

Oracle8i

Installation Guide

Release 3 (8.1.7) for Alpha OpenVMS

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Oracle8i Installation Guide, Release 3 (8.1.7) for Alpha OpenVMS

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Oracle8i Installation Guide Release 3 (8.1.7) for Alpha OpenVMS

Part No. A86708-01

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?
- Is the information clearly presented?
- Do you need more information? If so, where?
- Are the examples correct? Do you need more examples?
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- E-mail - osdwrite_us@oracle.com
- FAX - 650.506.7303
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Redwood Shores, CA 94065
USA

If you would like a reply, please give your name, address, and telephone number below.

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

Preface

Purpose

This guide and the *Oracle8i Administrator's Reference* provide instructions for installing and configuring Oracle8i Release 3 on Alpha OpenVMS systems. Product-specific documentation is in the Oracle8i Generic Documentation Set.

Audience

This document is intended for anyone responsible for installing Oracle8i Release 3 on Alpha OpenVMS systems.

Oracle8i and Oracle8i Enterprise Edition

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

For the Latest Information

For the latest information about Alpha OpenVMS production releases of Oracle8i and related products, see the **README** files in the Oracle product directories.

Install Only Licensed Products

You are entitled to install and use only those products for which you have a current Oracle license agreement.

Typographic Conventions

<code>monospace</code>	Monospace type indicates OpenVMS DCL 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 logical, including logicals portions of filenames. It is also used for emphasis.
UPPERCASE	Uppercase letters indicate Structured Query Language (SQL) reserved words, initialization parameters, and environment logicals.

Command Syntax

Alpha OpenVMS command syntax appears in `monospace` font. The "\$" character at the beginning of OpenVMS command examples should not be entered at the prompt.

hyphen -	A hyphen indicates a command that is too long to fit on a single line. Enter the line as printed or enter it as a single line without a hyphen: <pre>copy disk\$server25:[oracle816.rdbms.admin]*.sql - disk\$server2:[oracle.rdbms.admin]</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 logical: <code>library_name</code>
vertical line	A vertical line indicates a choice within braces or brackets: <code>SIZE filesize [K M]</code>

Accessing Online Documentation

Oracle8i for Platform Documentation

Oracle8i for Platform documentation includes this guide and the *Oracle8i Administrator's Reference for Platform*.

To access the documentation in HTML and PDF formats, use a Alpha OpenVMS browser to open the `products.htm` file at the top level of the Oracle8i CD-ROM. This file contains links to product and Alpha OpenVMS-specific documentation.

Oracle Product Documentation

Oracle8i product documentation is on the Oracle8i Generic Documentation CD-ROM. Instructions for accessing and installing the documents on the CD-ROM are found in the README file on the top level directory of the CD-ROM.

Related Documentation

The documentation set for this release includes the following guides:

- *Oracle8i for Alpha OpenVMS Installation Guide, Release 3 (8.1.7)*.
- *Oracle8i for Alpha OpenVMS Server and Tools Administrator's Guide, Release 3 (8.1.7)* describes how to administer Oracle8i and related products on Alpha OpenVMS, including optimizing, setting up users, starting up and shutting down, managing instances and databases, backing up and archiving, using logical names, and so on.
- *SQL*Net for Alpha OpenVMS Configuration and User's Guide, Release 3 (8.1.7)* describes how to configure and use SQL*Net.
- *Oracle8i for Alpha OpenVMS Release Notes, Release 3 (8.1.7)* explains particulars about the release, such as how to install online documentation, products not included, and known restrictions.
- *Oracle Parallel Server Addendum for Alpha OpenVMS, Release 3 (8.1.7)* explains details on Oracle parallel Server.

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

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

- *Oracle8i System Administrator's Guide*
- *Net8 Administrator's Guide*
- *Oracle8i Designing and Tuning for Performance*

Migrating from Oracle Version 6

Migrating directly from Oracle Version 6 for OpenVMS to Oracle8i Release 3 (8.1.7) for Alpha OpenVMS is **not** supported. Use the Migration Utility to migrate from Oracle Version 6 for Alpha OpenVMS to Oracle7 Release 7.1.5 for Alpha OpenVMS. Upgrade the database to Oracle7 Release 7.3.3.4, or higher, and then use the Migration Utility provided with the Oracle8 Enterprise Edition to migrate from your upgraded Oracle7 release to Oracle8i Release 3 (8.1.7) for Alpha OpenVMS.

Oracle Version 6 is not supported on Alpha OpenVMS 7.2-1. You can, however, perform a full export from a Version 6 database and import it into 8.1.7.

For more information about migrating from Oracle Version 7 to Oracle8i, see the *Oracle8i Server Migration Guide*.

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

Related Documents for SQL*Net

The following Oracle manuals have relevant information for using SQL*Net:

- *SQL*Net for Alpha OpenVMS Configuration and User's Guide, Release 3 (8.1.7)*
- *Oracle Network Manager Administrator's Guide*
- *Net8 Administrator's Guide*

The following Compaq manual has relevant information for using SQL*Net:

- *Digital TCP/IP Services for OpenVMS User's Guide*

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

For U.S.A. customers, Oracle Store is at:

<http://store.oracle.com>

Links to Stores in other countries are provided from this site.

Product documentation can be found at:

<http://docs.oracle.com>

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.

Support for the Hearing-Impaired

Oracle Corporation provides TTY access to Oracle Support Services within the United States of America at the following number:

1-800-446-2398

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 Alpha OpenVMS and any restrictions with this release. Before starting the installation, verify if your system meets the requirements described in this chapter.

- Installation Overview
- System Installation Requirements
- Product Dependencies
- Configuration Restrictions
- SQL*Net Linking Options
- OpenVMS and Installation-Specific Issues and Restrictions
- Installation Procedure Requirements
- Alpha OpenVMS SYSGEN Parameters

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. *Pre-Installation:* Make sure the OpenVMS environment is properly set up and complete pre-installation tasks for the products you want to install.

3. *Character-based Menu driven Installer*: Use the Enterprise Edition Bundle to install Oracle products. See Chapter 4, "Installing Oracle8i Enterprise Edition Bundle and Online Documentation".
4. *Oracle Universal Installer*: Use the new Oracle Universal Installer provided on your software CD-ROM to install Oracle products. See Chapter 5, "Installing Oracle8i Products using Oracle Universal Installer".
5. *Post-Installation*: Create database objects, establish the user environment, and configure the installed Oracle products for the local system. See Chapter 8, "Post-Installation".
6. *Client Installations*: If you want to install client tools, applications, and client interfaces not included with the Oracle8i Release 3 (8.1.7) CD-ROM, check the requirements and instructions in the documentation for those products.

Product Installation Categories and Installation Types

Oracle 8i Release 3 (8.1.7) for Alpha OpenVMS comes with one set of products bundled together as a single group. If you are using ORACLIENS to install Oracle, your choice of products determines your type of installation. Typically, if you choose only the following products:

- UTIL
- NETCONFIG
- SVRMGR
- SQLPLUS
- SQLJ
- DBJAVA

you will get a "client" type of installation. If you choose RDBMS and its options, you will get an "Enterprise Edition Server" installation.

System Installation Requirements

Verify if your system meets the requirements described in the following sections before you install Oracle8i Release 3 (8.1.7) products.

Note: You will not be able to complete an installation if your system does not meet the minimum requirements for the Oracle products you select.

- Time Requirements
- Hardware Requirements
- Disk Space Requirements
- Images
- Operating System Software Requirements
- Online Documentation Requirements
- Additional Product-Specific Installation Requirements

Time Requirements

Installation time varies depending on the number of products being installed and the type of hardware being used. Duration of Typical installation takes about 1 to 3 hours.

Hardware Requirements

To install Oracle8i products included with this release, your Alpha OpenVMS system must meet the minimum hardware requirements listed in Table 1-2.

Table 1-1 Hardware Requirements

Hardware	Requirements
Memory	A minimum of 128 MB RAM is required to install Oracle8i products. Oracle8i Client products require 64 MB of RAM
Minimum global pages/sections	Please refer to the file ora_rdbms:readmevms.doc Section 1.2 for information on calculating minimum global pages/sections for your system.
CD-ROM Device	A CD-ROM drive supported by OpenVMS is required. Oracle uses ODS-2 format CD-ROM disks.

To determine the amount of RAM memory installed on your system, as well as the amount of swap space currently configured on your system, enter the following command:

```
$ SHOW MEMORY
```

Disk Space Requirements

The Oracle Universal Installer allows you to choose your installation category and type as described in "Product Installation Categories and Installation Types". Your choices will determine how much disk space you will need as shown in the following tables. Disk space requirements do not account for the size of your database. A production Oracle database server supporting many users requires significantly greater disk space and memory.

Note: These are approximate values that might vary slightly at install time.

Table 1–2 *Disk Space Requirements for Oracle8i Enterprise Edition*

Installation Type	Required Disk Space
Typical	1250 MB
Minimal	1050 MB
Custom	Up to a maximum of 1500 MB

Images

Two shared images that are linked with client code are built and installed when you link Oracle8i Enterprise Edition. The new shared images reduce the size of all Oracle client executable images (including precompiled user programs) by removing direct references to SQL*Net and other common routines.

The image names are in the form of: ORACLIENT_<imageid>.EXE and ORACLIENT64_<imageid>.EXE, where <imageid> is the identifier chosen during installation time.

Operating System Software Requirements

To install Oracle8i products included with this release, your Alpha OpenVMS system must meet the operating system requirements listed in the following table.

Table 1–3 Operating System Software Requirements

OS Software	Requirements
Operating System	OpenVMS, Version 7.2-1
Operating System Patch	Use the latest patch kit from Compaq. Compaq provides patch information at www.compaq.com/support .
SQL*Net 8.1.7 Requirements	<p>SQL*Net 8.1.7 on Alpha OpenVMS is developed and certified using Compaq's TCP/IP Services for OpenVMS (UCX). If you wish to use the TCP/IP protocol adapter for SQL*Net, you should have Version 5.0A or higher of TCP/IP Services for Alpha OpenVMS installed. TCP/IP protocol stacks from other vendors may work with Oracle, but customers use these products at their own risk. Any TCP/IP problems that cannot be reproduced using TCP/IP Services for Alpha OpenVMS will simply be referred to the TCP/IP vendor.</p> <p>Vendor-provided protocol services are usually upward-compatible, so that existing applications will continue to work without modification. Thus, later releases of TCP/IP are upward compatible with SQL*Net, provided that the vendor-specified Application Programming Interface (API) does not change with new releases.</p>
¹ Window Manager	X-windows must be installed on the system from where the Installer is run. Use any Compaq-supported X-windows server, for example, dtwm, twm, mwm, that supports Motif. If X-Windows is not installed, the ORACLEINS installer must be used.

¹ Required only if you wish to install Oracle8i using Oracle Universal Installer (OUI).

To determine your current operating system information, enter one of the following commands:

```
$ SHOW SYSTEM /NOPROCESS /FUL
```

To see information about all nodes in a cluster, add the /CLUSTER qualifier to the above command.

To determine if your X-windows system is working properly on your local system, enter the following command:

```
$ RUN SYSSYSTEM:DECW$CLOCK
```

If a clock is not displayed on your screen, X-windows is not configured correctly. See "DISPLAY" on page 2-4 for instructions on configuring X-windows.

SQL*Net VMS Mailbox Driver

The SQL*Net VMS Mailbox driver (protocol IPC) is included in NETCONFIG. You do not need a SQL*Net license to use the VMS Mailbox driver.

Programmatic Interface Support

The following DEC compilers were used to certify the programmatic interfaces:

Programmatic Interfaces	Certification Release
Pro*C	Compaq C release 6.2 Compaq C++ release 6.2
Pro*COBOL	DEC COBOL release 2.6
Pro*FORTRAN	DEC FORTRAN release 7.1
SQL*Module	DEC ADA 3.4-2

Product Dependencies

Some Oracle products depend on other Oracle products to work properly. Use the following tables to determine the product dependencies. This section has the following subsections:

- Products that require other products
- Important Compatibility Issues
- Online Documentation Requirements
- Additional Product-Specific Installation Requirements

Products that require other products

In the following cases, you need to install the required product **before or at the same time** you install the product that requires it.

If you want to install	then you need to install
Any Oracle product	UTIL and NETCONFIG
Server Manager or SQL*Plus	UTIL and NETCONFIG
Oracle8i Enterprise Edition	UTIL, NETCONFIG, and Server Manager or SQL*Plus

Oracle recommends that you build the products **at the same time** in order to save time. You must also make sure to configure the product to include (or link against) the dependent product and vice versa.

Important Compatibility Issues

Warning: If you are upgrading to Oracle8i from a previous version, ensure that you have no Oracle symbols and logicals defined prior to installing release 8.1.7. DO NOT run any ORAUSER_<dbname>.COM scripts as part of your login sequence. Failure to heed this warning will result in numerous problems, including undefined symbols and overwriting the previous code tree.

Review the compatibility issues given in this section:

- Oracle8i Enterprise Edition Release 3 (8.1.7) must be installed in a location separate from all other previous Oracle Server installations.
- If you are migrating from Oracle7, please read the migration documentation.
- Oracle products released for Oracle Server release 8.1.6 or earlier must not be linked against a Release 3 (8.1.7) installation. Contact your Sales Representative concerning releases of these products that have been certified with Release (8.1.7).

Note: To install National Language Support (NLS), build all Oracle products first. Then install NLS. The product directories must exist before NLS message files can be copied into them.

Online Documentation Requirements

To view online documentation included with the Oracle8*i* CD-ROM, use any HTML compatible browser available on OpenVMS. To view PDF documents, you need Adobe Acrobat Reader version 3.0 or higher. Online documentation included with Oracle8*i* Release 3 (8.1.7) for Alpha OpenVMS can only be viewed on Alpha OpenVMS systems.

Additional Product-Specific Installation Requirements

This section provides product-specific information in addition to hardware and software requirements provided earlier in this chapter. For descriptions of these products, see Appendix A, "Oracle8*i* Products".

Oracle8*i* and Options

Table 1–4 *Restrictions, Requirements, and Installation Tasks for Oracle8*i* and Options*

Product Name	Restrictions and Requirements
Oracle Parallel Server, 8.1.7	Alpha OpenVMS 7.2-1
Oracle <i>interMedia</i> , 8.1.7	You must have at least 10 MB of disk space available for the <i>interMedia</i> Text data dictionary.
Oracle Visual Information Retrieval, 8.1.7	Requires Oracle <i>interMedia</i> , 8.1.7

Tools and Precompilers

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

Product Name	Restrictions and Requirements
Oracle JServer, 8.1.7 (includes JRE, Java Virtual Machine (JVM), and Java utilities)	See the Java README on the Oracle8i CD-ROM for restrictions and requirements
Pro*COBOL, 8.1.7	Requires DEC COBOL 2.1 or higher.
Pro*C/C++, 8.1.7	Requires DEC C version 5.7-6 or Compaq C version 6.2.
Pro*COBOL, 1.8.51	DEC COBOL 2.1 or higher.
Pro*FORTRAN, 1.8.51	Requires Digital Fortran compiler 4.0 or higher or FORTRAN77 3.0.1 or higher.
SQL*Module Ada	Requires DEC Ada 3.4-2 for Alpha OpenVMS

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 Net8 products. Refer to operating system and third party vendor networking product documentation for more information. Net8 Release 8.1.7 products require Oracle8i Release 3 (8.1.7) and Net8 Release 8.1.7.

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

Product Name	Restrictions and Requirements
Oracle TCP/IP with SSL Protocol Support, 8.1.7	SSL 3.0 or later

Oracle Advanced Security

Oracle Advanced Security is an add-on product to the standard Net8 Server or Net8 Client. It must be purchased and installed on both the client and the server.

Oracle Advanced Security Release 8.1.7 requires Net8 Release 8.1.7 and supports Oracle8i Enterprise Edition. Install Oracle Advanced Security on each client and server where Oracle Advanced Security is required.

Table 1–7 describes requirements for authentication protocols supported by Oracle Advanced Security. See the *Oracle Advanced Security Administrator's Guide* for additional information.

Table 1–7 Supported Authentication Methods and Requirements

Authentication Method	Requirements
Kerberos	MIT Kerberos Version 5, Release 1.1 The Kerberos authentication server must be installed on a physically secure machine.
SecurID	ACE/Server release 3.3 or higher running on the authentication server.
Secure Socket Layer (SSL)	A wallet that is compatible with the Oracle Wallet Manager version 2.1. Wallets created in earlier releases of the Oracle Wallet Manager are not forward compatible.

Note: No additional authentication protocol software is required to relink Oracle products. However, Oracle does not provide the third-party authentication servers (e.g. Kerberos, RADIUS). The appropriate authentication server for these protocols must be installed and configured separately. Secure Socket Layer is provided and always installed with Oracle Advanced Security.

Configuration Restrictions

This section lists restrictions for Alpha OpenVMS at this time.

Restrictions

The following areas have restrictions on Alpha OpenVMS:

- Copying Oracle Executables
- Posix

Copying Oracle Executables

Moving executables from one OpenVMS machine to another is not recommended due to the usage of shared libraries and the difficulty of ensuring valid referencing. Therefore, we recommend that you relink executables.

Posix

Oracle8i is not supported under the Posix shell on OpenVMS.

SQL*Net Linking Options

Oracle8i Enterprise Edition Release 3 (8.1.7) supports only two-task configurations.

- Net 8 TCP/IP Adapter
- DEC TCP/IP (formerly known as UCX)

Guidelines

Keep the following guidelines in mind when linking SQL*Net:

- The Net8 Mailbox Adapter (IPC) is always installed. It provides inter-process communications through OpenVMS Mailboxes. The Mailbox Adapter can be used to connect an Oracle tool and the Oracle Server but only if the tool and the Server are on the same OpenVMS system.
- SQL*Net TCP/IP configurations are available for both OpenVMS clients and servers.

The following table shows the range of use for SQL*Net drivers in client/server and distributed database configurations. This table assumes that clients in a client/server configuration run the Oracle tool and that servers run the Oracle database. For distributed database examples, the clients and servers both run an Oracle tool and the Oracle database.

	Client/Server		Distributed RDBMS	
	Client Tool	RDBMS Server	Client	Server
SQL*Net TCP/IP	Yes	Yes	Yes	Yes
SQL*Net OpenVMS Mailbox	Limited*	Limited*	Limited*	Limited*

*Only for communication between products on the same machine.

OpenVMS and Installation-Specific Issues and Restrictions

The following issues and restrictions can affect the installation or use of Oracle8i on Alpha OpenVMS. Check the Release Notes that accompany this release in the `ORA_ROOT:[ORACLEDOC]PRODUCTS.HTM` file before using Oracle8i.

Re-Installing Oracle8i Release 3 (8.1.7)

If you re-install Oracle8i Server into an `ORACLE_HOME` where Oracle8i Server Release 3 (8.1.7) is already installed, you must also re-install any product options, such as Oracle Partitioning, that were enabled before you began the re-installation

New ORA_ROOT

Do not install Oracle8i Release 3 (8.1.7) into root directory of an Oracle installation containing any Oracle Software.

Oracle Corporation recommends that you install Oracle8i Release 3 (8.1.7) products into a new `ORA_ROOT`.

If you wish to run Oracle8i Release 3 (8.1.7) concurrently with Oracle8i Release 2 (8.1.6), Oracle 8i Release 3 must be installed into a new `ORA_ROOT`.

Java Runtime Environment (JRE)

The JRE shipped with Oracle8i is used by Oracle Java applications such as the Oracle Universal Installer and is the only one supported to run with these applications. Customers should not modify this JRE, unless it is done through a patch provided by Oracle Support Services.

The inventory can contain multiple versions of the JRE, each of which can be used by one or more products or releases. The Installer creates the `oraInventory` directory the first time it is run to keep an inventory of products that it installs on your system as well as other installation information.

Character Mode

Installation cannot be performed using character mode with the Oracle Universal Installer (OUI). For character mode installations, use the `ORACLEINS` installer. The Installer can be run in interactive mode (non-interactive is not currently supported), directly from your system's X-windows console or via an X-terminal or PC X-terminal on a remote system.

Upgrading and Migrating

If you are upgrading an existing system, there are issues which exceed the scope of this manual.

It is possible to migrate an Oracle7 database, Release 7.3.4 or higher, or upgrade an Oracle8 database, Release 8.0.5.1 or higher, to Oracle8*i* Release 3 (8.1.7). To migrate from an Oracle7 database lower than 7.3.4, you must first upgrade to an Oracle7 database, Release 7.3.4 or higher, and then follow the steps outlined in the document ora_rdbms:readmemigvms.doc to migrate to Oracle8*i*.

File Systems

Oracle8*i* 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), Oracle's standard set of configuration guidelines for Oracle databases, is not supported on OpenVMS.

Very Large Files

Oracle8*i* Release 3 (8.1.7) includes native support for datafile sizes upto 4 GB.

Installation Procedure Requirements

This section gives installation procedure requirements.

Oracle Server Database Administrator Account

Create an Alpha OpenVMS user account to administer the Oracle8*i* Enterprise Edition installation and maintenance, or modify your existing Oracle7 user account to meet the account quotas and privileges specified in this guide.

Setting up an Oracle8*i* account is the same as setting up any other Alpha OpenVMS user account. The following are the steps to set up an Oracle8*i* account:

1. Decide which values you will supply to create the account.
2. Run AUTHORIZE to add a record in the User Authorization File (UAF).
3. Use AUTHORIZE to set the following account requirements:

- Account quotas
 - Account privileges
 - Process rights identifiers
4. Exit AUTHORIZE to complete the account setup.

Note: The Oracle8i account's use of Alpha OpenVMS resources affects other user processes. Before setting up an Oracle8i account, you should thoroughly understand the reasons for changing system resources at your site.

Additional Information: See Compaq's *OpenVMS System Management Utilities Reference Manual* for more information about running the AUTHORIZE utility

Deciding Account Information

To add an account, you must supply the following information:

- Account name
- Account password
- USER and GROUP numbers for the UIC (octal values)
- Login device and directory
- Owner

Although this guide refers to this account as the Oracle8i account, you can assign any name or number to the account with the UIC restrictions noted below.

The Oracle8i account will own the runtime libraries and executable images for every Oracle product. Therefore, the database administrator (DBA) should manage this account and install all Oracle products from it.

Oracle8i Account is NOT the SYS or SYSTEM Account

In the *Oracle8i for Alpha OpenVMS Server and Tools Administrator's Guide*, the Oracle8i account is sometimes referred to as the DBA account. The Oracle8i account is not the same as the SYS or SYSTEM database usernames that are created for every database; it is an OpenVMS account name.

Oracle8i Account UIC Must Be Greater than MAXSYSGROUP

The UIC GROUP number of the Oracle8i account **must** be greater than the system parameter MAXSYSGROUP (which defaults to octal 10). GROUP numbers 1 through MAXSYSGROUP are reserved for use by the OpenVMS operating system itself. If the UIC GROUP number is not greater than the system parameter MAXSYSGROUP, the Oracle8i account cannot issue the following commands:

- STARTUP
- CREATE DATABASE/TABLESPACE
- ALTER DATABASE/TABLESPACE

If your Oracle8i account has a UIC group number that is less than MAXSYSGROUP, you **must** create a new account with a UIC group number higher than MAXSYSGROUP before you install Oracle8i.

Finding MAXSYSGROUP

The following command gives the value of MAXSYSGROUP:

```
$ WRITE SYS$OUTPUT F$GETSYI("MAXSYSGROUP")
```

Adding a Record in the User Authorization File (UAF)

Use the AUTHORIZE utility to create or modify records in the User Authorization File (UAF):

1. To run AUTHORIZE, enter:

```
$ SET DEFAULT SYS$SYSTEM
$ RUN AUTHORIZE
```

2. At the UAF prompt, enter the ADD command to create the user account from which you will install the product software:

```
UAF> ADD Oracle8 /PASSWORD=ORACLE/UIC=[277,100]-
/DEVICE=<device>/DIRECTORY=[Oracle8]/OWNER="ORACLE DBA"
```

In this example, the account name is Oracle8i. Note that the UIC GROUP number is 277. The UIC GROUP number must be larger than MAXSYSGROUP.

After adding the account, you must alter the account privileges and quotas. Although this can be done in any order, usually the account privileges are set before the account quotas.

For more information on using AUTHORIZE, see the chapter on “Managing User Accounts” in Compaq's *OpenVMS System Manager's Manual*.

Setting Account Privileges

The following privileges are required as **both** authorized and default privileges for the Oracle8i database administrator account:

Note: An exception is explained in “Security Issues with Multiple Databases.”

- CMKRNL
- IMPERSONATE
- LOG_IO
- NETMBX
- PFNMAP
- PRMGBL
- PRMMBX
- SYSGBL
- SYSLCK
- SYSNAM
- SYSPRV
- TMPMBX
- WORLD

Note: Appendix B, "Oracle8i 64-bit Feature" has additional information explaining the meanings of the privileges.

Use the AUTHORIZE utility to set the account privileges for the Oracle8i database administrator's account.

At the UAF prompt, use the MODIFY command to add the required default and authorized privileges as follows:

```
UAF> MODIFY ORACLE8 -
/PRIVILEGE=(CMKRNL,NETMBX,PFNMAP,PRMGBL,PRMMBX,SYSGBL, -
  SYSNAM,TMPMBX,IMPERSONATE,LOG_IO,WORLD,SYSLCK, SYSPRV) -
/DEFPRIVILEGE=(CMKRNL,NETMBX,PFNMAP,PRMGBL,PRMMBX,SYSGBL -
  SYSNAM,TMPMBX,IMPERSONATE,LOG_IO,WORLD,SYSLCK, SYSPRV)
```

Setting Account Quotas

You use the AUTHORIZE utility to change account quotas to accommodate the requirements of your Oracle8i installation.

