer is run. Use any Sun-supported X-windows server, for example, `dtwm`, `twm`, `olwm`, that supports Motif. Character mode installs are not supported for Release 2.1.1. See "Character Mode" on page 1-16.

Operating System

To determine your current operating system information, enter the appropriate commands for your platforms listed in Table 1–9:

Table 1–9 Operating System

Platforms	Commands
AIX-Based Systems	`$ uname -a`

Compaq Tru64 UNIX	`$ uname -a`
	or
	`$ string / vmunix | grep`

HP 9000 Series HP-UX	`$ uname -a`
Linux Intel	`$ uname -a`
Solaris Intel	`$ uname -a`
Sun SPARC Solaris	`$ uname -a`

Operating System Patch

To determine which operating system patches are installed, enter the appropriate commands for the platforms listed in Table 1–10:

Table 1–10 Operating System Patch

Platforms	Commands

AIX-Based Systems	`$ instfix -a`
	To determine if a patch has been installed, enter the following command:
	`$ instfix -ivk APAR_number`
	To determine which operating system filesets are installed, enter the following command:
	`$ lslpp -l [fileset_name]`

Compaq Tru64 UNIX	`$ dupatch`
Linux Intel	`$ showrev -p`
Solaris Intel	`$ showrev -p`
Sun SPARC Solaris	`$ showrev -p`

Operating System Packages

To determine which operating system packages are installed, enter the appropriate commands for the platforms listed in Table 1–11:

Table 1–11 Operating System Packages

Platforms	Commands
Compaq Tru64 UNIX	`$ setld -i | grep installed`
HP 9000 Series HP-UX	`$ swlist -i[package_name]` If you enter `swlist -i`, all installed packages are listed.
Linux Intel	`rpm -q[package.name]`
Solaris Intel	`$ pkginfo -i [package_name]` If you enter `pkginfo -i`, all installed packages are listed.
Sun SPARC Solaris	`$ pkginfo -i [package_name]` If you enter `pkginfo -i`, all installed packages are listed.

Window Manager

To determine if your X-windows system is working properly on your local system, enter the command listed in Table 1–12:

Table 1–12 Window Manager

Platforms	Commands
All platforms	`$ xclock` If a clock is not displayed on your screen, X-windows is not configured correctly. See "DISPLAY" on page 2-13 for instructions on configuring X-windows.

Required Executables

To determine if you are using the correct system executables, enter the appropriate commands for the platforms listed in Table 1–13:

Table 1–13 Required Executables

Platforms	Commands

AIX-Based Systems
Compaq Tru64 UNIX
Linux Intel
Solaris Intel
Sun SPARC Solaris
	`$ /usr/bin/which make`
	`$ /usr/bin/which ar`
	`$ /usr/bin/which ld`
	`$ /usr/bin/which nm`

HP 9000 Series HP-UX	`$ /usr/bin/which make`
	`$ /usr/bin/which ar`
	`$ /usr/bin/which ld`
	`$ /usr/bin/which nm`
	`$ /usr/bin/which cc`

Note: Each command should point to the `/usr/ccs/bin` directory. If not, add `/usr/ccs/bin` to the beginning of the PATH environment variable in the current shell. See "PATH" on page 2-14 for instructions on setting the PATH variable.

Online Documentation Requirements

To view online documentation, use a web browser such as Netscape Navigator 4.0 or higher running on a UNIX system. To view PDF documents, you need Adobe Acrobat Reader version 3.0 or higher.

Note: You can only view online documentation included with Oracle Internet Directory Release 2.1.1 on UNIX systems.

Additional Oracle Internet Directory-Specific Installation Requirements

Oracle Internet Directory Release 2.1.1 requires an installation of various components of Oracle8*i* Enterprise Edition, Release 8.1.7, with character set UTF8 and an instance dedicated to Oracle Internet Directory. If this installation does not already exist, then the Oracle Universal Installer installs the required components

automatically as part of the Oracle Internet Directory installation. Determine the database character by the following SQL Command:

```
select value from nls_database_parameters
where parameter = 'NLS_CHARACTERSET' ;
```

Installation-Specific Issues and Restrictions

The following issues and restrictions can affect the installation or use of Oracle Internet Directory on AIX-Based Systems, Compaq Tru64 UNIX, HP 9000 Series HP-UX, Linux Intel, Solaris Intel, and Sun SPARC Solaris. Check the Release Notes in the $*ORACLE_HOME*/relnotes directory before using Oracle Internet Directory.

Using Hummingbird Exceed

If you use Hummingbird's Exceed X-windows emulator while installing and using Oracle Internet Directory, set the window manager to run in *Native* mode so that Microsoft windows functions as the window manager.

> **See Also:** Exceed documentation for instructions on configuring the window manager.

New ORACLE_HOME

Oracle Corporation recommends that you install Oracle Internet Directory Release 2.1.1 products into a new *ORACLE_HOME*. Do not install Oracle Internet Directory Release 2.1.1 into an *ORACLE_HOME* directory that already contains Oracle products.

If you must install Oracle Internet Directory Release 2.1.1 into an ORACLE_HOME that contains Oracle Release 8.1.5 or 8.1.6 products, remove the Release 8.1.5 or 8.1.6 products by using Oracle Universal Installer before beginning the new installation.

Java Runtime Environment (JRE)

The JRE, certified for use with Oracle Internet Directory on your platform, enables Oracle Java applications such as the Oracle Universal Installer. Certified versions of JRE are supported to run with these applications. Do not modify the JRE, unless it is done through a patch provided by Oracle Support Services.

The inventory can contain multiple versions of the JRE, each of which can be used by one or more products or releases. The first time you use Installer creates the oraInventory directory which stores installation information for products that it

installs on your system. The location of `oraInventory` is defined in `/var/opt/oracle/oraInst.loc`.

Products in an `ORACLE_HOME` access the JRE through a symbolic link in `$ORACLE_HOME/JRE` to the actual location of a JRE within the inventory. Do not modify the symbolic link unless it is done through a patch provided by Oracle Support Services.

The Sun SPARC Solaris patches listed in Table 1–14 and Table 1–15 are required or recommended for JRE 1.1.8_10 and can be obtained from:

`http://sunsolve.sun.com`

Table 1–14 Solaris 2.6 (5.6) Patches for JRE 1.1.8_10

Patch ID	Description	Required or Recommended
106040-11	X Input and Output Method patch	Required
105181-15	Kernel patch	Required
105284-25	Motif Runtime Library Patch	Recommended
105490-07	Dynamic linker patch	Recommended
106409-01	Chinese TrueType fonts patch (1)	Recommended
105633-21	OpenWindows 3.6: Xsun patch (1)	Recommended
105568-13	Libthread patch	Recommended
105210-19	LibC patch	Recommended
105669-07	CDE 1.2: libDTSvc patch (dtmail)	Recommended

Table 1–15 Solaris 7 (5.7) Patches for JRE 1.1.8_10

Patch ID	Description	Required or Recommended
107636-01	X Input and Output Method patch	Required
106980-05	Libthread patch	Recommended
107607-01	Motif fontlist, fontset, libxm	Recommended
107078-10	Open Windows 3.6.1 Xsun patch (1)	Recommended

Table 1–16 Solaris 2.6 (5.6) Patches for JDK 1.2.2

Patch ID	Description	Required or Recommended
105490-07	Linker patch	Required
105568-16	Libthread patch	Required
105210-27	Libc patch	Required
106040-13	X Input and Output Method patch	Required
105633-36	OpenWindows 3.6: Xsun patch	Required
106409-01	Fixes the Chinese TrueType fonts	Required
108091-03	SunOS 5.6: ssJDK 1.2.1_03 fails with fatal error in ISO8859-01 Locales	Required
105181-19	Kernel Update (socket close / hang)	Recommended
105669-10	CDE 1.2: libDTSvc patch (dtmail)	Recommended
105284-31	Motif 1.2.7: Runtime Library patch	Recommended

Table 1–17 Solaris 7 (5.7) Patches for JDK 1.2.2

Patch ID	Description	Required or Recommended
106980-10	Libthread patch	required
107636-03	X Input and Output Method Patch	Required
107081-11	Motif 1.2.7 and 2.1.1: Runtime library patch for Solaris 7	Required
108376-03	OpenWindows 3.6.1 Xsun Patch	Required

Solaris Intel systems require the patches listed in Table 1–18 for JRE Release1.1.8.10. They are available at:

```
http://sunsolve.sun.com
```

Table 1–18 Solaris Intel Patches for JDK 1.2.2

Patch ID	Description	Required or Recommended
106981-10	Libthread patch	Required
107637-03	X Input and Output Method patch	Required
107082-11	Motif 1.2.7_x86 and 2.1.1_x86: Runtime library patch for Solaris 7	Required
108377_03	OpenWindows 3.6.1_x86:Xsun Patch	Required

Character Mode

You can no longer install using character mode. However, you can configure the Oracle Universal Installer to perform a non-interactive installation of Oracle products. The Installer can be run in non-interactive mode directly from your system's X-windows console or via an X-terminal or PC X-terminal on a remote system. For more information on the non-interactive installation of Oracle products, see "Non-Interactive (Silent) Installation and Configuration" on page 3-16.

File Systems

Oracle8*i* Server must be able to verify that file writes are made to disk. Oracle does not support file systems that do not support this verification.

Solaris 2.3, 2.4, and 2.5

Oracle does not support Solaris 2.3, 2.4, and 2.5 for use with Oracle Internet Directory Release 2.1.1. You must use Solaris 2.6 or Solaris 7. See Table 1–3 on page 1-5 for details of operating system and patch level requirements.

