Oracle8™ Enterprise Edition

Getting Started

Release 8.0.6 for Windows NT

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ORACLE

Oracle8 Enterprise Edition Getting Started, Release 8.0.6 for Windows NT

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Glossary

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Contact Us!

Oracle8 Enterprise Edition, Release 8.0.6 for Windows NT

Part No. A69518-01

This document describes how to contact Oracle Corporation if you have issues with the documentation or software.

Read the section...	If you...
"How to Contact Oracle Technical Publications" on page ,-xv	Have issues with Documentation
"How to Contact Oracle Support Services" on page ,-xviii	Have issues with Software
"Resources for Oracle Partners and Developers" on page ,-xviii	Want to join an Oracle partner or application developer program

How to Contact Oracle Technical Publications

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?
- What features did you like most about this manual?
- Do you have suggestions for improvement? Please indicate the chapter, section, and page number (if available).

You can send comments regarding documentation to *ntdoc@us.oracle.com*

How to Contact Oracle Support Services

Please copy this page and distribute within your organization as necessary.

Oracle Support Services can be reached at the following telephone numbers. The hours of business are detailed in your support contract and the *Oracle Customer Support Guide* in your kit.

Oracle Support Services In...	Call...
All locations	The telephone number for your country is listed at the following Web site: `http://www.oracle.com/support/contact_us/sup_hot_phone.html` Oracle Support Services telephone numbers are also listed in the *Oracle Customer Support Guide* in your kit.

Please complete the following checklist before you call. If you have this information ready, your call can be processed much quicker.

❏ Your CPU Support Identification Number (CSI Number) if applicable.

❏ The hardware name on which your application is running.

❏ The operating system name and release number on which your application is running.

- ❑ The release numbers of the Oracle Server and associated products involved in the current problem. For example, Oracle8 Server release 8.0.6.0.0 and Oracle Replication Manager release 1.6.0.0.0.

- ❑ Are you using 16-bit or 32-bit Oracle software?

- ❑ The third-party vendor and version you are using.

- ❑ The exact error codes and messages. Please write these down as they occur. They are critical in helping Oracle Support Services to quickly resolve your problem.

- ❑ A description of the issue, including:
  - **What happened?** For example, the command used and its result.
  - **When did it happen?** For example, during peak system load, or after a certain command, or after an operating system upgrade.

- **Where did it happen?** For example, on a particular system, or within a certain procedure or table.

- **What is the extent of the problem?** For example, production system unavailable, or moderate impact but increasing with time, or minimal impact and stable.

❑ Keep copies of any trace files, core dumps, and redo log files recorded at or near the time of the incident. Oracle Support Services may need these to further investigate your problem.

Resources for Oracle Partners and Developers

This section provides information on partner programs and resources for Oracle database administrators and application developers.

Information Source	Description
Oracle Corporation Home Page `http://www.oracle.com`	This Web site is the starting point for general information on Oracle Corporation.
Alliance Online `http://alliance.oracle.com`	Oracle provides leading-edge technology, education, and technical support that enables you to effectively integrate Oracle into your business. By joining the Oracle Partner Program, you demonstrate to customers that you are committed to delivering innovative Oracle-based solutions and services. The greater your commitment to Oracle, the more we can help you grow your business. It's that simple. The value you derive is associated directly with your level of commitment.

Information Source	Description
Oracle Education `http://education.oracle.com/`	Customers come to Oracle Education with a variety of needs. You may require a complete curriculum based on your job role to enable you to implement new technology. Or you may seek an understanding of technology related to your key area of responsibility to help you meet technical challenges. You may be looking for self-paced training that can be used as an ongoing resource for reference and hands-on practice. Or, you may be interested in an overview of a new product upgrade. Whatever your training need, Oracle Education has the solution.
Oracle Technology Network `http://technet.oracle.com/`	The Oracle Technology Network is your definitive source for Oracle technical information for developing for the Internet platform. You will be part of an online community with access to free software, Oracle Technology Network-sponsored Internet developer conferences, and discussion groups on up-to-date Oracle technology. Membership is free.
Oracle Store `http://oraclestore.oracle.com/`	This is Oracle's online shopping center. Come to this site to find special deals on Oracle software, documentation, publications, computer-based training products, and much more.
Oracle Support Services' Support Web Center `http://www.oracle.com/support/`	Oracle Support Services offers a range of programs so you can select the support services you need and access them in the way you prefer: by telephone, electronically, or face to face. These award-winning programs help you maintain your investment in Oracle technology and expertise. Here are some of the resources available in the Support Web Center:
Oracle*MetaLink* `http://www.oracle.com/support/elec_sup/index.html`	Oracle*MetaLink* is Oracle Support Services' premier Web support service. It is available to Oracle*metals* customers (Gold, Silver, Bronze), 24 hours a day, seven days a week.
Oracle*Lifecycle* `http://www.oracle.com/support/sup_serv/lifecycle/index.html`	Oracle*Lifecycle* is designed to deliver customized, industry-focused, full life-cycle support solutions that enable industry leaders to use Oracle technology to make smart business decisions, achieve operational excellence, and succeed in their markets.