Modifying the Default Quotas

After adding a record with the default quotas, use the MODIFY command to alter the default values. The following example changes the Enqueue quota (ENQLM) from the default to 150:

```
UAF> MODIFY ORACLE/ENQLM=150
```

Process Quotas

The following table lists the Oracle8i account quotas, their minimum recommended values, and their equivalent Alpha OpenVMS quota names as displayed by the DCL commands SHOW PROCESS/QUOTA and SHOW WORKING_SET.

Note: These quotas depend on the number of logfiles, the number of databases, the number of network connections, and other logicals on your system. You might need to customize them.

Account Quotas	Minimum Value	Quota Name
ASTLM	250 (the default)	Asynchronous System Trap limit
BYTLM	150,000	Buffered I/O limit
ENQLM	2000 (the default)	Enqueue quota
FILLM	100	Open file quota
JTQUOTA	8192	Job table quota

Account Quotas	Minimum Value	Quota Name
MAXDETACH	0 (the default)	Max detached processes
MAXJOBS	0 (the default)	Max active jobs
PGFLQUOTA (with ORACLIENS)	250,000	Paging file quota
PGFLQUOTA (with OUI)	750,000 (1,000,000 recommended)	
WSDEFAULT	2048	Working set default
WSEXTENT	8192	Working set extent
WSQUOTA	4096	Working set quota

Appendix B, "Oracle8i 64-bit Feature" has additional information explaining the meanings of the quotas and how to determine their values.

Process Rights for Database Administrators

The Oracle Server Database Administrator account must be granted one or more process rights identifiers. These identifiers provide the ability to issue the CONNECT INTERNAL command that is required to perform database administration functions. The following table displays the combinations of adding and granting rights identifiers to this account:

Adding...	and Granting...	Allows Control of...
ORA_DBA	ORA_DBA	Any database instance (provided it does not also have an ORA_<sid>_DBA identifier defined for it)
ORA_<sid>_DBA	ORA_<sid>_DBA	Database instance <sid> only
ORA_<sid>_DBA	ORA_DBA	All database instances except <sid>

For example, to grant the ORA_<sid>_DBA rights identifier to the Oracle8i account for an instance called TEST, issue the following command:

```
UAF> ADD/IDENTIFIER ORA_TEST_DBA
```

Then grant the rights identifier to the Oracle8i account as follows:

```
UAF> GRANT/IDENTIFIER ORA_TEST_DBA ORACLE8
```

If you add the ORA_TEST_DBA rights identifier, but grant only ORA_DBA to ORACLE8, the account would have insufficient privileges to administer the instance TEST.

The third line of the table shows that you can add and grant different identifiers, thereby restricting control of a particular instance while still granting control to other instances.

You can grant database maintenance privileges (for example, privileges to start up and shut down the database) to accounts in addition to the Oracle8i account. (However, with the Oracle8i account, the user's UIC GROUP number must be greater than MAXSYSGROUP.) By granting the ORA_<sid>_DBA identifier, you can similarly restrict a user's privileges to an instance named <sid>.

Process Rights for SGA Protection

Oracle releases of RDBMS on Alpha OpenVMS after Release 7.3.2.3.0 feature a change in the way the software runs and accesses the SGA. Previous to Release 7.3.2.3.2, the SGA was protected by allowing only processes running in supervisor mode to access it directly. Starting with Release 7.3.2.3.2, the SGA is protected by an Access Control List to accommodate the kernel remaining in user mode.

Before bringing up a database later than 7.3.2.3.0, add a rights identifier to the User Authorization File (UAF). Have your system manager follow these directions.

At the UAF> prompt, type:

```
UAF > ADD/IDENTIFIER/ATTRIBUTES=SUBSYSTEM ORA_SGA
```

Warning: DO NOT GRANT THE RIGHTS IDENTIFIER TO ANY USER. Oracle takes care of assigning it when it starts the database.

Process Rights for Intelligent Agent (OEMAGENT)

To install the Intelligent Agent, you **must** add the ORA_AGENT_ID identifier to your system before starting the install. Use the following:

```
UAF > ADD/IDENTIFIER ORA_AGENT_ID
```

All users that will submit jobs to the Intelligent Agent must have ORA_AGENT_ID. Use the following:

```
UAF > GRANT/IDENTIFIER ORA_AGENT_ID <user name>
```

Security Issues with Multiple Databases

If your site has several databases managed by different DBAs, you might not want to grant the CMKRNL privilege to every DBA's Oracle8i account. This privilege allows a DBA to activate any process rights identifiers and install shared images.

For security reasons, Oracle Corporation recommends that the OpenVMS system administrator handle these tasks. This person should be responsible for starting Oracle8i instances from a controlled account with a UIC group greater than MAXSYSGROUP. If this is not possible, at least one Oracle8i database administrator must have the CMKRNL privilege.

Completing Account Set Up

Exit the AUTHORIZE utility.

If the user account that you modified was logged on at the time, this user must log out and log back in before the changes take effect.

Verifying Privileges

Use the following command to verify that your account has the correct privileges and rights identifiers:

```
$ SHOW PROCESS/PRIVILEGE
```

Alpha OpenVMS SYSGEN Parameters

Please refer to the READMEVMS.DOC in the RDBMS directory for instructions on calculating MIN_GBLPAGES, MIN_GBLSECTIONS, and MIN_MAXBOBMEM.

Using the Reserved Memory Registry

Through its interface within the SYSMAN utility, the Reserved Memory Registry allows an Alpha OpenVMS system to be configured with large amounts of memory set aside for use within memory-resident global sections. The AUTOGEN utility considers the preallocated reserved memory when it tunes the system.

The advantages to reserving memory for an SGA are as follows:

- You can be certain that the memory is available and that the system is correctly tuned.
- The memory is reserved at boot time as contiguous aligned physical pages. This allows the system to optimize the mapping of the SGA.
- The memory is preallocated and zeroed. This results in faster SGA mapping and instance startup.

To reserve memory for an SGA, use the SYSMAN utility. The size qualifier is specified in megabytes. For example, to reserve memory for a 6 GB SGA for the SID named TEST, use the following commands:

```
$ MCR SYSMAN
SYSMAN> RESERVED_MEMORY ADD ORA_TEST_SGA/SIZE=6144/ALLOCATE/ZERO/PAGE
SYSMAN> EXIT
```

Note: 1 GB = 1024 MB

Then run AUTOGEN and reboot the system to allow AUTOGEN to adjust other system parameters for the reduced amount of memory available to the rest of the system.

Memory for multiple SGAs may be reserved. Any change to the name or size of a piece of reserved memory may require rebooting the system. During instance startup, Oracle compares the size of the reserved memory, if any, with the size of the SGA. If appropriate, one of the following messages will be included in the Alert log:

** Reserved memory size = <size> greater than
created SGA size = <size>**

** Please reduce reserved memory size to avoid wasting memory. **

** Memory was not reserved for the SGA. SGA size = <size>**

** There might be performance advantages to allocating memory for
the SGA in the VMS reserved memory registry. **

If memory is reserved for an SGA but not enough memory is reserved, the instance startup will fail. In this case, the amount of reserved memory should be adjusted, AUTOGEN should be run, and the system should be rebooted. For example, to expand the SGA to 6.5 GB for the TEST instance, use the following commands:

```
$ MCR SYSMAN
SYSMAN> RESERVED_MEMORY REMOVE ORA_TEST_SGA
SYSMAN> RESERVED_MEMORY ADD ORA_TEST_SGA/SIZE=6656/ALLOCATE/ZERO/PAGE
SYSMAN> EXIT
```

Then run AUTOGEN and reboot the system.

To avoid rebooting the system, SYSMAN can be used to free the memory reservation. Then you may start the instance. The risk is that the system may not have enough fluid pages to create the SGA. Also, the performance advantages of using reserved memory are not available.

Additional Information: For more information about the reserved memory registry, see *Compaq's Alpha OpenVMS Guide to 64-Bit Addressing and VLM Features*

Using AUTOGEN

Because SYSGEN parameters affect the entire operating system, your system administrator is the only person who should modify them. Of course at some sites, the DBA and system administrator may be the same person. In this section, we assume we are addressing the system administrator.

For setting or modifying SYSGEN parameters, OpenVMS provides the AUTOGEN utility. You can also use SYSGEN, but this is an older utility whose use is discouraged, except perhaps for checking current values. You must have SYSPRV or BYPASS privilege to run these utilities.

AUTOGEN provides a permanent way of setting parameters, and it documents all changes. AUTOGEN also lets you recalculate any parameters that depend on other parameters you might have changed. Remember to record parameter values before changing them, and determine beforehand what results you expect from your changes. If the expected changes do not occur, restore the old values before trying again.

1. Run the AUTOGEN utility with the SAVPARAMS parameter by entering the following:

```
$ @SYS$UPDATE:AUTOGEN SAVPARAMS GETDATA
```

This step saves current parameters to a file named AGEN\$FEEDBACK.DAT.

2. If you haven't already done so, run AUTOGEN GETDATA to ensure that the file PARAMS.DAT has been generated.

```
$ @SYS$UPDATE:AUTOGEN GETDATA
```

3. Examine the parameter settings in the current PARAMS.DAT and if they are inappropriate, change them in the MODPARAMS.DAT file using the format `MIN_<parameter>=<value>` as in the following:

```
MIN_GBLSECTIONS=3000  
MIN_GBLPAGES=300000
```

The MIN prefix indicates that you are setting a lower limit for the specified parameter. To use the MIN prefix, identify the current value of the specified parameter (using SYSGEN) and the amount by which you want to increase the parameter. The sum of these two values is used for the `MIN_<parameter>` entry.

4. Run the AUTOGEN utility with the GENPARAMS and REBOOT parameters by entering the following:

```
$ @SYS$UPDATE:AUTOGEN GENPARAMS REBOOT
```

Warning: The REBOOT parameter in this example will cause the system to automatically reboot when the SYSGEN is complete.

This step generates new SYSGEN parameters in a file named SETPARAMS.DAT and runs the SYSGEN utility to set these parameter values as specified in this file.

See Also: For more information about using the AUTOGEN utility, see Compaq's *System Management Utilities Reference*.

Pre-Installation

After you have verified that your system meets the requirements described in Chapter 1, "System Requirements", use this chapter to help you prepare your system for installing Oracle8i,

- Alpha OpenVMS System Configuration
- Setup Tasks to Perform as the SYSTEM User
- Setup Tasks to Perform as the oracle User

Alpha OpenVMS System Configuration

Table 2-1 summarizes the requirements for installing Oracle8i on your OpenVMS system. If your system fails to satisfy any listed requirement, perform the tasks listed in next section as necessary to configure your system to meet these requirements.

Table 2-1 Alpha OpenVMS System Configuration Summary

System Factors	Requirement for Oracle8i
Alpha OpenVMS Parameters:	
Minimum Global Pages/sections	Verify that the values for MIN_GBLPAGES and MIN_GBLSECTIONS are greater than or equal to the values calculated for these parameters as documented in READMEVMS.DOC.
OpenVMS Groups for Oracle Roles	An OpenVMS 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.
OpenVMS Accounts	An OpenVMS account that is dedicated solely to installing and upgrading Oracle products. This book assumes the account is called <code>oracle8</code> .
Permissions for File Creation	Set for the <code>oracle8</code> account.

Setup Tasks to Perform as the SYSTEM User

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

- Create a OpenVMS Account to Own Oracle Software

Note: In addition to these setup tasks, you will need privileges near the start of the installation if the file does not exist.

▶▶ Create a OpenVMS Account to Own Oracle Software

The `oracle8` account is the OpenVMS user account that owns the Oracle8i software after installation. Run Oracle Universal Installer with this user account.

Use the `AUTHORIZE` utility to create an `oracle8` account with the following properties:

Table 2-2 Properties of the oracle8 Account

Login Name	Any name, but this document refers to it as the <code>oracle8</code> account.
UIC	The group UIC number greater than <code>MAXSYSGROUP</code> .
Home Directory	Choose a home directory consistent with other user home directories. The home directory of the <code>oracle8</code> account does not have to be the same as the <code>ORA_ROOT</code> directory.

Note: Use the `oracle8` account only for installing and maintaining Oracle software. Never use it for purposes unrelated to the Oracle8i Server. Do not use `SYSTEM` as the `oracle8` account.

Sites with multiple `ORA_ROOT`s on one system may install Oracle software with the same `oracle8` account, or separate ones. Each `oracle8` account must have the same group UIC.

Setup Tasks to Perform as the *oracle* User

Log in to the `oracle8` account and perform the following tasks as necessary:

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

► Set Permissions for File Creation

Set default file protections for the `oracle8` account to ensure group and other have read and execute permissions, but not write permission, on files installed.

1. Enter the `$$SHOW PROTECTION` command to check the current setting.
2. If the `$$SHOW PROTECTION` command does not show the expected protection, set protection in the `login.com` of the `oracle8` as follows:

```
$ SET PROTECTION=(s:RWE, o:RWE, g:RE, w:RE)/default
```

» Set Logicals

Before starting the Oracle Universal Installer, set logical names and any of the other variables as appropriate. Table 2-3, "Logical Name Summary", provides a brief summary of the logicals listed in this section. Refer to each logical's entry in this section for instructions on setting the logical correctly.

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.

Table 2-3 Logical Name Summary

Logical Name	Description and Example Setting	Required?
DECW\$DISPLAY	The the name, server number, and screen number of the system where the Oracle Universal Installer will display. Refer to the following paragraph for correct command.	If using OUI Yes

DECW\$DISPLAY

On the system where you will run Oracle Universal Installer, use the following SET DISPLAY command to set the system name or IP address, X server and screen used by your workstation:

```
$SET DISPLAY/CREATE/TRANSPORT=TCPIP/NODE=<nodename>
```

where nodename is the name or the IP address of the display server. This sets the logical DECW\$DISPLAY.

Do not use the hostname or IP address of the system where the software is being installed unless you are performing the installation from that system's X-windows console. Use the machine name or IP of your own workstation if you are installing from a remote system. If you are not sure what the X server and screen should be set to, use 0 (zero) for both. The logical DECW\$DISPLAY can be defined in LOGIN.COM.

►► Update the Environment for Current Session

With a text editor, add the settings for the environment logicals listed in "Set Logicals" to the `LOGIN.COM` file of the *oracle8* account. Once you have finished editing these initialization files, you can quickly update the environment in the current session before beginning installation by using the appropriate DCL command.

```
$@SYS$LOGIN:LOGIN.COM
```

Understanding CD-ROM Structure and Content

Unlike some prior releases, Oracle Server Release 3 (8.1.7) **MUST BE INSTALLED** in its own directory, separate from that of any prior release. There are two reasons for this requirement:

- Reduces the possibility of installing incompatible versions of products
- Eliminates the possibility of inheriting obsolete files left behind after previous installations

This chapter explains the following topics:

- CD-ROM Contents
- BOOT.BCK Saveset
- Product Savesets and README Files

CD-ROM Contents

The product CD-ROM root directory has a file called AAA_CD_ROM.CONTENTENTS. This file lists the contents of the CD-ROM.

The Oracle8i Enterprise Edition CD-ROM distribution contains several directories that contain various product bundles.

The following figure shows the directory structure of the Oracle8 CD-ROM disk:



Each product bundle (for example, [SERVER] and [ORACLEDOC]) directory contains Alpha OpenVMS BACKUP savesets for each product in the particular bundle.

For example, the [SERVER] product bundle contains the following savesets/products:

Saveset	Product
APACHE.BCK	Oracle HTTP Server powered by Apache
BOOT.BCK	{Used by ORACLEINS Files}
CTX.BCK	IntermediaText Option (Formerly known as ConText)
DBJAVA.BCK	JDBC (Java Database Connectivity)
DDBOPT.BCK	Distributed Database Option
*DPOPT.BCK	Data Partitioning Option
JAVAVM.BCK	Jserver 8.1.7
NETCONFIG.BCK	SQL*Net Component
NLS.BCK	National Language Support or Multilingual Option
*OBJOPT.BCK	Object Option
OEMAGENT.BCK	Intelligent Agent
*ORDIMG.BCK	Image Cartridge
*ORDTS.BCK	Time Series Cartridge

Saveset	Product
*ORDVIR.BCK	Virage Cartridge
OWM.BCK	Oracle Wallet Manager
*PQOPT.BCK	Parallel Query Option
PROGINT.BCK	Oracle Precompilers
*PSOPT.BCK	Parallel Server Option
RDBMS.BCK	Oracle8 Server
*SDOPT.BCK	Spatial Data Option
SQLJ.BCK	SQLJ and JPublisher
SQLPLUS.BCK	SQL*Plus
SVRMGR.BCK	Server Manager
UTIL.BCK	Utility Component (such as common libraries, etc.)
* These products can only be installed with the Oracle8i Enterprise Edition.	

BOOT.BCK Saveset

Each product bundle, except ORACLEDOC, contains a BOOT.BCK saveset. The BOOT.BCK saveset is used to install the particular product bundle. Before you invoke the Oracle installation procedure (ORACLEINS.COM), you must use the Alpha OpenVMS BACKUP command to restore the BOOT.BCK saveset for the product bundle. Then invoke ORACLEINS to load, configure, and build products selected from the product bundle.

If you are using Oracle Universal Installer, BOOT.BCK is copied and restored automatically.

The BOOT.BCK saveset contains the following files:

- Installation command procedures, including ORACLEINS.COM
- PRODUCTS.TXT file, lists all the products in this product bundle
- <product>.DEF files, define the default configuration for each <product>
- <product>.CTL files, determine product build dependencies
- JRE 1.1.8 from Compaq

Product Savesets and README Files

Each product saveset contains various files (object files, object libraries, DCL command procedures, etc.) that are used to build the specific product. Each product saveset might also contain one or more README files that may contain last minute information not included in the installation documentation set.

Note: It is recommended that you review the contents of the README files before performing an Oracle installation.

Use the Alpha OpenVMS BACKUP command to extract the README files from each of the product savesets. For example, to extract the README files from the RDBMS product saveset into the current default directory, issue the following command:

```
$ BACKUP/LOG/SELECT=READ*.* -  
  <ddcn>:[SERVER]RDBMS.BCK/SAVE_SET [ ]
```

where <ddcn> is a valid CD-ROM device.

Installing Oracle8i Enterprise Edition Bundle and Online Documentation

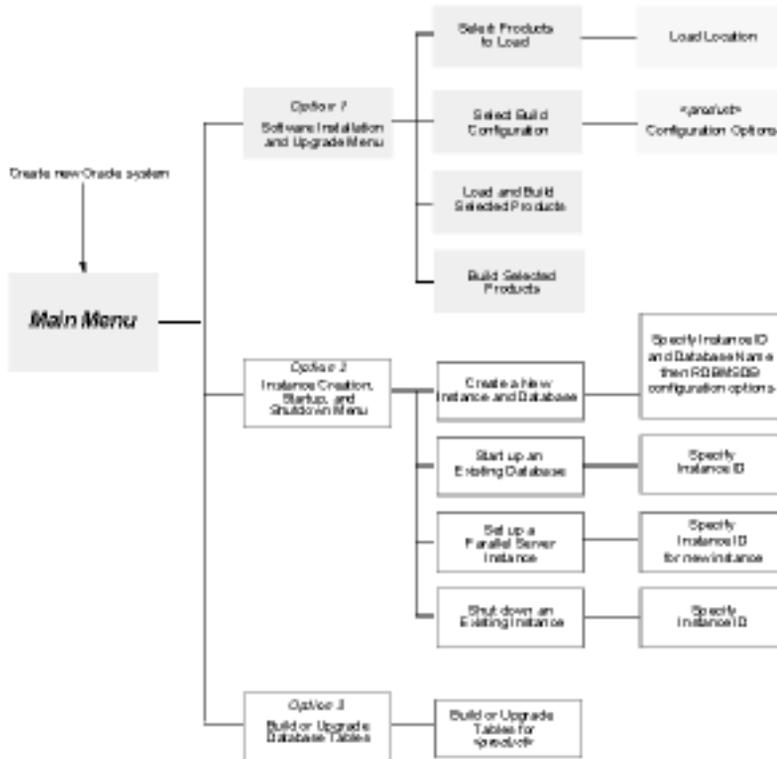
This chapter describes how to install the Oracle8i Enterprise Edition bundle.

Note: The examples given represent an *Oracle8i Enterprise Edition* installation. If you are installing Oracle8i, you will have fewer product selections available to choose from. The Advanced Replication, Object Support, Spatial Data and Data Partitioning options are available only in the *Oracle8i Enterprise Edition* release. These are not listed or available in the *Oracle8i* release.

The following steps are in the order that they need to be performed:

- Step 1. Logging Into the Oracle8i Database Administrator's Account.
- Step 2. Setting the Oracle Root Directory
- Step 3. Mounting the Oracle8i Enterprise Edition Distribution.
- Step 4. Restoring the Oracle8i Enterprise Edition BOOT.BCK.
- Step 5. Invoking ORACLEINS.
- Step 6. Selecting "Create a new ORACLE system"
- Step 7. Selecting Products to Load
- Step 8. Configuring Products
- Step 9. Loading and Building Configured Products
- Step 10. Installing Online Documentation

Figure 4-1 Installation



Step 1. Logging Into the Oracle8i Database Administrator's Account

Begin the installation of the Oracle8i Enterprise Edition by logging into the Oracle8i database administrator's account. For example:

Username: **ORACLE8**

Password: <not displayed when entered>

Step 2. Setting the Oracle Root Directory

Once you are logged in, your default directory is set to the device and directory defined in the SYSUAF entry for the **ORACLE8** user. If this directory is to become

the ORACLE root directory (the directory under which the Oracle products will be installed), proceed to Step 3.

To place the ORACLE root directory in another directory or subdirectory, then issue an appropriate CREATE/DIRECTORY command. For example:

```
$ CREATE/DIRECTORY/OWNER=[ORACLE8] -  
  <disk_device>:[<directory>]
```

where:

[ORACLE8] is the owner of the directory

<disk_device> is a valid disk device

[<directory>] is a valid directory file specification

Warning: Make sure that you specify the "/OWNER" switch on the above CREATE/DIRECTORY command.

Note: The Oracle root directory may only be a top-level directory or one level below a top level directory.

Then set your default to this directory as follows:

```
$ SET DEFAULT <disk_device>:[<directory>]
```

Step 3. Mounting the Oracle8i Enterprise Edition Distribution

Mount the Oracle8i Enterprise Edition distribution on your CD-ROM device. For example:

```
$ MOUNT/OVERRIDE=IDENTIFICATION <ddcn>:
```

where:

<ddcn> is a valid CD-ROM device

Step 4. Restoring the Oracle8i Enterprise Edition BOOT.BCK

Use the following BACKUP command to restore the BOOT.BCK saveset for the Oracle8i Enterprise Edition product bundle on the CD-ROM to the current directory (which will become ORA_ROOT):

```
$ BACKUP/LOG <ddcn>:[SERVER]BOOT.BCK/SAVE_SET -  
  [ ]/NEW_VERSION/BY_OWNER=PARENT
```

As the BOOT.BCK saveset is restored, you will see a listing of each file as it is restored. For example:

```
%BACKUP-S-CREATED, created DKA100:[ORACLE8]DDBOPT.CTL;1  
.  
.  
.  
%BACKUP-S-CREATED, created DKA100:[ORACLE8]UTIL.CTL;1  
%BACKUP-S-CREATED, created DKA100:[ORACLE8]UTIL.DEF;1
```

Step 5. Invoking ORACLEINS

From the Oracle8 root directory, invoke ORACLEINS:

```
$ @ORACLEINS
```

The ORACLE Installation Startup Menu appears:

```
ORACLE Installation Startup Menu

Options:

1) Create a new ORACLE system.
2) Upgrade your system from an ORACLE distribution tape.
3) Reconfigure existing products, manage the database,
   or load demo tables.
4) Exit.

Before attempting to upgrade, reconfigure, manage the database, or load
demo tables, please run ORA_UTIL:ORAUSER.COM or, if you created an
instance, ORA_DB:ORAUSER_<database name>.COM <SID> <setup_node>.

Choose an option please:
```

Step 6. Selecting “Create a new ORACLE system”

Follow these steps to select “Create a new ORACLE system.”

1. Select Option 1, “Create a new ORACLE system.”

A prompt similar to the following appears:

```

Create ORACLE from distribution media.
-----
ORACLE Installation Version 1.0.12.15 - Production on . . .
Copyright (c) 1999, Oracle Corporation, . . .
Root directory? ( DISK$DEV:[<dir>.<dir>] )

```

Note: You should only choose this option the first time you run ORACLEINS on a code tree.

2. Press [RETURN] since you are already in the root directory.

ORACLEINS assigns the specified directory to the logical name ORA_ROOT and displays the following prompt:

```

The root directory will be DISK$DEV:[<default_location>].
If you are loading products from savesets, enter the drive/directory where
the savesets are located (e.g. MUA0: or DISK$A:[ORACLE.SAVE_SETS]). If you
are loading from a remote device, do not include a username and password
(you will be prompted instead).
If not loading savesets, press [RETURN].
Saveset location or [RETURN]:

```

3. The saveset location depends on your installation media.

If you load savesets from a remote location, specify the remote node, device, and directory path using the following format:

```
<remote_node>::<remote_device>:[<remote_directory_path>]
```

If you specify a remote load location, ORACLEINS warns you that it cannot verify that the remote device actually exists. It also asks you to specify a remote OpenVMS username and password. If you do not need to specify a username or password (for example, because OpenVMS proxies have been established),

press [RETURN]. Otherwise, enter the username and password, separated by a space.

For example, if the remote location is owned by the OpenVMS user ORACLE, with password FRIDAY, then the following message appears:

```
WARNING: The saveset location that you specified is on a remote device. We
can only do minimal checking to see if the device is available.
Enter the remote VMS username and password needed to access this location,
or [RETURN] if one is not required: ORACLE FRIDAY
```

If you are loading savesets from a local disk or CD-ROM, enter the device name and the directory path and press [RETURN], for example, DKA400:[SERVER].