2

Pre-Installation

After verify that your system meets the requirements described in Chapter 1, "System Requirements", use this chapter when you prepare your system for installing Oracle Internet Directory.

- UNIX System Configuration
- Understanding Setup Tasks
  - Setup Tasks to Perform as the root User
  - Setup Tasks to Perform as the oracle User
  - Setup Tasks for Oracle Internet Directory

UNIX System Configuration

Table 2–1 through Table 2–5 summarizes the requirements for installing Oracle Internet Directory on Compaq Tru64 UNIX, HP 9000 Series HP-UX, Linux Intel, Sun SPARC Solaris and Solaris Intel. If your system fails to satisfy any listed requirement, perform the tasks listed on page 2-8 as necessary to configure your system to meet these requirements

Table 2–1 Compaq Tru64 UNIX configuration

System Factor	Requirement for Oracle Internet Directory	
UNIX Kernel Parameters:		
Shared Memory	SHMMAX	2139095040 (2GB - 8MB)
		This setting does not affect how much shared memory is needed or used by Oracle Internet Directory or the operating system. It is used only to indicate the maximum allowable size. This setting also does not impact operating system kernel resources.
		1
	SHMMIN	100
	SHMMNI	32
	SHMSEG	

Note: If any of the kernel parameters above are less than your current values, continue to use the current value. These are the requirements for Oracle Internet Directory only. If you have other programs which use shared memory, you will need to adjust the values accordingly. Take into account that a system reboot is necessary for kernel changes to take effect when planning for current and future database requirements.

Table 2–2 HP 9000 Series HP-UX specific configuration

System Factor	Requirement for Oracle Internet Directory	
UNIX Kernel Parameters:	Use the System Administrator's Menu (SAM) to configure the HP-UX kernel with the minimum recommended values.	
Shared Memory	SHMMAX	1 GB This setting does not affect how much shared memory is needed or used by Oracle Internet Directory or the operating system. It is used only to indicate the maximum allowable size. This setting also does not impact operating system kernel resources.
	SHMMIN	1
	SHMMNI	100
	SHMSEG	10
Semaphores	SEMMNI	70 Set the number of semaphore set identifiers in the system. SEMMNI determines the number of semaphore sets which can be created at any one time. The PROCESSES parameter can be found in each `init`*`sid`*`.ora` file, located in the `$ORACLE_HOME/dbs` directory. The default value of PROCESSES for the preconfigured database created by Oracle Database Configuration Assistant is 50.
	SEMMNS	200 Set the number of semaphores in the system to 200. The default value of SEMMNS is 128, which is, in most cases, too low for Oracle.
Threads	MAX_THREAD_PROC	256 or more
	Set the maximum number of threads per process to 256 or more. The default value of MAX_THREAD_PROC is 64, which is, in most cases, too low for Oracle.	

Table 2–2 HP 9000 Series HP-UX specific configuration

System Factor	Requirement for Oracle Internet Directory
Note: If any of the kernel parameters above are less than your current values, continue to use the current value. If you have other programs which use shared memory and semaphores, you will need to adjust the values accordingly. Take into account that a system reboot is necessary for kernel changes to take effect when planning for current and future database requirements.	

Table 2–3 Linux Intel specific configuration

System Factor	Requirement for Oracle Internet Directory	
UNIX Kernel Parameters:		
Shared Memory	SHMMAX	0.5*(physical memory present in machine). Check your system for additional restrictions. This setting does not affect how much shared memory is needed or used by Oracle Internet Directory or the operating system. It is used only to indicate the maximum allowable size. This setting also does not impact operating system kernel resources.
	SHMMIN	1
	SHMMNI	100
	SHMSEG	10

Table 2–3 Linux Intel specific configuration

System Factor	Requirement for Oracle Internet Directory	
Semaphores	SEMMNI	100
	SEMMSL	Set to 10 plus the largest PROCESSES parameter of any Oracle database on the system. The PROCESSES parameter can be found in each `initsid.ora` file, located in the `$ORACLE_HOME/dbs` directory. The default value of PROCESSES for the preconfigured database created by Oracle Database Configuration Assistant is 50.
	SEMMNS	Set to the sum of the PROCESSES parameter for each Oracle database, adding the largest one twice, then add an additional 10 for each database. See "Configure the UNIX Kernel for Oracle8i" on page 2-8 for an example of this formula.
	SEMOPM	100
	SEMVMX	32767

Note: If any of the kernel parameters above are less than your current values, continue to use the current value. If you have other programs which use shared memory and semaphores, you will need to adjust the values accordingly. Take into account that a system reboot is necessary for kernel changes to take effect when planning for current and future database requirements.

Table 2–4 Sun SPARC Solaris specific configuration

System Factor	Requirement for Oracle Internet Directory	
UNIX Kernel Parameters:	SHMMAX	4294967295
Shared Memory		This setting does not affect how much shared memory is needed or used by Oracle Internet Directory or the operating system. It is used only to indicate the maximum allowable size. This setting also does not impact operating system kernel resources.
	SHMMIN	1
	SHMMNI	100
	SHMSEG	10

Table 2–4 Sun SPARC Solaris specific configuration

System Factor	Requirement for Oracle Internet Directory	
Semaphores	SEMMNI	100
	SEMMSL	Set to 10 plus the largest PROCESSES parameter of any Oracle database on the system. The PROCESSES parameter can be found in each `init`*`sid`*`.ora` file, located in the `$ORACLE_HOME/dbs` directory. The default value of PROCESSES for the preconfigured database created by Oracle Database Configuration Assistant is 50.
	SEMMNS	Set to the sum of the PROCESSES parameter for each Oracle database, adding the largest one twice, then add an additional 10 for each database. See "Configure the UNIX Kernel for Oracle8i" on page 2-8 for an example of this formula.
	SEMOPM	100
	SEMVMX	32767

Note: If any of the kernel parameters above are less than your current values, continue to use the current value. If you have other programs which use shared memory and semaphores, you will need to adjust the values accordingly. Take into account that a system reboot is necessary for kernel changes to take effect when planning for current and future database requirements.

Table 2–5 Solaris Intel specific configuration

System Factor	Requirement for Oracle Internet Directory	
UNIX Kernel Parameters:		
Shared Memory	SHMMAX	0.5*(physical memory present in machine). This setting does not affect how much shared memory is needed or used by Oracle Internet Directory or the operating system. It is used only to indicate the maximum allowable size. This setting also does not impact operating system kernel resources.
	SHMMIN	1
	SHMMNI	100
	SHMSEG	10

Table 2–5 Solaris Intel specific configuration

System Factor	Requirement for Oracle Internet Directory	
Semaphores	SEMMNI	100
	SEMMSL	Set to 10 plus the largest PROCESSES parameter for any Oracle database on the system. The PROCESSES parameter can be found in each `init`*`sid`*`.ora` file, located in the `$ORACLE_HOME/dbs` directory. The default value of PROCESSES for the preconfigured database created by Oracle Database Configuration Assistant is 50.
	SEMMNS	Set to the sum of the PROCESSES parameter for each Oracle database, adding the largest one twice, then add an additional 10 for each database. See "Configure the UNIX Kernel for Oracle8i" on page 2-8 for an example of this formula.
	SEMOPM	100
	SEMMNI	100
	SSEMMNS	Set to the sum of the PROCESSES parameter for each Oracle database, adding the largest one twice, then add an additional 10 for each database. See "Configure the UNIX Kernel for Oracle8i" on page 2-8 for an example of this formula.

Understanding Setup Tasks

The following pre-installation setup tasks configure your system and set up accounts, groups, variables and permissions needed to run Oracle8*i*. If you do not perform these tasks prior to installation, the Installer will give the option during installation to become `root` and run `orainstRoot.sh`, a script program that will perform many of these setup tasks for you. However, running `orainstRoot.sh` might not provide a satisfactory environment for your system and needs. Oracle Corporation recommends that you perform these steps‘ manually.

Setup Tasks to Perform as the root User

Log in as the `root` user and perform the following tasks to set up your environment for Oracle8*i*:

- Configure the UNIX Kernel for Oracle8i
- Create Mount Points
- Create UNIX Groups for Database Administrators
- Create a UNIX Group for the Oracle Universal Installer Inventory
- Create a UNIX Account to Own Oracle Software

Note: In addition to these setup tasks, you will need `root` privileges near the start of the installation if the file `/var/opt/oracle/oraInst.loc` does not exist. You will also need `root` privileges near the end of the installation to run the `root.sh` script.

Configure the UNIX Kernel for Oracle8*i*

Configure the UNIX kernel Interprocess Communication (IPC) parameters to accommodate the System Global Area (SGA) structure of Oracle8*i*. You will not be able to start up the database if the system does not have adequate shared memory to accommodate the SGA.

1. Use the `ipcs` command to obtain a list of the system’s current shared memory segments, semaphore segments, their identification number and owner.

   Because the shared memory in AIX-Based Systems, Compaq Tru64 UNIX, HP 9000 Series HP-UX, Linux Intel, Solaris Intel, and Sun SPARC Solaris is dynamically loaded, when you run `ipcs` you might receive a message that the

shared memory facility is not in the system. The shared memory driver loads after the Oracle8*i* instance is started. You can check the `/etc/system` file to verify that the system configured with enough shared memory.

