

Oracle8i™

Installation Guide

Release 8.1.5 for Sun SPARC Solaris

February 1999

Part No. A67457-01

Topics Include:

System Requirements

Setting the Environment

Installation

Configuring Oracle8i

National Language Support

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Send Us Your Comments

Oracle8i Installation Guide, Release 8.1.5 for Sun SPARC Solaris

Part No. A67457-01

Oracle Corporation welcomes your comments and suggestions on the quality and usefulness of this publication. Your input is an important part of the information used for revision.

- Did you find any errors?
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USA

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If you have problems with the software, please contact your local Oracle Support Services Center.

Preface

Purpose

This guide and the *Oracle8i Administrator's Reference* provide instructions for installing and configuring Oracle8i on Sun SPARC Solaris. Product information is in your Oracle8i Documentation Library Set.

Audience

This document is intended for anyone responsible for creating an Oracle8i installation on a Sun SPARC Solaris system.

Oracle8i and Oracle8i Enterprise Edition

Unless noted otherwise, features and functionality described in this document are common to both Oracle8i and Oracle8i Enterprise Edition.

Typographic Conventions

<code>monospace</code>	Monospace type indicates UNIX commands, directory names, usernames, pathnames, and filenames.
brackets []	Words enclosed in brackets indicate key names (for example, Press [Return]). Note that brackets have a different meaning when used in command syntax.
<i>italics</i>	Italic type indicates a variable, including variable portions of filenames. It is also used for emphasis.
UPPERCASE	Uppercase letters indicate Structured Query Language (SQL) reserved words, initialization parameters, and environment variables.

Because UNIX is case-sensitive, conventions in this document may differ from those used in other Oracle product documentation.

Command Syntax

Command syntax appears in `monospace` font. The following conventions apply to command syntax:

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

Related Documentation

Information about migrating or upgrading from a previous release of the Oracle Server is provided in the *Oracle8i Migration Guide*.

Information about system administration and tuning for a production database system is provided in these documents:

- *Oracle8i Administrator's Reference for Sun SPARC Solaris*
- *Oracle8i Tuning*
- *Oracle8i Administrator's Guide*
- *Net8 Administrator's Guide*

If you are unfamiliar with the concepts or terminology associated with relational database management systems, read Chapter 1 in *Oracle8i Concepts* before beginning your installation.

Oracle Services and Support

A wide range of information about Oracle products and global services is available on the Internet, from <http://www.oracle.com>.

The sections below provide URLs for selected services.

Oracle Support Services

Technical Support contact information worldwide is listed at <http://www.oracle.com/support>. Templates are provided to help you prepare information about your problem before you call. You will also need your CSI number (if applicable) or complete contact details, including any special project information.

Products and Documentation

Oracle Store, for U.S.A. customers, is at <http://oraclestore.oracle.com>. Links to Stores in other countries are provided from this site.

Customer Service

Global Customer Service contacts are listed at <http://www.oracle.com/support/>.

Education and Training

Training information and worldwide schedules are available from <http://education.oracle.com>.

Oracle Technology Network

Register with the Oracle Technology Network (OTN) at <http://technet.oracle.com>. OTN delivers technical papers, code samples, product documentation, self-service developer support, and Oracle's key developer products to enable rapid development and deployment of applications built on Oracle technology.

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 Oracle8i on Solaris and any restrictions with this release. Verify that your system meets the requirements described in this chapter before starting the installation.

- Installation Overview
- System Installation Requirements
- Solaris and Installation-Specific Issues and Restrictions
- New Products

Installation Overview

Installing Oracle8i 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. *Check the UNIX Environment:* make sure the UNIX environment is properly set up for the products you want to install. See Chapter 2, "Setting the Environment".
3. *Install:* use the new Oracle Universal Installer provided on your software CD-ROM to install the Oracle software. See Chapter 3, "Installation" of this manual.
4. *Post-Installation:* create database objects, establish the user environment, and configure the installed Oracle products for the local system. See Chapter 4, "Configuring Oracle8i" of this manual.
5. *Client Installations:* if you want to install Oracle client tools, applications, and client interfaces, check the requirements and instructions in the installation guides for those products.

System Installation Requirements

Verify that your system meets the installation requirements described in the following sections before you install Oracle Products.

Hardware Requirements

Table 1-1 Hardware Requirements

Hardware	Requirements
Memory	A minimum of 128 MB RAM is required to install the Oracle8i products.
Swap Space	Twice the amount of RAM is recommended for most systems.
CD-ROM Device	A CD-ROM drive supported by Solaris is required. Oracle uses ISO 9660 format CD-ROM disks with RockRidge extensions.

Disk Space Requirements

The Oracle Universal Installer (OUI) allows you to choose your installation category and type as described in "Product Installation Categories and Installation Types" on page 3-2. Your choice will determine how much disk space you will need as shown in Table 1-2. Custom installations require at least as much space as the minimal installations. Disk space requirements do not account for the size of your database, and 128 MB of RAM is the minimum amount required for running the products in this release. A production RDBMS supporting many users requires significantly greater disk space and memory.

Table 1-2 Disk Space Requirements for Installation

	Oracle8i Enterprise Edition	Oracle8i Client	Programmer/2000
Minimal	660 MB	N/A	N/A
Typical	811 MB	306 MB	276 MB
Custom	Custom installations require at least as much space as the minimal installations.		
Note: These are approximate values that might vary slightly at install time.:			

Operating System Software Requirements

Table 1-3 Operating System Software Requirements

OS Software	Requirements
Operating System	Solaris 2.6 or 2.7
Operating System Patch	Use the latest kernel patch from Sun Microsystems. Sun provides patch information at http://sunsolve.sun.com At least kernel jumbo patch revision #105181-06 is required for successful installation of Release 8.1.5.
Operating System Packages	SUNWarc, SUNWbtool, SUNWlibm, SUNWlibms, SUNWsprot, SUNWtoo, SUNWhea.
Window Manager	Use any Sun-supported window manager, for example, dtwm, twm, olwm, that supports Motif. Character mode installs are not supported for Release 8.1.5. See "Character Mode" on page 1-9.

To determine your current operating system information, enter the following command:

```
$ uname -a
```

To determine which operating system patches are installed, enter the following command:

```
$ showrev -p
```

To determine which operating system packages are installed, enter the following command:

```
$ pkginfo -i [package_name]
```

If you enter `pkginfo -i`, all installed packages are listed.

Online Documentation Requirements

To view online documentation, you need a web browser. We recommend Netscape Navigator 4.0 or Microsoft Internet Explorer 4.0 or higher.

Additional Product-Specific Installation Requirements

This section provides product-specific information additional to hardware and software requirements provided earlier in this chapter.

Oracle8i Options

Table 1-4 Restrictions, Requirements, and Installation Tasks for Oracle8i and Options

Product Name	Restrictions and Requirements
Oracle8i, 8.1.5	None.
Oracle Programmer, 8.1.5	None.
Oracle Parallel Server, 8.1.5	Requires Sun SPARCcluster PDB 2.1 or higher.
Oracle Partitioning Option, 8.1.5	None.
Oracle interMedia, 8.1.5 (includes Audio, Text, Video, Locator, and Image)	None.

Tools and Precompilers

Table 1–5 Restrictions, Requirements, and Installation Tasks for Tools and Precompilers

Product Name	Restrictions and Requirements
Oracle Data Migration Assistant, 8.1.5	An Oracle7 database must be at least release 7.1.4 to be migrated by ODMA. An Oracle8 database must be at least release 8.0.3.0 to be upgraded by ODMA.
Oracle Database Configuration Assistant, 8.1.5	None.
Object Type Translator, 8.1.5	None.
Oracle Call Interface, 8.1.5	None.
Oracle Universal Installer, 1.6.0.7	Two terminal windows should remain open while using OUI.
Pro*COBOL, 8.1.5	Requires Micro Focus COBOL 3.2 or higher, or Sun Nihongo COBOL 1.0.1.
Pro*C/C++, 8.1.5	Requires SPARCworks/Workshop C compiler 4.2 or higher.
Pro*COBOL, 1.8.50	Requires Micro Focus COBOL 3.2 or higher, or Sun Nihongo COBOL 1.0.1.
Pro*FORTRAN, 1.8.50	Requires FORTRAN77 3.0.1 or higher.
SQL*Module Ada, 8.1.5	Requires Sun ADA 2.1 or higher.
Oracle JServer, 8.1.5 (includes JRE, JVM, and Java utilities)	See the Java README on the Product CD-ROM for restrictions and requirements.
Oracle JDBC Drivers	None.
Oracle SQLJ, 8.1.5	None.
SQL*Plus, 8.1.5	None.

Networking and System Management Products

All network products require the underlying software and operating system libraries for the supported network. The network software must be installed and running *prior* to installation of the Net8 products. Refer to the operating system and third party vendor networking product documentation for more information. Net8 products require the specific release of Oracle8i and Net8 supplied with this release.

Table 1–6 Restrictions, Requirements, and Installation Tasks for Networking and System Management Products

Product Name	Restrictions and Requirements
Oracle Advanced Security: Export Version, 8.1.5	See Table 1–7 for information about OSA authentication support requirements.
Legato Storage Manager, Version 5.5	See Table 1–8 for Legato Storage Manager Software Requirements. Note: Legato Storage Manager (LSM) can be installed either through the OUI or manually according to the instructions in the section "Installing Legato Storage Manager Manually" in Chapter 3.
Oracle Intelligent Agent, 8.1.5	None.
Oracle Names, 8.1.5	None.
Net8, 8.1.5	None.
Oracle Connection Manager, 8.1.5	None.
Oracle TCP/IP Protocol, 8.1.5	None.
Oracle SSL Protocol, 8.1.5	Requires SSL 3.0 or later.
Oracle LU6.2 Protocol, 8.1.5	Sun SNA 9.1, or higher.
Oracle SPX/IPX Protocol, 8.1.5	Sun PC Protocol Services 1.1.

Transparently Installed Products

Some products are automatically included with the Oracle8i Server. These products do not appear on lists of products that are included in your installation even though they have appeared as independent products in prior releases:

- PL/SQL, 8.1.5
- Oracle Database Utilities, 8.1.5
- Oracle Objects, 8.1.5
- Migration Utility, 8.1.5
- Server Manager, 8.1.5

Oracle Intelligent Agent automatically installs Oracle Data Gatherer.