The logical name ORA_SOURCE is set to the saveset location you entered.

ORA_ROOT:[INSTALL] is created by ORACLEINS and is assigned the logical name ORA_INSTALL. The contents of the BOOT.BCK saveset are moved to the INSTALL subdirectory of the Oracle8 root directory.

The logical ORA_SOURCE now points to the default load location for product savesets. ORA_SOURCE has the following definition: DKA400:[SERVER]

```
--- Doing some setup - please wait... ---
- Creating ORA_UTIL:ORAUSER.COM.
- Adding INSTALLUSER.COM to ORAUSER.COM.
- Linking INSDRV.EXE for Install version 1.0.12.15 on VMS 7.2-1
Press [RETURN] to continue:
```

4. Press [RETURN].

After the contents of the saveset have been moved, the Main Menu appears:

```

Main Menu
Oracle Product Installation and Upgrade
1. Software Installation and Upgrade Menu
2. Instance Creation, Startup, and Shutdown Menu
3. Build or Upgrade Database Tables Menu

Enter a number or (E)XIT to exit installation procedures
```

Step 7. Selecting Products to Load

Follow these steps to select products to load.

1. Select Option 1, "Software Installation and Upgrade Menu."

The Software Installation and Upgrade Menu appears:

```

Software Installation and Upgrade Menu

1. Select Licensed Products to load
2. Select Build Configuration Options
3. Load and Build Selected Licensed Products
4. Build Selected Licensed Products

Warning: You may not be licensed for all products
listed.
Enter a number or (E)xit to return to the Main Menu:

```

2. Select Option 1, "Select Licensed Products to Load."

A list of Oracle products appears. For example:

```

Select Licensed Products to Load for Installation or Upgrade
-----
Product Name                                Product Name                                Status
-----
1. APACHE                                    14. OAM
2. CTX                                       15. PQOPT
3. DBJAVA                                    16. PROGINT
4. DBOPT                                     17. PSOPT
5. DPOPT                                     18. FORMS
6. JAVAVM                                    19. SDOPT
7. METACONFIG                               20. SQLPLUS
8. NLS                                       21. SQLJ
9. OBJOPT                                    22. SVRMOR
10. OENAGENT                                23. UTIL
11. ORDIN
12. ORDTS
13. ORDWR

Enter (A)LL to select all products.
Enter (E)XIT to exit this menu with selected products.
Enter (Q)UIT to quit this menu with no action.

Enter the number of the product that you want to load:

```

3. Select the products for which you have a license.

If you are preparing a client only installation, you **must** select the following products to run Oracle8:

- NETCONFIG
- UTIL

In addition, if you are preparing a server for a client/server installation, you **must select** the following products:

- RDBMS

Note: When installing the 8.1.7 Server, ensure that a unique image identifier per software tree is chosen on the RDBMS configuration menu.

- Any of the server extensions for which you have a license, such as DDBOPT (distributed database option) or HOOPT (advanced replication option)
- SVRMGR (Server Manager)

To fit all the product names on the screen, ORACLEINS displays the short, abbreviated names for some products. For example, it displays “SVRMGR” instead of “Server Manager”.

For each product you selected, you are prompted to specify the location from where it is loaded with a message similar to the following:

```
Copy from ( ORA_SOURCE:NETCONFIG.BCK )
```

4. To accept the default, press [RETURN].

Accepting the default means you are loading the product savesets from the location you assigned to the ORA_SOURCE logical name.

To specify a different location, enter the correct location and the saveset name at the “Copy from” prompt, and press [RETURN].

The product you selected for loading is marked with **-load**.

Note: This step only *selects* which products are to be loaded. Only after you select Option 3 from the Software Installation and Upgrade Menu (“Load and Build Selected Licensed Products”) does ORACLEINS actually load the products you selected.

5. After locations for all licensed products are entered, enter E .
Select the products and return to the Software Installation and Upgrade Menu.

Step 8. Configuring Products

Follow these steps to configure products.

1. Configure all products.
 - If you are reconfiguring products that are already installed, you must access the configuration menu of each product selected in the “Select Licensed Products to Load” step, even if you accept only the defaults. Only those products whose configuration menus are accessed and products that depend on the selected ones will be built.
 - If you are installing a product for the first time, access its configuration menu, even if you accept only the defaults.
 - If you are installing the RDBMS for the first time, use the configuration menu to change its default image identifier if another Oracle Server on the system is using the default.

Note: Each image identifier should be unique per software tree. It can be set or changed in the RDBMS configuration menu.

To begin configuring the products you have loaded, **select Option 2, “Select Build Configuration Options.”**

2. Select the Configuration Options Menu.
The Select Configuration Options Menu appears below:

```

                                Select Configuration Options
                                -----
List of products available for installation or upgrade configuration:

1. APACHE                      14. OWM
2. CTX                          15. PQOPT
3. DBJAVA                       16. PROGINT
4. DSOPT                        17. PSOPT
5. DFOPT                        18. RDBMS
6. JAVAVM                       19. SDOPT
7. NETCONFIG                    20. SQLPLUS
8. NLS                          21. SQLJ
9. OBJOPT                       22. SVRMGR
10. OEMAGENT                    23. UTIL
11. ORDIN
12. ORDTB
13. ORDWR

Enter (A)LL to select all products.
Enter (E)XIT to exit this menu with selected products.
Enter (Q)UIT to quit this menu with no action.

Enter the number of the product that you want to configure:

```

3. Consider each configuration option carefully.
4. Enter the number of each product you need to configure.

Each product appears in turn with its default configuration options. For example, here is the Server Manager Configuration Menu:

```

                                SVRMGR Configuration Options
                                -----
Option                               Current Values
1. System or Group Installation? [8/6]  8

Enter (A)LL to select all options.
Enter (E)XIT to exit this menu with selected options.
Enter (Q)UIT to quit this menu with no action.

Enter the number of the option that you want to change:

```

Note: Do not simply select the current values. The configuration options you select will have serious consequences in the way your Oracle system works. For more information about configuration options, see Appendix A, "Oracle8i Products".

5. To enter a new value, enter the number of the option you want to change and press [RETURN]:

Enter the number of the option that you want to change: 1

The following screen appears:

```
System or Group installation? [S/G]
Original Default: S
Current Value   : S
New Value      >
```

6. When the option is displayed at the bottom of the screen, enter the new value and press [RETURN].

The following screen appears:

```
System or Group installation? [S/G]
Original Default: S
Current Value   : S
New Value      > G
```

7. To save any changes made to the configuration options and to mark a product for rebuilding, type E to exit the menu screen.

The Select Configuration Menu appears with **-rebuild** beside the products you selected.

```

                                Select Configuration Options
                                -----
List of products available for installation or upgrade configuration:

    1. AFACHE
    2. CTX
    3. DSIJAVA
    4. DSOFT
    5. DSOFT
    6. JAVA9H      - rebuild
    7. NETCONFIG
    8. NLS
    9. OBJOFT
   10. OENAGENT
   11. ORDIN
   12. ORDTS
   13. ORDVIR

   14. O9H
   15. P9OFT
   16. PRO9INT
   17. P9OFT
   18. R99HS
   19. S9OFT
   20. SQLPLUS
   21. SQLJ
   22. SW99GR     - rebuild
   23. UTIL       - rebuild

Enter |A|LL to select all products.
Enter |E|XIT to exit this menu with selected products.
Enter |Q|UIT to quit this menu with no action.

Enter the number of the product that you want to configure:

```

8. If needed, select another product to configure from the Configuration Menu.
9. When you have configured all products you want to install, enter E to exit to the Select Configuration Options menu and press [RETURN].

Note: If you expect more than one Oracle Installation on your system make sure you specify a unique string value of up to 6 chars to the following RDBMS config option: 2. Oracle Image Identifier

Step 9. Loading and Building Configured Products

After configuring the products, you are returned to the Software Installation and Upgrade Menu.

```

Software Installation and Upgrade Menu

1. Select licensed Products to Load
2. Select Build Configuration Options
3. Load and Build Selected Licensed Products
4. Build Selected Licensed Products

Warning: You may not be licensed for all products
listed.
Enter a number or (Z)xit to return to the Main Menu:

```

1. Select Option 3, "Load and Build Selected Licensed Products."

The system loads the products you selected and configured. This step takes several minutes. You will see several messages as the products are loaded.

You will eventually see a message similar to this one:

```

- Creating NETCONFIG directories.
- Loading NETCONFIG files into ORA_ROOT: [NETCONFIG].
%BACKUP-S_CREATED, created ORA_ROOT:[NETCONFIG]. . .
.
.
.

```

The products you requested have been loaded.

You have the following options:

1. Build the Oracle products loaded.
2. Return to the Software Installation and Upgrade Menu (to choose new configuration values or to load additional products from another tape or directory.)

Enter the number of option you want [2]:

2. The next step depends on your situation:
 - If you have additional product bundles to load, press [RETURN].
 - If you have additional products to load from a second CD-ROM, enter 2 and press [RETURN].
 - If you decide to change the configuration options you just entered, then reconfigure the products.
 - If you have no more products to load, enter 1 and press [RETURN].

All selected products are now built. You will see a message similar to this:

```
12 products have been successfully built.
```

```
Note: If you want to create known file entries for some
of the linked products using the VMS INSTALL utility,
run ORA_INSTALL:ORA_INSUTL.COM. Refer to the appropriate
ORACLE for OpenVMS Administrator's Guide for details.
```

```
Press [RETURN] to continue:
```

3. Press [RETURN] to return to the Software Installation and Upgrade Menu.
4. Press E to return to the Main Menu.
5. Press E to return to the DCL prompt.

Step 10. Installing Online Documentation

Oracle8i Release 3 (8.1.7) includes online documentation for the following OpenVMS-specific guides:

- *Oracle8i for Alpha OpenVMS Installation Guide* (this manual)
- *Oracle8i for Alpha OpenVMS Server and Tools Administrator's Guide*
- *SQL*Net for Alpha OpenVMS Configuration and User's Guide*
- *Oracle8i Parallel Server Addendum for Alpha OpenVMS*

Beginning with Oracle7 Release 7.3.2, online documents were distributed in HTML format and could be viewed using an HTML browser on OpenVMS (or another system in your environment if you prefer). Oracle has successfully tested viewing of the HTML files using Enhanced Mosaic V2.10. Note that Enhanced Mosaic V2.10 is bundled with Motif 1.2-4.

Online documentation installation and usage instructions are as follows:

1. Create a root level directory named ORACLEDOC. The documentation will need approximately 2MB of disk space.

```
$ CREATE/DIRECTORY/OWNER=[ORACLE8] -  
<disk_device>:[ORACLEDOC]/PROTECTION=WORLD:RE  
where:
```

[ORACLE8] is the owner of the directory

<disk_device> is a valid disk device

2. Make ORACLEDOC your default directory.

```
$ SET DEFAULT <disk_device>:[ORACLEDOC]
```

3. Mount the **Product** media.

```
$ MOUNT/OVERRIDE=IDENTIFICATION <ddcn>:
```

where:

<ddcn> is a valid CD-ROM device.

4. Copy the entire oracledoc directory structure contents to the disk.

```
$ COPY/LOG <ddcn>:[ORACLEDOC...]*.*[ ]
```

where:

<ddcn>: is the CD-ROM device.

5. To view the Oracle documentation, invoke your HTML browser and open the following URL:

```
FILE: /<disk_device>/ORACLEDOC/PRODUCTS.HTM
```

Installing Oracle8*i* Products using Oracle Universal Installer

This chapter describes how to start the Oracle Universal Installer and install Oracle8*i* products on your system. Review and complete the tasks listed in Chapter 1, "System Requirements" and Chapter 2, "Pre-Installation" before beginning the installation.

- Using Oracle Universal Installer

Using Oracle Universal Installer

Complete these tasks to start Oracle Universal Installer:

- Mount the Oracle8i CD-ROM
- Start Oracle Universal Installer

▶▶ Mount the Oracle8i CD-ROM

Mount the Oracle8i CD-ROM device. For example:

```
$ MOUNT/OVERRIDE=IDENTIFICATION <ddcn>:
```

where:

<ddcn> is a valid CD-ROM device

▶▶ Start Oracle Universal Installer

CAUTION: Do not run the Installer as the *SYSTEM* user.

To start the Installer:

1. Log in as the *oracle8* user.

Note: Should be the same account used if using ORACLEINS.COM installer.

2. Start the Installer by entering

```
$_@<ddcn>: [OUI]OUI
```

where <ddcn> is a valid CD-ROM drive.

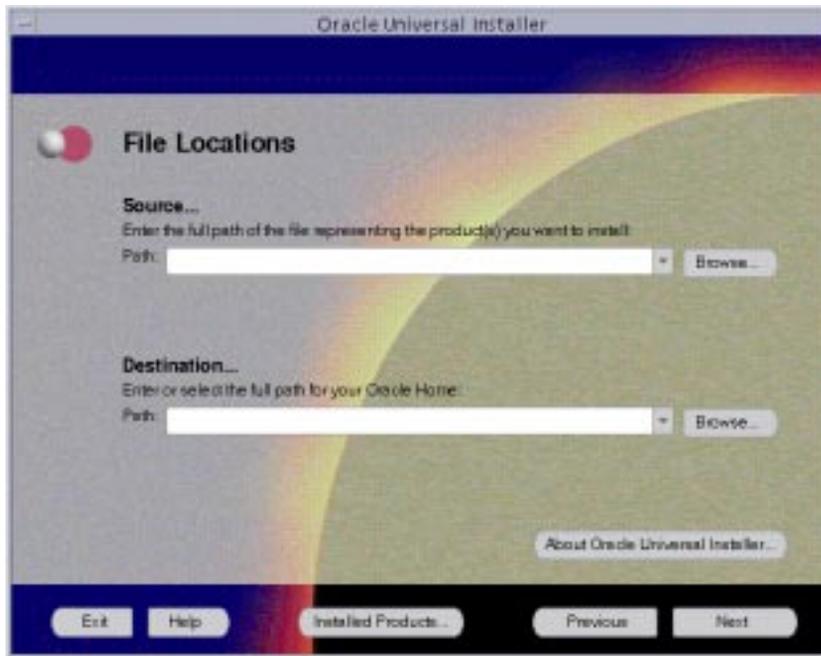
Once the Installer is started, the *Welcome* window appears.

3. Normally, we should not need to change the "source" field. This field contains the location of a java archive file called PRODUCTS.JAR, which contains definitions and scripts used to control the installation.

Note: This field is NOT the location of the OpenVMS save sets (*.BCK files) which contain the product object libraries, demos, and other installable files; this information is entered on the next screen. This differs slightly from OUI on non-OpenVMS platforms, for compatibility between OUI and the OpenVMS character based installer, ORACLEINS (see following note for details).

Note: On non-OpenVMS platforms (on which OUI is now the only supported installer), all object and other product files (for all products) are packaged in PRODUCTS.JAR, as well as the install scripts. To facilitate a smooth transition from ORACLEINS to OUI, Oracle is supporting full compatibility between the two installers, at least for this release. In future releases, the character based installer will be phased out, or modified to use the newer packaging scheme. For compatibility with ORACLEINS, product files continue to be packaged in native OpenVMS BACKUP format, while OUI installation scripts are packaged in PRODUCTS.JAR, so two separate entries will not be necessary.

Figure 5–1 Oracle Universal Installer "File Locations" Window



4. Enter the ORA_ROOT directory path in which to install Oracle8i products in the *Destination* fields. The default location is the directory pointed to by the OpenVMS logical ORA_ROOT.

If the destination directory you choose contains Oracle8i Release 3 (8.1.7) software, the older versions of the software will be upgraded to Release 3 (8.1.7). Oracle Corporation recommends that you install Release 3 (8.1.7) products into a new ORA_ROOT.

CAUTION: If you have an existing ORA_ROOT created with a pre-8.1.x release, you *must* change the default installation location to a different location.

Note: If you install Oracle8i into an ORA_ROOT directory that already contains Oracle client software, the listener is not created. To create the listener, install Oracle8i in a different ORA_ROOT.

5. Click Next.

The *Available Products* window appears.

Figure 5–2 Oracle Universal Installer "Available Products" Window



6. Select the Oracle8i installation category you want to install and click Next. See "Product Installation Categories and Installation Types" on page 1-3 for a description of each category.

Note: For a list of products installed with each installation type, see the appropriate product section in Appendix A, "Oracle8i Products".

7. Proceed to one of the following sections based on the selection you made in step 6.

If You Selected...	See this Section...
Oracle8i Enterprise Edition	"Oracle8i Enterprise Edition" on page 5-6.
Oracle8i Client	"Oracle8i Client" on page 5-7.

Oracle8i Enterprise Edition

The *Installation Types* window appears.

1. Select one of the types of installations and click Next.
2. Proceed to one of the following sections based on the selection you made in step 1.

If You Selected...	See this Section...
Typical or Minimal	"Typical or Minimal" on page 5-6.
Custom	"Custom" on page 5-7.

Typical or Minimal

1. Click Next.

The saveset location window appears. If installing from the CD-ROM, accept the default value. Otherwise, enter the directory path to the location of the product savesets (*.bck files).

2. Click Next.

The *Global Install Options* window appears. Select System or Group Installation. This affects file protections on product installed files. The option 'System' is recommended.

3. Click Next.

The *RDBMS Options* window appears. Enter a 1-6 character identifier for the installed Oracle images. This string is appended to the exe filename to identify a particular installation.

4. Click Next (for typical install type only).

The Apache options window appears. Enter a port number between 1 and 65535. Port 80 is the default.

5. Click Next.
The *Summary* window appears.
6. Click Next to continue.
The *End of Installation* window appears.
7. Click Exit to exit Oracle Universal Installer, or click Next Install to install additional products. Clicking Next Install returns you to the "Oracle Universal Installer "File Locations" Window" on page 5-4.
8. See section "Reviewing a Log of an Installation Session" on page 5-9 for information about accessing Oracle Universal Installer log files.

Custom

The *Available Products* window displays all products available for installation.

1. Select appropriate products to install and click Next.
2. Provide appropriate responses to any windows that appear.
The *Summary* window appears.
3. Click Install. Wait until the selected products are installed.
The *End of Installation* window appears.
4. Click Exit to exit Oracle Universal Installer or click Next Install to install additional products. Clicking Next Install returns you to the "Oracle Universal Installer "File Locations" Window" on page 5-4.
5. See "Reviewing a Log of an Installation Session" on page 5-9 for information about accessing Oracle Universal Installer log files.

Oracle8i Client

Note: For a list of products installed with each installation type, see the appropriate product section in Appendix A, "Oracle8i Products".

The *Installation Types* window appears.

1. Select the Oracle installation type you want to install and click Next.

2. Proceed to one of the following sections based on the selection you made in step 1.

If You Selected...	See this Section...
Administrator, Programmer, or Application User	"Administrator, Programmer or Application User" on page 5-8.
Custom	"Custom" on page 5-8.

Administrator, Programmer or Application User

1. Click Next.
The *Summary* window appears.
2. Review the information to ensure that you have enough disk space. You cannot make any product or space allocation changes once the installation begins
3. Click Install. Wait until the selected products are installed.
The *End of Installation* window appears.
4. Click Exit to exit Oracle Universal Installer, or click Next Install to install additional products. Clicking Next Install returns you to the "Oracle Universal Installer "File Locations" Window" on page 5-4.
5. See "Reviewing a Log of an Installation Session" on page 5-9 for information about accessing Oracle Universal Installer log files.

Custom

The *Available Products* window displays all products available for installation.

1. Select appropriate products to install and click Next.
2. Provide appropriate responses to any windows that appear.
The *Summary* window appears.
3. Review the information to ensure that you have enough disk space. You cannot make any product or space allocation changes once the installation begins
4. Click Install. Wait until the selected products are installed.
The *End of Installation* window appears.
5. Click Exit to exit Oracle Universal Installer, or click Next Install to install additional products. Clicking Next Install returns you to the "Oracle Universal Installer "File Locations" Window" on page 5-4.

6. See section "Reviewing a Log of an Installation Session" on page 5-9 for information about accessing Oracle Universal Installer log files.

Reviewing a Log of an Installation Session

The Installer creates the `orainventory` directory the first time it is run to keep an inventory of products that it installs on your system as well as other installation information. The location of `orainventory` is defined.

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

The latest log file is `disk:[<orainventory>.logs]installActions.log`. Log file names of previous installation sessions take the form `installActionsdatetime.log`. For example:
`installActions1999-07-14_09-00-56-am.log`

Installing Oracle Parallel Server

Installing Oracle Parallel Server with OUI requires the "Custom" install type option for Enterprise Edition. Select "Oracle Parallel Server" from the expanded "Product Options" component tree. You will be prompted to enter Oracle Parallel Server specific options from a subsequent window. The Oracle Parallel Server is installed on the node from which OUI is run. "Pushing" the installation to other nodes on the cluster from the same install session is not supported with this release.

Cleaning Up After a Failed Installation

If an installation fails, you might need to remove files that the Installer created during the last session before you attempt another installation.

To clean up after a failed installation:

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

To complete the clean up, you might need to manually remove the `ORA_ROOT` directory.

Installing Other Product Bundles Into Your Server Environment

This chapter describes, step-by-step, how to install other Oracle product bundles.

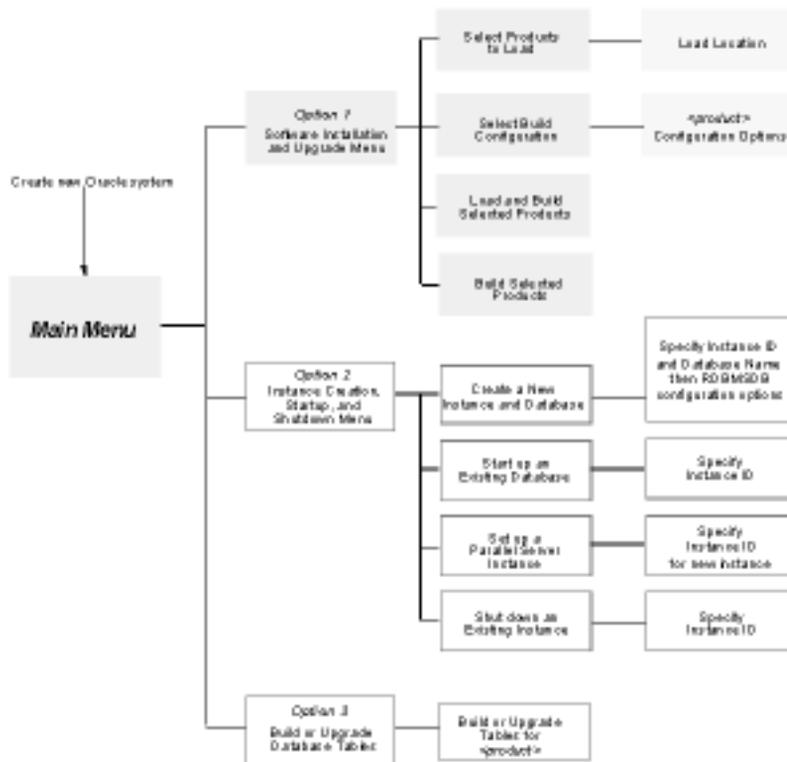
Note: The examples given represent an Oracle8i Enterprise Edition installation. If you are installing *Oracle8i*, you will have fewer product selections available to choose from. The Advanced Replication, Object Support, Spatial Data, and Data Partitioning options are available only in the *Oracle8i Enterprise Edition* release. They are not listed or available in the *Oracle8i* release.

The following steps are in the order that they need to be performed:

- Step 1. Mounting the Product Bundle CD-ROM
- Step 2. Restoring the Product Bundle BOOT.BCK
- Step 3. Invoking ORACLEINS
- Step 4. Selecting the Reconfiguration Menu Option
- Step 5. Selecting Products to Load
- Step 6. Configuring Products
- Step 7. Loading and Building Configured Products

Once the Oracle Server bundle has been loaded and configured, you can optionally choose to install other Oracle product bundles for which you are licensed, for example, Developer/2000, Advanced Networking Option, etc. These product bundles are found on the same CD-ROM distribution as the Oracle Server bundle or on separate CD-ROMs. When installing these products, install them to access the 8.1.6 Server via SQL*Net. Always refer to the product-specific installation guide first for product-specific installation information.

Figure 6–1 Installation



Step 1. Mounting the Product Bundle CD-ROM

Mount the CD-ROM containing the product bundle to be installed. For example:

```
$ MOUNT/OVERRIDE=IDENTIFICATION <ddcn> :
```

where:

<ddcn> is a valid CD-ROM device

Step 2. Restoring the Product Bundle BOOT.BCK

Restore the BOOT.BCK for the product bundle on the CD-ROM to the directory pointed to by the logical name ORA_INSTALL with the BACKUP command:

```
$ BACKUP/LOG <ddcn>:[<bundle>]BOOT.BCK/SAVE_SET -  
ORA_INSTALL:/NEW_VERSION/BY_OWNER=PARENT
```

As the BOOT.BCK saveset is restored, you will see a listing of each file as it is restored. For example:

```
%BACKUP-S-CREATED, created ORA_ROOT:[INSTALL]DDBOPT.CTL;  
.  
.  
.  
%BACKUP-S-CREATED, created ORA_ROOT:[INSTALL]UTIL.CTL;  
%BACKUP-S-CREATED, created ORA_ROOT:[INSTALL]UTIL.DEF;
```

Step 3. Invoking ORACLEINS

Invoke ORACLEINS as follows:

```
$ ORACLEINS
```

The ORACLE Installation Startup Menu appears:

```
ORACLE Installation Startup Menu

Options:

 1) Create a new ORACLE system.

 2) Upgrade your system from an ORACLE distribution tape.

 3) Reconfigure existing products, manage the database,
    or load demo tables.

 4) Exit.

Before attempting to upgrade, reconfigure, manage the database, or load
demo tables, please run ORA_UTIL:ORAUSER.COM or, if you created an
instance, ORA_DB:ORAUSER_<database name>.COM <SID> <setup_node>.

Choose an option please:
```

Step 4. Selecting the Reconfiguration Menu Option

Select Option 3, “Reconfigure existing products, manage the database, or load demo tables.”