Information Source	Description
Expert*ONLINE* `http://www.oracle.com/support/sup_serv/online/index.html`	Oracle Support Services has launched a new line of services called Expert*ONLINE*. These services provide online database administration for companies looking to supplement their existing DBA staff or fill a DBA role. Services range from Expert*DETECT*, a monitoring, diagnostic, and recommendation service, to Expert*DBA*, a full online database administration service.
Virtual Support Analyst (VSA) `http://www.oracle.com/support/sup_serv/vsa_start.html`	VSA is Oracle's Internet e-mail service; it is available to U.S. customers with an Oracle*metals* support agreement. With VSA, you can initiate a request for assistance through e-mail, bypassing the queues you may encounter when using telephone support. VSA also enables you to access Oracle's bug database.
Customer Service `http://www.oracle.com/support/cus_serv/index.html`	This site provides resources to make your interactions with Oracle as easy as possible. Among the things you can do are ■ Learn what is a CPU Support Identification (CSI) number ■ Update your technical contact information ■ Find out whom to contact for invoice and collection issues ■ Request product update shipments ■ Access a glossary of Oracle Support Services terms
U.S. Customer Visit Program `http://www.oracle.com/support/cus_serv/cus_visit.html`	This U.S.-based program has been established to help our customers understand and obtain maximum benefit from the support services they have purchased. The visit typically offers a customized orientation presentation, a comprehensive overview and demonstration of Oracle's electronic services, and helpful tips on working more effectively with Oracle Support Services.
Support Web Center Library `http://www.oracle.com/support/library/index.html`	This site contains articles, guides, and other documentation to help you leverage the wealth of knowledge and reference material that Oracle Support Services produces.
Product Availability *infowin@us.oracle.com*	Send an e-mail to request information on future product releases on Oracle for Windows NT and Windows 95/98.

Before You Begin

This guide is your primary source of introductory, post-installation, configuration, and administration information for Oracle8 Enterprise Edition.

Specific topics discussed are:

- Prerequisites
- Intended Audience
- How This Guide Is Organized
- Documentation and Code Conventions Explained

Prerequisites

This guide assumes that you are familiar with:

- Windows NT and have installed and tested it on your personal computer (PC) and network hardware
- Relational database management concepts

Intended Audience

This guide is necessary for anyone configuring or administering Oracle8 Enterprise Edition.

Note: This guide describes *only* the features of the Oracle8 Enterprise Edition software that apply to the Windows NT, Windows 95, and Windows 98 operating systems. For information about Oracle8 Enterprise Edition that is applicable to *all* operating systems, see the other documentation included in your package, listed in Chapter 1, "Getting Started with Your Documentation".

How This Guide Is Organized

This guide is organized as follows:

Chapter 1, "Getting Started with Your Documentation"

Introduces you to the Oracle documentation set. Read this chapter *before* installing or using Oracle8 Enterprise Edition.

Chapter 2, "Introducing Oracle8 Enterprise Edition"

Describes the basic components of Oracle8 Enterprise Edition.

Chapter 3, "Database Tools Overview"

Provides a list of preferred and optional tools you can use to perform common database administration tasks.

Chapter 4, "Oracle Enterprise Manager Overview"

Provides an overview of Oracle Enterprise Manager, Oracle's suite of products for managing Oracle databases over a distributed network.

Chapter 5, "Starter Database Contents"

Describes the contents of the preconfigured starter database.

Chapter 6, "Using Multiple Oracle Homes"

Describes how to use single and multiple Oracle homes.

Chapter 7, "Installing, Migrating, and Upgrading Databases"

Describes what to do if you have existing databases on your computer and want to install the latest release of Oracle8 Enterprise Edition.