Oracle Parallel Server automatically installs Oracle Parallel Server Management.

Oracle Advanced Security automatically installs SSL Protocol Support and Oracle Wallet Manager.

Oracle Advanced Security

Table 1–7 describes requirements for authentication protocols supported by the Oracle Advanced Security (OAS).

Table 1–7 OAS-Supported Authentication Methods and Requirements

Authentication Method	Requirements
Kerberos	Kerberos Version 5 Release 1.0 or higher.
CyberSAFE	CyberSAFE Application Security Toolkit, release 1.1 or higher, installed on both the Oracle client and server nodes. CyberSAFE Challenger, release 5.2.5 or higher, installed on the node running the authentication server. CyberSAFE Client installed on the Oracle client nodes.
SecurID	ACE/Server release 1.2.4 or higher and SecurID card from Security Dynamics.
Identix	Oracle Biometrix release 1.2.4 or higher or SecurID card from Security Dynamics.
RADIUS	RADIUS server that complies with the Livingston RADIUS standard. The required Java native threads are installed as a part of JRE.
Secure Socket Layer	Requires SSL 3.0 or later.

Note: No additional authentication protocol software is required to relink Oracle products. However, Oracle does not provide an authentication server for Kerberos or SecurID. The appropriate authentication server for these protocols must be installed and configured separately. Secure Socket Layer is provided and always installed with Advanced Security Option.

Software Requirements for Legato Storage Manager

Legato Storage Manager is a restricted-functionality version of Legato NetWorker.

Note: If you have Legato NetWorker already installed on your system you will not have the option of installing Legato Storage Manager. To install the version of Legato Storage Manager included with this release of Oracle8i, you must first de-install any present version. See "Removing an Existing Legato Storage Manager Installation" in Chapter 2.

The software requirements in Table 1-8 apply to a default installation of Legato Storage Manager, with no relocation of the software components.

Table 1-8 Legato Storage Manager Software Requirements

Components	Default Location	Space Requirement
GUI	/usr/bin	17 MB
Daemon and utility command files	/usr/sbin	26 MB
Library files	/usr/lib	10 MB
Online client file and server indexes; media database	/nsr	100 MB
Online manual pages	/usr/share/man	1 MB
Device Drivers	/usr/kernel	0.1 MB
	/etc/LGT0uscsi	15 MB
		169.1 MB

Solaris and Installation-Specific Issues and Restrictions

The following issues and restrictions may affect the installation or use of Oracle8i on Solaris. You should also check the Release Notes that accompany this release and the README files in the \$ORACLE_HOME/rdbms/doc directory before using Oracle8i. For release 8.1.5, the README files are uncompressed and linked to the top-level HTML file in the doc directory. README files for other products on the Oracle8i Server distribution are in the doc or admin/doc directories for the respective products.

New ORACLE_HOME

You must not install Oracle8i Release 8.1.5 into an ORACLE_HOME directory containing any Oracle Software earlier than 8.1.5, including 8.1.3 or 8.1.4.

Java Runtime Environment (JRE)

The JRE shipped with Oracle8*i* is used by the Java applications shipped by Oracle, such as the OUI, the Database Configuration Assistant (DBCA), and the Net8 Assistant. The JRE shipped by Oracle is the only one supported to run with these applications.

Customers may not modify this JRE, unless it is done through a patch provided by Oracle Support Services.

The JRE is installed in the Oracle Inventory at the same time the OUI is installed. The inventory can contain multiple versions of the JRE, each of which can be used by one or more products or releases. The products in an `ORACLE_HOME` will access the JRE through a symbolic link from `$ORACLE_HOME/JRE` to the actual location of a JRE within the inventory.

Customers may not modify the symbolic link, unless it is done through a patch provided by Oracle Support Services.

Character Mode

Installation can no longer be performed using character mode. However, you may configure the OUI to perform a non-interactive installation of Oracle products. The OUI in non-interactive mode can be run directly from your machine's console, X-windows environment, or via an X-terminal emulator. For more information on the non-interactive installation of Oracle products, see "Non-Interactive Installation" on page 3-11.

Upgrading and Migrating

If you are upgrading an existing system, there are issues which exceed the scope of this book. See *Oracle8i Migration* for details on upgrade and migrate procedures.

Migrating from Oracle7

Oracle Data Migration Assistant (ODMA) is included with this release and makes it possible to migrate an Oracle7 database, release 7.1.4 or higher, or upgrade an Oracle8 database, release 8.0.3 or higher, to the latest release of Oracle8*i*. To migrate from a Oracle7 database lower than 7.1.4, you must first upgrade to an Oracle7 database, release 7.1.4 or higher, and then use the ODMA to migrate to Oracle8*i*.

Note: The Migration utility is still available as a stand-alone product.

File Systems

The Oracle Server must be able to verify that file writes have been made to disk. File systems that do not support this verification are not supported for use with Oracle databases, although Oracle software can be installed on them.

Optimal Flexible Architecture

Optimal Flexible Architecture (OFA) is supported, but not enforced, by the OUI. The demonstration database installed by default when you select the [Typical] option in the OUI's "Installation Types" dialog, is created under a single mount point.

For further information about OFA, refer to Appendix A, "Optimal Flexible Architecture" in the *Oracle8i Administrator's Reference*.

Solaris 2.3, 2.4, and 2.5

Solaris 2.3, 2.4, and 2.5 are not supported for use with Oracle8i Release 8.1.5. You must be using Solaris 2.6 or 2.7. See Table 1-3 for details of operating system and patch level requirements.

Very Large Files

Oracle8i includes native support for files greater than 2 GB in both 32-bit and 64-bit releases. Solaris also supports large files, however you should verify that your file system and volume manager do not impose file size limits. Some System V file systems have a 2 GB maximum.

You should also check your shell to determine whether it will impose a limit. To check shell limits, enter `ulimit -Sa`. To check hard limits, enter `ulimit -Ha`.

For example, if `file (blocks)` is set to 2097148, the maximum size of a file which you can create will be 1 GB.

on Solaris 2.6 and 2.7, `file (blocks)` is set to unlimited by default.

Oracle Parallel Server Restriction

Because all Oracle databases on a cluster linked in Parallel Server mode must match the word size of the Cluster Group Services executable, they must *all* run only a 32-bit executable. Mixing word sizes of parallel server executables, even across different databases, will not work in 8.1.x. This restriction does not apply to Oracle executables that are not linked in Parallel Server modes.

New Products

The following sections enumerate the names of new and modified products from a previous Oracle Server release.

Oracle7 to Oracle8

New Products

Connection Manager Connection Manager is part of the Oracle Net8 set of products. It provides support for multiple network protocols (replacing the Multi-Protocol Interchange), access control to Oracle Servers, and session concentration between clients and a server.

Image Cartridge The Image Cartridge is an extension to the Oracle8 Server and provides image storage, retrieval, and format conversion capabilities through an object data type. This cartridge supports image storage using binary large objects (BLOBS) and references to image data residing in external files (BFILES).

Object Type Translator The Object Type Translator converts database definitions of object types and named collection types into C-struct declarations which can be included in OCI or Pro*C/C++ applications.

Oracle Security Server The Oracle Security Server is based on public-key cryptography and supports authentication and authorization in an Oracle network environment.

Recovery Manager Recovery Manager integrates backup, restore, and recovery capabilities into the Oracle8 Server. It replaces the Enterprise Backup Utility.

Modified Products

Oracle Net8 Formerly, SQL*Net, enables network communication.

Oracle8 to Oracle8i

The following sections enumerate and define the names of products that are new and modified to this release.

New Products

Oracle Partitioning Oracle Partitioning provides users more control in managing tables and indices by providing administration capabilities on subsets of tables.

Java Runtime Environment 1.1.7 Sun Microsystem's JRE is shipped with 8.1.5 and is the minimum standard Java platform for running Java programs. It includes Java Virtual Machine, Java core classes, and supporting files.

Oracle Database Configuration Assistant Oracle Database Configuration Assistant automates the process of creating, modifying, or deleting a database.

Oracle Data Migration Assistant Oracle Data Migration Assistant automates the migration of an Oracle7 or Oracle8 database to an Oracle8i database.

Oracle JServer and Oracle JServer Enterprise Edition JServer offers a Java Virtual Machine, a CORBA ORB, an embedded JDBC driver, a SQLJ translator, and an Enterprise JavaBeans transaction server. Oracle JServer is licensed separately.

Oracle Universal Installer A Java application that installs Oracle products.

Oracle *interMedia* Enables Oracle to manage text, documents, image, audio, and video in an integrated fashion with other enterprise information. Extends Oracle reliability, availability, and data management to text and multimedia content in Internet, electronic commerce, and media-rich applications.

Oracle *interMedia* Locator Service Oracle *interMedia* Locator Service enables users to store and query spatial data.

Oracle JDBC Drivers Oracle's Java Database Connectivity Driver's give Java programmers access to Oracle's industry leading Oracle7, Oracle8, and Oracle8i database servers.

Oracle SQLJ SQLJ is a new standard for embedding SQL within Java

Modified Products

Net8 Products Formerly Oracle Net8 Products that enable client/server and server/server communication. Applies to Oracle Net8 Assistant, Oracle Net8 Client, and Oracle Net8 Server.

Oracle Advanced Security Formerly Oracle Advanced Networking Option, Advanced Security provides enhanced security and authentication to your network. Oracle Advanced Security is licensed separately.

Oracle Spatial Formerly Oracle8 Spatial Cartridge, Oracle Spatial enables users to manipulate and store spatial data. Oracle Spatial is licensed separately.

Oracle Time Series Formerly Oracle8 Time Series Cartridge, Oracle Time Series provides the ability to store and retrieve time stamped data through object data types. Oracle Time Series is licensed separately.

Oracle Visual Information Retrieval Formerly Oracle8 Visual Information Retrieval Cartridge, it provides the ability to store, retrieve, and manipulate image data. Oracle8 Visual Information Retrieval is licensed separately.

Oracle Programmer Formerly Programmer 2000, it includes development tools and interfaces for creating applications that access an Oracle database. Programmer includes precompilers, networking services, basic client software, and documentation.