You are prompted to specify the root directory and saveset location.

The following prompt appears:

```
ROOT DIRECTORY? (<default_location>)
```

Press [RETURN] to accept the current translation of ORA_ROOT.

ORACLEINS assigns the specified directory to the logical name ORA_ROOT and displays the following prompt:

If you are loading products from savesets, enter the drive/directory where the savesets are located (for example, MUA0: or DISKSA:[ORACLE.SAVESETS]).

If you are loading from a remote device, do not include a username and password (you will be prompted instead).

If not loading savesets, press [RETURN].

The saveset location depends on whether you are doing a remote or local installation:

- If you load savesets from a remote location, use the following format to specify the remote node, device, and directory path:

```
<remote_node>::<remote_device>:[<remote_directory_path>]
```

If you specify a remote load location, ORACLEINS warns you that it cannot verify that the remote device actually exists. It also asks you to specify a remote OpenVMS username and password. If you do not need to specify a username or password (because OpenVMS proxies have been established), press [RETURN]. Otherwise, enter the username and password, separated by a space.

For example, if the remote location is owned by the OpenVMS user ORACLE, with password FRIDAY, then the following message appears:

```
WARNING: The saveset location that you specified is on a remote device. We can
only do minimal checking to see if the device is available.
Enter the remote VMS username and password needed to access this location, or
[RETURN] if one is not required: ORACLE FRIDAY
```

- If you are loading savesets from CD-ROM or from disk, enter the device name and the directory path and press [RETURN], for example:

```
<device_name>:[<dir-name>]
```

The logical name ORA_SOURCE is set to the saveset location you entered.

The contents of the BOOT.BCK saveset are moved to the INSTALL subdirectory of the Oracle8 root directory.

After the contents of the saveset have been moved, the Main Menu appears:

```

Main Menu
Oracle Product Installation and Upgrade
1. Software Installation and Upgrade Menu
2. Instance Creation, Startup, and Shutdown Menu
3. Build or Upgrade Database Tables Menu
Enter a number or (E)XIT to exit installation procedures
```

Step 5. Selecting Products to Load

Follow these steps to select products to load.

1. Select Option 1, “Software Installation and Upgrade Menu.”

The Software Installation and Upgrade Menu appears:

```
Software Installation and Upgrade Menu

1. Select Licensed Products to load
2. Select Build Configuration Options
3. Load and Build Selected Licensed Products
4. Build Selected Licensed Products

Warning: You may not be licensed for all products
listed.

Enter a number or (E)xit to return to the Main Menu
```

2. Select Option 1, “Select Licensed Products to Load.”

A list of Oracle products appears similar to the following:

```
Select Licensed Products to Load for Installation or Upgrade

-----
Product Name      Status      Product Name      Status
-----
 1. APACHE
 2. CTX
 3. DBJAVA
 4. DBOPT
 5. DPOPT
 6. JAVAVM
 7. NETCONFIG
 8. NLS
 9. OBJCPT
10. ORHAGENT
11. ORDIH
12. ORDTB
13. ORDVIR
14. OUI
15. POOPT
16. PROGINT
17. PROPT
18. RDSMS
19. SDOPT
20. SQLPLUS
21. SOLJ
22. SVRNGR
23. UTIL

Enter |A|LL to select all products.
Enter |E|XIT to exit this menu with selected products.
Enter |Q|UIT to quit this menu with no action.

Enter the number of the product that you want to load:
```

3. Select the products that you want to add or upgrade.

Note: If UTIL is listed, you should generally load it. Loading UTIL ensures compatibility among your products. However, do not load UTIL if it is a different version than the UTIL for the Oracle installation you are reconfiguring.

For each product you selected, you are prompted to specify the location from where it is loaded with a message similar to the following:

```
Copy from ( ORA_SOURCE:SQLPLUS.BCK )
```

4. To accept the default, press [RETURN].
To specify a different location, enter the correct location and the saveset name at the “Copy from” prompt, and press [RETURN].
The default assumes that you are loading the product savesets from the location that you assigned to the ORA_SOURCE logical name in the Installation Startup Menu.
The product you selected for loading is marked with **-load**.
5. After locations for all products are entered, enter **E** to select the products and return to the Software Installation and Upgrade Menu.

Step 6. Configuring Products

This section explains how to configure products.

Configure All Products Loaded

You must verify or select the configuration options for **all** products selected in the “Select Licensed Products to Load” step.

Note: You must access the configuration menu of each selected product even if you only accept the defaults. Only those products whose configuration menus are accessed are built.

If this is the last product bundle to be installed, you must **RESELECT NETCONFIG** to force all products to be linked.

To begin configuring the products you have loaded, **select Option 2, “Select Build Configuration Options.”**

Select Configuration Options Menu

The Select Configuration Options Menu appears below:

```

Select Configuration Options
-----
List of products available for installation or upgrade configuration:

1. AFACME
2. CTX
3. ICSJAVA
4. DSOPT
5. DFOPT
6. JAVAVM
7. NETCONFIG
8. NLS
9. OBJOPT
10. ORNAGENT
11. ORDIN
12. ORDTS
13. ORDVIR
14. OSM
15. PGOPT
16. PROGINT
17. PROPT
18. RERS
19. SDOPT
20. SQLPLUS
21. SOLJ
22. SWRGR
23. UTIL

Enter |A|LL to select all products.
Enter |E|XIT to exit this menu with selected products.
Enter |Q|UIT to quit this menu with no action.

Enter the number of the product that you want to configure:
```

1. Enter the number of each product you selected to load.

Each product appears in turn with its default configuration options or with the configuration options you chose previously. For example, here is the SQL*Plus Configuration Menu:

```
SQL*Plus Configuration Options
Option                               Current Values
1. System or Group Installation? [8/6]  8

Enter (A)LL to select all options.
Enter (E)XIT to exit this menu with selected options.
Enter (Q)UIT to quit this menu with no action.
Enter the number of the option that you want to change:
```

2. Consider each configuration option carefully and enter the value appropriate for your system.

Note: Do not simply select the current value. The configuration options you select will have serious consequences in the way your Oracle system works.

3. To enter a new value, enter the number of the option you want to change and press [RETURN].
4. When the option is displayed at the bottom of the screen, enter the new value and press [RETURN].
5. To save any changes made to the configuration options and to mark a product for rebuilding, type E to exit the menu screen.

The Select Configuration Menu appears with **-rebuild** beside the products you selected.

```

                                Select Configuration Options
                                -----
List of products available for installation or upgrade configuration:

  1. APACHE
  2. CTK
  3. DBJAVA
  4. DBOPT
  5. DPOPT
  6. JAVAVM             - rebuild
  7. NETCONFIG
  8. NLS
  9. ORJCOPT
 10. ORHAGENT
 11. ORDIR
 12. ORDTX
 13. ORDVIR

 14. OWE
 15. POOPT
 16. PROGINT
 17. PROPT
 18. RDEMS
 19. SDOPT
 20. SQLPLUS
 21. SQLT
 22. SVRMRG             - rebuild
 23. UTIL               - rebuild

Enter (A)LL to select all products.
Enter (E)XIT to exit this menu with selected products.
Enter (Q)UIT to quit this menu with no action.

Enter the number of the product that you want to configure:

```

6. If needed, select another product to configure from the Configuration Menu.
7. When you have configured all products you want to install, enter E to exit to the Software Installation and Upgrade Menu menu and press [RETURN].

The Select configuration Menu appears with -rebuild beside the products you selected.

See Also: For more information about product configuration options, see Appendix A, "Oracle8i Products".

Step 7. Loading and Building Configured Products

After configuring the products, you are returned to the Software Installation and Upgrade Menu.

```
Software Installation and Upgrade Menu

1. Select Licensed Products to Load
2. Select Build Configuration Options
3. Load and Build Selected Licensed Products
4. Build Selected Licensed Products

Warning: You may not be licensed for all products
listed.

Enter a number or (EXIT to return to the Main Menu)
```

1. Select Option 3, "Load and Build Selected Licensed Products."

The system loads and builds the products you selected and configured. This step takes several minutes. You will see several messages as the products are loaded.

You will eventually see a message similar to this one:

```
The products you requested have been loaded.
```

```
You have the following options:
```

1. Build the Oracle products loaded.
2. Return to the Software Installation and Update Menu (to choose new configuration values or to load additional products from another tape or directory).

```
Enter the number of option you want [2]:
```

2. The next step depends on your situation:
 - If you have additional product bundles to load, then load and configure the products from the next directory.
 - If you decide to change the configuration options you just entered, then reconfigure and build the products.
 - If you have no more products to load, enter 1 and press [RETURN].

All selected products are now built. You will see a message similar to this:

2 products have been successfully built.

NOTE: If you want to create known file entries for some of the linked products using the VMS INSTALL utility, run ORA_INSTALL:ORA_INSUTL.COM. Refer to the appropriate ORACLE for OpenVMS Administrator's Guide for details.

Press [RETURN] to continue:

3. Enter (E)xit to return to the Main Menu.
4. Enter E to return to the DCL prompt.

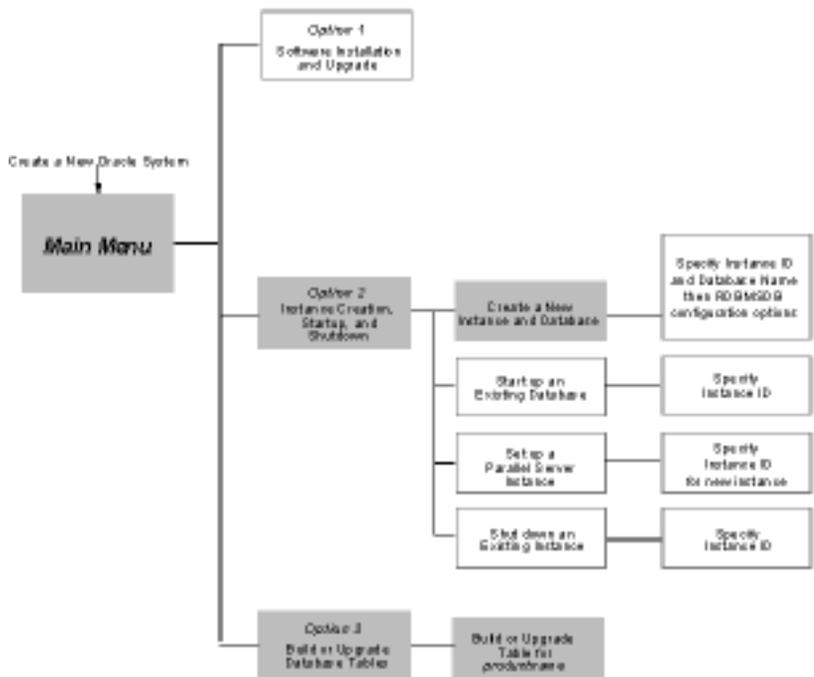
Creating an Initial Instance and Building Database Tables

This chapter describes how to use ORACLEINS to create an initial Oracle8i database and instance. It has the following topics:

- Creating an Initial Instance
- Building Database Tables

The following figure shows the ORACLEINS menu structure; the highlighted boxes indicate the steps taken in setting up the database.

Figure 7-1 Installation



Creating an Initial Instance

This section has the following topics:

- Configuring the Database
- Choosing a Default Language

Configuring the Database

1. From the Main Menu of ORACLEINS, select Option 2, “Instance Creation, Startup, and Shutdown Menu.”
2. Select Option 1, “Create a New Instance and Database,” from the Instance Creation, Startup, and Shutdown Menu.

You are prompted for the system identifier (SID) for the instance you are creating.

3. Enter a unique initial instance SID that has a maximum of six alphanumeric characters, the first of which must be an alphabetic character. The underscore character ("_") is also a valid character.

You are prompted for the database name.

4. Enter a unique database name of eight alphanumeric characters or less.

Note: Record the SID and database name. You will use them later.

The Oracle8i Enterprise Edition database configuration menu called the RDBMSDB Configuration Options Menu appears.

```

RDBMSDB Configuration Options

Option                                     Current Value

1. System or Group Installation? [S/G]    S
2. Root directory for database administration
   directory [ORA_DB]?                    ORA_ROOT:[000000]
3. Initial database file for SYSTEM Tablespace?
   ORA_DB:ORA_SYSTEM.DBS
4. Initial size of SYSTEM Tablespace?    80M
5. Log File 1?                            ORA_DB:ORA_LOG1.RDO
6. Log File 1 Size?                       2000K
7. Log File 2?                            ORA_DB:ORA_LOG2.RDO
8. Log File 2 Size?                       2000K
9. Control File 1 Name?                   ORA_DB:ORA_CONTROL1.CON
10. Control File 2 Name?                  ORA_DB:ORA_CONTROL2.CON
11. Value for MAXDATAFILES [1..999999999]? 32
12. Value for MAXLOGFILES [2..254]?       32
13. Value for MAXINSTANCES [1..63]?       16
14. Value for MAXLOGMEMBERS [1..5]?       2
15. Value for MAXLOGHISTORY [0..5000]?    1600
16. Value for CHARACTER SET?              UTF8ASCII

Enter [A]LL to select all options.
Enter [E]XIT to exit this menu with selected options.
Enter [Q]UIT to quit this menu with no action.

Enter the number of the option that you want to change:

```

5. Consider each configuration option carefully and enter the value appropriate for your system.

We recommend that you put your log files on drives separate from that on which your database files reside. This increases your ability to recover from media failure, and improves database performance.

In addition, verify that your log files are large enough for the expected level or intensity of database updates and that the MAX parameters are set with future expansion in mind. For issues regarding the default character set, see the next session on “Choosing a Default Language.”

Note: Do not simply select the current values. The configuration options you select will have serious consequences in the way your Oracle system works. For more information about the options, see Appendix A, "Oracle8i Products".

6. Enter **E** to exit the RDBMSDB Configuration Options menu and start database setup.

A message that lists the parameters you selected appears.

After ORACLEINS creates the database administration directory and scripts for managing the database, the following line appears:

```
Do you want to continue (Y/N)? [Y]
```

7. Enter **[RETURN]** to accept the default.

ORACLEINS creates and initializes a new Oracle8i database and starts the instance in exclusive mode..

Note: This operation can take a long time. The length of time depends on the size of your data files, the options you chose, and the speed of your machine.

When the initial database and instance creation is complete, what occurs next depends on whether errors are found.

- If no errors are found, the following occurs:

```
Looking for fatal errors in log file:
%SEARCH-I-NOMATCHES, no strings matched
Press [RETURN] to continue
```

Then, press **[RETURN]** to return to the Instance Creation, Startup, and Shutdown Menu, and enter **E** to return to the Main Menu.

- If a fatal error is found, look in the files `ORA_DB:CREATE_<dbname>.LOG`, `ORA_DB:CREATECAT_<dbname>.LOG` and/or `ORA_DUMP:<node>_<sid>_ALERT.LOG` for additional information or errors raised that led to the fatal error.

Choosing a Default Language

Before you choose a default language for the database, you need to understand the language requirements of your users. The character set used to create the database must be able to accommodate any possible user session translations needed by your users.

For instance, if you choose the default US7ASCII (a 7-bit character set), the database will not be able to store data entered in an 8-bit or multibyte language. However, if you choose an 8-bit or multibyte language, such as one in the list below, then your users will also be able to use an 8-bit European language or multibyte for their own session.

Additional Information: The following table lists some of the supported 8-bit character sets. Refer to Appendix A, "Oracle8i Products" in the *Oracle8i for Alpha OpenVMS Server and Tools Administrator's Guide* for a complete list of supported character sets.

Some 8-Bit Character Sets Supported	Description
WE8EBCDIC37	EBCDIC Code Page 37 8-bit West European
WE8EBCDIC500	EBCDIC Code Page 500 8-bit West European
WE8ISO8859P1	ISO 8859-1 West European
WE8DEC	DEC 8-bit West European
WE8HP	HP LaserJet 8-bit West European
US8PC437	IBM-PC Code Page 437 8-bit American
WE8PC850	IBM-PC Code Page 850 8-bit West European
WE8MACROMAN8	Mac Extended ROMAN 8 8-bit West European

Building Database Tables

Follow these steps to build and upgrade the database tables.

1. From the ORACLEINS Main Menu, select Option 3, “Build or Upgrade Database Tables Menu.”
2. A list of Oracle products appears. Some of the products are distributed with demonstration files, online help, and system tables that are created after the product is installed.

If you want to “Build database tables for All products,” enter A, unless you are performing an installation for a client machine only.

If you do not want to build database tables for all products, enter a product number for each product for which you want to create database tables.

The following message appears for each product:

```
Do you want to Initialize or Upgrade the system tables? [I/U]
```

3. Enter I to initialize system tables.

The following query appears:

```
Do you want to create the demo tables? [Y/N]
```

4. If you want to create demo tables for this product, enter Y.
5. When all desired products have been selected, enter E to exit the Build or Upgrade Database Tables menu and to build the system and demo tables.

During this process you are prompted to enter information, such as Oracle usernames and passwords. **The default SYSTEM password is MANAGER. The default SYS password is CHANGE_ON_INSTALL.**

At the end of this process, you are prompted to press [RETURN].

During the building process, you may receive messages such as the following. These are normal messages and can be ignored.

```
No data to load for HOOPT  
No data to load for DDBOPT  
ORA-942, table or view does not exist  
ORA-1432, public synonym to be dropped does not exist
```

Post-Installation

You must perform certain post-installation steps and configure Oracle8i after completing the installation of Oracle8i Release 3 (8.1.7). This chapter describes the required steps, as well as some optional ones.

- Configuration Tasks to Perform as the System User
- Configuration Tasks to Perform as the oracle User
- Post-Installation for Oracle Products
- Accessing Installed Documentation
- Installing a Client Only Tools Environment
- Reconfiguring Products
- Removing Products
- Adding or Upgrading Products
- Relinking the Oracle Code

Configuration Tasks to Perform as the System User

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

- Create Additional OpenVMS Accounts
- Automate Database Startup and Shutdown (Optional)

▶▶ Create Additional OpenVMS Accounts

If necessary, create additional OpenVMS accounts with a system administration utility. Each DBA user on the system must be a member of the OSDBA group.

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 Installer.

```
SQL> SELECT username from dba_users;
```

You should delete accounts you do not need.

▶▶ Automate Database Startup and Shutdown (Optional)

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

Configuration Tasks to Perform as the *oracle* User

Perform the following task as the `oracle` user.

- Set Initialization Parameters

▶▶ Set Initialization Parameters

Modify `init.ora` Parameters

When you create a database using ORACLEINS your `init.ora` parameters are automatically set. You can manually modify the initialization parameters in the `init.ora` with a OpenVMS editor. Activate the modified `init.ora` file by shutting down and restarting the database.

Do not use symbolic character representations such as question marks or logicals in parameter files.

See Also: *Oracle8i Administrator's Reference for Alpha OpenVMS* for information on `init.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 review online documentation before you configure your Oracle products, see "Accessing Installed Documentation" on page 8-6. 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:

- Net8
- Oracle Options
- Multi-Threaded Server
- Oracle Precompilers (Pro*COBOL, Pro*C/C++, Pro*FORTRAN)
- Oracle Supported Protocols

Net8

Configuring a complete Oracle network is beyond the scope of this manual and is covered in detail in the *Net8 Administrator's Guide*.

Verify and complete your initial configuration with the following steps:

1. Check the status of the listener following installation by using the command:

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

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

If the listener is not running, start it with the following command:

```
$ lsnrctl start listener_name
```

2. Install and configure Oracle client software on a remote system, if necessary, then start SQL*Plus to test the connection to the server.

```
$ sqlplus username/password@net_service_name
```

Note: 1521 is the default port.

If you can successfully connect to the server with SQL*Plus, you have established network connectivity over TCP/IP. For more advanced network configuration, refer to the *Net8 Administrator's Guide*.

Oracle Options

Oracle *interMedia*

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 after your initial installation, ensure you have at least 10 MB of disk space for the data dictionary.

Your database must include tablespaces specific to *interMedia* Text data. 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.

Multi-Threaded Server

Oracle servers configured with Multi-Threaded Server require a higher setting for the initialization parameter `SHARED_POOL_SIZE` or a custom configuration that uses `LARGE_POOL_SIZE`. If you created a database manually you should raise `SHARED_POOL_SIZE` in the `init.ora` file. Typically, you should add 1 KB for each anticipated concurrent user. See *Oracle8i Designing and Tuning for Performance* for further information on configuring Multi-Threaded Server.

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 `ORA_ROOT:[PROGINT.EXE]` must be customized for your environment before using Pro*C/C++. This file is installed without content and can be configured with any text editor according to your site-specific requirements. See the *Pro*C/C++ Programmer's Guide* for information on 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 `pcbcfg.cfg` is installed without content and may be configured with any text editor according to your site-specific requirements. See the *Pro*COBOL Programmer's Guide* for information on how to configure this file.

Pro*FORTRAN

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

SQL*Module Ada

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

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. Start the listener on the server:

```
$ lsnrctl start
```

3. Check the listener process:

```
$ lsnrctl status
```

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

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

Configuring the Secure Socket Layer

For details on Secure Socket Layer, refer to the installed documentation *Configuring Secure Socket Layer Authentication* in the *Oracle Advanced Security Administrator's 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. OpenVMS-specific documentation files are installed from the Oracle8i CD-ROM. Generic documentation files are installed from the Online Generic Documentation CD-ROM.

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

You can also access documentation directly from the CD-ROM as described in "Accessing Online Documentation" on page xiii.

Oracle Information Navigator

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

Installing a Client Only Tools Environment

In a client only installation, Oracle and/or user applications connect to an Oracle8i Enterprise Edition database (on the same node or another node) using one of the SQL*Net communication protocols. Applications communicate with another process (called a server process) over SQL*Net, which submits requests to the Oracle8i Enterprise Edition on behalf of the application. This server process then returns the results to the application over the same SQL*Net connection.

Implement the following steps to perform a client only installation:

1. Decide the following:
 - Which Oracle products (besides SQL*Net) are to be installed?
 - Which SQL*Net network protocol will the client use to communicate to the server machine (for example, TCP/IP)?
2. Once you have decided the Oracle products that you want to install, do the following:
 - Create the Oracle Server database administrator account and root directory, as described in Chapter 1.
 - Log onto the Oracle Server database administrator account and set your default directory as described in Chapter 1.

- Mount your distribution media and restore the appropriate BOOT.BCK (if loading from CD-ROM, the first BOOT.BCK to restore is located in the [SERVER] directory). The BACKUP command to be used is:

```
$ BACKUP/LOG <ddcn>: [SERVER]BOOT.BCK/SAVE_SET -  
[ ]/NEW_VERSION/BY_OWNER=PARENT
```

where:

<ddcn> is the name of your CD-ROM device.

3. Invoke the Oracle Installation procedure by entering the following command:

```
$ @ORACLEINS
```

- Select Option 1, "Create a new Oracle system."
- When prompted for "Root directory?," press RETURN to accept the default.
- When prompted for the saveset location, enter the device name with the correct directory (for example, DKA100:[SERVER]).
- Select Option 1, "Software Installation and Upgrade Menu," from the Main Menu.
- Select Option 1, "Select Products to Load."

Select all the Oracle products that you want to install. From the Server Bundle, **YOU MUST SELECT** NETCONFIG and UTIL.

- Select Option 2, "Select Build Configuration Options".
- Select Option 3, "Load and Build Selected Products."

The Oracle installer now loads and builds the selected products.

4. If you need to load and build additional products from any other CD-ROM directories, do the following:

- Restore the BOOT.BCK from that CD-ROM directory, by entering the following:

```
$ BACKUP/LOG <ddcn>: [<bundle>]BOOT.BCK/SAVE_SET -  
ORA_INSTALL:/NEW_VERSION/BY_OWNER=PARENT
```

where:

`<ddcn>` is the name of your CD-ROM device.

- Invoke the Oracle Installation procedure by entering the following command:

```
$ ORACLEINS
```

- Select Option 3, “Reconfigure existing products, manage the database, or load the demo tables.”
- Follow the same instructions as in Step 3 above (starting with the step that begins with, “When prompted for 'Root directory?'...”).

Reconfiguring Products

Perform the following steps to change product configuration options or to relink products. Verify that your system has Oracle8i installed.

Note: If you are reconfiguring NETCONFIG or the RDBMS, shut down the instance and deinstall the shareable images before reconfiguring. See the section, “Shutting Down Oracle8i via Server Manager,” for more information

1. Run the ORAUSER file for your database by entering the following line:

```
$ @<database directory>:ORAUSER_<dbname>
```

2. If you plan to reconfigure or relink the Oracle8i Enterprise Edition or SQL*Net, you must shut down the database.

```
SVRMGR> SHUTDOWN NORMAL
```

3. Remove the shareable images.

```
$ REMORACLE
```

4. Run the installation script by entering the following line:

```
$ ORACLEINS
```

The ORACLE Installation Startup Menu appears as follows:

```
ORACLE Installation Startup Menu

Options:
1. Create a new ORACLE system.
2. Upgrade your system from an ORACLE distribution tape.
3. Reconfigure existing products, manage the database,
   or load the demo tables.
4. Exit.

Before attempting to upgrade, reconfigure, manage the database,
or load demo tables, please run ORA UTIL:ORAUWER.COM or, if you
created an instance, ORA_DB:ORAUWER_<database name>.COM <SID>

Choose an option please:
```

5. From this menu, select Option 3, “Reconfigure existing products, manage the database, or load demo tables.” You are prompted to verify the root directory and supply a saveset location.