2. Set the kernel parameters that correspond to your platform in Table 2–1 through Table 2–5 the following are descriptions of the kernel parameters:

   - maximum size of a shared memory segment (SHMMAX)
   - minimum size of shared memory segment (SHMMIN)
   - maximum number of shared memory identifiers in the system (SHMMNI)
   - maximum number of shared memory segments a user process can attach (SHMSEG)
   - maximum number of semaphore identifiers in the system (SEMMNI)
   - maximum number of semaphores in a set (SEMMSL)
   - maximum number of semaphores in the system (SEMMNS)
   - maximum number of operations per `semop` call (SEMOPM)
   - semaphore maximum value (SEMVMX)

   The total allowable shared memory is determined by the formula:

   ```
   SHMMAX * SHMSEG
   ```

   Set SEMMNS to the sum of the PROCESSES parameter for each Oracle database, adding the largest one twice, then add an additional 10 for each database. For example, consider a system that has three Oracle instances with the PROCESSES parameter in their `initsid.ora` files set to the following values:

   ```
   ORACLE_SID=A, PROCESSES=100
   ORACLE_SID=B, PROCESSES=100
   ORACLE_SID=C, PROCESSES=200
   ```

   The value of SEMMNS is calculated as follows:

   SEMMNS = [(A=100) + (B=100)] + [(C=200) * 2] + [(# of instances=3) * 10] = 630

   Setting parameters too high for the operating system can prevent the machine from booting up. Refer to UNIX system administration documentation for parameter limits.

   The following lines are examples of additions to the `/etc/system` file to configure the UNIX kernel with the minimum recommended values:

```
set shmsys:shminfo_shmmax=4294967295
set shmsys:shminfo_shmmin=1
set shmsys:shminfo_shmmni=100
set shmsys:shminfo_shmseg=10
set semsys:seminfo_semmni=100
set semsys:seminfo_semmsl=100
set semsys:seminfo_semmns=200
set semsys:seminfo_semopm=100
set semsys:seminfo_semvmx=32767
```

3. Reboot the system if you have modified the kernel, shared memory, or semaphore parameters.

Create Mount Points

Oracle8*i* requires at least two mount points:

- one for the software
- at least one for the database files

Create UNIX Groups for Database Administrators

During installation, two Oracle roles are created:

- SYSDBA
- SYSOPER

Database administrators are granted these roles by virtue of their membership in corresponding UNIX groups. Oracle8*i* documentation refers to these UNIX groups as the `osdba` and `osoper` groups. Create the group(s) for these roles before you log in as the *`oracle`* user and start the Oracle Universal Installer. You may assign the roles to two separate UNIX groups, or to a single group.

Use the `admintool` or `groupadd` utility to create a group named *`dba`* or another name of your choosing. If you plan to assign the SYSOPER role to a separate group, create that group also.

The Oracle Universal Installer gives both Oracle SYSDBA and SYSOPER privileges to members of the UNIX group `dba` by default. If you perform a Custom installation of Oracle8*i*, or if the *`oracle`* user is not a member of a group called `dba`, Oracle Universal Installer will prompt you to enter the group(s) you have created for these roles.

Create a UNIX Group for the Oracle Universal Installer Inventory

Use the `admintool` or `groupadd` utility to create a group named *`oinstall`*. The *`oinstall`* group will own the Oracle Universal Installer's `oraInventory` directory. The *`oracle`* user account that runs the installation should have the *`oinstall`* group as its primary group.

Create a UNIX Account to Own Oracle Software

The *`oracle`* account is the UNIX user account that owns the Oracle8*i* software after installation. Run Oracle Universal Installer with this user account.

Use the `admintool` or `useradd` utility to create an *`oracle`* account with the following properties:

Table 2–6 Properties of the oracle Account

Property	Description
Login Name	Any name, but this document refers to it as the *`oracle`* account.
Primary GID	The *`oinstall`* group.
Secondary GID	The *`dba`* group.
Home Directory	Choose a home directory consistent with other user home directories. The home directory of the *`oracle`* account does not have to be the same as the ORACLE_HOME directory.
Login Shell	The default shell can be `/usr/bin/sh`, `/usr/bin/csh`, or `/usr/bin/ksh`, but the examples in this document assume the Bourne shell (`/usr/bin/sh`).

Caution: Use the *`oracle`* account only for installing and maintaining Oracle software. Never use it for purposes unrelated to the Oracle8*i* Server. Do not use `root` as the *`oracle`* account.

Sites with multiple *`ORACLE_HOME`*s on one system may install Oracle software with the same `oracle` account, or separate ones. Each oracle account must have `oinstall` as its primary group.

Setup Tasks to Perform as the *oracle* User

Log in to the *oracle* account and perform the following tasks as necessary:

- Task 1: Set Permissions for File Creation
- Task 2: Set Environment Variables
- Task 3: Update the Environment for Current Session

Task 1: Set Permissions for File Creation

Set umask to 022 for the *oracle* account to ensure group and other have read and execute permissions, but not write permission, on files installed.

1. Enter the umask command to check the current setting.
2. If the umask command does not return 022, set it in the .profile or .login file of the *oracle* account and execute the following command:

```
$ umask 022
```

Task 2: Set Environment Variables

Before starting the Oracle Universal Installer, set the DISPLAY and PATH environment variables and any of the other variables as appropriate. Table 2–7, "Environment Variable Summary", provides a brief summary of the variables listed in this section. Refer to each variable's entry in this section for instructions on setting the variable correctly.

> **Note:** If an Oracle Server already exists on your system, its settings might have a bearing on the settings that you choose for the new environment.

Table 2–7 Environment Variable Summary

Variable	Description	Required?
DISPLAY	The name, server number, and screen number of the system where the Oracle Universal Installer will display.	Yes
PATH	Shell's search path for executables.	Yes
ORACLE_BASE	Directory at the top of the Oracle software and administrative file structure.	No
ORACLE_HOME	Directory containing Oracle software for a given release.	No

Table 2–7 Environment Variable Summary

Variable	Description	Required?
NLS_LANG	Language, territory and character set to use when installing.	No
ORACLE_SID	The Oracle server instance identifier to use during installation.	No

DISPLAY

On the system where you will run Oracle Universal Installer, set DISPLAY to the system name or IP address, X-server, and screen used by your workstation. Do not use the hostname or IP address of the system where the software is being installed unless you are performing the installation from that system's X-windows console. Use the machine name or IP of your own workstation if you are installing from a remote system. If you are not sure what the X-server and screen should be set to, use 0 (zero) for both.

If you get an Xlib error similar to "Failed to connect to server", "Connection refused by server" or "Can't open display" when starting the Installer, run the following Bourne/Korn shell or C shell commands on your X workstation:

For the Bourne or Korn shells:

On the server where the Oracle database will be installed, enter the following:

```
$ DISPLAY=workstation_name:0.0
$ export DISPLAY
```

In the session on your workstation:

```
$ xhost +server_name
```

For the C shell:

On the server where the Oracle database will be installed, enter the following:

```
% setenv DISPLAY workstation_name:0.0
```

In the session on your workstation:

```
% xhost +server_name
```

If you are using a PC X server, refer to your PC X server documentation for instructions on how to configure the PC X server to allow remote X clients to connect.

Verify that the DISPLAY variable is correctly set.

PATH
Set the shell's search path to include the following:

- `$ORACLE_HOME/bin`, `/usr/bin`, `/etc`, `/usr/ccs/bin`, `/usr/openwin/bin`
- the local `bin` directory, `/usr/local/bin`, if it exists

> **Note:** If you require `/usr/ucb` in your search path, make sure it comes after `/usr/ccs/bin` in the PATH setting.

ORACLE_BASE
ORACLE_BASE specifies the directory at the top of the Oracle software and administrative file structure. The value recommended for an OFA configuration is *`software_mount_point`*`/app/oracle`. For example: `/u01/app/oracle`. If you are not using an OFA-compliant system, Oracle recommends that you set ORACLE_BASE.

ORACLE_HOME
ORACLE_HOME specifies the directory containing the Oracle software for a given release. The OFA recommended value is:
`$ORACLE_BASE/product/`*`release`*.
For example:
`/u01/app/oracle/product/8.1.7.`

Ensure that the value of ORACLE_HOME points to a directory that does not already contain any Oracle software prior to Oracle8*i* Release 1 (8.1.5) or Release 2 (8.1.6).

NLS_LANG
For Oracle Internet Directory, set NLS_LANG for the database to `utf8.`

Oracle supports client/server environments where clients and servers use different character sets. The character set used by a client is defined by the value of the NLS_LANG parameter for the client session. The character set used by a server is its database character set. Data conversion is done automatically between these character sets if they are different.

> **See Also:** For more information about National Language Support features, refer to *Oracle8i Administrator's Reference*. A complete list of valid character sets is available in the Oracle8*i* *National Language Support Guide*.

ORACLE_SID

If you plan on creating a database during installation, you have the option of setting ORACLE_SID to the value of the Oracle server instance identifier (referred to in this installation guide as the *sid*). If you choose to create a database during installation, the Installer will prompt you to confirm this value.

Task 3: Update the Environment for Current Session

With a text editor, add the settings for the environment variables listed in "Task 2: Set Environment Variables" to the `.profile` or `.login` file of the *oracle* account. Once you have finished editing these initialization files, you can quickly update the environment in the current shell session before beginning installation by using the appropriate shell command.

For the Bourne or Korn shell:

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

For the C shell:

```
% source .login
```

Setup Tasks for Oracle Internet Directory

For optimal directory performance, Oracle Corporation recommends installing Oracle Internet Directory on a system separate from other Oracle software.

If Oracle8*i* Release 8.1.7 is not already installed on your system, then Oracle Universal Installer will install it with Oracle Internet Directory.

Complete these steps in addition to those steps listed in the chapter on preliminary tasks in *Oracle Internet Directory Administrator's Guide.*

If Oracle8*i* Release 8.1.7 is already installed on your system, verify that:

- The Oracle8*i* server is running
- You can connect to the database as user `internal` without a password; for example:

  ```
  $ sqlplus internal
  ```

If you cannot connect as `internal` without a password, refer to the *Oracle8i Administrator's Guide* for instructions on configuring the `internal` account to not require a password.