Oracle *interMedia* Audio Formerly Oracle Audio Cartridge, Audio enables management of digital audio data in several file formats.

Oracle *interMedia* Image Formerly Oracle Image Cartridge, Image provides the ability to store, retrieve, and process image data using popular and industry standard formats.

Oracle *interMedia* Text Formerly Oracle ConText Cartridge, Text provides full text retrieval and advanced linguistic capabilities for text data. Supports storing, querying, and viewing text in a variety of languages and formats using standard SQL and PL/SQL.

Oracle *interMedia* Video Formerly Oracle Video Cartridge, Video provides storage and retrieval of video data in several formats from a local or remote source.

Setting the Environment

Use this chapter to help you prepare your environment for installing Oracle8i, after you have verified the system meets the requirements described in Chapter 1, "System Requirements".

- UNIX Environment Summary
- Setup Tasks to Perform as the root User
- Setup Tasks to Perform as the oracle User
- Setup Tasks for Oracle Products

UNIX Environment Summary

Table 2–1 summarizes the requirements for installing the Oracle8i Server. If your system fails to satisfy any listed requirement, perform the tasks listed on page 2-3 as necessary to set up your environment to meet these requirements.

Table 2–1 UNIX Environment Summary

Environmental Factor	Requirement for Oracle8i	
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 Oracle8i 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	100
	SEMMSL	Set to 10 plus the largest <code>initsid.ora</code> PROCESSES parameter of an Oracle database on the system. The PROCESSES parameter can be found in each <code>initsid.ora</code> file, located in the <code>ORACLE_HOME/dbs</code> directory. The default value of PROCESSES for the Release 8.1.5 prebuilt database is 50.
	SEMMNS	Set to the sum of the PROCESSES parameter for each Oracle database <i>except</i> the largest one, plus 2 times the largest PROCESSES value, plus 10 times the number of Oracle databases. See "Configure the UNIX Kernel for Oracle8i" on page 2-4 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. These are the requirements for Oracle8i only. 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 affect when planning for current and future database requirements.

Table 2–1 UNIX Environment Summary

Environmental Factor	Requirement for Oracle8i
Mount Points (Storage Devices)	The Oracle Universal Installer requires only two mount points: one for the software, and one for the database files. An OFA-compliant database requires at least four mount points, all at the same level of the directory structure. One is for the software, three are for database files.
UNIX Groups for Oracle Roles	A UNIX group is required for the OSDBA role. This book assumes that the group is named <code>dba</code> . The OSOPER role may belong to the same group as the OSDBA or to a different group.
Special UNIX Group for the OUI <code>oraInventory</code>	All users installing Oracle in any <code>ORACLE_HOME</code> must belong to the same UNIX group. The OUI inventory is shared by all <code>ORACLE_HOMES</code> on a machine, and is group writable. Oracle recommends installing with <code>oinstall</code> as the current primary group.
UNIX Accounts	A UNIX account that is dedicated solely to installing and upgrading the Oracle8i system. The account must be a member of <code>oinstall</code> group. This book assumes the account is called <code>oracle</code> .
Permissions for File Creation	Set <code>umask</code> to <code>022</code> for the <code>oracle</code> account.
<code>ORACLE_BASE</code>	Not required, but recommended as part of an OFA-compliant installation. See "ORACLE_BASE" on page 2-9 for further information.

Setup Tasks to Perform as the root User

Log in as the `root` user and perform the following tasks set up your environment for Oracle8i:

- Configure the UNIX Kernel for Oracle8i
- Create Mount Points
- Create UNIX Groups for Database Administrators
- Create a UNIX Group for the OUI 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 install if the file `/var/opt/oracle/orainst.loc` does not exist. You will also need `root` privileges near the end of the install to run the `root.sh` script.

▮▮ Configure the UNIX Kernel for Oracle8i

Configure the UNIX kernel Interprocess Communication (IPC) parameters to accommodate the Shared Global Area (SGA) structure of the Oracle8i Server. 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 and semaphore segments, and their identification number and owner.

Because the shared memory in Solaris is dynamically loaded, when you run `ipcs` you may receive a message that the shared memory facility is not in the system. The shared memory driver is loaded after the Oracle8i instance is started. You can check the `/etc/system` file to verify that the system has been configured with enough shared memory.

2. Set the kernel parameters corresponding to the:
 - 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:

$$\text{SHMMAX} * \text{SHMSEG}$$

Table 2-1 shows the recommended settings. The recommended values are optimal for one instance and are based on the default `init.ora` file. If you plan to install more than one instance, or to modify the `init.ora` file extensively, set these parameters higher.

To set the kernel parameter for SEMMNS, use the formula in Table 2-1. For example, consider a system that has three Oracle instances with the PROCESSES parameter in their `init.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:

$$\text{SEMMNS} = ((A=100) + (B=100)) + ((C=200) * 2) + ((\# \text{ of instances}=3) * 10) = 630$$

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

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

```
set shmsys:shminfo_shrmax=4294967295
set shmsys:shminfo_shrmin=1
set shmsys:shminfo_shrmmi=100
set shmsys:shminfo_shrmsg=10
set semsys:seminfo_semmni=100
set semsys:seminfo_semmns=100
set semsys:seminfo_semmns=200
set semsys:seminfo_semopm=100
set semsys:seminfo_semvms=32767
```

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

► Create Mount Points

Oracle8i requires at least two mount points: one for the software and at least one for the database files. It requires at least four mount points when creating an Optimal Flexible Architecture (OFA)-compliant installation: one for the software and at least three for database files.

All software and database mount point names used for Oracle8i should match the pattern `/p/m` where `p` is a string constant and `m` is a fixed-length key to distinguish between mount points. Table 2-2 shows a sample naming scheme.

Table 2–2 Sample Mount Point Naming Scheme

Software Mount Point	Database Mount Points
/u01	/u02
	/u03
	/u04

See Also: Optimal Flexible Architecture is described in detail in Appendix A, "Optimal Flexible Architecture" of the *Oracle8i Administrator's Reference for Sun SPARC Solaris*.

▀ Create UNIX Groups for Database Administrators

During installation, two Oracle roles are created: DBA and OPERATOR. Database administrators are granted these roles by virtue of their membership in corresponding UNIX groups. You must 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.

On Solaris, use the `groupadd` utility to create a group named `dba`. You can name the group something other than `dba`. If you plan to assign the OPERATOR role to a separate group, create that group also.

The OUI assigns both Oracle DBA and OPERATOR privileges to the UNIX group, `dba`, by default. If you have not created a `dba` group, you will be prompted to enter the name(s) you have chosen.

(Oracle8i documentation refers to these UNIX groups as the OSDBA and OSOPER groups.)

▀ Create a UNIX Group for the OUI Inventory

On Solaris, use the `groupadd` utility to create a group named `oinstall`. The `oinstall` group will own the OUI `oraInventory`. The user account that runs the installation must be a member of this group.

▀ Create a UNIX Account to Own Oracle Software

The *oracle* account is the UNIX account that owns the Oracle8i software after installation. You must run the OUI from this account.

On Solaris, use the operating system administration utility `useradd` to create an *oracle* account with the following properties:

Login Name	Any name, but this document refers to it as the <i>oracle</i> account.
Default GID	Corresponding to the <code>oinstall</code> group.
Home Directory	Choose a home directory consistent with other user home directories. The home directory of the <i>oracle</i> account does not have to be the same as the <code>ORACLE_HOME</code> directory.
Login Shell	The default shell can be <code>/bin/sh</code> , <code>/bin/csh</code> , or <code>/bin/ksh</code> , but the examples in this document assume the Bourne shell (<code>/bin/sh</code>).

Note: Use the *oracle* account only for installing and maintaining Oracle software. Never use it for purposes unrelated to the Oracle8i Server. Do not log in to the database when using the *oracle* (UNIX) account. Do not use *root* as the *oracle* account.

Sites with multiple Oracle servers may install them under the same *oracle* account, or separate ones. All *oracle* accounts must belong to the `oinstall` group which owns the `oraInventory` directory. For security purposes, it is possible to use different OSDBA groups for different systems. You can do this as long as the *oracle* user is not a member of the DBA group. You will be prompted to enter a non-default value for OSDBA and OSPER groups.

Setup Tasks to Perform as the *oracle* User

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

- Set Permissions for File Creation
- Set Environment Variables
- Update the Environment for Current Session

► 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 the files the OUI creates.

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:

```
umask 022
```

▮ Set Environment Variables

Set the environment variables listed in this section before starting the OUI.

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

DISPLAY

Set to the machine name or IP address, X server, and screen being used by your workstation to connect to the system where the software will be installed. Do not use the machine name or IP address of the system where the software is being installed. Use the machine name or IP of your own workstation. 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" or "Connection refused by server" or "Can't open display" when starting the OUI, run the Bourne/Korn shell or C shell commands below:

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_machine_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_machine_name
```

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`. If you are not using an OFA-compliant system, you do not have to set `ORACLE_BASE`.

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/8.1.5`.

Ensure that the value of `ORACLE_HOME` points to a directory that does not already contain any Oracle software.

NLS_LANG

Required to be set if installing or creating a database that uses a character set other than `US7ASCII` (the default). A complete list of valid character sets is available in Appendix A, "National Language Support".

ORA_NLS33

Required if creating a database with a storage character set other than `US7ASCII`. Set `ORA_NLS33` to `$ORACLE_HOME/ocommon/nls/admin/data` before starting the OUI or creating the database.

►► Update the Environment for Current Session

After setting environment variables in the `.profile` or `.login` file of the `oracle` account, update the environment in the current shell session.

For the Bourne or Korn shell:

```
$ . ./profile
```

For the C shell:

```
% source .login
```

Setup Tasks for Oracle Products

Oracle8i Options

►► Pre-Installation Steps for Oracle Parallel Server Option

Complete the following steps before installing the Parallel Server Option:

1. Create raw devices.

All files associated with an Oracle Parallel Server database must reside on raw volumes so they can be accessed by all nodes in the cluster. Control and data files are shared by all instances. Each instance has its own log files, but all instances must have access to all log files during recovery.

See Also: Creating raw devices is described in the *Oracle8i Administrator's Reference*.

2. Create an ASCII file with entries for each data file, control file, and redo log file.

See Also: Information and examples on creating ASCII files are described in the *Oracle8i Parallel Server* guide.

3. Create an environment variable named DBCA_RAW_CONFIG that points to the ASCII file.

Steps to Perform as the root User

4. Make sure you have a UNIX group defined in the `/etc/group` file on all nodes of the cluster that will serve as the OSDBA group. The OSDBA group name and number (and OSOPER group if you plan to designate one during installation) must be identical for all nodes of a UNIX cluster accessing a single database. The default UNIX group name for the OSDBA and OSOPER groups is `dba`.
5. Create a UNIX account on each node of the cluster so that:
 - the account is a member of the OSDBA group
 - the account is used only to install and update Oracle software
 - the account has write permissions on remote directories
6. Create a mount point directory on each node to serve as the top of your Oracle software directory structure so that:

- the name of the mount point on each node is identical to that on the initial node
- the *oracle* account has read, write, and execute privileges

See Also: Recommended naming conventions for Oracle mount points are discussed on page 2-5.

7. Apply the Sun Cluster software patch that is provided on the Oracle distribution. To install the patch, follow the directions in the *ops_patch* directory on your CD-ROM. This patch provides the Cluster Membership Monitor (CMM) and is required before you attempt to install Oracle Parallel Server.
8. After applying the CMM patch, restart the cluster management software:

```
# cd /opt/SUNWcluster/bin
# scadmin startnode cluster_name
```

For information about cluster management software and the *scadmin* command, see your Solaris documentation.

Start the cluster software on each node of the cluster.

9. Set up user equivalence by adding entries for the other nodes in the cluster to the *.rhosts* file of the *oracle* account, or the */etc/hosts.equiv* file.

Exit the *root* account when you are done.

Steps to Perform as the *oracle* Account

1. Verify that the Cluster Membership Monitor (CMM) is running:

```
$ ps -ef | grep clustd
```

If the CMM program does not appear in the process listing, repeat step 8 on page 2-11.

2. Check for user equivalence for the *oracle* account by performing a remote login (*rlogin*) to each node in the cluster. If you are prompted for a password, the *oracle* account has not been given the same attributes on all nodes. The OUI cannot use the *rcp* command to copy Oracle products to the remote directories without user equivalence.

If you have not set up user equivalence, you must perform Step 9 on page 2-11.

Tools and Precompilers

Complete the tasks for the following tools and precompilers before installing them.

►► Pre-Installation Steps for the Pro*COBOL Precompiler

1. Verify that the COBOL compiler executable is included in the PATH setting.
2. Verify that \$COBLIB is in the LD_LIBRARY_PATH.
3. Set the COBDIR environment variable to the directory where the COBOL compiler is installed.

See Also: To determine what to set the COBDIR and COBLIB environment variables please refer to your product specific COBOL documentation.

►► Pre-Installation Steps for the Pro*C/C++ Precompiler

Verify that the C compiler executable is included in the PATH setting.

►► Pre-Installation Steps for Pro*FORTRAN Precompiler

Verify that the FORTRAN compiler executable is included in the PATH setting.

►► Pre-Installation Steps for the SQL*Module Ada

Verify that the Ada executable is included in the PATH setting, and that the Sun Ada 2.1 compiler configuration file has been set up.

►► Pre-Installation Steps for Legato Storage Manager (LSM)

The LSM installation script modifies the following system files during installation:

- /etc/rpc
- /etc/syslog.conf

Make copies of the original versions of these files before you install Legato Storage Manager.

Removing an Existing Legato Storage Manager Installation

If you want to install LSM from the Oracle8i distribution, but it is already on your system, you must first remove the installed version.

1. Log in as the root user and shut down the LSM daemons:

```
# nsr_shutdown
```

2. Use the `pkgrm` command to remove individual Legato Storage Manager packages, or all of the Legato Storage Manager packages at the same time.

Caution: Some LSM software packages depend on each other. Remove packages only in the following order: ORCLman, ORCLserv, ORCLnode, ORCLcnt, ORCLdrv. Do not remove any existing LSM index files in the `/nsr` directory.

The man pages, drivers, and documentation have no dependencies and can be removed in any order.

```
# pkgrm ORCLpackage_name
```

where *package_name* is one of the following:

ORCLcnt	NetWorker Client
ORCLdrv	NetWorker Device Drivers
ORCLman	NetWorker Man Pages
ORCLnode	NetWorker Storage Node
ORCLserv	NetWorker Server

Networking and System Management Products

Net8 Configuration Assistant

If the Net8 Server or Net8 Client is installed, the OUI automatically launches the Net8 Configuration Assistant for initial configuration of the network.

►► Pre-Installation Steps for Net8

Shut down all Net8 listeners specific to the current `ORACLE_HOME` before installing Net8. To determine if any listeners are running, enter:

```
% ps -ef | grep tns
```

Shut down a running listener with the listener control utility:

```
% lsnrctl listener_name stop
```

▀▀ Pre-Installation Steps for Oracle Names Server

If you want to use a *well-known* Names Server, create an alias for the machine hostname to `oranamestrvr [0-4]` in the `/etc/hosts` file. For example:

```
128.128.44.123 mach1.eng oranamestrvr0
```

You must also create the alias for the well-known Names Server on all server and client machines in the network. (A well-known Names Server is one that uses a default name, such that clients can find it on the network, without being individually configured.)

See Also: Names Servers and well-known Names Servers are discussed in the *Oracle Net8 Administrator's Guide*.

▀▀ Pre-Installation Steps for Oracle Supported Protocols

Before installing any protocol, verify that the underlying network is functioning and configured properly.

TCP/IP

The TCP/IP protocol is installed automatically with all Oracle8i Server installations.

Verify that the network is functioning properly by transferring a test file using the `ftp` utility.

```
$ ftp remote_server_name
ftp> put test_filename
ftp> get test_filename
```

This chapter describes how to start the Oracle Universal Installer (OUI) and create a new Oracle8i installation.

- Product Installation Categories and Installation Types
- Starting the OUI
- Installing Products for the First Time
- Creating a Database
- Upgrading or Migrating an Existing System
- De-installing Oracle Software
- Installing Oracle Parallel Server
- Non-Interactive Installation

Product Installation Categories and Installation Types

Oracle8i comes with a choice of three installation categories: Oracle8i Enterprise Edition, Oracle8i Client, or Oracle Programmer. Each category gives you a choice of installation types: Typical, Minimal, and Custom. Choose the combination of products suitable for your purposes and requirements.

Table 3–1 shows the products which can be installed by each of the three installation categories.

Table 3–1 Oracle Universal Installer: Product Installation Categories

Products	Oracle8i Enterprise Edition	Oracle8i Client	Oracle Programmer
Oracle8i Server	X		
Oracle8i Client		X	
Oracle Programmer			X
Net8 Assistant	X	X	X
Oracle Call Interface	X	X	X
Oracle Advanced Security Option-Export Edition	X	X	
Oracle Object Type Translator	X	X	X
Pro*C			X
Pro*COBOL			X
Pro*FORTRAN			X
Oracle Universal Installer	X	X	X
SQL*Plus	X	X	
Oracle8i Utilities	X	X	
Net8 Server	X		
Net8 Client	X	X	X
Oracle Connection Manager	X		
Oracle Intelligent Agent	X		
Oracle Names	X		

Table 3-1 Oracle Universal Installer: Product Installation Categories

Products	Oracle8i Enterprise Edition	Oracle8i Client	Oracle Programmer
Oracle Parallel Server	X		
Oracle Database Configuration Assistant	X	X	
Oracle Data Migration Assistant	X	X	
Legato Storage Manager	X		
Oracle Partitioning	X		
Oracle interMedia	X		
Oracle Visual Information Retrieval	X		
Oracle Spatial	X		
Oracle Time Series	X		
Solaris Documentation	X	X	
SQLJ Translator	X	X	X
SQLJ Runtime	X	X	X
JDBC/OCI Driver	X	X	X
SQL*Module ADA			X
EJB/CORBA	X	X	X

Starting the OUI

Perform the following tasks to run the Installer:

- Mount the Oracle8i CD-ROM
- Start the OUI

► Mount the Oracle8i CD-ROM

The Oracle8i CD-ROM is in ISO 9660 format with Rockridge extensions. If you are using volume management software (available by default on Solaris) the CD-ROM is mounted automatically to `/cdrom/oracle8i` when you put it into the disk drive, and you can proceed to "Start the OUI" on page 3-4.

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 manually. Be sure to unmount the CD-ROM before removing it from the drive by using the `umount` command

1. Place the Oracle8i 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:

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

Example 3-1 Mounting the CD-ROM Without Using Volume Management Software

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

▶▶ Start the OUI

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

To start the OUI:

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

```
cd cdrom_mount_point_directory
```

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

Note: The OUI is capable of running a non-interactive, "silent" installation of Oracle products that does not use the graphical interface. For instructions on using this feature of the OUI, see "Non-Interactive Installation" on page 3-11.

Installing Products for the First Time

1. In the "Welcome" dialog box, click the [Next] button to begin your installation.
2. In the "File Locations" dialog box, enter a value in the [Destination...] field for the desired location of your ORACLE_HOME.

You will be prompted to run `/tmp/orainstRoot.sh` as `root` before proceeding. This is to create a pointer file to the location of the `oraInventory` directory.

3. In the "Available Products" dialog box, select a product installation category, and in the dialog box which follows, "Installation Types", select an installation type. For more information on installation types, see "Product Installation Categories and Installation Types" on page 3-2. Products not available in all installation types are annotated as such in the table.
4. Proceed through the remaining dialogues using the online help for assistance; available by clicking the [Help] button.
5. After the OUI has finished installing the Oracle products, you must run the `root.sh` script. See "Run the root.sh Script" on page 4-2.

Installing Additional Products after Initial Installation

1. Referring to Table 3-1 on page 3-2, identify the product installation category for the additional product(s) you wish to install.
2. Navigate past the "Welcome" and "File Locations" dialog boxes to the "Available Products" dialog box, and select the product installation category identified in the previous step.
3. Select [Custom] in the "Installation Types" dialog box.
4. In the dialog box that follows, "Available Product Components", currently installed products are shown pre-selected. Select any additional product(s) to be installed.

Caution: Do not de-select any currently installed products, otherwise they will be de-installed.

In the "Products to be Installed" dialog box which follows, currently installed products are shown under "Already Installed". The additional products you have selected are shown under "New Installations".

Installing Legato Storage Manager Manually

The usual procedure for installing Legato Storage Manager is to select Legato Storage Manager installation when you use the Oracle Universal Installer (OUI) to install your Oracle software.

The OUI asks if you want Legato Storage Manager to be installed. If you answer no, you can follow the steps below to install Legato Storage Manager manually at a later time.

Note: If you are updating Legato Storage Manager, be sure to perform a partial removal of Legato Storage Manager using the procedure in the section "Removing an Existing Legato Storage Manager Installation" in Chapter 2. Be sure not to remove any existing Legato Storage Manager files in the `/nsr` directory. For more information on updating, refer to the section "Updating Legato Storage Manager".

To install Legato Storage Manager manually, follow these steps:

1. Be sure no Legato Storage Manager or NetWorker software is installed on your system. The Legato Storage Manager installer, `lsminst` (step 3 below), attempts to detect existing Legato software. If Legato software exists but is not detected, both the existing Legato software and the Legato Storage Manager might not function properly.
2. From the CD-ROM mount point, go to the directory:

```
stage/Components/lsm
```
3. As `root` user, install the Legato Storage Manager software using the following `lsminst` command:

```
# ./lsminst .
```

For each prompt asking if you want to continue the installation, enter Yes.

When prompted for a directory to use for client and server information, you can accept the default or enter another directory name. Be sure the directory used has sufficient disk space, as listed for the indexes in the "Legato Storage Manager Software Requirements" table on page 1-8.

When prompted for a device name, you can enter either a carriage return ([ENTER]) or a proper no-rewind, BSD-semantics tape device name. The device is used by Legato Storage Manager for backups after it has been properly configured in the LSM Administrator GUI. For details on device configuration, refer to Chapter 3 in the *Legato Storage Manager Administrator's Guide*.

For all other prompts displayed by `lsminst`, press [ENTER].

4. Update the MANPATH and PATH environment variables as required. MANPATH must include `/usr/share/man`, the pathname of the directory where the Legato Storage Manager man pages are installed. PATH must include `/usr/bin` and `/usr/sbin`, the pathnames of the directories where the Legato Storage Manager binaries are installed.
5. For each ORACLE_HOME to be enabled for Legato Storage Manager backups, follow these steps:

Note: If you later install another ORACLE_HOME on your system, you must follow these steps to enable Legato Storage Manager backups from that ORACLE_HOME.

- a. Log in as the ORACLE_HOME owner.
- b. Copy the file `liblsm.so` from the directory:


```
stage/Components/lsm/lib
```

 on the Oracle CD-ROM to the file `$ORACLE_HOME/lib/liblsm.so`:


```
cp stage/Components/lsm/lib/liblsm.so $ORACLE_HOME/lib/liblsm.so
```
- c. Shut down all Oracle instances that use this ORACLE_HOME.
- d. Remove the symbolic link `$ORACLE_HOME/lib/libobk.so` and replace it with a symbolic link to the file `$ORACLE_HOME/lib/liblsm.so`:

```
cd $ORACLE_HOME/lib
rm libobk.so
ln -s liblsm.so libobk.so
```

- e. Restart all Oracle instances that use this ORACLE_HOME.

Updating Legato Storage Manager

To update to a newer version of Legato Storage Manager, follow these steps:

1. Perform a partial removal of Legato Storage Manager using the procedure in the section "Removing an Existing Legato Storage Manager Installation" in Chapter 2.

Be sure not to remove any existing Legato Storage Manager files in the `/nsr` directory.

2. Install the updated version of Legato Storage Manager using the procedure in the section "Installing Legato Storage Manager Manually".

Re-Installing Products

To re-install, the product(s) must first be de-installed using the method described in the section "De-installing Oracle Software", then installed according to one of the installation methods outlined elsewhere in this chapter: "Installing Products for the First Time" or "Non-Interactive Installation".

If an installation has failed or aborted, see the section "De-installing Oracle Software" on page 3-9.

Re-Installing Oracle Parallel Server

If the install fails before completion and you have to re-install, you must click the [Yes] button to all the OUI dialog boxes that ask "Do you want to re-install *name of a product*?". Otherwise the remote copy operation to the other nodes will miss the products for which you declined the re-install.

Creating a Database

The OUI does not create a database. However, all server installation types allow at least the option of automatically launching the Oracle Database Configuration Assistant (DBCA) at the end of the installation session. The assistant can create a default or customized database. The assistant can create the database, or can output a SQL script which you can inspect and modify, then run via SQL*Plus or Server Manager.

You can also launch DBCA independently of the OUI. Make sure `$ORACLE_HOME/bin` is in your search path and enter the following:

```
$ dbassist &
```

Upgrading or Migrating an Existing System

If you have installed Oracle8i to use with an existing database from a prior software release, you must upgrade or migrate that database prior to mounting it using Oracle8i. The steps for this process exceed the scope of this manual. See *Oracle8i Migration* for instructions.

De-installing Oracle Software

To de-install Oracle software using the OUI, follow the steps below.

1. Click the [De-install Products] button on the "Welcome" dialog box or the [Installed Products...] button available on any OUI screen. The "Inventory" dialog box appears, listing installed products.
2. In the "Inventory" dialog box, select any product(s) to be de-installed, then click the [Remove] button.

Removing Legato Storage Manager Version 5.5

Note: You cannot remove Legato Storage Manager using the OUI. You must use the following steps to remove Legato Storage Manager version 5.5.

To remove Legato Storage Manager version 5.5, follow these steps:

1. For each ORACLE_HOME on your system enabled for backups, follow these steps to remove the Media Management API of Legato Storage Manager:
 - a. Shut down all Oracle instances that use this ORACLE_HOME.
 - b. Remove `$ORACLE_HOME/lib/liblsm.so` and create a symbolic link from `$ORACLE_HOME/lib/libobk.so` to `$ORACLE_HOME/lib/liborasbt.so`:

```
cd $ORACLE_HOME/lib
rm libobk.so
rm liblsm.so
```

```
ln -s liborasbt.so libobk.so
```

- c. Restart all Oracle instances that use this ORACLE_HOME.
2. As root user, stop the Legato Storage Manager daemons using the `nsr_shutdown` command:
3. As root user, remove the Legato Storage Manager software using the following `pkgrm` command:

```
# nsr_shutdown
```

```
# pkgrm ORCLman ORCLserv ORCLnode ORCLdrv ORCLclnt
```

Note: Be sure to specify the software packages in this exact order, with ORCLman being followed by ORCLserv, etc.

For each prompt displayed by the `pkgrm` command, enter yes.

Warning: This procedure does not remove the `/nsr` directory containing the Legato Storage Manager client and media index files and resource configuration files.

4. To remove the Legato Storage Manager index and resource configuration files, remove the `/nsr` directory by running the following command as root user:

```
# rm -rf /nsr/* /nsr
```

If you remove the `/nsr` directory containing the index and configuration information, you will not be able to restore from the Legato Storage Manager backups. If you later reinstall the Legato Storage Manager or install another Legato product, you will need to rebuild the configuration.

Cleaning Up After a Failed Installation

If an installation fails, it may be necessary to remove any files that the OUI created during the last session before you attempt another installation.

To clean up after a failed installation:

1. Start the OUI.
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 may need to manually remove the following items:

1. `ORACLE_HOME` directory.
2. `oraInventory/./oui`.
3. `oraInventory/./jre`.

The location of the `oraInventory` directory can be obtained from the file `/var/opt/oracle/oraInst.loc`.

Installing Oracle Parallel Server

During installation, software components are installed on the node from which the Oracle Universal Installer is run, and pushed to the other selected nodes in the cluster.

See Also: For more detailed installation information on Oracle Parallel Server refer to the *Oracle 8i Parallel Server Guide*.

Non-Interactive Installation

You may perform a non-interactive, or "silent," install by supplying the OUI with a *response file*, a text file that contains values and variables that are used by the OUI during the installation process. By using a response file, you can perform an installation without some or any of the OUI's graphical interface.

Preparing the Response File

There are seven response files, one for each install type and for each category, included on the Oracle8i CD-ROM. The typical server response file is almost completely configured to perform a non-interactive, typical installation using the OUI. The custom response file requires extensive editing before it can be used as a response file for the OUI.

To use a response file, copy the response file from the Oracle8i CD-ROM to a drive mounted on your system. For example:

```
% cd cdrom_mount_point_directory/stage/Response/  
% cp typical815.rsp local_directory
```

Edit the response file you want to use with any text editor, to include information specific to your system. Each file contains instructions for properly configuring the response file.

Specifying a Response File for the Oracle Universal Installer

To make the OUI use the response file at install time, follow the same steps as described in the section "Start the OUI" on page 3-4, but specify the location of the response file that you wish to use as a parameter when running OUI:

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

To perform a completely silent installation with the OUI, use the flag `-silent`. Note that the OUI will fail if you use this flag and the response file has not been configured. The success or failure of the installation is logged in the `silentInstall.log` file in the `/tmp` directory.

Error Handling

The OUI treats wrong context, format, or type values as if no value were specified. Variables which are outside of any section are ignored.

Validation of Values from Response File

Calculation and validation of the response file is performed at install time by OUI. Failure of the validation process results in the termination of installation.

Configuring Oracle8i

You must perform certain post-installation steps and configure Oracle8i after completing the OUI session. This chapter describes the required steps, as well as some optional ones.

- Configuration Tasks to Perform as the root User
- Configuration Tasks to Perform as the oracle User
- Post-Installation for Oracle Products
- Accessing Installed Documentation

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 Sun SPARC Solaris* and in product administration and tuning guides.

Configuration Tasks to Perform as the `root` User

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

- Run the `root.sh` Script
- Create Additional UNIX Accounts
- Verify Database File Security
- Automate Database Startup and Shutdown (Optional)

▶▶ Run the `root.sh` Script

The OUI creates the `root.sh` script in the `ORACLE_HOME` directory and prompts you to run the `root.sh` script. 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
```

If you have installed Oracle Parallel server, you must run the `root.sh` script on every node in the cluster.