After you enter this information, the Main Menu appears as shown here:

```
      Main Menu
    Oracle Product Installation and Upgrade

1. Software Installation and Upgrade Menu
2. Instance Creation, Startup, and Shutdown Menu
3. Build or Upgrade Database Tables Menu

Enter a number or |E|XIT to exit installation procedure:
```

6. Select Option 1 from the Main Menu. The Software Installation and Upgrade Menu appears as shown here:

```

Software Installation and Upgrade Menu

1. Select Licensed Products to load
2. Select Build Configuration Options
3. Load and Build Selected Licensed Products
4. Build Selected Licensed Products

Warning: You may not be licensed for all products
listed.

Enter a number or (E)xit to return to the Main Menu:

```

- To reconfigure software products, select Option 2 from the Software Installation and Upgrade Menu.

The Select Configuration Options Menu appears:

```

Select Configuration Options
-----

List of products available for installation or upgrade configuration:

1. APACHE          14. OVM
2. CTX             15. PROFT
3. DBJAVA          16. PROGMT
4. ISOFT           17. PROPT
5. DFDFT           18. REDES
6. JAVAVM          19. SOOFT
7. METCONFIG       20. SQLPLUS
8. MLS             21. SQLT
9. OBJOFT          22. STRMR
10. OEHAGENT       23. UTIL
11. ORDIN
12. ORDS
13. ORDVIR

Enter [A]LL to select all products.
Enter [E]XIT to exit this menu with selected products.
Enter [Q]UIT to quit this menu with no action.

Enter the number of the product that you want to configure:

```

- Modify the configuration options for each product as needed. For more information about individual product configuration options, see Appendix A, "Oracle8i Products"

- Exit each configuration menu, then enter E to return to the Software Installation and Upgrade Menu.
8. To relink software products, select Option 4, “Build Selected Licensed Products,” from the Software Installation and Upgrade Menu.
 9. Exit ORACLEINS and return to the DCL prompt. You have now completed reconfiguring or relinking your Oracle products. Note that if you previously shut down the database (to reconfigure or relink Oracle8i or SQL*Net), you will need to restart the database.
 10. If the product you have reconfigured has changed its executable name since the last installation, and you install the product into shared memory, you must run the following command procedure:

```
$ ORA_INSTALL:ORA_INSUTL.COM
```

Removing Products

To remove products, issue the following command:

```
$ @ORA_INSTALL:ORA_DEINST <product name>
```

where:

<product name> is the mnemonic used in the ORA_UTIL:PRODUCTS.TXT file.

For example, if you want to completely get rid of SQL*Plus, issue the following command:

```
$ @ORA_INSTALL:ORA_DEINST SQL*PLUS
```

Adding or Upgrading Products

This section applies to the following topics:

- Preparing to Add or Upgrade
- Starting Up an Instance
- Building or Upgrading Database Tables

Preparing to Add or Upgrade

Note: You may **not** upgrade an Oracle 8.1.6 or earlier installation to Oracle 8.1.7. The Oracle 8.1.7 savesets are **not** backward compatible with previous Oracle releases and can only be used for an Oracle 8.1.7 installation.

Before you add or upgrade a product, perform the following steps:

1. Verify that your system has Oracle8i installed.
2. Log onto your Alpha OpenVMS machine.
3. Run the following ORAUSER file for your database:

```
$ @ORA_DB:ORAUSER_<dbname>
```
4. If you plan to upgrade any Oracle product tables, change the Oracle SYSTEM password to MANAGER.

Note: If you do not change the Oracle SYSTEM password to MANAGER, your installation may fail. Oracle installation scripts often assume the password is MANAGER. Alternatively, you can check for hardcoded user names and passwords in the Oracle scripts and change them to your own user names and passwords.

5. Back up the old code and database files (data, redo log, and control).
6. Mount the distribution media.
7. Restore the product's BOOT.BCK saveset into the ORA_ROOT:[INSTALL] directory. Refer to Chapter 4 for more information.

This saveset contains the updated PRODUCTS.TXT file used by the installation procedure to upgrade the products on the distribution media.

After completing these preliminary steps, you are ready to load and configure your Oracle products.

Adding or Upgrading a Product Summary

1. Start ORACLEINS.

2. From the Installation Startup Menu, select Option 3, “Reconfigure system, manage database, load demo tables.”
3. From the Main Menu, select Option 1, “Software Installation and Upgrade Menu.”
4. Select products to load.
5. Configure products.
6. Load and build selected products.
7. Exit and return to the Main Menu.
8. Start an instance.
9. Build or upgrade database tables menu.

Starting Up an Instance

If the database is running, go to the next section “Building or Upgrading Database Tables.”

If you previously shut down the database (to upgrade the Oracle8i Enterprise Edition or SQL*Net), you need to start it up again. From the Main Menu, select Option 2, “Instance Creation and Instance Startup Menu.” This brings up a submenu, from which you should select Option 2, “Startup an Existing Instance.” To restart your database, enter its instance ID when prompted to do so. Return to the Main Menu.

Building or Upgrading Database Tables

Before building database tables, you must have created the SCOTT account. This is created automatically when Building Database Tables for RDBMS.

From the Main Menu, select Option 3, “Build or Upgrade Database Tables Menu.”

1. Enter the item number of each product whose database tables you want to upgrade, or enter **A** for all products. Steps 2 and 3 must be completed for each product you choose.
2. When prompted to initialize or upgrade the system tables, enter **U** to upgrade existing products or **I** to initialize new products.
3. When prompted if you want to create demo tables, enter **Y** if you want to create them or **N** if you do not want to create them.

Press **E** to exit ORACLEINS and return to the DCL prompt. The upgrade procedure is now complete.

Relinking the Oracle Code

The Oracle code must be relinked under the following conditions:

- Change to operating system, for example upgrade
- Change to SQL*Net configuration
- Change to RDBMS configuration

Step 1. Shutdown the Given Database(s)

First verify that you are pointed to the right database instance. At the DCL prompt:

```
$ SHOW LOGICAL ORA_SID  
ORA_SID" = "V817" (LNM$JOB_TABLE)
```

Invoke SVRMGR and connect internal. Select from the view V\$PROCESS. If no other processes are active and you are pointed to the right instance, shut down the given database.

Once the database is shut down, all Oracle background process will no longer exist. Type SHOW SYSTEM at the DCL prompt to verify.

Step 2. Remove Images

1. Type REMORACLE at the system prompt.

```
$ REMORACLE
```

Note: Generally no response is returned except for the return of the DCL prompt.

Step 3. Invoke the Oracle Installation Utility

1. Type ORACLEINS at the DCL prompt.

```
$ ORACLEINS
```

This yields the ORACLE Installation Startup Menu.

- From this menu, choose option 3, “Reconfigure existing products, manage the database, and/or load the demo tables.”
- Press the return key until you reach the “Main Menu.”
- Choose option 1, “Software Installation and Upgrade Menu.” This yields the menu, “Software Installation and Upgrade Menu.”
- Choose Option 2.

You are presented with a list of Oracle products that can be installed, upgraded, or reconfigured.

```
                Select Configuration Options
                -----
List of products available for installation or upgrade configuration:

  1. APACHE                14. OMS
  2. CTX                   15. PQOPT
  3. DEJAVA                16. PROGINF
  4. DBOPT                 17. PSOPT
  5. DPOPT                 18. RDBMS
  6. JAVAVM                19. SDOPT
  7. NETCONFIG             20. SQLPLUS
  8. NLS                   21. SQLJ
  9. OBJOPT               22. SVRMGR
10. ORMGENT                23. UTIL
11. ORDI
12. ORDT
13. ORDVIR

Enter (A)LL to select all products.
Enter (E)XIT to exit this menu with selected products.
Enter (Q)UIT to quit this menu with no action.

Enter the number of the product that you want to configure:
```

- Choose the number for NETCONFIG only.

The current configuration options for NETCONFIG are shown.

- At the prompt, type E to exit this menu with selected options.

You are again presented with the list of products. Note, `-rebuild` appears next to NETCONFIG, for example:

- Type E again to exit this menu with selected products.

You are returned to the Software Installation and Upgrade Menu and you are prompted to Enter a number or (E)XIT to return to the Main Menu.

9. Select option 4, "Build Selected Licensed Products".

If you install the tools into memory, invoke `ORA_UTIL:INSUTILITY.COM`. Invoke `ORA_DB:STARTUP_<dbname>.COM` as applicable.

Note: If you have an automatic startup Oracle script, you may run it instead

Managing the Oracle8i Enterprise Edition

This chapter describes post-installation notes on the following topics:

- Starting the Oracle8i Enterprise Edition
- Creating Additional Oracle Databases and Instances
- Shutting Down an Oracle Database/Instance

Starting the Oracle8i Enterprise Edition

Before you start the Oracle8i Enterprise Edition, both an instance and a database must exist on your local system. If you did not install the Oracle8i Enterprise Edition, consult the person who did.

This section presents the following topics:

- Before Start Up
- Starting Oracle8i via ORACLEINS
- Starting Oracle8i via STARTUP Files
- Starting Oracle8i via Server Manager
- Starting Oracle8i Automatically

Before Start Up

Prior to starting up an Oracle database/instance, the Oracle shareable images must be installed. To install the Oracle shareable images, issue the following DCL commands:

1. Run ORAUSER.COM, specifying the full directory path. For example:

```
$ @<disk_device>:[ORACLE8.UTIL]ORAUSER.COM
```

where:

<disk_device>:[ORACLE8.UTIL] is the UTIL directory under the ORACLE root directory pointed to by the logical name ORA_ROOT.

You must perform steps 2 and 3 under the following conditions:

- After the ORACLE image has been removed, but before the Oracle8i Enterprise Edition is started
- After running the REMORACLE.COM command file (which de-installs the global sections loaded by INSORACLE.COM)
- Whenever the computer is booted.

WARNING: Running INSORACLE.COM might cause problems with any currently running instance that uses the shareable images that these command files install. Take this into account if you create an instance-specific automatic startup procedure that invokes the INSORACLE file.

2. Run the ORA_RDBMS:INSORACLE.COM file.

```
$INSORACLE
```

This file installs the shared global sections that make a shareable ORACLE image known to the system. The ORACLE<image_id>.EXE file must have proper protection when you run INSORACLE. The account where you run INSORACLE.COM must have CMKRNL privilege.

3. If you plan to install shared images, run the file ORA_INSTALL:ORA_INSUTL.COM to create ORA_UTIL:INSUTILITY.COM.

INSUTILITY.COM installs Oracle products other than the Oracle8i Enterprise Edition (such as Oracle Forms and SQL*Plus) in shared memory.

Starting Oracle8i via ORACLEINS

To start Oracle8i using ORACLEINS, do the following steps:

1. Run the database-specific ORAUSER file using the following syntax:

```
$ @ORA_DB:ORAUSER_<dbname> <sid> <setup_nodename>
```

2. Run ORACLEINS:

```
$ ORACLEINS
```

3. Select option 3, "Reconfigure existing products, manage the database, or load demo tables," from the Oracle Installation Startup Menu.
4. Press [RETURN] when prompted to specify the root directory.
5. Press [RETURN] when prompted to specify the device where you mounted the distribution medium.
6. Select option 2, "Instance Creation, Startup, and Shutdown Menu," from the Main Menu.
7. Select option 2, "Startup an Existing Instance," from the Instance Creation, Startup, and Shutdown Menu. The following message is displayed:

```
Currently known database SIDs:
```

```
[list of known SIDs]
```

```
Press [RETURN] to quit with no action.
```

```
NOTE: The SID can be a maximum of 6 characters in length.
```

```
What is the SID for the instance to startup?
```

8. Type the SID of the instance that you want to start and press [RETURN]. The instance identified by this SID is started and the database associated with this instance is opened in exclusive mode.

Starting Oracle8i via STARTUP Files

You can also use command files to start Oracle8i. The file you execute depends on whether you are running in exclusive or in parallel mode.

Run one of the following STARTUP command files for the instance you want to start:

```
$ @ORA_DB:STARTUP_<dbname> <sid> <setup_nodename>
```

These files are located in the database-specific directory identified by the logical name ORA_DB. When you start up the instance, be sure to specify the SID of the instance and its setup node.

Starting Oracle8i via Server Manager

You can also start an instance of Oracle8i using Server Manager. See the section, “Starting the Server,” in this chapter for instructions about setting up Server Manager. Then, refer to the generic (platform-independent) Oracle Server documentation for instructions about using Server Manager.

You might choose to complete startup tasks separately when monitoring instance performance, for example, or you might want to start an instance and open a database after making some modifications.

Identifying the Current Instance

When starting up the Oracle8i Enterprise Edition, you start up the current instance. The current Oracle8i instance is identified by the value of the logical name `ORA_SID`. For example, if the value of `ORA_SID` is currently `V817`, the current instance is the instance with the `SID V817`. If you have not reassigned the `ORA_SID` logical name, the value of `ORA_SID` is the `SID` specified during installation. To change the current instance before starting the Oracle8i Enterprise Edition with Server Manager, you must reassign the value of `ORA_SID`.

If the `ORA_SID` is missing or incorrect, you receive the following error:

```
ORA-07582, spstp: ORA_SID has an illegal value
```

Specifying Startup Parameters

When the current Oracle8i instance is started, the SGA is created and initialized with the startup parameters set in the distributed parameter file, `INIT.ORA`, in the `ORA_DB` directory. When using Server Manager, you can use another startup file that sets different parameter values by including the `PFILE` option with the `STARTUP` command to identify an alternative parameter file. If the directory location of the alternative parameter file is not in the current directory, include it:

```
SVRMGR> STARTUP PFILE=ORA_DB:INIT2.ORA
```

Starting the Server

To start Oracle8i, you must have the process rights identifier `ORA_DBA` or `ORA_<sid>_DBA` assigned to your user account in the OpenVMS rights database and you must run two `.COM` files that make the logical name assignments required to run Oracle8i.

Before starting up Oracle8i, run the `ORAUSER_<dbname>.COM` to set the desired instance.

After running the above .COM files, run Server Manager and execute the appropriate STARTUP command(s), as documented in the *Oracle8i Server Administrator's Guide*. You can issue the single Server Manager command, STARTUP, or execute the three separate Server Manager commands documented in the *Oracle8i Server Administrator's Guide* to start the Oracle8i Enterprise Edition.

The Server Manager command STARTUP starts the current ORACLE instance, creating the SGA in OpenVMS shared memory and creating the detached processes. It then mounts the database and opens it.

Starting Oracle8i Automatically

To start Oracle8i automatically whenever you start OpenVMS, submit the Oracle8i start procedure as a batch job from the system startup file. This batch job must:

- Execute the ORAUSER.COM file to define the logical names and symbols referenced by Oracle8i
- Run as the operating system DBA account user
- Run ORA_RDBMS:INSORACLE.COM to install the global sections required by Oracle8i
- Execute one of the startup command files to start Oracle8i:

```
$ @ORA_DB:STARTUP_<dbname>
```

- Run ORA_UTIL:INSUTILITY.COM if you previously ran ORA_INSTALL:ORA_INSUTL.COM to install Oracle products as shared images

Sample Startup File

A sample startup file that starts two Oracle8i systems automatically after a system reboot is shown below:

```
$! STARTORAV8.COM
$! This script shows how one might start two Oracle
$! database instances at system boot time.
$!-----
$! Get the name of the node.
$!
$ NODENAME = F$GETSYI("NODENAME")
$!
$! Acquire CMKRNL privilege to install ORACLE
$! IMAGES. Exit with error if you are not so
$! authorized.
```

```
$!  
$ SET PROCESS/PRIVILEGES=CMKRNL  
$ IF (F$PRIVILEGE("CMKRNL") .EQS. "FALSE") THEN EXIT 2  
$!  
$! Define symbols specific to this version of ORACLE  
$! code by running the appropriate ORAUUSER.COM:  
$!  
$ @DISK$ORACLE:[ORACLE.V8.UTIL]ORAUUSER  
$!  
$! Install shared images:  
$!  
$ INSORACLE ! Install shared ORACLE image  
$!  
$! Start a database instance.  
$!  
$ INSTSID = "PROD1" ! Define SID  
$ DB_NAME = "PROD" ! Define database name  
$ GOSUB START_DATABASE  
$!  
$! Start a second database instance.  
$!  
$ INSTSID = "PROD2" ! Define sid  
$ DB_NAME = "TEST" ! Define database name  
$ GOSUB START_DATABASE  
$ EXIT  
$!  
$! Invoke the database-specific startup script. Assumes  
$! that ORA_DB for each database is under ORA_ROOT.  
$! This need not be the case.  
$!  
$START_DATABASE:  
$ @ORA_ROOT:[DB_'DB_NAME']STARTUP_'DB_NAME' -  
'INSTSID' 'NODENAME'  
$ RETURN
```

In this sample startup file, the systems share the same copy of Oracle8i code. The example assumes that the Oracle8i root directory is DISK\$ORACLE:[ORACLE.V8].

Run this file as a batch job under the Oracle8i account as part of the standard system startup procedure. Keep this file in the Oracle8i account login directory.

For example, if the Oracle8i account resides in DISK\$ORACLE:[ORACLE] and the startup script is named STARTORAV8.COM, then start this script at boot time by adding the following lines to SYSS\$MANAGER:SYSTARTUP_VMS.COM:

```

$ FILSPC = "DISK$ORACLE:[ORACLE]STARTORAV8"
$ SUBMIT-
/USER=ORACLE8
/AFTER="+00:05:00"
/LOG='FILSPC'.LOG
'FILSPC'

```

Creating Additional Oracle Databases and Instances

The only supported way of creating additional Oracle databases and instances is by using ORACLEINS.

The way to create additional Oracle databases is similar to when you created your initial database/instance.

For additional information, see Chapter 5.

Shutting Down an Oracle Database/Instance

The following three methods can be used to shut down an Oracle database instance:

- Shutting down Oracle8i via ORACLEINS
- Shutting down Oracle8i via SHUTDOWN file
- Shutting down Oracle8i via Server Manager
- Shutting down Oracle8i via SQLPLUS

After all instances on a node have been shut down, you can deinstall the shareable images if desired by using REMORACLE.

Shutting Down Oracle8i via ORACLEINS

To shut down Oracle8i using ORACLEINS:

1. Using Server Manager, ensure that there are no open sessions.
2. Run the database-specific ORAUSER file:

```
$ @ORA_DB:ORAUSER_<dbname> <sid> <setup_nodename>
```

3. Run ORACLEINS:

```
$ ORACLEINS
```

4. Select option 3, "Reconfigure existing products, manage the database, or load demo tables," from the ORACLE Installation Startup Menu.
5. Press [RETURN] when prompted to specify the root directory.
6. Press [RETURN] when prompted to specify the location of the savesets.
7. Select option 2, "Instance Creation, Startup, and Shutdown Menu," from the Main Menu.
8. Select option 4, "Shutdown an Existing Instance," from the Instance Creation, Startup, and Shutdown Menu. The following message is displayed:

```
Currently known database SIDs:
[list of known SIDs]
Press [RETURN] to quit with no action.
NOTE: The SID can be a maximum of 6 characters in length.
What is the SID for the instance you want to shut down?
```

9. Type the SID of the instance that you want to stop and press [RETURN]. The ORACLEINS utility will now do an orderly shutdown of the specified instance.

Shutting Down Oracle8i via the SHUTDOWN File

To shut down the currently running ORACLE instance, use the following command file:

```
$ @ORA_DB:SHUTDOWN_<dbname>.COM <sid> <setup_nodename>
```

This file is located in the database-specific directory identified by the logical name ORA_DB. When you shut down the instance, be sure to specify the SID of the instance and its setup node.

Sample Shutdown File

A sample shutdown file that shuts down two Oracle8i systems automatically is shown below:

```
$!
$! NAME: STOPORAV8.COM
$! Note that this script will hang if users are still

$! connected to the databases unless you modify the
$! shutdown scripts to issue SHUTDOWN IMMEDIATE commands.
$!-----
```

```
$!  
$!   Get the name of the node:  
$!  
$ NODENAME = F$GETSYI("NODENAME")  
$!  
$!   Acquire CMKRNL privilege to remove the Oracle  
$!   shareable images.  Exit with error if you are not so  
$!   authorized.  
$!  
$ SET PROCESS/PRIVILEGES=CMKRNL  
$ if (F$PRIVILEGE("CMKRNL") .EQS. "FALSE") THEN EXIT 2  
$!  
$!   Define symbols and logical names specific to this version  
$!   of the Oracle code by running ORAUUSER.COM  
$!  
$!  
$ @DISK$ORACLE:[ORACLE.V8.UTIL]ORAUUSER  
$!  
$!   Shut down a database instance  
$!  
$ INSTSID = "PROD1"           ! Define SID  
$ DB_NAME = "PROD"           ! Define Database Name  
$ GOSUB DO_SHUTDOWN  
$!  
$!   Shut down a second database instance  
$!  
$ INSTSID = "PROD2"           ! Define SID  
$ DB_NAME = "TEST"           ! Define Database Name  
$ GOSUB DO_SHUTDOWN  
$!  
$!  
$!   De-install Oracle shareables  
$!  
$ REMORACLE  
$ EXIT  
$!  
$ DO_SHUTDOWN:  
$ @ORA_ROOT:[DB_'DB_NAME']SHUTDOWN_'DB_NAME' 'INSTSID'-  
'NODENAME'  
$ RETURN
```

Shutting Down Oracle8i via Server Manager

You can shut down an instance of Oracle8i using Server Manager. See the section, “Starting the Server,” in this chapter for instructions on setting up Server Manager. Refer to the generic (platform-independent) Oracle Server documentation for instructions about using Server Manager.

Deinstalling Shareable Images

After shutting down all Oracle8i instances on a node, and before relinking, deinstall the shareable images (and shutdown the bequeath adapter) by entering the following statement:

```
$ REMORACLE
```

Oracle8i Products

This appendix lists the products included with Oracle8i Release 3 (8.1.7):

- Oracle8i Enterprise Edition or Oracle8i Components
- Oracle8i Client Components
- Product Descriptions

Note: The Custom installation type is not listed for any of the above three top-level components since it allows you to install all components in the current top-level component category. Some components can *only* be installed through a Custom installation. Such components have an availability of "No" listed for other installation types in the tables in this appendix.

Oracle8i Enterprise Edition or Oracle8i Components

This table alphabetically lists the components available with each installation type of the Oracle8i Enterprise Edition or Oracle8i top-level component.

Component	Oracle8i Enterprise Edition or Oracle8i	
	Typical	Minimal
Advanced Queueing	Yes	Yes
Advanced Replication	Yes	Yes
Apache WebServer Files	Yes	Yes
Generic Connectivity	Yes	Yes
Net8 Client (Windows NT/2000), includes:	Yes	Yes
▪ Net8 Assistant	Yes	Yes
▪ Net8 Configuration Assistant	Yes	Yes
▪ Oracle Protocol Support	Yes	Yes
Net8 Server	Yes	Yes
Object Type Translator, includes:	Yes	Yes
▪ Oracle INTYPE File Assistant	Yes	Yes
Oracle Advanced Security, includes: ¹	Yes	No
1. Encryption and Integrity Support, includes:	Yes	No
▪ DES40 Encryption	Yes	No
▪ DES56 Encryption	Yes	No
▪ 3DES_112 Encryption (2-key option)	Yes	No
▪ 3DES_168 Integrity (3-key option)	Yes	No
▪ RC4_40 Encryption	Yes	No
▪ RC4_56 Encryption	Yes	No
▪ RC4_128 Encryption	Yes	No
▪ RC4_256 Integrity	Yes	No
▪ SHA-1 Integrity	Yes	No
▪ MD5 Integrity	Yes	No
2. Thin JDBC Java-based Encryption Support, includes:	Yes	No

Component	Oracle8i Enterprise Edition or Oracle8i	
	Typical	Minimal
▪ DES40 Encryption	Yes	No
▪ DES56 Encryption	Yes	No
▪ RC4_40 Encryption	Yes	No
▪ RC4_56 Encryption	Yes	No
▪ RC4_128 Encryption	Yes	No
▪ RC4_256 Integrity	Yes	No
▪ SHA-1 Integrity	Yes	No
▪ MD5 Integrity	Yes	No
3. Authentication Support, includes:	Yes	No
▪ Identix (for Biometrics)	Yes	No
▪ Kerberos (with SSO support)	Yes	No
▪ SecurID (for Token Cards)	Yes	No
▪ SSL (with X.509 version 3) (with SSO support)	Yes	No
4. Enterprise User Security, includes:	Yes	Yes
▪ Oracle Enterprise Login Assistant	Yes	Yes
▪ Oracle Wallet Manager	Yes	Yes
Note: Oracle Enterprise Login Assistant and Oracle Wallet Manager are features of Oracle Advanced Security and can only be used if you have purchased an Oracle Advanced Security license.		
Oracle Call Interface	Yes	Yes
Oracle Enterprise Java Beans and CORBA Tools	Yes	Yes
Oracle Enterprise Manager, includes three main components (Windows NT/2000):	Yes	Yes
1. Oracle Enterprise Manager Client, includes:	Yes	Yes
▪ Oracle Enterprise Manager Console	Yes	Yes
▪ Oracle DBA Management Pack, includes:	Yes	Yes
Oracle DBA Studio	Yes	Yes
Oracle Instance Manager	Yes	Yes
Oracle Schema Manager	Yes	Yes

Component	Oracle8i Enterprise Edition or Oracle8i	
	Typical	Minimal
Oracle Security Manager	Yes	Yes
Oracle Storage Manager	Yes	Yes
SQL*Plus Worksheet	Yes	Yes
<ul style="list-style-type: none"> ■ Oracle Enterprise Manager Quick Tours ■ Oracle Enterprise Manager Web Site 	Yes	No
<p>Note: The OEM Web Site uses the Oracle HTTP Server as a Web listener.</p>		
2. Oracle Intelligent Agent, includes:	Yes	Yes
Oracle HTTP Server, includes	Yes	Yes
<ul style="list-style-type: none"> ■ Apache JServ ■ Apache WebServer Files ■ Business Components for Java ■ mod_ose ■ Mod PL/SQL 	Yes	Yes
3. Oracle Management Server (Windows NT/2000), includes:	Yes	No
<ul style="list-style-type: none"> ■ Oracle Enterprise Manager Configuration Assistant ■ Oracle Enterprise Manager Migration Assistant 	Yes	No
Oracle <i>interMedia</i> , includes:	Yes	No
<ul style="list-style-type: none"> ■ Oracle <i>interMedia</i> Client Option ■ Oracle <i>interMedia</i> Locator ■ Oracle <i>interMedia</i> Text 	Yes	No
Oracle JDBC Drivers, includes:	Yes	Yes
<ul style="list-style-type: none"> ■ Oracle JDBC Thin Driver for JDK 1.1 ■ Oracle JDBC Thin Driver for JDK 1.2 ■ Oracle JDBC/OCI Driver for JDK 1.1 ■ Oracle JDBC/OCI Driver for JDK 1.2 	Yes	Yes
Oracle8i JVM, includes:	Yes	Yes
<ul style="list-style-type: none"> ■ Java Virtual Machine ■ Oracle Servlet Engine 	Yes	No
Oracle Names	No	No

Component	Oracle8i Enterprise Edition or Oracle8i	
	Typical	Minimal
Oracle Parallel Server, includes: ²	Yes	No
Oracle Partitioning ¹	Yes	Yes
Oracle SNMP Agent	No	No
Oracle Spatial ¹	Yes	No
Oracle SQLJ, includes:	Yes	Yes
▪ SQLJ Runtime	Yes	Yes
▪ SQLJ Translator	Yes	Yes
Oracle Trace	Yes	Yes
Oracle Time Series ¹	Yes	No
Oracle Universal Installer, includes:	Yes	Yes
▪ Oracle's version of Java Runtime Environment	Yes	Yes
Oracle Utilities, includes:	Yes	Yes
▪ Database Verify Utility	Yes	Yes
▪ Export	Yes	Yes
▪ Import	Yes	Yes
▪ Migration Utility	Yes	Yes
▪ Recovery Manager	Yes	Yes
▪ SQL*Loader	Yes	Yes
▪ Server Manager	Yes	Yes
Note: Server Manager will no longer be available after Release 8.1.7.		
Oracle Visual Information Retrieval ¹	Yes	No
Oracle Visual Information Retrieval Client ¹	Yes	No
Oracle8i Server ³ (the Oracle8i database), includes:	Yes	Yes
▪ Oracle Database Demos	Yes	Yes
▪ PL/SQL	Yes	Yes
▪ PL/SQL Embedded Gateway	Yes	Yes

Component	Oracle8i Enterprise Edition or Oracle8i	
	Typical	Minimal
SQL*Plus	Yes	Yes

¹ Oracle Advanced Security, Oracle Partitioning, Oracle Spatial, Oracle Time Series, Oracle Visual Information Retrieval, and Oracle Visual Information Retrieval Client are available with Oracle8i Enterprise Edition, but are not available with Oracle8i.