Chapter 8, "Post-Installation Configuration Tasks"

Describes the configuration tasks you *must* perform before using products, such as Oracle Enterprise Manager, Net8, and Oracle8 ConText Cartridge.

Chapter 9, "Creating a Database"

Describes how to create a database automatically using Oracle Database Assistant, or manually using command line tools and the BUILD_DB.SQL script.

Chapter 10, "Administering a Database"

Describes how to administer a database.

Chapter 11, "Authenticating Database Users with Windows NT"

Describes how to authenticate Oracle8 database users with Windows NT.

Chapter 12, "Monitoring a Database"

Describes how to monitor Oracle8 Enterprise Edition.

Chapter 13, "Backing Up and Recovering Database Files"

Provides recommendations and procedures for backing up and recovering database files.

Chapter 14, "Distributing and Managing Oracle Software"

Describes how to install Oracle8 Enterprise Edition products using Microsoft Systems Management Server (SMS).

Chapter 15, "Developing Applications"

Describes Windows NT-specific issues for application developers.

Chapter 16, "Using Oracle8 ConText Cartridge"

Describes Windows NT-specific issues for using Oracle8 ConText Cartridge.

Appendix A, "Directory Structures"

Lists default directory structures for Oracle8 Enterprise Edition components installed on the Windows NT, Windows 95, and Windows 98 operating systems.

Appendix B, "Oracle8 Database Specifications for Windows NT"

Describes Oracle8 Enterprise Edition initialization parameters, how to edit them, and Windows NT-specific values (and ranges) for them.

Appendix C, "Configuration Parameters and the Registry"

Describes the use of the registry for various Oracle8 Enterprise Edition components. Additionally, it lists the recommended values and ranges for configuration parameters.

Appendix D, "Messages and Codes"

Lists the error messages, causes, and corrective actions specific to installing and using Oracle8 Enterprise Edition.

Appendix E, "National Language Support"

Explains the NLS_LANG configuration parameter and its components, and lists available options.

Appendix F, "Troubleshooting"

Describes how to diagnose and troubleshoot common error messages.

Glossary

Provides brief descriptions of terms used throughout this guide.

Documentation and Code Conventions Explained

The following conventions are used in this guide:

Convention	Example	Meaning
All uppercase plain	C:\ORANT\DATABASE	Indicates command names, SQL reserved words, and keywords, as in ALTER DATABASE. All uppercase plain is also used for directory names and file names.
Italic	■ Italic is used to indicate a variable: *filename* ■ Italic is used for emphasis: The WHERE clause may be used to *join* rows in different tables.	Indicates a value that you must provide. For example, if a command asks you to type *filename*, you must type the actual name of the file. Italic is also used for emphasis in the text and to indicate the titles of other guides.
Square brackets [ ]	Start > Programs > Oracle for Windows NT - [*HOME_NAME*] > Oracle Database Assistant	Encloses optional items. For example, you can start Oracle Installer from the default Oracle home or from another Oracle home indicated by [*HOME_NAME*] if you use multiple Oracle homes. Square brackets also indicate a function key, for example [Enter].
Choose Start >	Choose Start > Programs > Oracle for Windows NT > Oracle Installer	How to start a program. For example, to start Oracle Installer, you must click the Start button on the taskbar and then choose Programs, Oracle for Windows NT, Oracle Installer.
C:\>	C:\ORANT\DATABASE	Represents the Windows NT command prompt of the current hard disk drive. Your prompt reflects the subdirectory in which you are working. Referred to as the MS-DOS command prompt in this guide.
Backslash (\) before a directory name	\DATABASE	Indicates that the directory is a subdirectory of the root directory.

Convention	Example	Meaning
ORACLE_HOME	Go to the *ORACLE_HOME*\DATABASE directory	*ORACLE_HOME* is represented as the hard drive letter and the top level directory where your Oracle software is installed, which may be: ■ C:\ORANT for Windows NT ■ C:\ORAWIN for Windows 95 and Windows 98 or whatever you may have called your Oracle home.
	`SVRMGR> @%ORACLE_ HOME%\RDBMS80\ADMIN\CATALOG.SQL`	In Server Manager commands, you may see %ORACLE_HOME%. Server Manager is able to locate your Oracle Home directory using the %ORACLE_ HOME% variable. This convention can be used in Server Manager, SQL*Plus, Export Utility, and Import Utility.
HOME_NAME	Oracle*HOME_NAME*TNSListener80	Represents the Oracle home name if you use multiple Oracle homes. *This convention is not applicable for a single Oracle home.* The home name can be up to sixteen alphanumeric characters. The only special character allowed in the home name is the underscore.
HOME*ID*	HOME0, HOME1, HOME2	Represents a unique registry subkey for each Oracle home directory in which you install products. A new HOME*ID* is created and incremented each time you install products to a different Oracle home directory on one computer. Each HOME*ID* contains its own configuration parameter settings for installed Oracle products.