- The Net8 listener serving connections to the database is running. To display basic listener status information, enter:

  ```
  $ lsnrctl status [listener_name]
  ```
  The *`listener_name`* field is required if the listener has a name other than the default, `listener`.

3
Installation

This chapter describes how to start the Oracle Universal Installer and install Oracle Internet Directory. Review and complete the tasks listed in Chapter 1, "System Requirements" and Chapter 2, "Pre-Installation" before beginning the installation.

- Oracle Universal Installer
- Non-Interactive (Silent) Installation and Configuration

Oracle Universal Installer

Complete these tasks to start Oracle Universal Installer:

- Mount the Oracle Internet Directory CD-ROM
- Start Oracle Universal Installer (OUI)
- Performing the Installation

Note: Using a previous version of Oracle Installer (installer shipped with Releases 7.*x* and 8.0.x) to install components into a Release 8.1 Oracle home directory is *not* supported. Likewise, you cannot install Release 8.1.7 components into a Release 7.x, 8.0.x, 8.1.3, or 8.1.4 Oracle home.

Mount the Oracle Internet Directory CD-ROM

The Oracle Internet Directory CD-ROMs are in ISO 9660 format with Rockridge extensions.

If you are using Volume Management software (available by default on Solaris Intel and Sun SPARC Solaris) the CD-ROM is mounted automatically to `/cdrom/oracle8i` when you put it into the disk drive. Proceed to "Start Oracle Universal Installer (OUI)" on page 3-5.

If you are not using the Volume Management software, you must mount the CD-ROM manually. You must have `root` privileges to mount or unmount the CD-ROM. Unmount the CD-ROM before removing it from the drive by using the `umount` command.

Mounting the CD-ROM for AIX-Based Systems, Compaq Tru64 UNIX, Linux Intel, Solaris Intel and Sun SPARC Solaris.

1. Place the Oracle Internet Directory CD-ROM in the CD-ROM drive.
2. Log in as the `root` user and create a CD-ROM mount point directory:

   ```
   $ su root
   # mkdir cdrom_mount_point_directory
   ```

3. Mount the CD-ROM drive on the mount point directory and exit the `root` account.

   For AIX-Based Systems, Linux Intel and Solaris Intel, use the following:

```
# mount options device_name cdrom_mount_point_directory
# exit
```

For Compaq Tru64 UNIX, use the following:

```
# mount -t cdfs -r -o nodefperm, noversion, rrip device_name
cdrom_mount_point_directory
# exit
```

These options have the following meaning:

```
-t cdfs = ISO 9660 CD.
-r = mount the CD read-only
-o = include the following options.
nodefperm = use the file permissions recorded on the CD instead of
defaults.
noversion = do not show ISO version numbers.
rrip = use Rockridge extensions.
```

Example 3–1 Mounting the CD-ROM

The following examples show how to manually mount the CD-ROM on AIX-Based Systems, Compaq Tru64 UNIX, Linux Intel, Solaris Intel and Sun SPARC Solaris.

On AIX-Based Systems, enter:

```
$ su root
# mkdir /cdrom
# chmod 777 /cdrom
# mount -rv cdrfs /dev /cd0 /cdrom
# exit
```

Running the rootpre.sh Script

Shut down all running databases, become root, and run rootpre.sh:

1. As the oracle user, shut down all databases on the machine.
2. Log in as root and change to the CD-ROM mount point directory:

   ```
   $ su root
   # cdrom_mount_point_directory
   ```

3. Run the rootpre.sh on all nodes before installing the Oracle Parallel Server Option:

   ```
   $ su root
   # cd /cdrom
   # ./rootpre.sh
   # exit
   ```

On Compaq Tru64 UNIX, enter:

```
$ su root
# mkdir /cdrom
# mount -t cdfs -r -o nodefperm, noversion, rrip /dev/rz4c /cdrom
# exit
```

On Linux Intel, enter:

```
$ su root
# mkdir /cdrom
# mount -t iso9660 /dev/cdrom /cdrom
```

On Solaris Intel, enter:

```
$ /etc /mount -F hsfs -r /dev/dsk/c0t6d0p0 /cdrom
```

On Sun SPARC Solaris, enter:

```
$ su root
# mkdir /cdrom
# mount -r -F hsfs device_name /cdrom
# exit
```

Mounting the CD-ROM for HP 9000 Series HP-UX:

The Oracle Internet Directory CD-ROMs are in ISO 9660 format with Rockridge extensions. There are two CD-ROM disks included with Oracle Internet Directory Release 2.1.1. Use disk one to begin the installation. Mount disk two when prompted to do so.

Note: See the release notes for your platform for details on mounting disks for Oracle Internet Directory Release 2.1.1.

You must have `root` privileges to mount or unmount the CD-ROM manually. Be sure to unmount the CD-ROM before removing it from the drive by using the `umount` command.

1. Use a system editor to add the following line to the `/etc/pfs_fstab` file.

Syntax

```
<device_file> <mount_point> <filesystem_type> <translation_method>
```

The first entry is the CD-ROM device file; the second is the mount point. The third indicates that the CD-ROM to be mounted is in ISO 9660 format with RockRidge extensions.

Example
```
/dev/dsk/c5t2d0 /SD_CDROM pfs-rrip xlat=unix 1 0
```

2. Login as `root`.
3. Enter the following command.

   ```
   $ nohup /usr/sbin/pfs_mountd &
   ```

4. Enter the following command.

   ```
   $ nohup /usr/sbin/pfsd &
   ```

5. Place the CD-ROM into the tray and run the following command to mount the CD-ROM:

   ```
   $ /usr/sbin/pfs_mount /SD_CDROM
   ```

6. Log out of the `root` account.

   ```
   # exit
   ```

   Change directories to `/SD_CDROM` where you can see a lowercase listing of the directories and files on the CD-ROM. The mounted CD-ROM should appear as another read-only file system.

Start Oracle Universal Installer (OUI)

Caution: Do not run the Installer as the `root` user.

To start Oracle Universal Installer:

1. Log in as the *`oracle`* user.
2. Go to the CD-ROM mount-point directory:

   ```
   cd cdrom_mount_point_directory
   ```

3. Start the Installer by entering `./runInstaller`.

Note: The Oracle Universal Installer (OUI) is capable of running a non-interactive installation of Oracle products. Optionally, you can configure OUI for "silent" mode which does not display anything on the screen. For instructions on using this feature of the Installer, see "Non-Interactive (Silent) Installation and Configuration" on page 3-16.

Warning: Oracle Universal Installer automatically installs Oracle's version of the Java Runtime Environment (JRE). This version is required to run Oracle Universal Installer and several Oracle assistants. Do *not* modify the JRE, unless doing so with a patch provided by Oracle Support Services.

Performing the Installation

The following procedure contains instructions for the Oracle Universal Installer.

1. Start the Installer. The *Welcome* window appears.
2. Click [Next].

   The *File Locations* window appears. Do not change the text in the *Source* field. This is the location of files for installation.
3. In the *Destination* field, enter the ORACLE_HOME directory path in which to install Oracle Internet Directory. The default location is the ORACLE_HOME environment variable if you set it prior to starting the Installer.

   If the destination directory you choose contains a previous release of Oracle Internet Directory, the Installer will upgrade the older version of the software to Release 2.1.1. Oracle Corporation recommends that you install Release 2.1.1 products into a new ORACLE_HOME.
4. Click [Next].

   If this is the first time Oracle Internet Directory is installed on your system, the *UNIX Group Name* window appears. If it is not the first install, go to Step 6.

   In the *UNIX Group Name* field, specify the group that will have permission to update Oracle software on the system. This group typically should be the `oinstall` group created in "Create a UNIX Group for the Oracle Universal Installer Inventory" on page 2-11.

5. Click [Next].

   If `/var/opt/oracle/` does not exist or is not writable by the *`oracle`* user, an Installer window will open and prompt you to run `/tmp/OraInstall/orainstRoot.sh` in another terminal window as the `root` user. After you run `orainstRoot.sh`, click [Retry] to continue the installation.

   Attention: The `orainstRoot.sh` Installer window will open only if you do not complete the pre-installation steps . If you choose to run the `orainstRoot.sh` script, the `oraInventory` file and other files will write the Oracle uses in `ORACLE_HOME` in order to ensure that Oracle has write access. This configuration might not be optimal for your system and your needs. Oracle Corporation recommends that you complete the steps described in Chapter 2, "Pre-Installation".

6. The *Available Products* window presents two options:

   - Install Oracle Internet Directory Client 2.1.1.0.0
   - Install Oracle Internet Directory 2.1.1.0.0

   If you select the client installation, then Oracle Universal Installer silently processes your request. It then displays the *Summary* window. Skip to "Performing a Typical Installation" on page 3-8.

   If you select the server installation, then the *Installation Types* window appears.

7. Select the installation type you want to install—Typical or Custom—and choose [Next].

8. If you select a custom installation, then skip to "Upgrading Oracle Internet Directory" on page 3-13.

   If you select a typical installation, then follow the steps below based on the window that appears:

If Oracle8*i* Database...	Then The...	Go To...
Release 8.1.7 is already installed on the computer, but Oracle Internet Directory Release 2.1.1 is not installed.	*Using an existing instance* window appears, you are prompted for the SID to use, and another Oracle8*i* database is not installed.	Step 1 of "Performing a Typical Installation" on page 3 - 8.