The `root.sh` script prompts you to confirm the environment before it performs any actions. If you need to reset the environment for any reason, terminate the `root.sh` script. If you terminate the script, you must re-run it; you do not need to run the OUI again. Select the [OK] button on the OUI screen 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.

▶▶ Create Additional UNIX Accounts

If necessary, create additional UNIX accounts with your system administration utility (`useradd`). Each DBA on the system must have an account in the `OSDBA` group.

► Verify Database File Security

Sites using Oracle8i configured in a way similar to a United States NCSC C2 or European ITSEC E3 security evaluation configuration must perform this task to ensure the integrity of the Oracle software installation. This task is optional if security is not an issue.

Query the data dictionary view using SQL*Plus to list the accounts in the default database. Accounts in the database are based upon the products chosen in the OUI.

```
sql> SELECT username from dba_users;
```

You should delete accounts you do not need.

Many files must be protected to prevent unauthorized access to secure data. The recommended file modes and ownership are as follows:

- The *oracle* account should own all common system files and installation files.
- The OSDBA group should have read, write, and execute privileges on all common system files and installation files.
- No user outside the OSDBA 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 that 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 <i>oracle</i> account and OSDBA group.
\$ORACLE_HOME/bin/	751 rwxr-x--x	Must be writable by the <i>oracle</i> software owner, and executable by all users.

Table 4–1 Access Permissions on Oracle Directories and Files

Directories/Files	Permissions	Comments
The <code>oracle</code> executable, and the following network executables: <code>cmctl</code> , <code>cmadmin</code> , <code>cmgw</code> , <code>names</code> , <code>namesctl</code> , <code>tnsping</code> , <code>osslogin</code> , <code>trcroute</code> , <code>trcasst</code> , <code>onrsd</code> , <code>oemevent</code> , <code>oratclsh</code> , <code>dbsnmp</code> , <code>lsnrctl</code> , and <code>tnslsnr</code> .	6751 rws-r-s--x	The 6 sets the <code>setuid</code> bit so the executables run as the <code>oracle</code> user and <code>dba</code> group, regardless of who executes them.
All other executables.	751 rwxr-x--x	Must be writable by the <code>oracle</code> software owner, and executable by all users.
<code>\$ORACLE_HOME/lib/</code>	755 rwxr-xr-x	The directory is readable, writable, and executable by the owner, readable and executable by all other users.
All files under <code>\$ORACLE_HOME/lib/</code>	644 rw-r--r--	The files are readable and writable by the owner, read-only for all other users.
<code>\$ORACLE_HOME/rdbms/log</code>	751 rwxr-x--x	Restricts access to log files to the <code>oracle</code> account and OSDBA group.
Product subdirectories such as <code>\$ORACLE_HOME/sqlplus</code> or <code>\$ORACLE_HOME/rdbms</code>	751 rwxr-x--x	Restricts access to log files to the <code>oracle</code> account and OSDBA group.
Files in <code>\$ORACLE_HOME/sqlplus</code> or <code>\$ORACLE_HOME/rdbms</code>	644 rw-r--r--	The files are readable and writable by the owner, read-only for all other users.
<code>\$ORACLE_HOME/network/trace</code>	777 or 730 rwxrwxrwx or rwx-wx---	777 allows broad access to view and create trace files during development. Use 730 in a production environment to ensure that only members of the OSDBA group have access to trace files.
All files under product admin directories, like <code>\$ORACLE_HOME/rdbms/admin</code> and <code>\$ORACLE_HOME/sqlplus/admin</code>	644 -rw-r--r--	SQL scripts should typically be run as the SYS user.

► Automate Database Startup and Shutdown (Optional)

Automating database startup is optional, but automatic shutdown is recommended, because it guards against improper shutdown of the database.

The `dbshut` and `dbstart` 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: Check the documentation for the `init` command in your Sun SPARC Solaris documentation for a description of system startup and shutdown procedures.

Automating Database Startup and Shutdown

This process must be completed for every new database that you want to have automated startup and shutdown. 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.

2. 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`.
3. Create a file named `dbora` in the `/etc/init.d` directory (if it does not already exist).
4. Create entries similar to the following at the end of the `dbora` file (if they do not already exist). Be sure to give the full path of the `dbstart` utility.

```
#!/bin/sh
# Set ORACLE_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/8.1.5
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
```

5. 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
- Update the oratab File
- Apply Any Required Oracle Patches
- Set Initialization Parameters

►► Update UNIX Account Startup Files

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

Set Environment Variables

Set the following environment variables in the `.profile` or `.login` file of the `oracle` account before using Oracle8i products. Table 4-2 shows the OUI's default values (which you might have modified). 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.

CLASSPATH

The classpath is used for Java functionality. CLASSPATH is different for various products. Refer to your product documentation for more information.

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 OFA-recommended value is `$ORACLE_BASE/product/release`. For example: `/u01/app/oracle/product/8.1.5`.

ORACLE_SID

Specifies the Oracle system identifier, or *sid*, which is the name of the Oracle Server instance. Because the *sid* is incorporated into many filenames, Oracle Corporation recommends restricting it to no more than four characters to avoid filename problems on heterogeneous systems.

PATH

Verify that the search path includes all of the following:

- `$ORACLE_HOME/bin`, `/bin`, `/usr/bin`, and `/usr/ccs/bin`
- the local `bin` directory, `/usr/local/bin`, created automatically by the OUI

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

Table 4–2 Environment Variable Settings

Environment Variable	Default Setting
LD_LIBRARY_PATH	There is no default setting for LD_LIBRARY_PATH. Set it to include <code>\$ORACLE_HOME/lib</code>
ORACLE_BASE	<code>software_mount_point/app/oracle</code>
ORACLE_HOME	<code>\$ORACLE_BASE/product/8.1.5</code>
ORACLE_SID	There is no default setting for ORACLE_SID. If you do not remember the value you entered, you can find it listed in the OUI log file.
PATH	There is no default setting for PATH. Make sure the new <code>\$ORACLE_HOME/bin</code> directory is included. See Chapter 2, "Setting the Environment" for other requirements.
CLASSPATH	There is no default setting, and CLASSPATH must include the following: <code>JRE_Location</code> , <code>\$ORACLE_HOME/jlib</code> , <code>\$ORACLE_HOME/product/jlib</code> Note: <code>JRE_Location</code> is defined as <code>oraInventory/./jre/1.1.6.20</code> , where <code>oraInventory</code> is a directory whose path is specified in the file, <code>/var/opt/oracle/oraInst.loc</code> .

Initialize the `oraenv` (`coraenv`) Script

You have option of using the `oraenv` or `coraenv` scripts to set a common environment for oracle users. Follow the instructions below for a single-instance or multiple-instance configuration for the `oraenv` script, or the `coraenv` script if you are running the C shell.

Single-Instance Machine

On a single-instance machine, include the following commands to initialize the `oraenv` (`coraenv`) file at the end of the `.profile` or `.login` file of the `oracle` account.

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` (`coraenv`) file at the end of the startup file of the `oracle` account. The value of `ORACLE_SID` you defined before the OUI session is the default instance name.

For the Bourne or Korn shell:

```
#!/bin/sh
SIDLIST=`awk -F: '/^[^#]/{printf "%s", $1} '/var/opt/oracle/oratab`
echo "SIDs on this machine are $SIDLIST"
ORAENV_ASK=
. /usr/local/bin/oraenv
```

For the C shell:

```
set sidlist=`awk -F: '/^[^#]/{printf "%s", $1} '/var/opt/oracle/oratab`
echo "SIDs on this machine are $sidlist"
unset ORAENV_ASK sidlist
source /usr/local/bin/coraenv
```

Update Other Oracle User Startup Files

To create the same environment for all Oracle users, update each user startup file to include:

- `ORACLE_HOME/bin` in the `PATH` statement
- the following line at the end of the startup file:
 `. /usr/local/bin/oraenv`
 (or `source /usr/local/bin/coraenv` for C shell users)
- settings for `ORACLE_BASE` and `ORACLE_HOME`

» Update the `oratab` File

If you have created a database manually instead of using the Database Configuration Assistant (DBCA), 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. The DBCA automatically adds an entry for each database it creates.

» Apply Any Required Oracle Patches

The Oracle8i release which this manual accompanies includes patches that must be applied to Oracle8i or other products. Patches can be found on the Product CD-ROM in the `/cd_rom_mount_point/patch` directory. Review the `README` file included with each patch for installation instructions.

» Set Initialization Parameters

The default `initsid.ora` file shipped with the distribution is located in the `$ORACLE_BASE/admin/sid/pfile` directory. A template `initsid.ora` file is also in `$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 `initsid.ora` Parameters

When you create a database using DBCA your `initsid.ora` parameters are automatically set. You can manually modify the initialization parameters in the

`inittsid.ora` with a UNIX text editor. Activate the modified `inittsid.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.

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

For example, change:

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

See Also: *Oracle8i Administer's Reference for Sun SPARC Solaris* for information on `inittsid.ora` parameters.

Post-Installation for Oracle Products

Perform the product-specific steps as necessary for your installation. Not all products require post-installation setup.

To access online documentation before you configure your Oracle installation, see the instructions for accessing that documentation on page 4-20. It is not necessary to read product documentation before completing the configuration tasks in this manual, but more sophisticated tuning requires information in the product documentation.

The following products have post-installation steps:

- Oracle Options
- Oracle 8i Recovery Manager
- Multi-Threaded Server
- Oracle Parallel Server Option
- Oracle Compilers (Pro*COBOL, Pro*C/C++, Pro*FORTRAN, SQL*Module Ada)
- Net8
- Legato Storage Manager
- Oracle Names Server

- Oracle Supported Protocols

Post-Installation for Oracle Options

Note: There is no upgrade from previous releases of ConText Cartridge to Oracle interMedia Text 8.1. However, there is a migration that can be performed manually. See the *Oracle8i ConText to interMedia Text Migration* guide for documentation of this process.

If you intend to install Oracle interMedia Text, ensure you have at least 10 MB of disk space for the data dictionary.

Verify that tablespaces exist to serve as default and temporary tablespaces for Oracle interMedia Text. Oracle interMedia Text uses the DRSYS tablespace for its default and temporary tablespaces. If tablespaces for Oracle interMedia Text do not exist or you do not want to use the DRSYS tablespace, create additional tablespaces before proceeding.