Convention	Example	Meaning
Symbols	period . comma , hyphen - semicolon ; colon : equal sign = backslash \ single quote ‘ double quote ' parentheses ()	Symbols other than brackets and vertical bars must be entered in commands exactly as shown.

1

Getting Started with Your Documentation

This chapter introduces you to the Oracle8 Enterprise Edition for Windows NT documentation set. Read this chapter *before installing or using* Oracle8 Enterprise Edition.

Specific topics discussed are:

- Documentation Formats
- What Documentation Did I Receive?
- What Documentation Do I Read First?
- Starting Oracle Information Navigator
- Starting Adobe Acrobat Reader

Documentation Formats

This table describes the format and availability of documents in your Oracle8 Enterprise Edition kit and the tools required to view them:

Document Format	Document Availability	Document Tools
HyperText Markup Language (HTML)	*All* Oracle documentation is available in HTML.	Use Oracle Information Navigator to view your HTML documentation set. For information on how to start Oracle Information Navigator, see "Starting Oracle Information Navigator" on page 1-8.
Portable Document Format (PDF)	*All* Oracle documentation is available in PDF.	Use Adobe Acrobat Reader to view your PDF documentation set. For information on how to start Adobe Acrobat Reader, see "Starting Adobe Acrobat Reader" on page 1-9.
Printed	*Oracle8 Enterprise Edition Installation for Windows NT* This is the CD-ROM insert that contains the installation instructions. *Oracle8 Enterprise Edition Release Notes for Windows NT* The release notes contain important last-minute installation and configuration information. *Oracle8 Enterprise Edition Getting Started for Windows NT* This guide. **Note:** Additional generic documentation may be included in your kit for this release.	Certain printed guides are also included in your kit. To order printed guides, contact Oracle Documentation Sales at the following locations: ■ Telephone (1) (800) 252-0303 in the United States of America. ■ Visit: `http://www.oracle.com/documentation/sales/`

What Documentation Did I Receive?

Your documentation set consists of two types of documentation:

Documentation Type	Describes...
Operating System-specific	Installation, configuration, and use of Oracle8 Enterprise Edition products in a Windows NT, Windows 95, or Windows 98 environment. Operating system-specific documents are occasionally referred to in the generic documentation set. These documents are easy to identify because they always mention their specific operating system in their title.
Generic	Oracle8 Enterprise Edition, Net8 networking information, and Application Programming Interfaces information that is uniform across all operating system platforms. The vast majority of documents in your documentation set belong to this category. While reading through the generic documentation set, you are occasionally asked to refer to your platform-specific or operating system-specific documentation for procedures specific to the Windows NT, Windows 95, or Windows 98 operating systems. To easily identify where these generic documentation references are described in your operating system documentation, see the index of this guide for the following entry: generic documentation references All generic documentation references described in this guide appear under this index entry.

IMPORTANT: Documentation may be included in your package detailing products that you did not buy or license, or whose functionality is not included in the current release. The presence of such documentation does not mean that these products are included in your package or that you are licensed to use them.

Online Documentation Set

Your online Oracle documentation set is divided into the following categories:

- Installation
- Oracle8 Database
- Oracle8 Cartridges
- SQL*Plus
- Network
- Oracle Enterprise Manager
- Application Development
- Parallel Server
- Legato Storage Manager
- Oracle Web Publishing Assistant
- Task Page-Find out how to do common Oracle tasks!