² Oracle Parallel Server is available with Oracle8i Enterprise Edition, but is not available with Oracle8i.

³ The type of Oracle8i Server depends upon the database type you purchased: Oracle8i Enterprise Edition or Oracle8i.

Oracle8i Client Components

This table alphabetically lists the components available with each installation type of the Oracle8i Client top-level component.

Component	Oracle8i Client		
	Administrator	Programmer	Application User
Advanced Queuing	Yes	Yes	Yes
Documentation for Alpha OpenVMS (online)	Yes	Yes	Yes
Net8 Client (Windows NT/2000), includes:	Yes	Yes	Yes
▪ Net8 Assistant	Yes	Yes	Yes
▪ Net8 Configuration Assistant	Yes	Yes	Yes
▪ Oracle Protocol Support	Yes	Yes	Yes
Object Type Translator, includes:	Yes	Yes	No
▪ Oracle INTYPE File Assistant	Yes	Yes	No
Oracle Advanced Security, includes: ¹	Yes	Yes	Yes
1. Encryption and Integrity Support, includes:	Yes	Yes	Yes
▪ DES40 Encryption	Yes	Yes	Yes
▪ DES56 Encryption	Yes	Yes	Yes
▪ 3DES_112 Encryption (2-key option)	Yes	Yes	Yes
▪ 3DES_168 Integrity (3-key option)	Yes	Yes	Yes
▪ RC4_40 Encryption	Yes	Yes	Yes
▪ RC4_56 Encryption	Yes	Yes	Yes
▪ RC4_128 Encryption	Yes	Yes	Yes
▪ RC4_256 Integrity	Yes	Yes	Yes
▪ SHA-1 Integrity	Yes	Yes	Yes
▪ MD5 Integrity	Yes	Yes	Yes
2. Thin JDBC Java-based Encryption Support, includes:	Yes	Yes	Yes
▪ DES40 Encryption	Yes	Yes	Yes
▪ DES56 Encryption	Yes	Yes	Yes
▪ RC4_40 Encryption	Yes	Yes	Yes

Component	Oracle8i Client		
	Administrator	Programmer	Application User
■ RC4_56 Encryption	Yes	Yes	Yes
■ RC4_128 Encryption	Yes	Yes	Yes
■ RC4_256 Integrity	Yes	Yes	Yes
■ SHA-1 Integrity	Yes	Yes	Yes
■ MD5 Integrity	Yes	Yes	Yes
3. Authentication Support, includes:	Yes	Yes	Yes
■ Identix (for Biometrics)	Yes	Yes	Yes
■ Kerberos (with SSO support)	Yes	Yes	Yes
■ SecurID (for Token Cards)	Yes	Yes	Yes
■ SSL (with X.509 version 3) (with SSO support)	Yes	Yes	Yes
4. Enterprise User Security, includes:			
■ Oracle Enterprise Login Assistant	Yes	No	No
■ Oracle Wallet Manager	Yes	Yes	Yes
Note: Oracle Enterprise Login Assistant and Oracle Wallet Manager are features of Oracle Advanced Security and can only be used if you have purchased an Oracle Advanced Security license.			
Oracle Call Interface	Yes	Yes	Yes
Oracle Java Tools and CORBA Tools, includes:	Yes	Yes	Yes
■ Enterprise Java Beans	Yes	Yes	Yes
Oracle Enterprise Manager (Windows NT/2000), includes:	Yes	No	No
1. Oracle Enterprise Manager Client, includes:	Yes	No	No
■ Oracle Enterprise Manager Console	Yes	No	No
■ Oracle DBA Pack, includes:	Yes	No	No
Oracle DBA Studio	Yes	No	No
Oracle Instance Manager	Yes	No	No
Oracle Schema Manager	Yes	No	No
Oracle Security Manager	Yes	No	No

Component	Oracle8i Client		
	Administrator	Programmer	Application User
Oracle Storage Manager	Yes	No	No
SQL*Plus Worksheet	Yes	No	No
■ Oracle Enterprise Manager Integrated Applications, includes:	Yes	No	No
Oracle Parallel Server Manager	Yes	No	No
Oracle <i>interMedia</i> Text Manager	Yes	No	No
Oracle Replication Manager	Yes	No	No
Oracle Applications Manager	Yes	No	No
Oracle Developer Server Forms Manager	Yes	No	No
Oracle Spatial Index Advisor (beta)	Yes	No	No
Oracle Directory Manager	No	No	No
Oracle Application Server Manager	Yes	No	No
■ Oracle Enterprise Manager Quick Tours	Yes	No	No
Oracle <i>interMedia</i> Client Option	Yes	Yes	No
Oracle JDBC Drivers, includes:	Yes	Yes	Yes
■ Oracle JDBC Thin Driver for JDK 1.1	Yes	Yes	Yes
■ Oracle JDBC Thin Driver for JDK 1.2	Yes	Yes	Yes
■ Oracle JDBC/OCI Driver for JDK 1.1	Yes	Yes	Yes
■ Oracle JDBC/OCI Driver for JDK 1.2	Yes	Yes	No
Oracle SQLJ	Yes	Yes	No
■ SQLJ Runtime	Yes	Yes	No
■ SQLJ Translator	Yes	Yes	No
Oracle Universal Installer, includes:	Yes	Yes	Yes
■ Oracle's version of Java Runtime Environment	Yes	Yes	Yes
Oracle Utilities, includes:	Yes	Yes	Yes
■ Export	Yes	Yes	Yes
■ Import	Yes	Yes	Yes
■ Recovery Manager	Yes	Yes	No
■ SQL*Loader	Yes	Yes	Yes
■ TKPROF	Yes	Yes	No

Component	Oracle8i Client		
	Administrator	Programmer	Application User
Oracle Visual Information Retrieval Client	Yes	Yes	Yes
PL/SQL	Yes	Yes	No
Pro*C/C++	Yes	Yes	No
Pro*COBOL 8.1.7	No	No	No
Pro*COBOL 1.8.52	Yes	Yes	No
Pro*FORTRAN	Yes	Yes	No
SQLJ, includes	Yes	Yes	Yes
<ul style="list-style-type: none"> ■ SQLJ Runtime 	Yes	Yes	Yes
<ul style="list-style-type: none"> ■ SQLJ Translator 	Yes	Yes	Yes
SQL*Plus	Yes	Yes	Yes

¹ Oracle Advanced Security is available with Oracle8i Enterprise Edition, but is not available with Oracle8i.

Product Descriptions

Table A–1, "Product Descriptions" provides descriptions and release numbers of products available for installation. Some products described below are automatically installed with other products.

Table A–1 Product Descriptions

Product	Release	Description	For more information, see...
Advanced Queueing	8.1.7	Provides the functionality to support the Advanced Queueing API.	<i>Oracle8i Application Developer's Guide - Advanced Queueing</i>
Advanced Replication	8.1.7	Provides the functionality to support the Advanced Replication API.	<i>Oracle8i Replication</i>
Enterprise JavaBeans	8.1.7	An architecture for developing transactional applications as distributed components in Java.	<i>Oracle8i Enterprise JavaBeans and CORBA Developer's Guide</i>
Java Runtime Environment (Oracle's version)	1.1.8-7	Required for running Java applications, such as Oracle Universal Installer. Compaq' JRE Version 1.1.8 is the minimum standard Java platform for running Java programs.	Not applicable
Generic Connectivity	8.1.7	Also known as Heterogeneous Services, this feature implements an extensibility framework for accessing non-Oracle systems. This feature integrates the core of Oracle's gateway technology directly into the Oracle8i database server by extending the Oracle SQL engine to optimize and rewrite SQL for non-Oracle data stores.	<i>Getting to Know Oracle8i</i>
Net8 Server	8.1.7	Provides products that allow the listener, through a protocol, to accept connections from client applications on the network. Note: Net8 Server is not installable through any Oracle8i Client installation types. Net8 clients communicate with Oracle servers through net service names. Net8 resolves net service names using the following naming methods: <ul style="list-style-type: none"> ■ Host Names ■ Local Names ■ Oracle Names 	<i>Net8 Administrator's Guide</i>

Table A-1 Product Descriptions

Product	Release	Description	For more information, see...
Object Type Translator	8.1.7	Used to create C-struct representations of Abstract Data Types (ADTs) that have been created and stored in an Oracle database. To take advantage of objects, run Object Type Translator against the database, and a header file is generated that includes the C-structs.	<i>Oracle Call Interface Programmer's Guide</i>
Oracle Advanced Security	8.1.7	Oracle Advanced Security provides the following comprehensive suite of security services for Oracle8i: <i>This multicomponent product requires a separate license.</i>	<i>Oracle Advanced Security Administrator's Guide</i>
1. Authentication support	8.1.7	Oracle Advanced Security provides strong authentication support through a variety of authentication modules.	<i>Oracle Advanced Security Administrator's Guide</i>
2. Encryption and Integrity support	8.1.7	Oracle Advanced Security ensures data confidentiality during transmission using the encryption and data integrity types listed in the installable products tables above. It enables a variety of public-key solutions, including native encryption, Secure Sockets Layer (SSL), X.509 certificates, passwords, smartcards and biometrics. Note: Recent changes in the United States Export Administration Regulations (EAR) have made it possible for Oracle Corporation to ship the one edition of Oracle Advanced Security worldwide. Oracle Advanced Security functionality includes strong encryption for protocols into the Oracle database that were previously available only to the U.S. and Canadian markets.	<i>Oracle Advanced Security Administrator's Guide</i>
3. Single Sign On support	8.1.7	Oracle Advanced Security provides single sign-on to multiple accounts and applications with a single password. Strong authentication occurs transparently in subsequent connections. Kerberos, DCE, and SSL-based single sign-on are supported.	<i>Oracle Advanced Security Administrator's Guide</i>
Oracle Call Interface	8.1.7	An application programming interface (API) for accessing an Oracle database from a C or C++ program.	<i>Oracle Call Interface Programmer's Guide</i>

Table A-1 Product Descriptions

Product	Release	Description	For more information, see...
Oracle Documentation	8.1.7	Online version of Oracle8i documentation available in HTML and PDF format.	"Accessing Installed Documentation" on page -xi
Oracle Enterprise Login Assistant	1.1	Enables single sign on, which implements a subset of the Wallet Manager functionality for opening a user wallet and enabling applications to use it.	<i>Oracle Advanced Security Administrator's Guide</i>
Oracle HTTP Server		<p>A component that provides a preconfigured, ready-to-use listener (for use with Oracle Enterprise Manager Web Site) to enable a browser-based Oracle Enterprise Manager Console.</p> <ul style="list-style-type: none"> ■ Apache Configuration for Oracle Java Server Pages (JSPs) ■ Oracle8i JVM ■ Apache Web Server Files (Apache 1.3.12) <p>Note: Oracle HTTP Server replaces Oracle Application Server Listener.</p>	Apache documentation
Oracle Instance Manager (part of Oracle DBA Studio)	2.2	Manages database instances and sessions in your Oracle environment.	<i>Oracle Enterprise Manager Administrator's Guide</i>
Oracle Intelligent Agent	8.1.7	Monitors services on the managed node for registered events and scheduled jobs sent by the console.	<i>Oracle Intelligent Agent User's Guide</i>
Oracle <i>interMedia</i>	8.1.7	<p>Enables file management in a variety of media, including text, audio, and video through a specific component of <i>interMedia</i>.</p> <p><i>This multi-component product requires a separate license.</i></p>	<i>Oracle8i interMedia Text Reference</i>
Oracle <i>interMedia</i> Common Files (installed with Oracle <i>interMedia</i>)	8.1.7	A set of files used by Oracle <i>interMedia</i> components.	Not applicable

Table A-1 Product Descriptions

Product	Release	Description	For more information, see...
Oracle <i>interMedia</i> Locator Service (installed with Oracle <i>interMedia</i>)	8.1.7	Enables Oracle8i to support online internet-based geocoding facilities for locator applications and proximity queries.	<i>Oracle8i interMedia Locator User's Guide and Reference</i>
Oracle <i>interMedia</i> Text (installed with Oracle <i>interMedia</i> , formerly Oracle ConText Cartridge)	8.1.7	Manages and search for text in the database as quickly and easily as any other type of data. Oracle <i>interMedia</i> Text also supports basic full-text searches in most languages supported by the Oracle database.	<i>Oracle8i interMedia Text Reference</i>
Oracle <i>interMedia</i> Text Manager (part of Oracle Enterprise Manager Integrated Applications)	2.2	A application for administering <i>interMedia</i> Text functionality.	<i>Oracle Enterprise Manager Concepts Guide</i>
Oracle Java Database Connectivity (JDBC) Drivers	8.1.7	A standard set of Java classes, specified by JavaSoft, that provides vendor-independent access to relational data through Java.	<i>Oracle8i JDBC Developer's Guide and Reference</i>
Oracle8i JVM Enterprise Edition	8.1.7	Provides Oracle's Java Virtual Machine, CORBA 2.0 Object Request Broker, embedded JDBC drivers, SQLJ translator, and an Enterprise JavaBeans transaction server.	<i>Oracle8i Java Developer's Guide</i>
Oracle8i JVM Accelerator	8.1.7	Eliminates interpreter overhead by translating standard Java class files into specialized C source files. A platform-dependent C compiler then processes the C source files into native libraries, which can be loaded dynamically. The Oracle8i JVM Accelerator is portable to all OS and hardware platforms.	<i>Oracle8i Java Stored Procedures Development Guide; Oracle8i Java Developer's Guide</i>
Oracle Java Tools	8.1.7	Provides Java tools to build and deploy Java stored procedures, CORBA objects, and Enterprise JavaBeans with Oracle's Java Virtual Machine.	<i>Oracle8i SQLJ Developer's Guide and Reference</i>

Table A-1 Product Descriptions

Product	Release	Description	For more information, see...
Oracle Names	8.1.7	A distributed naming service developed for Oracle environments to help simplify the setup and administration of global, client/server computing networks. Oracle Names does this by establishing and maintaining an integrated system of Names servers. Oracle Names servers work like a directory service storing addresses for all the database services on a network and making them available to clients that want to make a connection.	<i>Net8 Administrator's Guide</i>
Oracle Objects Functionality	8.1.7	Lets you create and manipulate objects, as well as to integrate objects with standard relational functionality.	
Oracle Parallel Server	8.1.7	Enables multiple Oracle instances to share a single Oracle database. <i>This product requires a separate license.</i>	<i>Oracle8i Parallel Server Setup and Configuration</i>
Oracle Partitioning	8.1.7	Provides more control in managing tables and indexes by directing all maintenance operations to individual partitions rather than to tables and index names. <i>This product requires a separate license.</i>	
Oracle PL/SQL Embedded Gateway	8.1.7	A Java module gateway that authenticates user roles and enables secured access to build and invoke PL/SQL procedures. These procedures can retrieve data from database tables and generate HTTP responses. It may be deployed in one of two ways: <ul style="list-style-type: none"> ■ <code>mod_plsql</code>: This module runs as a servlet on the HTTP Server middle tier. It creates "stateless" sessions, meaning information about requests is not maintained between client sessions. ■ <code>mod_ose</code>: This module runs as a servlet within the database. By resetting the default database activation descriptor (DAD) from the default "stateless" to "stateful," conventional database locking schemes are enabled and session states are maintained. 	<i>Oracle Internet Application Server Release: Using mod_PL/SQL</i> <i>Oracle8i Administrator's Reference Release 3 (8.1.7)</i>
Oracle Servlet Engine	8.1.7	A Web server built directly into the Oracle8i database. Oracle Servlet Engine includes an HTTP listener and the ability to distribute Java Server Pages (JSP's) and run servlets directly on the database.	<i>Oracle8i JVM Servlet Container</i>

Table A-1 Product Descriptions

Product	Release	Description	For more information, see...
Oracle Spatial (formerly Oracle Spatial Data Cartridge)	8.1.7	Oracle Spatial makes the storage, retrieval, and manipulation of spatial data easier and more intuitive to users. <i>This product requires a separate license.</i>	<i>Oracle8i Spatial User's Guide and Reference</i>
Oracle Time Series (formerly Oracle8i Time Series Cartridge)	8.1.7	Stores and retrieves time-stamped data through object data types. <i>This product requires a separate license.</i>	<i>Oracle8i Time Series User's Guide</i>
Oracle Universal Installer	1.7.1.7.0	A Java-based application that lets you quickly install, update, and remove Oracle products.	<i>Oracle8i Installation Guide</i>
Oracle Utilities	8.1.7	A suite of products used for database administration which includes: <ul style="list-style-type: none"> ▪ DBVERIFY ▪ Export Utility ▪ Import Utility ▪ Migration Utility ▪ OCOPY ▪ ORADIM ▪ Password Utility ▪ Recovery Manager ▪ Server Manager ▪ SQL*Loader ▪ TKPROF 	<i>Oracle8i Utilities</i>
Oracle Visual Information Retrieval (formerly Oracle8i Visual Information Retrieval)	8.1.7	Provides image storage, content-based retrieval, and format conversion capabilities through an object data type. This option is a building block for various imaging applications, rather than being an end-user application.	<i>Oracle8i Visual Information Retrieval User's Guide and Reference</i>
Oracle Wallet Manager	2.2	Generates a public-private key pair, creates a certificate request for submission to a certificate authority, and installs and configures a trusted certificate for the identity.	<i>Oracle Advanced Security Administrator's Guide</i>
Oracle8i Server	8.1.7	The database component of the Oracle8i Enterprise Edition or Oracle8i software	<i>Getting to Know Oracle8i</i>

Table A-1 Product Descriptions

Product	Release	Description	For more information, see...
PL/SQL Embedded Gateway	8.1.7	Enables users to use their browsers to invoke PL/SQL procedures stored in an Oracle database. The stored procedures can retrieve data from tables in the database, and generate HTTP responses to return to client browsers. The PL/SQL Embedded Gateway also includes the PL/SQL Web Toolkit--a set of PL/SQL packages that enables users to retrieve information about the HTTP request, specify values for HTTP headers, set cookies, and generate HTML pages.	<i>Using mod_plsql</i>
Pro*C/C++	8.1.7	Takes SQL statements embedded in C and C++ programs and converts them to standard C code. When you precompile this code, the result is a C or C++ program that you can compile and use to build applications that access an Oracle database. <i>This product requires a separate license as a part of Oracle Programmer.</i>	<i>Pro*C/C++ Precompiler Programmer's Guide</i>
Pro*COBOL	8.1.7	Takes SQL statements embedded in a COBOL program and converts them to standard COBOL code. When you precompile this code, the result is a COBOL program that you can compile and use to build applications that access an Oracle database. <i>This product requires a separate license as a part of Oracle Programmer.</i>	<i>Pro*COBOL Precompiler Programmer's Guide</i>
Pro*FORTRAN	1.8.52	Takes SQL statements embedded in a FORTRAN program and converts them to standard FORTRAN code. When you precompile this code, the result is a FORTRAN program that you can compile and use to build applications that access an Oracle database. <i>This product requires a separate license as a part of Oracle Programmer.</i>	<i>Pro*Fortran Supplement to the Oracle Precompilers Guide</i>
SQL*Plus	8.1.7	Command line interface that allows SQL and PL/SQL database languages to be used with an Oracle database	<i>SQL*Plus User's Guide and Reference</i>
SQLJ	8.1.7	A standard way to embed SQL statements in Java programs.	<i>Oracle8i SQLJ Developer's Guide and Reference</i>

Table A-1 Product Descriptions

Product	Release	Description	For more information, see...
SQLJ Runtime (installed with SQLJ)	8.1.7	A thin layer of pure Java code that runs above the JDBC driver. When Oracle SQLJ translates a SQLJ source code, embedded SQL commands in a Java application are replaced by calls to the SQLJ runtime.	<i>Oracle8i SQLJ Developer's Guide and Reference</i>
SQLJ Translator (installed with SQLJ)	8.1.7	A preprocessor for Java programs that contain embedded SQL statements. Oracle SQLJ Translator converts the SQL statements to JDBC calls.	<i>Oracle8i SQLJ Developer's Guide and Reference</i>
TCP/IP Protocol Support	8.1.7	Enables client/server conversation over a network using TCP/IP and Net8. This combination of Oracle products enables an Oracle application on a client to communicate with remote Oracle databases through TCP/IP (if the Oracle database is running on a host system that supports network communication using TCP/IP). Multi-Threaded Server Support (MTS) is available in TCP/IP networks. Connection Pooling is available only with MTS on TCP/IP networks.	<i>Net8 Administrator's Guide</i>

Installation and Configuration of Apache Server for Alpha OpenVMS

This appendix lists the procedure and steps to install Apache Server for Alpha OpenVMS.

Post Installation Checklist

After you configure the Oracle HTTP Server, perform the following tasks to ensure a successful startup:

- Run AUTOGEN
- Check Disk Quota
- Check for SET TERMINAL/INQUIRE

Each of these tasks is explained below. Once you have completed them, you can test the installation by starting the Oracle HTTP Server.

Run AUTOGEN

After the installation, run SYSSUPDATE:AUTOGEN.COM (AUTOGEN) to evaluate your system parameters and make adjustments based on your hardware configuration and system workload. On the Oracle HTTP Server for OpenVMS, AUTOGEN will probably increase the page file size and the number of swap file pages.

Check Disk Quota

If the disk quota is too low, the Oracle HTTP Server will not start. Either raise the disk quota for the user account ORACLE, or grant the account the EXQUOTA

privilege, thus allowing it to bypass disk quota restrictions. Use the following commands:

```
$ SHOW QUOTA/USER=[server-uic]/DISK=device-name  
$ SET PROCESS/PRIVILEGES=EXQUOTA node-name::ORACLE
```

Check for SET TERMINAL/INQUIRE

When the Oracle HTTP Server for OpenVMS is started, the following login files are executed:

- SYLOGIN.COM (system login file)
- LOGIN.COM (login file for ORACLE)

Check these files to make sure that any SET TERMINAL/INQUIRE statements are executed only in INTERACTIVE mode. For example:

```
$ IF F$MODE() .eqs "INTERACTIVE" then $ SET TERMINAL/INQUIRE
```

Failure to do so might result in ill-formed HTML intermittently being returned to clients. This problem might also appear when executing CGI scripts.

Test the Installation

Now you will manually start the Oracle HTTP Server to verify the installation and configuration of the server. Enter the following command:

```
$APACHECTL START
```

Browser Test

You can test the installation using your web browser. Replace host.domain in the following URL with the information for the Oracle HTTP Server you just installed:

```
HTTP://host.domain:<port>
```

If this is a new installation, the browser should display the standard introductory page with the following bold text at the top:

```
"If you see this, it means that the installation of the Apache web server  
software on this system successful."
```

The Apache logo is displayed at the bottom.