See Also: *Oracle8i SQL Reference* for information on creating tablespaces.

1. Start up the Database Configuration Assistant (DBCA) by executing `dbassist`, which is located at:

```
$ORACLE_HOME/bin/dbassist
```
2. Select [Modify Database].
3. Select the appropriate database SID from the list of those detected by the DBCA. The database that you want to modify must already be running.
4. Choose the options you wish to enable from the list and click the [Finish] button.

Execute privileges will be granted to PUBLIC for all of the options and packages.

Post-Installation for Oracle8i Recovery Manager

Recovery Manager is an automated recovery utility that is installed as part of Oracle8i. It stores information in a recovery catalog in a separate Oracle8i database.

This second Oracle8i database should be installed on a separate machine to provide maximum fault resistance.

Note: Recovery Manager can also be used in a restricted mode without a recovery catalog, if the installation and maintenance of a second Oracle8i database is impractical.

Perform the following steps if you want to create a recovery catalog:

1. Install Oracle8i on a separate machine from any other Oracle8i system and create a database for the recovery catalog.

If you choose not to write a custom script to create the database, create the default database with the OUI. The default database is adequate for the recovery catalog.

2. Create a user in the recovery catalog database to be the RECOVERY_CATALOG_OWNER.
3. As the RECOVERY_CATALOG_OWNER, run the `createCatalog` command at the Recovery Manger prompt.

See Also: For more detail on Recovery Manager, see the *Oracle8i Backup and Recovery Guide*.

Post Installation Steps for Multi-Threaded Server (MTS)

Servers configured with MTS require a higher setting for the initialization parameter `SHARED_POOL_SIZE` or a custom configuration that uses `LARGE_POOL_SIZE`. The value of `SHARED_POOL_SIZE` will be set for you automatically by the Oracle Database Configuration Assistant if you installed your server with the OUI. However, if you created a database manually you should raise `SHARED_POOL_SIZE` in the `initsid.ora` file. Typically, you should add 1 KB for each anticipated concurrent user. See *Oracle8i Tuning* for further information on configuring MTS.

Post Installation Steps for Oracle Parallel Server Management

1. To start the OPSD (Oracle Parallel Server Communication Daemon) automatically when the machine is rebooted, log in as the `root` user and add a line similar to the following in the system startup file:

```
su - oracle -c "opstd log=/tmp/opstd.log"
```

The above entry is optional, the default is:

```
/tmp/opsdlog
```

On Sun SPARC Solaris, the startup file is `/etc/init.d/dbora`.

2. Determine the node numbers for all nodes of the cluster, by entering:

```
$ORACLE_HOME/opsm/utl/getnodelist -a"
```

3. Create the OPS configuration file, `$ORACLE_HOME/ops/opsname.conf`, and install on each node. This file contains parameters describing the configuration of OPS instances and related services.

See Also: For more information, refer to the *Oracle Parallel Server Management Configuration Guide for UNIX*. To view this document, point your browser to `$ORACLE_HOME/opsm/doc/opsmsrv.htm`.

Post-Installation Steps for Oracle Precompilers

Note: You cannot use Oracle Precompilers independently of Oracle8i to convert embedded PL/SQL.

Pro*C/C++

The configuration file `pcscfg.cfg` in `$ORACLE_HOME/precomp/admin` must be customized for your environment before using Pro*C/C++. This file is installed without content and may be configured with any text editor according to your site-specific requirements. See your SPARCworks/workshop C compiler documentation to determine how to configure this file.

See Also: The *Programmer's Guide to the Pro*C/C++ Precompiler* for further information on configuring the `pcscfg.cfg` file for your environment.

Pro*COBOL

The configuration file is `pcbcbfg.cfg`. For This file is installed without content and may be configured with any text editor according to your site-specific requirements. See your Micro Focus COBOL documentation to determine how to configure this file.

Pro*FORTRAN

The configuration file is `pccfor.cfg`. This file is installed without content and may be configured with any text editor according to your site-specific requirements. See your FORTRAN77 documentation to determine how to configure this file.

SQL*Module Ada

The configuration file is `pmscfg.cfg`. This file is installed without content and may be configured with any text editor according to your site-specific requirements. See your Sun Ada 2.1 documentation to determine how to configure this file.

Post-Installation Steps for Net8

Configuring a complete Oracle network is beyond the scope of this manual, and is covered in detail in the *Net8 Administrator's Guide*. When the Net8 Server or Net8 Client is installed, the Net8 Configuration Assistant is automatically launched to complete initial configuration of Net8 as follows:

1. If you are installing Oracle8i, the Net8 Assistant will automatically create a profile called `sqlnet.ora` and a listener called `listener` with a listening endpoint that is consistent with any protocol support selections you made. In most cases, this results in listening on protocol TCP/IP using port number 1521. In all but the most complicated environments this will be the only listener you will ever need to configure. The listener will be started automatically by the Net8 Configuration Assistant. If you wish to check the status of the listener following installation you can do so by using the command:

```
$ lsnrctl status
```

If the listener is not running, start it up:

```
$ lsnrctl start listener
```

2. Log in as `root` and reserve a port for the Net8 listener by making the following entry in the `/etc/services` file:

```
listener 1521/tcp          #Net8 listener
```

If you create a database using the Database Configuration Assistant during or after installation, it will automatically update the listener configuration with any necessary configuration information for this new database. This file can then be distributed to any client machines to connect to the Oracle8i database.

If you choose to do a separate Oracle8i client install, the Net8 Configuration Assistant will automatically create a profile that is consistent with any selections you made during install. The OUI will automatically run the Net8 Easy Configuration wizard which assists you in configuring a net service name in the Local Naming file located in the \$ORACLE_HOME/network/admin directory of your client installation.

After installation is complete more detailed configuration can be accomplished using the Net8 Assistant by executing:

```
$ netasst
```

Net8 Easy Configuration is also available by executing:

```
$ netec
```

For information on the use and configuration of Net8 please refer to the *Net8 Administrator's Guide*.

3. After the Net8 Assistant creates the `tnsnames.ora` file, append its contents to existing `tnsnames.ora` files in the `$ORACLE_HOME/network/admin` directories of client machines.
4. Install SQL*Plus on a client machine, then start SQL*Plus to test the connection to the Server:

```
$ sqlplus username/password@service_name
```

At this point you have established network connectivity over TCP/IP. For more advanced network configuration, refer to the *Net8 Administrator's Guide*.

Post-Installation for Legato Storage Manager (LSM)

Legato Storage Manager installation through the OUI is done via the `root.sh` script as described in "Run the root.sh Script" on page 4-2.

1. After `root.sh` has completed the LSM installation, verify that all the required packages were installed:

```
# pkginfo | grep -i LSM
application ORCLclnt      LSM (Backup/Recover) Client
system ORCLdrv          LSM (Backup/Recover) Device Drivers
application ORCLman      LSM (Backup/Recover) Man Pages
application ORCLnode     LSM (Backup/Recover) Storage Node
application ORCLserv     LSM (Backup/Recover) Server
```

2. Configure the driver software to provide support for Legato Storage Manager to back up data to the SCSI storage devices attached to the system. For more information, refer to the *Legato Storage Manager Administrator's Guide*.

Integrating SAP R/3 with Legato Storage Manager

Legato Storage Manager (LSM) provides a means to integrate SAP R/3 and Oracle8 backup and recovery initiated from SAPDBA along with the SAP br-tools (brbackup, brarchive, and brrestore) with the LSM server to perform archive, backup, and recover operations.

On the Oracle software CD-ROM, the directory containing the LSM software has a subdirectory named `SAP` with the following files for SAP R/3 on Oracle:

`backint` - SAP API that integrates SAP R/3 backup and recovery with third-party utilities

`init.utl` - Parameter file that specifies the variables used by `backint` during backup, recover, and archive operations

`README` - Text file that describes the SAP R/3 files and where to install them

You can follow these steps to set up and configure LSM with SAP R/3 on Oracle:

1. Install LSM on the Oracle server, with SAP R/3 already installed. Follow the LSM installation instructions included in this Oracle Installation Guide.
2. Be sure to include the pathname of the directory containing the LSM executables, `/usr/sbin`, in the `PATH` environment variable for the Oracle user, `oraoracle_sid`.
3. Configure a client resource for the Oracle server in LSM, according to the instructions in Chapter 2 of the *Legato Storage Manager Administrator's Guide*, which is included on the Oracle software CD-ROM.
4. From the subdirectory named `SAP` in the LSM directory on the Oracle CD-ROM, copy the `backint` program file into the directory where the SAP br-tools reside.
5. From the subdirectory named `SAP` in the LSM directory on the Oracle CD-ROM, copy the file `init.utl` into the directory where you installed LSM, `/usr/sbin`.
6. Instruct the SAP Database Administration program to use the `backint` program by setting the `backup_dev_type` parameter in the SAP initialization file, `initoracle_sid.sap`. In `initoracle_sid.sap`, set the parameter as follows:

```
backup_dev_type = util_file
```

7. Instruct the SAP Database Administration program to use the file `initoracle_sid.utl` for backint-specific parameters by setting the `util_par_file` parameter in the SAP initialization file, `initoracle_sid.sap`.

In `initoracle_sid.sap`, set the parameter as follows:

```
util_par_file = ?/dbs/initoracle_sid.utl
```

The session report, `backintoracle_sid.log`, is created after the first backup session using SAP R/3 integrated with LSM. The report, typically located in the directory `/nsr/logs`, is appended to after each backup, recover, or archive.

Post-Installation for Oracle Names Server (Optional)

Oracle Names Server is installed automatically with Net8. If you want to configure your network to use Oracle Names Server, do the following:

1. Use the Net8 Assistant to create the Oracle Names configuration files `sqlnet.ora` and `names.ora`.
2. If you are using well-known Names Servers, verify they are correctly aliased in the `/etc/hosts` file of all network nodes.
3. If you are using your machine as the server, start the Names Server process:

```
$ namesctl startup
```

4. Check the Names Server process:

```
$ namesctl status
```

Post-Installation for Oracle Supported Protocols

All Supported Protocols

Perform the following steps after installing any protocol:

1. Verify that you have created and installed the necessary configuration files for the network.
2. To start the listener automatically when the machine is rebooted, log in as the `root` user and add a line similar to the following in the system startup file:

```
su - oracle -c "lsnrctl start"
```

On Sun SPARC Solaris, the startup file is `/etc/init.d/dbora`.