If Oracle8*i* Database...	Then The...	Go To...
Releases 8.1.5, 8.1.6 and 8.1.7 and Oracle Internet Directory Releases 2.0.4, 2.0.6 and 2.1 are *not* installed on the computer.	*Database Identification* window appears and Oracle8*i* database Release 8.1.7 is automatically installed in the same home with Oracle Internet Directory Release 2.1.1.	Step 3 of "Performing a Typical Installation" on page 3 - 8.
Releases 8.1.5 or 8.1.6 and Oracle Internet Directory Release 2.0.4 or 2.0.6 are already installed on the computer.	*Upgrade OID* window appears and prompts you to upgrade to Oracle8*i* database Release 8.1.7 and Oracle Internet Directory Release 2.1.1.	"Upgrading Oracle Internet Directory" on page 3 - 13.

Performing a Typical Installation

If an Oracle8*i* database Release 8.1.7 is not currently installed, then Oracle Universal Installer automatically installs one in the same *ORACLE_HOME* directory in which Oracle Internet Directory is installed.

1. Select [Yes] to use the installed database with Oracle Internet Directory, and click [Next]. Otherwise, select [No] and click [Next] to use a different database with Oracle Internet Directory, and go to step 4.

   The *Oracle SID* window appears.

2. Enter the SID of the installed database.
3. Click [Next]. Go to step 5.

   The *Database Identification* window appears.

4. Enter the Global Database Name and SID fields in the fields provided:

In This Field...	Enter The...
Global Database Name	Full database name that uniquely distinguishes it from any other database in your network domain. For example: `sales.us.acme.com` where *sales* is the name you want to call your database, and *us.acme.com* is the network domain in which the database is located.

In This Field...	Enter The...
SID	Database instance name that uniquely distinguishes it from any other database on your computer. The SID automatically defaults to the database name portion of the global database name (*sales* in the example above) until you reach eight characters or enter a period. You can accept or change the default value.

The *OiD Database File Location* window appears.

5. Enter a directory location in which to install the Oracle Internet Directory database files. Oracle Corporation recommends installing database files and Oracle software on separate drives. These database files contain Oracle Internet Directory-specific tables and schema created during configuration.
6. Click [Next].

   If you are not a member of the DBA group, then the *Privileged Operating System Groups* window appears. Specify the UNIX groups to which Oracle Universal Installer should assign Oracle DBA and Operator privileges. See the online help for a description of this screen.
7. Click [Next].

   The *Summary* window appears. Review the information to ensure that you have enough disk space. You cannot make any product or space allocation changes once the installation begins.
8. Click [Install]. Wait until the selected products are installed.

   The following information is automatically set during installation:

The...	Is Automatically Set to...
Use of an Encrypted Password	Yes
Encryption Schema	MD4
Approximate number of directory entries to be stored in Oracle Internet Directory	Under 10,000 entries
Password of the Administrator Distinguished Name	welcome

9. The *Install* window appears. Run the `root.sh` Script when prompted.

The Installer creates the `root.sh` script in the ORACLE_HOME directory and prompts you to run the script when it finishes installing Oracle products. Log in as the `root` user and run the script to set the necessary file permissions for Oracle products, and perform other `root`-related configuration activities.

```
# cd $ORACLE_HOME
# ./root.sh
```

The `root.sh` script prompts you to confirm the environment before it performs any actions. If you need to reset the environment, terminate the `root.sh` script. You do not need to run Oracle Universal Installer again. Click [OK] in the alert window after `root.sh` runs successfully to continue the installation.

Depending on the products you installed, messages are displayed to inform you of the progress of `root.sh`. You might also be prompted for user names and be given additional instructions.

You will be asked by the `root.sh` script to specify the local `bin` directory. If this directory does not already exist, `root.sh` creates it for you.

10. The *Configuration Tools* window appears at the end of installation and automatically starts the following assistants to create and configure your network and Oracle Internet Directory environments:

This Assistant...	Starts...	And...
Net8 Configuration Assistant	If not currently installed on this computer.	Prompts you to configure your Net8 server networking software. Select Perform typical configuration and accept all default settings by choosing the [Next] button as each window appears.
OiD Configuration Assistant	In all cases.	Creates Oracle8*i* tablespaces and schema in the Oracle8*i* database server and starts the Oracle directory server. **Note:** If a database needs to be installed, Oracle Database Configuration Assistant is automatically launched within OiD Configuration Assistant to create a database with the UTF8 character set.

11. The *End of Installation* window appears.

12. Click [Exit] to exit Oracle Universal Installer, or click [Next Install] to install additional products. Selecting [Next Install] returns you to the Oracle Universal Installer *File Locations* Window.

    See Also: "Reviewing a Log of an Installation Session" to view a log file summary of your installation session.

Performing a Custom Installation

If you choose to perform a custom installation, then the *Component Locations* window prompts you to select alternate locations in which to install some components.

1. Choose [Next] to accept the default locations. Otherwise, choose a component to display a text box for changing the default location. Then, click [Next]. The *Database Identification* window appears.
2. Enter the global database name and SID for the Oracle8*i* database and click [Next]:

In This Field...	Enter The...
Global Database Name	Full database name that uniquely distinguishes it from any other database in your network domain. For example: `sales.us.acme.com` where *sales* is the name you want to call your database and *us.acme.com* is the network domain in which the database is located.
SID	Database instance name that uniquely distinguishes it from any other database on your computer. The SID automatically defaults to the database name portion of the global database name (*sales* in the example above) until you reach eight characters or enter a period. You can accept or change the default value.

   The *OiD Database File Location* window appears if a database is not currently installed.

3. Enter a directory location in which to install the Oracle Internet Directory database files. Oracle Corporation recommends installing database files and Oracle software on separate hard disks. These database files correspond to Oracle Internet Directory-specific tables and schema created during configuration.
4. Click [Next].

The *OiD User Password Encryption* window appears.

5. Select whether or not to enable password encryption and click [Next].

   The *User Password Hashing Algorithm* window appears.

6. Select an encryption schema to use and click [Next].

   The *OiD Administrator Password* window appears.

7. Enter a password.

   This password enables you to make all changes in Oracle Internet Directory.

8. Enter the same password a second time and click [Next].

   The *OiD Size Configuration* window appears.

9. Select the approximate number of directory entries to be stored in Oracle Internet Directory and click [Next].

   The *Summary* window appears.

10. Review the space requirements to ensure that you have enough disk space and click [Install].

    The *Configuration Tools* window appears at the end of installation and automatically starts the following assistants to create and configure the Oracle8*i* database for use with Oracle Internet Directory:

This Tool...	Starts...	And...
Net8 Configuration Assistant	If Net8 Client Release 8.1.7 is not already installed in the currently-specified Oracle home. **Note:** Net8 Client Release 8.1.6 or earlier installations in this Oracle home will be upgraded.	Prompts you to configure your Net8 server networking software. Select Perform typical configuration and accept all default settings by choosing the [Next] button as each window appears.

This Tool...	Starts...	And...
OiD Configuration Assistant	In all cases.	Creates Oracle Internet Directory tablespaces and schema in the Oracle8*i* database and starts the Oracle Internet Directory server. **Note:** Oracle Database Configuration Assistant is automatically launched within OiD Configuration Assistant to guide you through a Custom installation of the Oracle8*i* database. Ensure that you select the UTF8 character set when prompted.

The *End of Installation* window appears.

11. Click [Exit] to exit Oracle Universal Installer or choose [Next Install] to install additional components.

Upgrading Oracle Internet Directory

The *Upgrade OiD* window appears if you have a previously-installed version of Oracle Internet Directory on your system.

If Oracle Universal Installer detects an existing Oracle8*i* database in this location, it does not install another one. However, for optimal results, Oracle Corporation recommends that you install Oracle Internet Directory on a system that does not currently have an Oracle8*i* database.

If you intend to upgrade an existing installation of Oracle Internet Directory and Oracle8*i* Enterprise Edition, and you initially installed Oracle Internet Directory separately, then you should upgrade each program separately in order to ensure that all components of Oracle Internet Directory are upgraded.

Before upgrading Oracle Internet Directory, stop the following processes:

- Oracle listener server
- Oracle database server
- Oracle directory server

Note: If an Oracle8*i* Release 8.1.7 database is currently installed, ensure that the database and the listener are running. Also, verify that you can connect with the `internal` user account without being prompted for a password:

```
$ sqlplus internal
```

See Chapter 1 of the *Oracle8i Administrator's Reference* for information on configuring the `internal` user account to log in without a password.

To display basic listener status information, enter:

```
$ lsnrctl status [listener_name]
```

The *`listener_name`* field is required if the listener has a name other than the default, `listener`.

1. Select [Yes] to upgrade an existing Oracle database already configured for use with Oracle Internet Directory.
2. Click [Next].

   The *Oracle SID* window appears.
3. Enter the system identifier (SID) of the Oracle database to be upgraded.

   The *OiD Password* window appears.
4. Enter the password for the Oracle directory server user (*ODS* by default) and the Oracle Internet Directory administrator (*WELCOME* by default).
5. The *Configuration Tools* window appears and automatically starts the following assistants to upgrade your Oracle database and Oracle Internet Directory environments:

This Assistant...	Upgrades...
Oracle Data Migration Assistant	Oracle8*i* Release 8.1.5 or 8.1.6 to 8.1.7.
OiD Upgrade Assistant	Oracle Internet Directory Release 2.0.4 or 2.0.6 to Release 2.1.1

Reviewing a Log of an Installation Session

The first time you use the Installer, it creates the `oraInventory` directory to keep an inventory of products that it installs on your system as well as other installation

information. This information is useful in diagnosing and resolving installation problems.

The location of `oraInventory` is defined in `/var/opt/oracle/oraInst.loc`.

The latest log file is *`oraInventory_location`*`/logs/installActions.log`. Log file names of previous installation sessions take the form `installActions`*`datetime`*`.log`.