Installation

Oracle8 Enterprise Edition Installation for Windows NT

Oracle8 Database

Oracle8 Enterprise Edition Getting Started for Windows NT

Getting to Know Oracle8 and the Oracle8 Enterprise Edition, Release 8.0

Oracle8 Concepts

Oracle8 Administrator's Guide

Oracle8 Backup and Recovery

Oracle8 Distributed Database Systems

Oracle8 Migration

Oracle8 Replication

Oracle Server Manager User's Guide

Oracle8 Tuning

Oracle8 Utilities

Oracle8 Error Messages

Oracle8 Reference

Oracle8 SQL Reference

PL/SQL User's Guide and Reference

Oracle8 Cartridges

Oracle8 ConText Cartridge QuickStart

Oracle8 ConText Cartridge Administrator's Guide

Oracle8 ConText Cartridge Application Developer's Guide

Oracle8 ConText Cartridge Workbench User's Guide

Oracle8 Image Cartridge User's Guide

Oracle8 Spatial Cartridge User's Guide and Reference

Oracle8 Time Series Cartridge User's Guide

Oracle8 Visual Information Retrieval Cartridge User's Guide

SQL*Plus

*SQL*Plus Getting Started for Windows NT and Windows 95*

*SQL*Plus Quick Reference*

*SQL*Plus User's Guide and Reference*

Network

Net8

Net8 Getting Started for Windows NT and Windows 95/98

Net8 Administrator's Guide

Oracle Cryptographic Toolkit Programmer's Guide

Oracle Security Server Guide

Oracle Advanced Networking Option Administrator's Guide

Oracle7 Networking

Oracle Network Products Getting Started Release 2.3.4 for Windows Platforms

Oracle Names Administrator's Guide

Oracle Network Manager Administrator's Guide

Oracle Network Products Troubleshooting Guide

*Understanding SQL*Net*

Oracle Enterprise Manager

Oracle Enterprise Manager Administrator's Guide

Oracle Enterprise Manager Application Developer's Guide

Oracle Enterprise Manager Concepts Guide

Oracle Enterprise Manager Configuration Guide

Oracle Enterprise Manager Messages Manual

Oracle SNMP Support Reference Guide

Application Development

Oracle Call Interface Getting Started for Windows NT and Windows 95/98

*Pro*C/C++ Precompiler Getting Started for Windows NT and Windows 95/98*

*Pro*COBOL Precompiler Getting Started for Windows NT and Windows 95/98*

Oracle Call Interface Programmer's Guide

Oracle8 Application Developer's Guide

Oracle8 JDBC Drivers

*Pro*C/C++ Precompiler Programmer's Guide*

*Pro*COBOL Precompiler Programmer's Guide*

Parallel Server

Oracle Parallel Server Getting Started for Windows NT

Oracle Parallel Server Management User's Guide

Oracle8 Parallel Server Concepts and Administration

Legato Storage Manager

Legato Storage Manager Administrator's Guide

Oracle Web Publishing Assistant

Oracle Web Publishing Assistant Getting Started for Windows NT

Task Page-Find out how to do common Oracle tasks!

The Task Page provides easy access to step-by-step instructions on performing many Oracle tasks. Tasks are grouped according to job function at the highest level, then into sub-categories as appropriate. Find the task you are interested in under the appropriate job category. You can access the Task Page from the Oracle Information Navigator welcome page. See "Starting Oracle Information Navigator" on page 1-8.

What Documentation Do I Read First?

This table lists the recommended order in which to start reading through your documentation set in order to quickly install and configure Oracle8 Enterprise Edition.

Read Documents in This Order...		For Information On...
1.	*Oracle Customer Support Guide*	How to obtain Customer Support.
2.	*Oracle8 Enterprise Edition Release Notes for Windows NT*	Important last minute installation and configuration information.
3.	*Oracle8 Enterprise Edition Installation for Windows NT*	Installation instructions included in the CD-ROM insert.
4.	*Oracle8 Enterprise Edition Getting Started for Windows NT*	Post-installation, database migration, database upgrade, and configuration information for Oracle products.
5.	*Net8 Getting Started for Windows NT and Windows 95/98*	Oracle8 Enterprise Edition client/server networking environment, basic database network concepts, network protocols, and Oracle Protocol Adapters.
6.	*Oracle8 Concepts*	Basic database concepts.
7.	*Oracle8 Administrator's Guide*	Basic database administration.
8.	*Oracle Enterprise Manager Concepts Guide*	Instructions on using Oracle Enterprise Manager.
9.	The remaining documentation in an order appropriate to your needs.	

Starting Oracle Information Navigator

Use Oracle Information Navigator to view your HTML documentation set. Oracle Information Navigator enables you to search your entire documentation set for information on specific topics.

To start Oracle Information Navigator:

1. Install Oracle Documentation from the CD-ROM.

   Oracle Information Navigator is automatically installed along with your Oracle Documentation.