TELNET Test

You can also use TELNET on the local host to test the installation. Use the following procedure:

1. Enter the following command:

```
$ TELNET 0 80
```

The following text is displayed:

```
%TELNET-I-TRYING, Trying ... 127.0.0.1
%TELNET-I-SESSION, Session 01, host localhost, port 80
-TELNET-I-ESCAPE, Escape character is ^]
```

2. Press ENTER and enter the following HTTP command:

```
HEAD / HTTP/1.0
```

3. Press ENTER twice.

Text similar to the following is displayed:

```
HTTP/1.1 200 OK
Date: Tue, 23 May 2000 17:05:05 GMT
Server: Apache/1.3.12 (OpenVMS)
Last-Modified: Mon, 22 May 2000 15:33:27 GMT
ETag: "33dfec-681-39295347"
Accept-Ranges: bytes
Content-Length: 1665
Connection: close
Content-Type: text/html
%TELNET-S-REMCLOSED, Remote connection closed
-TELNET-I-SESSION, Session 01, host localhost, port 80
```

Troubleshooting

If you do not receive a response from the Oracle HTTP Server, check the following:

- Look in your SYLOGIN.COM file and make sure there is no SET TERMINAL/INQUIRE statement for NETWORK processes.

- Look for the following files:

```
APACHE$ROOT: [000000]APACHE$SERVER.LOG  
APACHE$ROOT: [LOGS]ERROR_LOG
```

Running the Oracle HTTP Server on OpenVMS

Starting and Stopping the Server

Start the Oracle HTTP Server with the following command:

```
$ @APACHE$ROOT:APACHE$STARTUP [parameter1]
```

where parameter1 is optional and can have the following values:

Value	Description
START	Creates the Oracle HTTP Server as a detached network process; default value
RESTART	Sends a restart signal to the server to have it reread APACHE\$ROOT: [CONF]HTTPD.CONF
RUN	Runs the server on the current process

You can shut down the Oracle HTTP Server with the following command:

```
$ @SYS$STARTUP:APACHE$SHUTDOWN [parameter1]
```

where parameter1 is optional and can have the following values:

Value	Description
SHUTDOWN	Stops the detached network process; default value
RESTART	Sends a restart signal to the server to have it reread APACHE\$ROOT: [CONF]HTTPD.CONF

Note: The Oracle HTTP Server will not shut down as long as the APACHE\$WWW process is running. If you have a problem with shutting down the server, use the following command to see if APACHE\$WWW is running:

```
$ SHOW SYSTEM/PROC=APACHE$WWW
```

If APACHE\$WWW is still running, use the following command to stop it. You should then be able to shut down the server.

```
$ STOP PROCESS/ID=<apache-pid>
```

Server Log File

The server log file for APACHE\$WWW is written to:

```
APACHE$SPECIFIC:[000000]APACHE$SERVER.LOG
```

Performance Considerations

You should have prior experience tuning the performance of the OpenVMS operating system. For general information on OpenVMS performance, see the OpenVMS Performance Management Manual at

<http://www.openvms.digital.com:8000/72final/6491/6491pro.html>

Recommendations for improving performance on a Oracle HTTP Server are provided below and in the Release Notes:

Limits and Quotas

The following table shows sample values for the ORACLE Account from a working and exercised Oracle HTTP Server with a light to moderate load. These values are presented as an example of a system performing well within its context. If you should experience performance difficulties, refer to this table for guidelines in making adjustments. For heavier loads, we point out which values, in our experience, need to be increased as load increases. Keep in mind that no one set of values will be appropriate for all situations.

Table B-1 Sample Values for the ORACLE Account

Parameter	Default	On Compaq Web Server
ASTLM (NonPooled) Total number of asynchronous system trap (AST) operations and scheduled wake-up requests the user can have queued at one time	250	610 Or BIOLM + DIOLM + 10
BIOLM (NonPooled) Number of outstanding buffered I/O operations permitted for a user's process	150	300 You might also need to increase the SYSGEN parameter CHANNELCNT because it limits BIOLM,DIOLM, and FILLM.
BYTLM (Pooled) Amount of buffer space a user's process can use	64000	200000 Increase this value for a heavy load.
DIOLM (NonPooled) Number of outstanding direct I/O operations permitted to a user's process	150	300 You might also need to increase the SYSGEN parameter CHANNELCNT because it limits BIOLM,DIOLM, and FILLM.
ENGLM (Pooled) Specifies the lock queue limit	2000	2000
FILLM (Pooled) Number of files a user's process can have opened at one time. Includes the number of network logical links that can be active at the same time	100	300 Increase this value for a heavy load. You might also need to increase the SYSGEN parameter CHANNELCNT because it limits BIOLM,DIOLM, and FILLM.
JTQUOTA (Pooled) Byte quota for the job-wide logical name table	4096	8192

Table B-1 Sample Values for the ORACLE Account

Parameter	Default	On Compaq Web Server
PGFLQUO (Pooled)	50000	250000
Number of pages the user's process can use in the system page file		If you increase PGFLQUO, you should monitor the free size of the system page and swap files; they may need to be increased.
PRCLM (Pooled)	8	20
Number of subprocesses a user's process can create		You should increase this value for a heavy load.
TQELM (Pooled)	10	610
Number of entries a user's process can have in the timer queue or the number of temporary common event flag clusters a user's process can have		Or BIOLM + DIOLM + 10

To change the quotas for the Oracle Account SYSUAF, use the system manager account and run the AUTHORIZE utility. For example:

```
$ SET DEFAULT SYS$SYSTEM
$ RUN AUTHORIZE
UAF> SHOW ORACLE
Username: ORACLE Owner: APACHE WEBSERVER
...
Maxjobs: 0 Fillm: 100 Byt1m: 64000
Maxacctjobs: 0 Shrfillm: 0 Pbyt1m: 0
Prclm: 8 DIOLm: 150 WSdef: 2000
...
UAF> MODIFY ORACLE/FILLM=300/PRCLM=20
%UAF-I-MDFYMSG, user record(s) updated
UAF> EXIT
$
```

Server Experiencing Medium to High Usage

After you install the server and have been running it, look in the log file for errors of the "cannot open" variety. Errors of this type often indicate you need to modify system parameters. Try the following:

- Set FILLM to limit the number of files a user's process can have open.
- Set the SYSGEN parameter CHANNELCNT to 1024 (unless it is already set to a higher value).

Note: Whenever you change system parameters, you must reboot the system to enable the new settings.

Global Pages and Global Sections

If a browser installation stalls, this could be an indication that the number of global pages or global sections is too low. Run AUTOGEN to evaluate the number of global pages and global sections you need. Some browsers might need more.

Excessive File Build Up

A large number of .LOG and .PID files can amass over time in the directories APACHE\$ROOT:[0000000] and APACHE\$ROOT:[LOGS]. Purging these files can become a burden on application or system managers.

System managers should manually use explicit SET DIRECTORY/VERSION commands on these two directories.

Customizing the Server Environment

The installation procedure creates a file named HTTPD.CONF and places it in APACHE\$ROOT:[CONF]. The HTTPD.CONF file stores information that the Oracle HTTP Server uses to set up the server environment. HTTPD.CONF has been tailored to use OpenVMS syntax, but its overall functionality is essentially identical to HTTPD.CONF on the UNIX platform.

HTTPD.CONF contains an explanation for each line that it can execute. You can refer to these explanations when customizing the file for your environment. You can also refer to any generally available Apache documentation on HTTPD.CONF.

Note the following about HTTPD.CONF on OpenVMS:

- MOD_OSUSSCRIPT has been added to enable CGI scripts originally written for the OSU server.
- UNIX style path names are recognized by OpenVMS. You can use either UNIX style or OpenVMS style path names in the configuration file. However, you cannot intermix the two styles within a specification.
- In an OpenVMS Cluster, you can specify either clusterwide or system-specific files.

Modules and Directives

Following is a list of the modules included in the Oracle HTTP Server for OpenVMS distribution kit. The list shows the directives supported in each module. All supported modules and directives function as documented by the Apache Software Foundation at

<http://www.apache.org/docs>

HTTP_CORE.C

AccessConfig
AccessFileName
AllowOverride
AuthName
AuthType
BindAddress
CoreDumpDirectory
DefaultType
<Directory>
<DirectoryMatch>
DocumentRoot
ErrorDocument
ErrorLog
<Files>
<FilesMatch>

HostnameLookups
IdentityCheck
<IfDefine>
<IfModule>
Include
KeepAlive
KeepAliveTimeout
<Limit>
<LimitExcept>
LimitRequestBody
LimitRequestFields
LimitRequestLine
Listen
ListenBacklog
<Location>
<LocationMatch>
LogLevel
MaxClients
MaxKeepAliveRequests
MaxRequestPerChild
MaxSpareServers
MinSpareServers
NameVirtualHost
Options
PidFile
Port
Require
ResourceConfig

RLimitCPU
RLimitMEM
RLimitNPROC
Satisfy
SendBufferSize
ServerAdmin
ServerAlias
ServerName
ServerPath
ServerRoot
ServerSignature
ServerTokens
ServerType
StartServers
TimeOut
UseCanonicalName
User
VirtualHost

MOD_ACCESS.C

allow
deny
order

MOD_ACTIONS.C

Action
Script

MOD_ALIAS.C

Alias
AliasMatch

Redirect

RedirectMatch

RedirectTemp

RedirectPermanent

ScriptAlias

ScriptAliasMatch

MOD_ASIS.C

MOD_AUTH.C

AuthGroupFile

AuthUserFile

MOD_AUTOINDEX.C

AddAlt

AddAltByEncoding

AddAltyByType

AddDescription

AddIcon

AddIconByEncoding

AddIconByType

DefaultIcon

FancyIndexing

HeaderName

IndexIgnore

IndexOptions

IndexOrderDefault

ReadmeName

MOD_CGI.C

ScriptLog

ScriptLogBuffer

ScriptLogLevel

MOD_DIR.C

DirectoryIndex

MOD_ENV.C

SetEnv

UnsetEnv

MOD_IMAP.C

ImapBase

ImapDefault

ImapMenu

MOD_INCLUDE.C

MOD_INFO.C

AddModuleInfo

MOD_LOG_CONFIG.C

CustomLog

LogFormat

TransferLog

MOD_MIME.C

AddCharset

AddEncoding

AddHandler

AddLanguage

AddType

DefaultLanguage

ForceType

RemoveHandler

SetHandler

TypesConfig

MOD_NEGOTIATION.C

CacheNegotiatedDocs

LanguagePriority

MOD_OSUSCRIPT.C (OpenVMS specific)

MOD_SETENVIF.C

BrowserMatch

BrowserMatchNoCase

SetEnvIf

SetEnvIfNoCase

MOD_SO.C

LoadModule

MOD_STATUS.C

ExtendedStatus

MOD_UNIQUE_ID.C

MOD_USERDIR.C

UserDir

Supported and Unsupported Features

The server documentation from the Apache Software Foundation at

<http://www.apache.org/docs/>

provides most of the information needed to run your Oracle HTTP Server for OpenVMS. Information specific to the OpenVMS operating system is provided below.

Modules Not Included

The following modules are not included in this version of the Oracle HTTP Server for OpenVMS kit:

MOD_AUTH_ANON

MOD_AUTH_DB

MOD_AUTH_DBM
MOD_AUTH_DIGEST
MOD_CERN_META
MOD_DIGEST
MOD_EXAMPLE
MOD_EXPIRES
MOD_HEADERS
MOD_ISAPI
MOD_LOG_AGENT
MOD_LOG_REFERER
MOD_MIME_MAGIC
MOD_MMAP_STATIC
MOD_PROXY
MOD_REWRITE
MOD_SPELING
MOD_USERTRACK
MOD_VHOST_ALIAS

Unsupported Directives

The following directives are not supported:

AgentLog
AllowCONNECT
Anonymous
Anonymous_Authoritative
Anonymous_LogEmail
Anonymous_MustGiveEmail
Anonymous_NoUserID
Anonymous_VerifyEmail

AuthDBAuthoritative
AuthDBGroupFile
AuthDBMAuthoritative
AuthDBMGroupFile
AuthDBUserFile
AuthDBMUserFile
AuthDigestFile
CacheDefaultExpire
CacheDirLength
CachedirLevels
CacheForceCompletion
CacheGcInterval
CacheLastModifiedFactor
CacheMaxExpire
CacheRoot
CacheSize
CheckSpelling
CookieExpires
CookieTracking
Example
ExpiresActive
ExpiresByType
ExpiresDefault
Header
Metadir
MetaFiles
MetaSuffix
MimeMagicFile

MMapFile
NoCache
ProxyBlock
ProxyDomain
ProxyPass
ProxyPassReverse
ProxyReceiveBufferSize
ProxyRemote
ProxyRequests
ProxyVia
RefererIgnore
RefererLog
RewriteBase
RewriteCond
RewriteEngine
RewriteLock
RewriteLog
RewriteLogLevel
RewriteMap
RewriteOptions
RewriteRule
ScriptInterpreterSource
VirtualDocumentRoot
VirtualDocumentRootIP
VirtualScriptAlias
VirtualScriptAliasIP

Command Line Options

This section describes the HTTPD command line options supported on the Oracle HTTP Server. Before you can use them you must first define HTTPD as a symbol, as follows:

```
$ HTTPD ::= $APACHE$ROOT:[000000]APACHE_HTTPD.EXE_ALPHA
```

Then you can use the following format to enter a command line option:

```
$ HTTPD -option
```

where -option is one of the following:

Table B-2 *HTTPD Command Line Options*

Option	Description
-v	Displays the HTTPD version and its build date.
-"V"	Displays the HTTPD base version, its build date, and a list of compile settings that influence the behavior and performance of the server.
-h	Displays a list of the HTTPD options.
-l	Displays a list of all modules compiled into the server.
"L"	Displays a list of directives with expected arguments and places where the directive is valid.

The following example shows how to enter the L option to list the available configuration directives:

```
$ HTTPD -"L"
```

Virtual Host Support

The term virtual host refers to the practice of maintaining a single server to serve pages for multiple virtual hosts. Both IP-based and name-based virtual host support are available on the Oracle HTTP Server for OpenVMS.

Note: On OpenVMS, the security profile of the running server is the same on all virtual hosts.

For more information, see the Apache Software Foundation documentation at

<http://www.apache.org/docs/vhosts/index.html>

Dynamic Shared Object Support

Dynamic shared object support provides a way to format code so that it will load into the address space of an executable program at run time. This functionality is supported on OpenVMS. For more information, see the Apache Software Foundation documentation at

<http://www.apache.org/docs/dso.html>

File Handlers

The Oracle HTTP Server for OpenVMS supports the ability to use file handlers explicitly. For more information, see the Apache Software Foundation documentation at

<http://www.apache.org/docs/handler.html>

Content Negotiation

The MOD_NEGOTIATION module provides content negotiation. This module lets you specify language variants of HTML files. To specify language variants on OpenVMS, use an underscore instead of a period before the language extension.

For example:

- On UNIX, filename.html.fr is the French variant of filename.html.
- On OpenVMS, filename.html_fr is the French variant of filename.html.

For more information, see the Apache Software Foundation documentation at

<http://www.apache.org/docs/content-negotiation.html>

Apache API

You can use the standard Apache API to write your own modules that will run on the Oracle HTTP Server for OpenVMS. For more information, see the Apache Software Foundation documentation at

<http://www.apache.org/docs/misc/API.html>

suEXEC Support

The suEXEC feature provides the ability to run CGI programs under user IDs different from the user ID of the calling web server; this is not supported by the Oracle HTTP Server for OpenVMS.

Running MOD_OSUSCRIPT

The Oracle HTTP Server for OpenVMS Alpha provides a CGI script environment. However, it also includes MOD_OSUSCRIPT, an optional module that enables the server to run scripts that were written for the OSU http server's script environment (which is not CGI).

MOD_OSUSCRIPT does not need to communicate with a running OSU server to work properly. It needs only the following OSU http distribution files:

- WWWEXEC.COM
- INVCACHE.COM

You can download and install these files to run and test OSU scripts, as follows:

1. Create a directory for the OSU script files with the following command. The ORACLE username must be able to read this directory and its files.

```
$ CREATE/DIRECTORY device:[directory.BIN]
```

2. Create a logical name pointing to the OSU script root directory, as follows:

```
$ DEFINE/SYSTEM WWW_ROOT:[ directory.]/TRANS=CONCEAL
```

3. Copy INVCACHE.COM and WWWEXEC.COM from

```
http://www.er6.eng.ohio-state.edu/tarserv/http_server_3-8.tar/
```

to the following locations:

```
WWW_ROOT:[BIN]INVCACHE.COM  
APACHE$ROOT:[000000]WWWEXEC.COM
```

4. Use the SHOW SECURITY command to ensure that ORACLE can read these files. If needed, use the SET SECURITY command to change the security settings.
5. Edit HTTPD.CONF to add the following lines:

```
<Location /htbin>
  SetHandler osuscript-handler
  OSUscript 0::"0=WWWEXEC" www_root:[bin]
  Order allow,deny
  Allow from all
</Location>
```

6. Enter the following commands to add the DECnet proxy. Replace node with your DECnet node name.

```
$ SET DEFAULT SYS$SYSTEM
$ RUN AUTHORIZE
UAF> ADD/PROXY node::ORACLE ORACLE/DEFAULT
UAF> EXIT
```

7. To test, execute the simple OSU script INVCACHE.COM. To do this, replace myhostname in the following URL with your server's domain name:

```
HTTP://myhostname/INVCACHE.COM
```

MOD_OSUSCRIPT does the following:

1. Opens a DECnet connection using task 0 for the ORACLE username entered in the proxy command.
2. Executes WWWEXEC.COM using the default HTTPD.CONF directives.
3. Searches the WWW_ROOT:[BIN] directory for the script name entered in the URL.

MOD_OSUSCRIPT supports all of the script server protocol commands, except the following:

- <DNETREUSE> Reuse logical link for subsequent scripts.
- <DNETINVCACHE> Invalidate internal cache (the Oracle HTTP Server does not have a cache).
- <DNETMANAGE> Send management command, OSU server specific.
- <DNETFORCEKA> Put client link in keep-alive mode.

File Formats

All file formats are supported. However, the Web browser status bar will not show page loading progress for logical or VFC format files larger than 8K.

Page loading progress relies on an accurate byte count. Accurate byte count is not readily available for files in logical or VFC format. For files in these formats, the Oracle HTTP Server must count the bytes as the files load. The counting process can slow performance so it has been turned off in this situation.

File Naming Conventions

In general, users running the Oracle HTTP Server for OpenVMS can specify either UNIX style file names or OpenVMS style file names. The Oracle HTTP Server usually displays UNIX style file names.

The ODS-5 volume structure, introduced in OpenVMS Alpha Version 7.2-1, supports long file names, allows the use of a wider range of characters within file names, and preserves case within file names. However, the DEC C RTL shipped with OpenVMS Alpha Version 7.2-1 does not provide full support for extended file names on ODS-5 devices. This lack of full support imposes certain restrictions on users running the Oracle HTTP Server Oracle HTTP Server for OpenVMS Alpha.

Because mixed UNIX and OpenVMS style extended file names are not yet supported by the DEC C RTL, you might be required to use UNIX style syntax when interacting with the Oracle HTTP Server. An example would be appending additional directories or a file name to a root.

The following examples illustrate mixed UNIX and OpenVMS style file names that are not supported in OpenVMS Alpha Version 7.2-1:

```
doc/foo.bar.bar
./tmp/foo.bar.b^_ar
~foo^.bar
```

You can, however, modify the last example so that it will work as an OpenVMS extended file name that has a tilde (~) as the first character. Precede the leading tilde (~) with the Extended File Specifications escape character (^). For example:

```
^~foo^.bar
```

For more information about using the tilde (~) in OpenVMS extended file names, see the OpenVMS Guide to Extended File Specifications at

<http://caedmon.zko.dec.com/72final/6536/6536pro.html>

Mixed UNIX and OpenVMS style file names will be supported in a future release of the DEC C RTL for OpenVMS Alpha.

File Transfer Process and Access Control List

When performing a File Transfer Process (FTP) operation, make sure the Access Control List (ACL) for the target directory on the Oracle HTTP Server allows FTP access, as follows:

When transferring new files:

```
$ SET SECURITY/ACL=( IDENTIFIER=yourFTPname ,ACCESS=READ+WRITE) [directory]
```

When replacing existing files:

```
$ SET SECURITY/ACL=( IDENTIFIER=yourFTPname ,ACCESS=READ+WRITE) [directory]*.*
```

Logical Names

The Oracle HTTP Server for OpenVMS creates the following logical names.

Table B-3 System Defined Logical Names

Logical Name	Description
APACHE\$COMMON	Concealed logical name that defines clusterwide files in APACHE\$ROOT (device:[APACHE])
APACHE\$FIXBG	System executive mode logical name pointing to installed, shareable images. Not intended to be modified by the user.
APACHE\$HTTPD_SHR	System executive mode logical name pointing to installed, shareable images. Not intended to be modified by the user.
APACHE\$INPUT	Used by CGI programs for PUT/POST methods of reading the input stream.

Table B-3 System Defined Logical Names

Logical Name	Description
APACHE\$PLV_ ENABLE_<username>	System executive mode logical name defined during startup and used to control access to the services provided by the APACHE\$PRIVILEGED image. Not intended to be modified by the user.
APACHE\$PLV_ LOGICAL	System executive mode logical name defined during startup and used to control access to the services provided by the APACHE\$PRIVILEGED image. Not intended to be modified by the user.
APACHE\$PRIVILEGED	System executive mode logical name pointing to installed, shareable images. Not intended to be modified by the user.
APACHE\$ROOT	System executive mode logical name defined during startup that points to the top-level directory. (device:[APACHE], device:[APACHE.SPECIFIC.node-name])
APACHE\$SPECIFIC	Concealed logical name that defines system-specific files in APACHE\$ROOT (device:[APACHE.SPECIFIC.node-name])

Table B-4 User Defined Logical Names

Logical Name	Description
APACHE\$CGI_MODE	<p>System logical name that controls how CGI environment logicals are defined in the executing CGI process. There are three different options. Note that only one option is available at a time.</p> <p>0 Default. Environment logicals are defined as local symbols and are truncated at 970 (limitable with DEC C).</p> <p>1 Environment logicals are defined as local symbols unless they are greater than 970 characters. If the environment value is greater than 970 characters, it is defined as a multi-item logical.</p> <p>2 Environment logicals are defined as logicals. If the environment value is greater than 512 characters, it is defined as a multi-item logical.</p>
APACHE\$DEBUG_DCL_CGI	If defined, this system logical name enables APACHE\$VERIFY_DCL_CGI and APACHE\$SHOW_CGI_SYMBOL.
APACHE\$VERIFY_DCL_CGI	If defined, this system logical name provides information for troubleshooting DCL command procedure CGIs by forcing a SET VERIFY before executing any DCL CGI. Use with APACHE\$DEBUG_DCL_CGI.
APACHE\$SHOW_CGI_SYMBOL	If defined, this system logical name provides information for troubleshooting the CGI environment by dumping all of the symbols and logicals (job/process) for a given CGI. Use with APACHE\$DEBUG_DCL_CGI.
APACHE\$PREFIX_DCL_CGI_SYMBOLS_WWW	If defined, this system logical name prefixes all CGI environment logical symbols with "WWW_". By default no prefix is used.
APACHE\$CREATE_SYMBOLS_GLOBAL	If defined, this system logical name causes CGI environment symbols to be defined globally. They are defined locally by default.

Table B-4 User Defined Logical Names

Logical Name	Description
APACHE\$CGI_USE_ DCLCOM_FOR_ IMAGES	If defined, this system logical name forces CGI images to execute within a DCL process. The default is to execute CGI images directly. (Note: Direct execution of CGI images is not currently supported.)
APACHE\$DL_NO_ UPPERCASE_ FALLBACK	If defined to be true (1, T, or Y), this system logical name disables case-insensitive symbol name lookups whenever case-sensitive lookups fail. See APACHE\$DL_FORCE_UPPERCASE.
APACHE\$DL_FORCE_ UPPERCASE	If defined to be true (1, T, or Y), this system logical name forces case-sensitive dynamic image activation symbol lookups. By default, symbol lookups are first done in a case-sensitive manner and then, if failed, a second attempt is made using case-insensitive symbol lookups. This fallback behavior can be disabled with APACHE\$DL_NO_UPPERCASE_FALLBACK.

OpenVMS Cluster Considerations

An OpenVMS Cluster is a group of OpenVMS systems that work together as one virtual system. The Oracle HTTP Server runs in an OpenVMS Cluster so you can take advantage of the resource sharing that increases the availability of services and data. Keep the following points in mind:

- The Oracle HTTP Server is supported on OpenVMS Alpha Version 7.1-2 or higher.
- The Oracle HTTP Server runs in an Alpha or a mixed-architecture cluster.

Individual System vs. Clusterwide Definition

To define clusterwide vs. individual configuration files, APACHE\$ROOT uses the following concealed logical names:

- APACHE\$COMMON defines clusterwide files.
- APACHE\$SPECIFIC defines system-specific files.

When reading a file, the server first looks for a system-specific version of the file in APACHE\$SPECIFIC:[directory]. If it doesn't find one, it looks for a clusterwide file in APACHE\$COMMON:[directory].

To avoid confusion, always use the appropriate concealed logical name to specify the file you want to edit. For example, to edit a clusterwide version of HTTPD.CONF, refer to:

```
$ EDIT APACHE$COMMON:[CONF]HTTPD.CONF
```

If you referred to:

```
$ EDIT APACHE$ROOT:[CONF]HTTPD.CONF
```

the server would open the clusterwide file but save it as a system-specific version. The latest version of HTTPD.CONF would then be visible only to the individual node it was saved on.

Within HTTPD.CONF itself, you should make this distinction whenever you refer to a path or file location. This improves performance and ensures the server will return a complete directory listing. For example, you should specify APACHE\$COMMON or APACHE\$SPECIFIC (instead of APACHE\$ROOT) with Directory directives.