For example:
`installActions1999-07-14_09-00-56-am.log`

Note: Do not delete or manually alter the `oraInventory` directory or its contents. Doing so can prevent the Installer from locating products that you install on your system.

The `make.log` file in `ORACLE_HOME/install` contains a log of every `make` action called for in the installation process. You can find link errors during installation in the `make.log` file. Do not delete or alter the `make.log` file.

Cleaning Up After a Failed Installation

If an installation fails, you might need to remove files that the Installer created during the failed installation:

To clean up after a failed installation:

1. Start the Oracle Universal Installer.
2. Click the [De-install Products] button and select any products that were left after the failed installation.
3. Click the [Remove] button.

To complete the clean up, you might need to manually remove the ORACLE_HOME directory, in case the Installer copied files to your system but failed to register them during the unsuccessful installation. This step is not required if deinstallation cleans up `ORACLE_HOME`, and if only insignificant files are left after deinstallation.

Non-Interactive (Silent) Installation and Configuration

You can perform a non-interactive (or "silent") installation of Oracle8*i* products by supplying the Oracle Universal Installer with a *response file*. The Installer uses the variables and values contained in this text file to provide answers to some or all of the Installer's user prompts. If you include responses for all of the Installer's prompts in the response file, you can run a silent installation that displays no graphical output. You can also run Oracle Data Migration Assistant, Net8 Configuration Assistant, Oracle Database Configuration Assistant, and Oracle Enterprise Manager Configuration Assistant non-interactively by using response files.

Preparing the Response File

There are five Oracle Universal Installer response files, one for each install category and type, and three configuration tool response files included on the Oracle Internet Directory CD-ROM. You need to edit the response file to suit your environment. In particular, the custom response files need extensive editing before you can use them for a non-interactive session.

To use a response file, copy the response file from the Oracle Internet Directory CD-ROM to a drive mounted on your system. For example:

```
$ cd cdrom_mount_point_directory/response
$ cp oidtyp.rsp local_directory
```

Edit the response file with any text editor to include information specific to your system. Each file contains instructions for properly configuring the response file. Table 3–1 lists the response files included on the Oracle Internet Directory CD-ROM.

Table 3–1 Response Files

File Name	Provides Responses for...
`oidtyp.rsp`	Oracle Internet Directory server installation
`oidcus.rsp`	Oracle Internet Directory server custom installation
`oidclnttyp.rsp`	Oracle Internet Directory client installation
`dbca.rsp`	Oracle Database Configuration Assistant
`net8ca.rsp`	Net8 Configuration Assistant

Specifying a Response File

To make the Installer use the response file at install time, follow the same steps as described in the section "Start Oracle Universal Installer (OUI)" on page 3-5, but specify the location of the response file that you wish to use as a parameter when starting the Installer.

```
$ ./runInstaller [-silent] -responseFile filename
```

To use a configuration assistant in silent mode, outside of an installation session, you need to make it use a response file. You may either have the Installer spawn the silent configuration assistant, or run the configuration assistant in standalone mode. Invoke the configuration assistant at the command line using the same mode and response file parameters.

To perform a completely silent installation or configuration session, use the `-silent` parameter. In silent mode, the DISPLAY environment variable must still be set as described in "DISPLAY" on page 2-13.

To run the Oracle Enterprise Manger Configuration Assistant in non-interactive mode, you must use both the `-silent` and `-responseFile` parameters.

The success or failure of the installation is logged in the `silentInstall.log` file. If an Oracle Inventory exists on your system, then the `silentInstall.log` file is created there. Otherwise, it is created in the *`oraInventory_location`*`/logs/` directory. The detailed results of the non-interactive installation session are found in the *`oraInventory_location`*`/logs/installActions.log` file.

Note: The Installer or configuration assistant will fail if you attempt a non-interactive session without correctly configuring a response file.

See Also: For more information on silent install and installation using response files, see the *Oracle Universal Installer Concepts Guide*.

First time Installation in Silent Mode

If you will perform the first installation of Oracle products on a system with Oracle Universal Installer running in silent mode, you must manually create the `oraInst.loc` file. This file specifies the directory where the installer creates the inventory of Oracle products installed on the system. Before creating this file, read and complete the tasks detailed in Chapter 1 and Chapter 2.

To create the `oraInst.loc` file:

1. Log in as the `root` user.

   ```
   $ su
   ```

2. If it does not already exist on your system, you must create the `/var/opt/oracle` directory.

   ```
   # mkdir /var/opt/oracle
   ```

3. Change to the `/var/opt/oracle` directory.

   ```
   # cd /var/opt/oracle
   ```

4. Using a text editor, create a file called `oraInst.loc` with the following two lines of content:

   `inventory_loc=`*`inventory_directory`*`.`
   `inst_group=`
   Set `inventory_loc` to `ORACLE_BASE/oraInventory`. For example, if `ORACLE_BASE` is `/uo1/app/oracle`, then `inventory_directory` should be `/uo1/app/oracle/oraInventory`.

   Include, but do not set, `inst_group=` on the second line.

Error Handling

Values for variables that are of the wrong context, format, or type are treated as if they had no value specified. Variables which are outside any section are ignored.

A non-interactive installation fails if you do not specify a response file is or if you attempt a silent installation with an incorrect or incomplete response file. If you attempt a silent installation and the Installer encounters an error, such as insufficient disk space, the installation fails. The results of your non-interactive installation is recorded in the installation session's log file.

> **See Also:** "Reviewing a Log of an Installation Session" to view a log file summary of your installation session.

Validation of Values from Response File

The Installer or configuration assistant performs calculation and validation of the response file at run time. Failure of the validation process ends the installation or configuration.

4

Post-Installation

After completing the Oracle Universal Installer session, you must perform certain post-installation steps and configure Oracle8*i*. This chapter describes the required steps, as well as some optional ones.

> **Note:** This chapter describes *basic configuration only*. The more sophisticated configuration and tuning typically required for production systems is described in the *Oracle8i Administrator's Reference* for your platform and in product administration and tuning guides.

User Passwords

Oracle Corporation recommends that you change the password for user names *immediately* after installation.

To change a password:

1. Start SQL*Plus:

   ```
   $ sqlplus
   ```

2. Connect with the user name and password that you want to change:

   ```
   Enter user-name: username/password
   ```

3. Change the password:

   ```
   SQL> ALTER USER USERNAME IDENTIFIED BY PASSWORD;
   ```

   See Also: *Oracle Enterprise Manager Administrator's Guide* for information on using Oracle Security Manager or Oracle DBA Studio to change the password

Configuration Tasks to Perform as the root User

Log in as the `root` user and perform the following tasks:

- Create Additional UNIX Accounts
- Verify Database File Security
- Automate Database Startup and Shutdown (Optional)

Create Additional UNIX Accounts

If necessary, create additional UNIX accounts with a system administration utility such as `admintool` or `useradd`. Each DBA user on the system must be a member of the OSDBA group.

Verify Database File Security

If you configure Oracle Internet Directory in a way similar to a United States NCSC C2 or European ITSEC E3 security evaluation configuration, verify database file security to ensure the integrity of the Oracle software installation. This task is optional if security is not an issue.

Many files require protection to prevent unauthorized access to secure data. The file privileges and recommended ownership are as follows:

- The *oracle* account should have read, write, and execute privileges for all files and directories in an Oracle installation.
- The oinstall group should have read, write, and execute privileges on the oraInventory directory, but should not have write permissions on anything else.
- No user outside the *oracle* account or the oinstall group should have write access on any files or directories in an Oracle installation.

Table 4–1 summarizes the directory and file permissions for different types of files.

Note: These permissions are the default values and should not be changed.

Table 4–1 Access Permissions on Oracle Directories and Files

Directories/Files	Permissions	Comments
All database, redo log, and control files (extensions for these files are typically .dbf, .log, and .ctl)	640 rw-r----	To maintain discretionary access to data, all databases, redo logs, and control files must be readable only by the *oracle* account and oinstall group.
$ORACLE_HOME/bin/	751 rwxr-x--x	Must be writable by the *oracle* software owner, and executable by all users.
The oracle executable, and the following network executables: $ORACLE_HOME/bin/oracle and $ORACLE_HOME/bin/dbsnmp	6751 rws-r-s--x	The 6 sets the setuid bit and the setgid bit so the executables run as the *oracle* user and DBA group, regardless of who executes them.
All other executables.	751 rwxr-x--x	Must be writable by the *oracle* account and executable by all users.
$ORACLE_HOME/lib/	755 rwxr-xr-x	The directory is readable, writable, and executable by the owner, readable and executable by all other users.
All files under $ORACLE_HOME/lib/	644 rw-r--r--	The files are readable and writable by the owner, read-only for all other users.

Table 4–1 Access Permissions on Oracle Directories and Files

Directories/Files	Permissions	Comments
$ORACLE_HOME/rdbms/log	751 rwxr-x--x	Restricts access to files in the directory to the *oracle* account and oinstall group.
Product subdirectories such as $ORACLE_HOME/sqlplus or $ORACLE_HOME/rdbms	751 rwxr-x--x	Restricts access to log files to the *oracle* account and oinstall group.
Files in $ORACLE_HOME/sqlplus or $ORACLE_HOME/rdbms	644 rw-r--r--	The files are readable and writable by the owner, read-only for all other users.
$ORACLE_HOME/network/trace	777 rwxrwxrwx or 730 rwx-wx---	777 allows broad access to view and create trace files during development. Use 730 in a production environment to ensure that only the *oracle* account and members of the oinstall group have access to trace files.
All files under product admin directories, like $ORACLE_HOME/rdbms\/admin and $ORACLE_HOME/sqlplus/\admin	644 -rw-r--r--	SQL scripts should typically be run as the SYS user.