2. Use one of the following Java-enabled browsers:

   - Netscape Navigator Version 3.0 or later

     Visit `http://www.netscape.com`

   - Microsoft Internet Explorer Version 3.0 or later

     Visit `http://www.microsoft.com`

   Oracle Information Navigator can only work with a Java-enabled browser. If you do not use these browsers, you cannot view documentation from the WELCOME.HTM page that is accessed when you choose Start > Programs > Oracle for Windows NT - [*HOME_NAME*] > Oracle Documentation.

   You can still view online documentation by going to \DOC\INDEX.HTM located at the top of your CD-ROM, or to *ORACLE_HOME*\DOC\INDEX.HTM if you installed the documentation onto your computer.

3. Choose Start > Programs > Oracle for Windows NT - [*HOME_NAME*] > Oracle8 Documentation.

   Your Web browser is automatically started, and a welcome page appears.

   Oracle Information Navigator appears.

4. Click the question mark icon to access help for instructions on using Oracle Information Navigator.

Notes: Some notes on using Oracle Information Navigator:

- The Java components of Oracle Information Navigator do not work on Windows 3.1. You can still access the Oracle online documentation, however, you will not be able to use the Oracle Information Navigator. To use the Oracle Information Navigator, use a 32-bit Microsoft operating system such as Windows NT, Windows 95, or Windows 98.
- Changes to Microsoft's Internet Explorer release 3.02 to address security issues may prevent Oracle Information Navigator from starting and displaying properly. This does not affect your access to Oracle online documentation.

Starting Adobe Acrobat Reader

Use Adobe Acrobat Reader to view and print your PDF documentation set.

To start Adobe Acrobat Reader:

1. Insert the Oracle8 Enterprise Edition CD-ROM into the mapped CD-ROM drive.

   The operating system automatically detects the CD-ROM. The *Oracle8 Enterprise Edition Autorun* dialog box appears and prompts you to make a selection:

   - Begin Installation
   - Browse Information
   - Explore CD

2. Click Explore CD.
3. Go to the \ACROREAD directory.
4. Double-click on Ar32e30 to install the free Adobe Acrobat Reader.

   A wizard helps you quickly install Adobe Acrobat Reader.

5. Choose Start > Programs > Adobe Acrobat Reader 3.0 after installation is complete to start Adobe Acrobat Reader.
6. Choose Open from the File Menu and navigate to the \PDFDOC directory on the CD-ROM to read the PDF documents.

7. Read PDF directly from the CD-ROM, or copy the files to your hard disk.

Notes: Some notes on using Adobe Acrobat Reader:

- After several documents are opened in Adobe Acrobat Reader, you may receive an error message when trying to open an additional document, stating that the document does not exist. This error occurs because memory is low. To solve the problem, close open documents that you are not using, and continue.
- You must use Adobe Acrobat Reader Version 3.0 to view the PDF documentation set.
- The PDF (Adobe Acrobat) version of the documentation included on your product CD is compressed to save space. To use the PDF documentation, open the self-extracting PDF file located in the \PDF directory.

2

Introducing Oracle8 Enterprise Edition

This chapter introduces you to Oracle8 Enterprise Edition.

Specific topics discussed are:

- Overview
- What Products are on the CD-ROM?

Overview

Oracle8 Enterprise Edition for Windows NT is an Object Relational Database Management System (ORDBMS). Oracle8 Enterprise Edition client and server software operates on a personal computer (PC), running on the following Microsoft operating systems:

Operating System	Oracle Client software	Oracle Server software
Windows NT Workstation 4.0	Yes	Yes
Windows NT Server 4.0	Yes	Yes
Windows NT Server, Enterprise Edition	Yes	Yes
Windows 95	Yes	No
Windows 98	Yes	No

4GB RAM Tuning (4GT)

Windows NT Server, Enterprise Edition includes a new capability called 4GB RAM Tuning (4GT). This capability allows memory-intensive applications running on Windows NT Server, Enterprise Edition to utilize up to 50% more RAM on Intel Architecture servers. It does this by reducing the potential RAM allocated to the NT kernel from 2 GB to 1 GB, and increasing the potential RAM allocated to processes from 2 GB to 3 GB. Note that this capability is not currently available on any other Microsoft operating system.