The following extract, from the HTTPD.CONF file, refers to APACHE\$COMMON because the content for the default web page is in the clusterwide directories.

```
DocumentRoot "/apache$common/htdocs"
...
<Directory "/apache$common/htdocs">
    Options Indexes FollowSymLinks Multiviews
    AllowOverride None
    Order allow,deny
    Allow from all
</Directory>
```

If there were content for one specific node in a cluster, the APACHE\$SPECIFIC logical name would be used.

Mixed-Architecture Cluster

In a mixed-architecture cluster, do not use a cluster alias IP address with the Oracle HTTP Server. Because the VAX systems will not have the Oracle HTTP Server running, they won't be able to service HTTP requests.

Common Gateway Interface (CGI)

Common Gateway Interface (CGI) programs execute within the DCL shell on the Oracle HTTP Server for OpenVMS. Please note the following OpenVMS specific information.

CGI Environment Logical

By default, an environment logical symbol takes the form designated by the name of the environment logical. You can determine how environment logicals are set when the server executes a CGI program.

You can define the `APACHE$PREFIX_DCL_CGI_SYMOBLS_WWW` logical name to prefix all environment logical symbols with "WWW_". By default, no prefix is used.

The `APACHE$CGI_MODE` logical name controls how CGI environment logicals are defined in the executing CGI program, as follows:

```
APACHE$CGI_MODE      option
```

where option can have one of the following values at a time:

- | | |
|---|--|
| 0 | Default. Environment logicals are defined as local symbols and are truncated at 970 (limitable with DEC C). |
| 1 | Environment logicals are defined as local symbols unless they are greater than 970 characters. If the environment value is greater than 970 characters, it is defined as a multi-item logical. |
| 2 | Environment logicals are defined as logicals. If the environment value is greater than 512 characters, it is defined as a multi-item logical. |

`APACHE$DCL_ENV` is a foreign symbol that lets you define CGI environment logical, as follows:

```
APACHE$DCL_ENV [-c] [-d] [-e env-file]
```

where:

- | | |
|----|---|
| -c | Default. Indicates create environment logicals. |
| -d | Indicates delete environment logicals. |

`-e env-file` Specifies an alternate environment file. The environment file does not need to be specified by the caller because the parent derives it (it is easily determined by default).

The following example deletes the environment and then recreates it:

```
Example: diff_mode_cgi.com
$ APACHE$DCL_ENV -d
$ Define APACHE$PREFIX_DCL_CGI_SYMBOLS_WWW 1
$ APACHE$DCL_ENV -c
```

Referencing Input

CGI scripts that reference input to the Oracle HTTP Server must refer to `APACHE$INPUT`.

Executing CGI

On OpenVMS, CGI images execute within a DCL process. You cannot execute CGI images directly.

Logicals for Debugging CGI Scripts

Use the following logical to debug CGI scripts.

Logical Name	Description
<code>APACHE\$DEBUG_DCL_CGI</code>	If defined, this system logical name enables <code>APACHE\$VERIFY_DCL_CGI</code> and <code>APACHE\$SHOW_CGI_SYMBOL</code> .
<code>APACHE\$VERIFY_DCL_CGI</code>	If defined, this system logical name provides information for troubleshooting DCL command procedure CGIs by forcing a <code>SET VERIFY</code> before executing any DCL CGI. Enabled by <code>APACHE\$DEBUG_DCL_CGI</code> .
<code>APACHE\$SHOW_CGI_SYMBOL</code>	If defined, this system logical name provides information for troubleshooting the CGI environment by dumping all of the symbols and logicals (job/process) for a given CGI. Enabled by <code>APACHE\$DEBUG_DCL_CGI</code> .

Displaying Graphics with CGI Command Procedures

To display a graphics file with a CGI command procedure, use the `APACHE$DCL_BIN` foreign symbol in the following format:

```
APACHE$DCL_BIN [-s bin-size] bin-file
```

where:

- | | |
|-----------------------|--|
| <code>-s</code> | <code>bin-size</code> Specifies the actual or approximate file size in bytes. Bin-size is automatically determined if the image file is larger than 32768K (default value). If the image file is smaller than 32768K, you can provide an approximate (or actual) size (this will boost performance). |
| <code>bin-file</code> | Specifies the file to be displayed. |

For example:

```
$ SAY := WRITE SYS$OUTPUT
$ SAY "Content-type: image/gif"
$ SAY ""
$ APACHE$DCL_BIN APACHE$ROOT:[ICONS]APACHE_PB.GIF
$ EXIT
```

Running the Oracle HTTP Server on OpenVMS 3ñ19

Security Information

The Oracle HTTP Server for OpenVMS is a non-privileged, user-mode, socket-based network application. `TMPMBX` and `NETMBX` are the only privilege requirements. The server runs under its own unique UIC and user account (`ORACLE`).

Process Model

The Oracle HTTP Server runs as a single job which consists of:

- A master process (`ORACLE`)
- and
- Several subprocesses

Subprocesses are created to service incoming HTTP requests and execute CGI scripts.

Because the server runs as a single job, the OpenVMS security profile for each process is identical and no enhanced mechanism is required for these processes to communicate with one another. Resource utilization is controlled by a single user account (ORACLE) where pooled quotas are defined.

Privileged Images

The Oracle HTTP Server performs three operations that require additional privilege:

- Binding to a port below 1024 (privileged ports)
By default, the server binds to port 8080 (HTTP).
- Fetching path information for other users
The server provides a replacement for the `getpwnam` C RTL routine to allow the server to fetch default path information for other users (required by `MOD_UTIL` and `MOD_USERDIR`).
- Changing the "carriage-control" attribute on socket (BG) devices
The server also enables/disables the carriage-control attribute on BG (socket) devices for certain stream operations.

Two protected shareable images are installed at startup to allow the server to perform these functions:

- `APACHE$PRIVILEGED.EXE` (exec-mode services)
- `APACHE$FIXBG.EXE` (kernel-mode services)

The `APACHE$PRIVILEGED.EXE` image provides exec-mode services for binding to privileged sockets and fetching a user's default path information. Access to these services is limited to processes running under the ORACLE username and is controlled by the `APACHEPLV_ENABLE_APACHEWWW` logical name. This logical name is defined as:

```
"APACHE$PLV_ENABLE_APACHE$WWW" = "3,80,1023"
```

The "3,80,1023" string represents three parameters where:

- The first parameter (3) is a bit-mask which enables/disables the two services:
 - Bit 0 controls binding to privileged ports.

- Bit 1 controls fetching user default path information.
- The second and third parameters are the minimum and maximum port allowed to be bound.

When a call to either service is made, the service code:

1. Temporarily enables the privileges SYSPRV, OPER, SYSNAM, and NETMBX.
2. Performs the function.
3. Restores the process original privileges.

The APACHE\$FIXBG.EXE_ALPHA image provides a kernel-mode service for manipulating the carriage-control attribute for BG devices owned by the calling process. There is no special access control on this service. This function can also be performed using a setsockopt C RTL run-time call, but it is not supported by all TCP/IP stack vendors, which is the reason this service exists. This service does not enable privileges, but executes in kernel mode.

Privileges Required to Start and Stop the Server

The Oracle HTTP Server runs under the ORACLE username and UIC and is started as a detached, network process. During startup, protected images are installed and logical names are placed in the system logical name table. Shutdown is accomplished by sending a KILL signal to the master process and its subprocess.

These actions require enhanced privileges (DETACH, SYSNAM, WORLD, etc.) and are usually performed from a suitably privileged account.

File Ownership and Protection

All of the server's files reside under its root directories pointed to by the APACHE\$ROOT logical name. During installation, file protection is set to (S:RWED, O:RWED, G, W). During configuration, all files are set to be owned by ORACLE.

Server Extensions (CGI Scripts)

Server extensions, such as CGI scripts run within the context of the Oracle HTTP Server's process or its subprocesses. These extensions have complete control over the server environment. You can configure the server to allow execution of arbitrary user scripts, but standard practice is to limit such activity to scripts written by completely trusted users. The Oracle HTTP Server includes directives that allow a

web administrator to control script execution and client access. The use of these directives is described in numerous books and is not duplicated here.

suEXEC Not Available for Protecting Script Execution

The Oracle HTTP Server for OpenVMS does not currently support the suEXEC method of executing scripts under the username that owns the script. Many sites like to use this feature to allow execution of arbitrary, user-written scripts without the fear of compromising the server's environment.

Open Source Licenses

This section provides open source license acknowledgments and license references.

Apache

This product includes software developed by the Apache Software Foundation (<http://www.apache.org/>). You can view the license at

http://www.openvms.compaq.com/openvms/products/ips/apache/apache_license.txt

This product also includes software developed by the Compaq Corporation.

Oracle8i 64-bit Feature

This appendix introduces the 64-bit feature or Very Large Memory (VLM) and makes setting and other recommendations for this feature.

Topics covered in this appendix are:

- Introduction to the Oracle8i 64-bit Feature
- Suggested Parameter Settings
- Other Recommendations

Attention: The 64-bit feature is a standard feature of Oracle8i for Alpha OpenVMS and cannot be de-installed. 64-bit feature tuning is under constant revision. Therefore, this information will be updated as further tuning suggestions are realized.

Introduction to the Oracle8i 64-bit Feature

This section includes the following information:

- Introducing the Oracle8i 64-bit Feature
- Benefits of the Oracle8i 64-bit Feature
- Implementation of the Oracle 64-bit Feature on Alpha OpenVMS

Introducing the Oracle8i 64-bit Feature

The Oracle 64-bit feature provides the ability to support Very Large Memory (VLM) system configurations with large amounts of RAM.

Benefits of the Oracle8i 64-bit Feature

The primary benefit of the 64-bit feature is "performance", because many operations can now run at memory speed instead of disk speed. With larger amounts of data in memory, the database issues fewer calls to disk, thus eliminating the delay of disk I/O.

Oracle's 64-bit feature also provides the advantage of "scalability", to support larger number of users and larger amounts of data. The system does not need to swap data in and out of memory to process all of the transaction requests and can more effectively accommodate requests for larger amounts of data.

The 64-bit feature can benefit both query-intensive (DSS) and read-write (OLTP) transactions. For DSS, the database feature provides particular advantage for index builds, full table scans, adhoc queries, and multi-way joins. For OLTP, the feature provides the ability to support very large tables, large amounts of data, and large numbers of users.

Implementation of the Oracle 64-bit Feature on Alpha OpenVMS

Starting with release 7.3.2.3.2, Alpha OpenVMS supported the Very Large Memory (VLM) 64-bit feature. The Alpha OpenVMS operating system has native 64-bit memory addressing, which allows Oracle8i to implement the 64-bit feature. The need to estimate the maximum System Global Area (SGA) at installation time is now eliminated and process startup times are faster. The Server no longer includes an SGAPAD.

By default, SGA creation uses the support which first appeared in the Alpha OpenVMS version 7.1 operating system that allows the creation of global sections

that are not backed by any file. These global sections are not pageable and do not require a backing file.

Suggested Parameter Settings

1. Big Oracle Blocks (BOB) provide the ability to support larger I/O transfers between memory and disk. BOB complements large SGA configurations, because BOB allows the system to move data faster between memory and disk. With VLM configurations, system performance depends directly on the ability of the system to move database blocks into the SGA as efficiently as possible. Without the benefits of improved data transfer, performance can decline.

For a pure decision support system (DSS) application, you may wish to choose a large value (such as 32K) for DB_BLOCK_SIZE. For an OLTP type of application, choose a lower value (such as, 2K or 4K). The larger the DB_BLOCK_SIZE, the more serious the impact on single-row lookups.

2. Choose DB_BLOCK_BUFFERS based on the size of the Oracle buffer cache that will provide the best possible cache hit ratio without affecting memory requirements of other Oracle and system processes.

For example, for a 3 GB buffer cache, with DB_BLOCK_SIZE=8192, set DB_BLOCK_BUFFERS=400000.

3. To enable Cost Based Optimizer (CBO), set:

```
optimizer_mode = choose
```

To use CBO, make sure all the tables and indexes are analyzed so that the statistics are up-to-date. Use the SQL*Plus commands "analyze ...estimate" for large tables and "analyze index ... compute statistics" for indexes.

Note: When no statistics are gathered or available, the Rule-based Optimizer (RBO) is used.

Note: Ensure the query does not use the rule hint (/*+ rule */). Otherwise the CBO will be disabled.

4. Set the SORT_AREA_SIZE parameter with care. SORT_AREA_SIZE is the space used in Program Global Area (PGA) for each sort executed by each Oracle process. If the value is too high, the PGA will use excessive memory when sorting. The default value (64K) is usually sufficient.

Check statistics, such as V\$SYSSTAT, to see if the number of sorts to disk is high compared to in-memory sorts. If it is, then increase the value of SORT_AREA_SIZE.

5. The CACHE_SIZE_THRESHOLD parameter controls the space used in the buffer cache exclusively for table scans. If most queries require table scans, increase the CACHE_SIZE_THRESHOLD parameter value. The maximum value is 50% of DB_BLOCK_BUFFERS, and the default is 10% of DB_BLOCK_BUFFERS. See the section "Other Recommendations".

Other Recommendations

Check the size in number of rows of the tables involved in the query, and translate this size into total number of blocks. Based on the query, try to fit as many of the hard hit table blocks in DB_BLOCK_BUFFERS.

For example, if there are four tables involved in the query, but columns from one of the tables are used repeatedly in the "where" clause in joins, "in", etc.; try to fit as many blocks from this table as possible into the cache to see if DB_BLOCK_BUFFERS can be increased. To ensure the hard hit tables are cached and stay in the most recently used (MRU) end of the cache, perform either of the following steps:

- Type (using SVRMGR or SQLPLUS),

```
alter table <tablename> cache
```

or

- At the time of creation,

```
create table <tablename> ... cache
```

If there are enough buffers to accommodate all blocks from all tables involved in the query, use the alter command to cache all the blocks. The purpose is to cache most blocks into memory to ensure that I/O to disks is eliminated or remains low. Pay special attention to the CACHE_SIZE_THRESHOLD parameter as described in the section above, "Suggested Parameter Settings."

Recovery Manager Reference Addendum

This addendum provides Alpha OpenVMS specific deviations from the generic Recovery Manager documentation. For more complete information please refer to the following documents:

- *Oracle8i Recovery Manager User's Guide and Reference, Release 2 (8.1.6)*
- *Oracle8i Documentation Addendum, Release 3 (8.1.7) - Chapter 7*

This appendix lists Recovery Manager features and connecting procedures such as:

- Recovery Manager Command Errors
- Media Management
- Determining the Snapshot Control Location
- Connecting to RMAN Using Operating System Authorization
- Hiding Passwords When Connecting to RMAN
- Cataloging Hot and Cold Operating System Backupss
- Cataloging an Operating System Backup
- Makings Lists of Backups and Copies
- Making Split Mirror Backups
- Maintaining Backups and Copies
- Performing Incomplete Recovery Without a Recovery Catalog
- Restoring Datafile Copies to a New Host
- Troubleshooting Scenarios
- Recovery Manager Command Syntax

Recovery Manager Command Errors

The RMAN commands that you can use to manage all aspects of backup and recovery operations remains the same and is dealt in detail in the first chapter of the RMSN User's guide. On various occasions it may be important for you to determine whether RMAN successfully executed your command. For example, if you are trying to write a script that performs an unattended backup using RMAN, you may want to know whether the backup was a success or failure. The simplest way to determine whether RMAN encountered an error is to examine its return code. Return codes in OpenVMS are output into the DCL Reserved Symbol called \$STATUS. If there are no errors, RMAN outputs a 0 to \$STATUS; otherwise a 1 is output to \$STATUS.

Media Management

The ABS product from Compaq Corporation is the only storage manager currently available on OpenVMS. Please refer to the following URL for more information:

<http://www.support.compaq.com/sms/pab/>

The files are in OpenVMS spool compressed mode. You need to uncompress on an OpenVMS system (Alpha).

You need to contact your Media Management vendor to obtain the appropriate BSP compliant libraries, in order to run the Recovery Manager.

Note: BSP stands for Backup Solutions Program (see <http://backup.us.oracle.com> for more details); a program that Oracle has set up to provide info and support to vendors for implementing the SBT interface to RMAN.

Determining the Snapshot Control Location

To setup the Snapshot Control Location, here is the example of an RMAN command set snapshot controlfile name to 'DISK\$1:[ORACLE.DBA.PROD]SNAP_PROD.CTL' However, It is not possible in VMS to set the snapshot control file to a raw device and reference to the raw device is not applicable to VMS.

Connecting to RMAN Using Operating System Authorization

If the target database does not have a password file, then the user must be validated using operating system authentication. You can use operating system authentication only if you connect locally, that is, RMAN and the target database reside on the same machine. You cannot connect to the target database using operating system authentication in conjunction with a net service name. To connect issue the following command at the DCL prompt.

```
$DEFINE ORACLE_SID PROD 1
```

Hiding Passwords When Connecting to RMAN

If you want to connect to RMAN from the operating system command line and hide authentication information, you can write a connect script and then create execute-only privileges on the file.

For example, if you are running RMAN in an OpenVMS environment, you can place the following connection information in a text file called `connect_rman.com`:

```
rman target system/target password@target_string catalog rman/catalog_
password@catalog_string
```

Cataloging Hot and Cold Operating System Backups

Whenever you make a cold operating system backup, for example, by using the OpenVMS `copy` or `backup` command to copy a datafile, make sure to catalog it. Oracle8i supports the `ALTER TABLESPACE ... BEGIN/END BACKUP` command, which allows open database operating system backups. Although RMAN does not create such backups, you can add them to the recovery catalog so that RMAN is aware of them.

Cataloging an Operating System Backup

Use the `catalog` command to propagate information about operating system backups to the recovery catalog.

To catalog an operating system backup:

1. Make a backup via an operating system utility. This example backs up a datafile.

```
$ copy DISK$1:[ORACLE.TEST.DB_V8TEST]SALES.F  
DISK$1:[ORACLE.TEST.BACKUP]SALES.BAK
```

Makings Lists of Backups and Copies

Use the list command to query the contents of the recovery catalog or the target database control file if no recovery catalog is used. You can use several different parameters to qualify your lists. The following example lists all copies of datafile 2 using the tag weekly_df2_copy that are in the copy sub-directory:

```
list copy of datafile 2 tag weekly_df2_copy like 'DISK$1:[ORACLE.COPY]%' ;
```

Making Split Mirror Backups

To make a split mirror backup of a tablespace:

1. You must make the datafile copies using operating system methods. [[Tony can you elaborate]] If the database is open and the datafile is online, first issue ALTER TABLESPACE... BEGIN BACKUP.
2. The resulting image copy can be hot cataloged:

```
catalog datafilecopy 'disk$1:[oracle.test.db_v8test]tbs_33.f' ;
```

Maintaining Backups and Copies

How long you must keep backups and copies depends on factors such as, how frequently you take backups and how far in the past point-in-time recovery is needed.

For example, if you back up all datafiles daily, do not require point-in-time recovery, and need only one backup per datafile, then you can delete previous backups as soon as the new one completes.

```
# delete a specific datafile copy  
change datafilecopy 'disk$1:[oracle.test.db_v8test]tbs_35.f' delete;
```

Performing Incomplete Recovery Without a Recovery Catalog

To perform DIBPITR without a recovery catalog follow the steps outlined in chapter6 of the recovery manager user's guide. Step 6 for Open VMS is as follows.

1. Shut down the database and copy the control file that you restored to a temporary location to the location specified for the control file in the initialization parameter file.

For example, assume that the `CONTROL_FILES` parameter is set as follows:

```
CONTROL_FILES = (disk$1:[oracle.test.db_v8test]cf1.f,
disk$1:[oracle.test.db_v8test]cf2.f)
```

Then, shut down the database and use operating system commands to copy the control file that you restored to the temporary location to the initialization parameter locations. For example, enter:

```
SQL> SHUTDOWN ABORT
$copy disk$1:[oracle.tmp]cf.tmp   disk$1:[oracle.test.db_v8test]cf1.f
$copy disk$1:[oracle.tmp]cf.tmp   disk$1:[oracle.test.db_v8test]cf2.f
...

```

Alternatively, you can copy the backup control file that you made in step 5 to a permanent location and then make RMAN aware of it by using the catalog command. First, copy the control file to a permanent location, giving it a meaningful filename:

```
$ copy disk$1:[oracle.tmp]original_cf $disk$1:[oracle.test.db_v8test]backup_cf_
JUN-20-1999
```

Then, use the catalog command make RMAN aware of this control file:

```
catalog backup controlfile 'disk$1[oracle.test.db_v8test]backup_cf_JUN-20-1999';
```

Restoring Datafile Copies to a New Host

To move the database to a new host using datafile copies, you must transfer the copies manually to the new machine. To Copy the datafile copies to the new host using an operating system utility, for example, a VMS user could enter:

```
$ copy disk$1:[oracle.test.copies...] newhost::disk$1:[oracle.test.db_v8test]
```

Duplicating a Database on a Remote Host with the Same Directory Structure

The simplest case is to duplicate your database to a different host and to use the same directory structure. To create a duplicate database on a different host with the same file system:

1. Use an operating system utility to copy your parameter file from its location in the target host directory structure to the same location in the duplicate host directory structure. For example, you might issue:

```
copy disk$1:[oracle.test.db_v8test]initPROD1.ora  
newhost::disk$2:[oracle.test.db_v8test]initDUPDB.ora
```

The rest of the steps to be followed are outlined in the recovery manager user's guide.

Troubleshooting Scenarios

After Linking to the Media Manager on VMS, RMAN Fails to Back Up to Tape

In this scenario, you link the media manager with Oracle but still cannot make RMAN back up to tape. You see either of these error messages:

```
# error 1  
ORA-19511: SBT error = 4110, errno = 0, BACKUP_DIR environment logical is not  
set  
# error 2  
RMAN-008526: channel channel_name: WARNING: Oracle Test Disk API
```

Diagnosis of the Cause

When you install Oracle8i on OpenVMS, the server kernel is linked with a static library whose name and location differs depending on your operating system. For example, the library on OpenVMS in version 8.1 uses two logicals ora_rman_mml and ora_rman_mml_64. These logicals point to the so-called dummy API that Oracle links to by default. On OpenVMS, this library is called libdsbtsh8.olb (and libdsbtsh8_64.olb).

This dummy static library allows you to use RMAN to test writing to disk so long as you specify BACKUP_DIR in the parms parameter of the allocate channel command.

An SBT error of 4110 for Oracle version 8.1 or an Additional information: message of 4110 for Oracle version 8.0 indicates that Oracle is not linked with the media manager API. Instead, Oracle is linked with Oracle's own dummy API. These errors

occur because the `BACKUP_DIR` environment logical is not specified for the channel servicing the backup. One way to set the `BACKUP_DIR` location is by using the `parms` parameter of the `allocate channel` command.

In Oracle version 8.1, if the `RMAN-8526` message states that the disk API was used, then the `BACKUP_DIR` environment logical was successfully resolved by the Oracle channel and `RMAN` made the backup using the disk API. If you do not see the `4110` or `RMAN-008526` errors, but `RMAN` is not making backups to the media manager, then follow the procedure below to determine whether Oracle is using the dummy API.

To determine whether Oracle is using the dummy API:

```
$show logical ORA_RMAN_MML
$show logical ORA_RMAN_MML_64
```

If these logicals are defined to point to `libdsbtsh8` and `libdsbtsh8_64` respectively then Oracle is linking to the dummy API instead of your media management API.

Test further by trying a backup using the dummy API. Note that you must set the `parms` parameter of the `allocate` command so that the `ENV` logical specifies a valid pathname for the `BACKUP_DIR` destination.

For example, you can issue:

```
run {
  allocate channel c1 type 'sbt_tape'
    parms="ENV=(BACKUP_DIR=disk$1:[test.oracle.work])";
  backup tablespace system;
}
```

If you see `RMAN-08526` and `RMAN-08525` in the output, then the backup to disk using the dummy API was successful:

```
RMAN-08526: channel c1: WARNING: Oracle Test Disk API
RMAN-08525: backup set complete, elapsed time: 00:00:25
```

Solution

If Oracle is linked to the dummy API instead of your media manager's static library, then you must tell Oracle to link to the media manager's static library instead.

Note: Database backups using the disk API are not supported.

To relink to your media management API:

1. Shut down all databases that are using the Oracle executable. For example, enter:

```
SQL> SHUTDOWN IMMEDIATE
```

2. Edit `ora_rdbms:rdbmsuser.com` to redefine the above logicals to point your vendor's mml libs:

```
$define/nolog ORA_RMAN_MML          <location of your vendor's 32 bit mml lib>
$define/nolog ORA_RMAN_MML_64      <location of your vendor's 64 bit mml lib>
```

3. After saving your changes to `rdbmsuser.com`, reexecute `orauser.com`:

```
$ @ora_util:orauser
```

4. Verify that the logicals are now set to point to your vendor's mml libs:

```
$ show log ORA_RMAN_MML
$ show log ORA_RMAN_MML_64
```

5. Invoke `oracleins` and select `rdbms` for rebuild.
6. Check that the link is successful by using the `sbttest` test program to back up a file. For example, enter:

```
$ sbttest testfile
```

Recovery Manager Command Syntax

`datafilespec`

Keywords and Parameters

'datafile'

Relative filenames are not used in VMS; use the full pathname.

host

Keywords and Parameters

```
host 'copy DISK$1:[ORACLE.TEST.DB_V8TEST]TBS_01.F DISK$1:[ORACLE.TEST.DB_
V8TEST.COPY]TBS_01.F';
```

***Hosting to the Operating System Within a Copy Job**

This example makes an image copy of datafile 3, hosts out to the DCL prompt to check that the copy is in the directory, then resumes the run job:

```
RMAN-03022: compiling command: host
$ dir df.3
df.3
$ exit
exit
RMAN-06134: host command complete
```

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