Automate Database Startup and Shutdown (Optional)

You can configure your system to automatically start Oracle databases when your system starts up and to shut down Oracle databases when your system shuts down. Automating database startup is optional, but automatic shutdown is recommended because it guards against improper shutdown of the database.

The dbstart and dbshut scripts are located in the $ORACLE_HOME/bin directory and can be used to automate database startup and shutdown.

The dbstart and dbshut scripts reference the same entries in the oratab file, so the scripts must apply to the same set of databases. For example, you cannot have dbstart automatically start up databases sid1, sid2, and sid3, and dbshut shut down only databases sid1 and sid2. You can, however, specify that dbshut shut down a set of databases while dbstart is not used at all. To do this, include the dbshut entry in the shutdown file but omit the dbstart entry from the system startup files.

> **See Also:** For a description of system startup and shutdown procedures, check the `init` command in your system documentation.

This process must be completed for every new database that you want to configure for automated startup and shutdown. Perform the following tasks to set up the `dbstart` and `dbshut` scripts so that they are called at system startup:

1. Edit the `/var/opt/oracle/oratab` file.

   Database entries in the `oratab` file appear in the following format:

   ORACLE_SID:*ORACLE_HOME*:{Y|N}

   where Y or N specifies whether you want the `dbstart` and `dbshut` scripts to start up and shut down the database. Find the entries for all the databases that you want to start up. They are identified by the *sid* in the first field. Change the last field for each to Y.

2. Create a file named `dbora` in the `/etc/init.d` directory (if it does not already exist).

3. Create entries similar to the following at the end of the `dbora` file (if they do not already exist). Make sure that you give the full path of the `dbstart` utility.

```
#!/bin/sh
# Set ORA_HOME to be equivalent to the ORACLE_HOME
# from which you wish to execute dbstart and
# dbshut
# set ORA_OWNER to the user id of the owner of the
# Oracle database in ORA_HOME
ORA_HOME=/u01/app/oracle/product/8.1.7
ORA_OWNER=oracle
if [! -f $ORA_HOME/bin/dbstart]
then
echo "Oracle startup: cannot start"
exit
fi
case "$1" in
'start')

# Start the Oracle databases:
# The following command assumes that the oracle login will not prompt the
# user for any values

su - $ORA_OWNER -c $ORA_HOME/bin/dbstart &
```

```
;;
'stop')

# Stop the Oracle databases:
# The following command assumes that the oracle login will not prompt the
# user for any values

su - $ORA_OWNER -c $ORA_HOME/bin/dbshut &
;;
esac
```

4. Link `dbora` by entering:

```
# ln -s /etc/init.d/dbora /etc/rc0.d/K10dbora
# ln -s /etc/init.d/dbora /etc/rc2.d/S99dbora
```

Configuration Tasks to Perform as the *oracle* User

Perform the following tasks as the *`oracle`* user:

- Update UNIX Account Startup Files
- Configuration Environment Variables
- Set Initialization Parameters

Update UNIX Account Startup Files

Update the startup files of the *`oracle`* account and the UNIX accounts of Oracle users.

Configuration Environment Variables

Set the following environment variables in the `.profile` or `.login` file of the *`oracle`* account before using Oracle8*i* products. Table 4–2, "Environment Variable Settings" shows the recommended settings. The settings that you use here should correspond to the settings you used during installation as described in "Task 2: Set Environment Variables" on page 2-12. The syntax for setting environment variables is as follows.

For the Bourne or Korn shell:

`variable_name``=`*`value`*`; export` *`variable_name`*

For the C shell:

setenv *variable_name value*

> **Note:** You should not define environment variables with names that are identical to those used for Oracle processes, for example: CKPT, PMON, and DBWR.

Table 4–2 Environment Variable Settings

Environment Variable	Recommended Setting
LD_LIBRARY_PATH	Set it to include $ORACLE_HOME/lib.
ORACLE_BASE	*software_mount_point*/app/oracle
ORACLE_HOME	$ORACLE_BASE/product/8.1.7
ORACLE_SID	If you do not remember the value you entered when you were prompted by the Oracle Universal Installer, you can find it listed in the Installer log file located in *oraInventory_location*/logs/installActions.log The *oraInventory_location* is defined in /var/opt/oracle/oraInst.loc
PATH	Make sure the new $ORACLE_HOME/bin directory is included in the PATH setting. See Chapter 2, "Pre-Installation" for other PATH requirements.
CLASSPATH	CLASSPATH must include the following: *JRE_Location/lib,* $ORACLE_HOME/JRE/lib/rt.jar: $ORACLE_HOME/jlib/<*product jar file*>:$ORACLE_HOME/*product*/jlib/<*product jar file*> **Note:** *JRE_Location* is defined as $ORACLE_HOME/JRE
TNS_ADMIN	Set it to the location of the Net8 configuration files. This variable only needs to be set if Net8 configuration files are not located in one of the default locations.
TWO_TASK	Set TWO_TASK to the Net8 connect string alias defined in tnsnames.ora which client software will use by default to connect to a server.

LD_LIBRARY_PATH

Required when using Oracle products that use shared libraries. Set LD_LIBRARY_PATH to include $ORACLE_HOME/lib.

ORACLE_BASE
Specifies the directory at the top of the Oracle software and administrative file structure. The OFA-recommended value is:

software_mount_point/app/oracle.

For example:

/u01/app/oracle

ORACLE_HOME
Specifies the directory containing the Oracle software for a given release. The Optimal Flexible Architecture recommended value is:

$ORACLE_BASE/product/*release*.

For example:

/u01/app/oracle/product/8.1.7.

ORACLE_SID
Specifies the Oracle System Identifier (SID) which is the name of the Oracle Server instance. Because the *sid* is incorporated into many file names, Oracle Corporation recommends restricting it to no more than four characters to avoid filename problems on different operating systems.

PATH
After installation of Oracle software, the search path should include all of the following:

- $ORACLE_HOME/bin, /bin, /usr/bin, and /usr/ccs/bin
- the local bin directory specified when you ran the root.sh script, usually /usr/local/bin

> **Note:** If you require /usr/ucb in your search path, make sure it comes after /usr/ccs/bin in the search order.

CLASSPATH
The CLASSPATH variable is used for Java functionality. CLASSPATH is different for various products. Refer to your product documentation for more information. In addition to any pre-existing settings, CLASSPATH must include the following JRE location(s):

$ORACLE_HOME/JRE/lib:$ORACLE_HOME/jlib:$ORACLE_HOME/*product*/jlib

The variable *product* indicates any product directory in the ORACLE_HOME, such as rdbms or network, where a JRE or file required for Java functionality are located.

TNS_ADMIN

To place the Net8 configuration files in a location other than the default locations (/var/opt/oracle or $ORACLE_HOME/network/admin), set the TNS_ADMIN environment variable to the directory where Net8 configuration files are located. For example, if tnsnames.ora resides in the /tns directory, set TNS_ADMIN to /tns.

Oracle products will look for the tnsnames.ora file in the following order:

1. .tnsnames.ora file in the current user's home directory (Note the dot before the file name).
2. $TNS_ADMIN/tnsnames.ora
3. /var/opt/oracle/
4. $ORACLE_HOME/network/admin/

Check that a tnsnames.ora file exists in one of these locations; otherwise, you may be unable to connect to a database through Net8 using local naming.

TWO_TASK

If you have a Client/Server configuration, you can set TWO_TASK to the net service name of the database where client software will connect by default. When TWO_TASK is set, you do not have to specify the net service name of the database to connect to it with Oracle client software. See the *Net8 Administrator's Guide* and the *Oracle8i Administrator's Reference* for your platform for more information about net service names.

Initialize the oraenv Script

You have the option of using the oraenv script to set a common environment for oracle users. Follow the instructions below for a single-instance or multiple-instance configuration for the oraenv script.

Note: The C shell uses the coraenv command instead of the oraenv command.

Single-Instance Machine

On a single-instance machine, set the environment variable ORACLE_SID in the `.profile` or `.login` file of the *`oracle`* account followed by these commands to initialize the `oraenv` file at login.

For the Bourne or Korn shell:

```
ORAENV_ASK=NO
. /usr/local/bin/oraenv
```

For the C shell:

```
set ORAENV_ASK = NO
source /usr/local/bin/coraenv
unset ORAENV_ASK
```

Multiple-Instance Machine

On a multiple-instance machine, include a list of instance names and the commands necessary to initialize the `oraenv` file at the end of the startup file of the *`oracle`* account.

For the Bourne or Korn shell:

```
#!/usr/bin/sh
echo "The SIDs on this machine are:"
cat /var/opt/oracle/oratab | awk -F: '{print $1}' | grep -v "#"
ORAENV_ASK="YES"
. /usr/local/bin/oraenv
```

For the C shell:

```
#!/usr/bin/csh
echo "The SIDs on this machine are:"
cat /var/opt/oracle/oratab | awk -F: '{print $1}' | grep -v "#"
set ORAENV_ASK="YES"
source /usr/local/bin/coraenv
```

Update Other Oracle User Startup Files

To create the same environment for all *`oracle`* accounts, update each user startup file to include the following line at the end of the startup file:

- for `.profile` files used by the Bourne or Korn shells:

  ```
  . /usr/local/bin/oraenv
  ```

for `.login` files used by the C shell:

```
source /usr/local/bin/coraenv
```

- Settings for the ORACLE_BASE, ORACLE_HOME, and PATH environment variables as described in "Configuration Environment Variables" on page 4-6.