Note: This procedure fails if the `TNS_ADMIN` environment variable is not set in the `.profile` or `.login` file of the `oracle` account, or if `listener.ora` is not in one of the default locations (`/var/opt/oracle` or `$ORACLE_HOME/network/admin`).

3. If you have a client/server configuration, you must set the `TWO_TASK` environment variable on the clients to point to the server. Set the `TWO_TASK` environment variable on the client machines to the service name for the server (available from the `tnsnames.ora` file).

4. Start the listener process on the server:

```
$ lsnrctl start
```

5. Check the listener process:

```
$ lsnrctl status
```

6. As the `oracle` user, start SQL*Plus, to test the connection:

```
$ sqlplus username/password@service_name
```

SPX/IPX

Start the `ntisbsdsm` executable before starting the Net8 listener:

```
$ ntspxctl  
ntspxctl> startup
```

Command output confirms the status of the executable.

Configuring the Secure Socket Layer

Once the Secure Socket Layer (SSL) is installed, you must run Net8 Configuration Assistant to properly configure it for your system.

See Also: For more detail on SSL, refer to the installed documentation *The Secure Socket Layer Feature of Oracle Advanced Security Option* that accompanies the *Oracle Advanced Security Option Administrator's Reference Guide* in the generic documentation set.

Accessing Installed Documentation

You can install documentation in HTML and PDF (Adobe Portable Document Format, which requires Acrobat Reader) formats. Solaris-specific documentation files are installed from the Oracle8i CD-ROM. Generic documentation files are installed from the Online Generic Documentation CD-ROM. The location of the documentation files is determined according to the following rules:

- If ORACLE_DOC is defined in the environment, the OUI installs the files there.
- If ORACLE_DOC is not defined but ORACLE_BASE is defined, the OUI installs the files under the \$ORACLE_BASE/doc directory.
- If neither ORACLE_DOC nor ORACLE_BASE are defined in the environment, the OUI installs the files under the \$ORACLE_HOME/doc directory.

To access the documentation, point your browser to either `index.htm` or `products.htm` (the latter does not require a frames-enabled browser). You can print the PDF files, if you prefer paper documentation.

You can also access documentation directly from the CD-ROM.

See Also: Information on accessing documentation directly from CD-ROM is contained in the CD-ROM insert.

Oracle Information Navigator

Information Navigator is a Java-based search and navigation utility provided on the Oracle Documentation CD-ROM. If you are using a Java-enabled browser, Information Navigator is launched automatically when you open the `index.htm` file. Information Navigator can be used with Oracle documentation, whether you are reading from CD-ROM or from installed files.

A

National Language Support

This appendix lists supported sort sequences, character sets, and languages and territories for Oracle products. This appendix is not a detailed discussion of Oracle National Language Support (NLS).

See Also: National Language Support is described in detail in the *Oracle8i Server Concepts* and the *Oracle8i Server Reference* guides.

Supported Sort Sequences

Available linguistic sort sequences are:

Arabic	German_Din	Italian	Spanish
Czech	XGerman	Latin	XSpanish
Danish	XGerman_Din	Norwegian	Swedish
XDanish	Greek	Polish	Swiss
Dutch	Hebrew	Russian	Turkish
Finnish	Hungarian	Slovak	Turkish
German	Icelandic	XSlovak	West_European

Supported Character Sets

Oracle NLS supports the following character sets:

7-Bit Character Sets

US7ASCII	US 7-bit ASCII(default)
D7DEC	DEC German 7-bit
F7DEC	DEC French 7-bit
S7DEC	DEC Swedish 7-bit
E7DEC	DEC Spanish 7-bit
AR7ASMO449PLUS	Arabic/Latin ASMO-Plus 7-bit
TR7DEC	DEC Turkish 7-bit
SF7ASCII	Finnish 7-bit ASCII extension
NDK7DEC	DEC Norwegian/Danish 7-bit
I7DEC	DEC Italian 7-bit
NL7DEC	DEC Dutch 7-bit
CH7DEC	DEC Swiss 7-bit
SF7DEC	DEC Finnish 7-bit

8-bit Character Sets

US8ICL	ICL EBCDIC 8-bit US
WE8ICL	ICL EBCDIC 8-bit West European
EE8PC853	IBM PC 8-bit East European - code page 853
LT8PC772	IBM PC 8-bit Lithuanian - code page 772
LT8PC774	IBM PC 8-bit Lithuanian - code page 774
DK8EBCDIC277	EBCDIC 8-bit Danish - code page 277
WE8DEC	DEC West European 8-bit
WE8HP	HP 8-bit West European
US8PC437	IBM PC 8-bit U. S. - code page 437
WE8EBCDIC37	EBCDIC 8-bit West European - code page 37
WE8EBCDIC500	EBCDIC 8-bit West European - code page 500
EL8EBCDIC875	EBCDIC 8-bit Greek - code page 875

WE8PC850	IBM PC 8-bit West European - code page 850 (for use with HFT terminals)
WE8ISO8859P1	ISO 8859-1 West European 8-bit
EE8ISO8859P2	ISO 8859-2 East European 8-bit
SE8ISO8859P3	ISO 8859-3 South European 8-bit
CL8ISO8859P5	ISO 8859-5 Cyrillic 8-bit
CL8MSWIN1251	Windows Cyrillic 8-bit (Replaces CL8MSWINDOW31)
CLMACCYRILLIC	Mac Cyrillic 8-bit
EL8ISO8859P7	ISO 8859-7 Latin/Greek 8-bit
IW8ISO8859P8	ISO 8859-8 Latin/Hebrew (Iwriet) 8-bit
WE8ISO8859P9	ISO 8859-9 West European/Turkish 8-bit
EL8DEC	DEC Latin/Greek 8-bit
TR8DEC	DEC Turkish 8-bit
EL8PC437S	IBM-PC Special American/Greek character set
EEC8EUROPA3	EEC's EUROPA3 West European/Greek 8-bit character set
RU8BESTA	Latin/Cyrillic BESTA 8-bit
RU8PC866	IBM-PC Latin/Cyrillic 8-bit - code page 866
RU8PC855	IBM-PC Latin/Cyrillic 8-bit - code page 855
D8EBCDIC273	EBCDIC 8-bit Austrian/German - code page 273/1
I8EBCDIC280	EBCDIC 8-bit Italian - code page 280/1
N8PC865	IBM PC 8-bit Norwegian - code page 865
TH8TISASCII	Thai Industrial Standard 620-2533 ASCII 8-bit
TH8TISEBCDIC	Thai Industrial Standard 620-2533 EBCDIC 8-bit
TR8PC857	IBM-PC Turkish 8-bit - code page 857
NEE8ISO8859P4	ISO 8859-4 North and North-east European
AR8ISO8859P6	Arabic/Latin ASMO-Plus 8-bit (not valid as a storage character set)
AR8ASMO708PLUS	ISO 8859-6 Latin /Arabic

TR8ISO8859P9 Turkish version ISO 8859-9 West European

Multi-Byte Character Sets

JA16VMS	Japanese VMS Kanji
JA16EUC	Japanese Extended UNIX Code
JA16EBCDIC930	Japanese
JA16SJIS	Japanese Shift-JIS
JA16DBCS	Japanese IBM
KO16KSC5601	Korean KSC5601
KO16DBCS	Korean IBM
ZHS16CGB231280	Chinese GB2312-80
ZHS16GBK	Chinese GBK
ZHT32CNS11643-86	Taiwan Traditional Chinese
ZHT16BIG5	BIG5 Traditional Chinese
ZHT32EUC	Traditional Chinese Extended UNIX Code

Supported Languages and Territories

Table A-1 lists language and territory names, and the corresponding NLS values. The table also lists the recommended character set for each language/territory pair.

Table A-1 Languages, Territories, and Recommended Character Sets

Language Name	NLS Value	Territory Name	NLS Value	Recommended Character Set
American	american	United States	america	US7ASCII
Arabic	arabic	United Arab Emirates	"united arab emirates"	AR8ISO8859P6
Brazilian Portuguese	"brazilian portuguese"	Brazil	brazil	WE8DEC
Canadian French	frc	Canada (Quebec)	frc	WE8DEC
Czech	czech	Czech Republic	czechoslovakia	EE8ISO8859P2

Table A-1 Languages, Territories, and Recommended Character Sets (Cont.)

Language Name	NLS Value	Territory Name	NLS Value	Recommended Character Set
Danish	danish	Denmark	denmark	WE8DEC
Dutch	dutch	The Netherlands	"the netherlands"	WE8DEC
Finnish	finnish	Finland	finland	WE8DEC
French	french	France	france	WE8DEC
German	german	Germany	germany	WE8DEC
Greek	greek	Greece	greece	EL8DEC
Hungarian	hungarian	Hungary	hungary	WE8ISO8859P2
Icelandic	is	Iceland	is	WE8ISO8859P1
Italian	italian	Italy	italy	WE8DEC
Japanese	japanese	Japan	japan	JA16EUC
Korean	korean	Korea	korea	KO16KSC5601
Lithuanian	lt	Lithuania	lt	NEE8ISO8859P4
Mexican Spanish	esm	Mexico	esm	WE8DEC
Norwegian	norwegian	Norway	norway	WE8DEC
Polish	polish	Poland	poland	EE8ISO8859P2
Portuguese	portuguese	Portugal	portugal	WE8DEC
Russian	russian	CIS	cis	CL8ISO8859P2
Simplified Chinese	"simplified chinese"	China	china	ZHS16CGB231280
Slovak	slovak	Slovakia	slovakia	EE8ISO8859P2
Spanish	spanish	Spain	spain	WE8DEC
Swedish	swedish	Sweden	sweden	WE8DEC
Thai	th	Thailand	th	TH8TISASCII
Traditional Chinese	"traditional chinese"	Taiwan	taiwan	ZHT32EUC
Turkish	turkish	Turkey	turkey	WE8ISO8859P9

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