Update the oratab File

If you have created a database manually instead of using Oracle Database Configuration Assistant, you must ensure the system configuration is reflected in the `/var/opt/oracle/oratab` file.

Add an entry for each Server instance on the system in the following format:

ORACLE_SID:*ORACLE_HOME*:{Y|N}

where Y or N indicates whether you want to activate the `dbstart` and `dbshut` scripts. Oracle Database Configuration Assistant automatically adds an entry for each database it creates.

Set Initialization Parameters

You can change initialization parameters to configure and tune your system for optimal performance. The default `init`*`sid`*`.ora` file shipped with the distribution is located in the `$ORACLE_BASE/admin/`*`sid`*`/pfile` directory. A template `init.ora` file is also in `$ORACLE_HOME/dbs`. The file contains settings for small, medium, and large databases, with the settings for medium and large databases commented out. The size settings are relative to each other, but do not represent an empirical size of the database.

Modify init*sid*.ora Parameters

When you create a typical startup database using Oracle Database Configuration Assistant, your `init`*`sid`*`.ora` parameters are automatically set. You can manually modify the initialization parameters in the `init`*`sid`*`.ora` with a UNIX text editor. Activate the modified `init`*`sid`*`.ora` file by shutting down and restarting the database.

Do not use symbolic character representations such as question marks (?) for ORACLE_HOME in parameter files, as they might lead to startup errors.

To bring rollback segments online automatically with database startup, you must uncomment the `rollback_segments` in the `init`*`sid`*`.ora` file.

For example, change:

```
#rollback_segments = (r0, r1, r2, r3)
```

to:

```
rollback_segments = (r0, r1, r2, r3)
```

> **See Also:** Oracle8*i Administer's Reference* for your platform for information on `init`*`sid.ora`* parameters and on tuning and configuring initialization parameters.

Post-Installation for Oracle Internet Directory

Carry out the following task after installation:

Run `cryptupgrd.sh` immediately after installation. The script can be found in `$ORACLE_HOME/ldap/bin`.

> **See Also:** The chapter on preliminary tasks in *Oracle Internet Directory Administrator's Guide* for more information.

Reviewing Installed Starter Database Contents

Database Identification

The Oracle8*i* database is identified by its global database name, which consists of the database name and network domain in which the database is located. The global database name uniquely distinguishes a database from any other database in the same network domain. You create a global database name when prompted in the *Database Identification* window during Oracle8*i* database installation. The global database name takes the form:

`database_name.database_domain`

For example:

```
sales.us.acme.com
```

Where...	Is...
sales	The name you give your database. The database name portion is a string of no more than 8 characters that can contain alpha, numeric, and additional characters. The database name is also assigned to the DB_NAME parameter in the `init.ora` file.

Where...	Is...
us.acme.com	The network domain in which the database is located, making the global database name unique. The domain portion is a string of no more than 128 characters that can contain alpha, numeric, period (.), and additional characters. The domain name is also assigned to the DB_DOMAIN parameter in the `init.ora` file.

The DB_NAME parameter (value *sales*) and DB_DOMAIN name parameter (value *us.acme.com*) combine to create the global database name value assigned to the SERVICE_NAMES parameter (value *sales.us.acme.com*) in the `init.ora` file.

The System Identifier (SID) identifies a specific Oracle8*i* instance that references the database. The SID uniquely distinguishes a database from any other database on the same computer. Multiple Oracle homes enable you to have multiple, active Oracle databases on a single computer. Each database requires a unique SID and database name.

The SID name is taken from the value you entered for the database name in the *Database Identification* window. The SID can be up to 64 alphanumeric characters in length.

For example, if the SID and database name for an Oracle database are ORCL, each database file is located in the `$ORACLE_BASE/oradata/ORCL` directory and the initialization parameter file is located in the `$ORACLE_BASE/admin/ORCL/pfile` directory. The directory ORCL is named after the DB_NAME parameter value.

Tablespaces and Datafiles

An Oracle8*i* database is divided into smaller logical areas of space known as tablespaces. Each tablespace corresponds to one or more physical datafiles. Datafiles contain the contents of logical database structures such as tables and indexes. A datafile can be associated with only one tablespace and database.

> **Note:** Unless you specified different names with Oracle Database Configuration Assistant, the tablespaces and datafiles described in the following table are also automatically included in the Custom database.

The tablespaces in the Oracle8*i* database contain the following types of datafiles located in the `$ORACLE_BASE/oradata/<db_name>` directory:

Tablespace	Datafile	Contains...
SYSTEM	system01.dbf	The data dictionary, including definitions of tables, views, and stored procedures needed by the Oracle database. Information in this area is maintained automatically. The SYSTEM tablespace is present in all Oracle databases.
USERS	users01.dbf	Your application data. As you create and enter data into tables, you fill this space with your data.
TEMP	temp01.dbf	Temporary tables and/or indexes created during the processing of your SQL statement. You might need to expand this tablespace if you are executing a SQL statement that involves a lot of sorting, such as ANALYZE COMPUTE STATISTICS on a very large table, or the constructs GROUP BY, ORDER BY, or DISTINCT.
RBS	rbs01.dbf	Rolled back transactions that fail to complete normally. You might need to expand this tablespace if you have long-running or high-data-volume transactions.
INDX	indx01.dbf	Indexes associated with the data in the USERS tablespace.
DRSYS	dr01.dbf	Oracle *inter*Media text-related schema objects.
TOOLS	tools01.dbf	Nothing. This datafile is used to install any third-party or Oracle tools/products.

Note: If you choose to create a new repository and accept the default settings when running Oracle Enterprise Manager Configuration Assistant, a tablespace named OEM_REPOSITORY and a datafile named `oem_repository.ora` are also created.

See Also:

- The "Tablespaces and Datafiles" chapter of *Oracle8i Concepts*
- The "Managing Tablespaces" and "Managing Datafiles" chapters of the *Oracle8i Administrator's Reference.*

Initialization Parameter File

The starter database contains one database initialization parameter file located in the `$ORACLE_BASE/admin/<db_name>/pfile` directory:

Initialization Parameter File	Description
`init.ora`	The parameter file `init.ora` must exist for an instance to start. A parameter file is a text file that contains a list of instance configuration parameters. The starter database `init.ora` file has preconfigured parameters. No edits are required to this file in order to use the starter database.

See Also: *Oracle8i Administrator's Reference* and *Oracle8i Reference* for Oracle8*i* database-specific initialization parameters and their default values for more information.

Redo Log Files

The starter database contains three redo log files located in the `$ORACLE_BASE/oradata/<db_name>` directory:

Note: The redo logs `redo01.log`, `redo02.log`, and `redo03.log` are also automatically included in the Custom database.

Database Files	Disk Size	Description
`redo01.log`	1 MB	Redo log files hold a record of all changes made to data in the database buffer cache. If an instance failure occurs, the redo log files are used to recover the modified data that was in memory. Redo log files are used in a cyclical fashion. For example, if three files constitute the online redo log, the first file is filled, then the second file, and then the third file. The first file is then re-used and filled, the second file is re-used and filled, and so on.
`redo02.log`	1 MB	
`redo03.log`	1 MB	

See Also: *Oracle8i Backup and Recovery Reference* for more information.

Control Files

The starter database contains three control files located in the `$ORACLE_BASE/oradata/<db_name>` directory:

Control Files	Description

`control01.ctl`
`control02.ctl`
`control03.ctl`
	A control file is an administrative file required to start and run the database. The control file records the physical structure of the database. For example, a control file contains the database name, and the names and locations of the database's datafiles and redo log files.

Note: The files `control01.ctl`, `control02.ctl`, and `control03.ctl` are also automatically included in the Custom database. Oracle Corporation recommends that you keep at least three control files (on separate physical drives) for each database and set the CONTROL_FILES initialization parameter to list each control file.

See Also: *Oracle8i Administrator's Guide* for information on setting this initialization parameter value.

Rollback Segments

Rollback segments record the old values of data changed by each transaction (whether or not committed). Every database contains one or more rollback segments, which are portions of the database that record the actions of transactions in the event that a transaction is rolled back. Rollback segments provide read consistency to roll back transactions and to recover the database.

The starter database contains the following rollback segments:

Rollback Segment	Contained in this Tablespace...	Used by
SYSTEM	SYSTEM	SYS
RB_TEMP	SYSTEM (private)	SYS
RB1 through RB16	RBS	PUBLIC (a pool of rollback segments that any instance requiring a rollback segment can use)

Data Dictionary

The data dictionary is a protected collection of tables and views containing reference information about the database, its structures, and its users. The data stored in the dictionary includes the following:

- Names of the Oracle database users
- Privileges and roles granted to each user
- Names and definitions of schema objects (including tables, views, snapshots, indexes, clusters, synonyms, sequences, procedures, functions, and packages)
- Integrity constraints
- Space allocation for database objects
- Auditing information, such as who accessed or updated various objects

Deinstalling Oracle Internet Directory

To deinstall Oracle Internet Directory:

1. Stop the Oracle Internet Directory server:

   ```
   $ oidctl connect=<net_service_name> server=oidldapd
   instance=<server_instance_number> stop
   ```

   where *<net_service_name>* is the network connection to the Oracle Internet Directory server and *<server_instance_number>* is the instance number. This number appears in the Server List tab of Oracle Directory Manager.

2. Stop the OiD Monitor.

   ```
   $ oidmon stop
   ```

3. Start Oracle Universal Installer as described in "Oracle Universal Installer" on page 3-2.

4. Click the [De-install Products] button on the Welcome dialog box or the [Installed Products...] button available on any Installer screen. The "Inventory" dialog box appears, listing installed products.

5. In the "Inventory" dialog box, select any product(s) to be de-installed, then click the [Remove] button.

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