To use 4GT for Oracle7 Server release 7.3.3 you must run the Windows NT IMAGECFG.EXE tool at the MS-DOS command prompt:

```
C:\> IMAGECFG -L ORACLE73.EXE
```

For Oracle Server releases 7.3.4, 8.0.3, 8.0.4, 8.0.5, and 8.0.6 there is no additional Oracle configuration required to take advantage of this capability, nor is there a requirement that this feature be enabled in order to use Oracle Server.

> **Additional Information:** See your Microsoft operating system documentation for more information on using 4GB RAM Tuning and the IMAGECFG.EXE tool, or visit:
>
> `http://www.microsoft.com`

What Products are on the CD-ROM?

Licensing Information

Although the Oracle8 Enterprise Edition for Windows NT CD-ROM in your kit contains many Oracle products, you may install and use only those products for which you have purchased licenses. For additional licensing information, refer to the *Global License Terms* booklet in your kit.

Oracle Support Services does not provide support for products where licenses have not been purchased.

CD-ROM Installation Sequence for Oracle Products

IMPORTANT: If you purchased Oracle Web Application Server, install the Oracle Web Application Server CD-ROM first.

If you attempt to install the Oracle Web Application Server CD-ROM after installing Oracle8 Enterprise Edition, dialog boxes appear requesting if you want to downgrade the software components. Select No to those messages. Also, Oracle Web Application Server must be installed and running prior to installing Oracle8 ConText Cartridge Viewer Cartridge and/or Oracle8 ConText Configuration Manager.

Choosing Which Oracle Products to Install

When you run Oracle Installer, a dialog box displays several product installation options. If you choose *Oracle8 Enterprise Edition* or *Oracle8 Client*, a group of products are automatically installed. If you choose *Custom Installation*, you can selectively install products. Available options depend upon the operating system you are using:

If You Are Using...	You Will See These Installation Options
Windows NT	Oracle8 Enterprise Edition
	Oracle8 Client
	Database Administrator
	Application User
	Custom Installation
Windows 95	Oracle8 Client
Windows 98	Database Administrator
	Application User
	Custom Installation

Oracle Products for Windows NT, Windows 95, and Windows 98

The products in this table are listed according to the installation option, of which they are a part, for each operating system. Note that the products are listed in alphabetical order.

Oracle8 Enterprise Edition Products	Installation Options Available on Each Operating System...			
	Oracle8 Enterprise Edition on Windows NT	Oracle8 Client on Windows NT, Windows 95, and Windows 98		Custom Installation on Windows NT/95/98
		Application User	Database Administrator	
Assistant Common Files Files for Oracle Java products.	Yes	Yes	Yes	Yes
Legato Storage Manager (LSM) Using Oracle8 Recovery Manager (RMAN80) for Oracle database backups requires the installation of a media management product in order to back up and restore from tape storage. You can choose to install the media management product supplied with Oracle8 Enterprise Edition, which is LSM, or use a third-party media management product that also complies with Oracle's Backup Solutions Program (BSP). LSM also includes a scaled-down version of Legato NetWorker. LSM is installed through Install Shield; it is not installed by Oracle Installer. You are given the option of installing LSM during installation. For more information on this product, call toll free (1) 888-8-LEGATO in the United States of America, or visit Legato's Oracle backup and recovery Web site: `http://www.backup-oracle.com/`	Yes	No	No	No
Java Runtime Environment A set of files distributed by Sun Microsystems that allows Java applications to run. It is required by many of the Oracle Assistants.	Yes	Yes	Yes	Yes

Oracle8 Enterprise Edition Products	Installation Options Available on Each Operating System...			
	Oracle8 Enterprise Edition on Windows NT	Oracle8 Client on Windows NT, Windows 95, and Windows 98		Custom Installation on Windows NT/95/98
		Application User	Database Administrator	
JDK 1.0 JDBC Thin Driver **JDK 1.1 JDBC Thin Driver** Appropriate for use by Java applets that can be downloaded in a Web browser. The JDBC Thin Client Driver provides a direct connection from a Web browser to the database by emulating Net8 and TTC (the wire protocol used by Oracle Call Interface [OCI]) on top of Java sockets. This driver works for Oracle7 version 7.2 and later.	No	No	No	Yes
JDK 1.0 JDBC OCI Driver 8.0 **JDK 1.1 JDBC OCI Driver 8.0** The OCI-based drivers are used by Java applications. The OCI JDBC Drivers call OCI directly from Java to connect to the database.	No	No	No	Yes
Oracle Administrator Toolbar Enables you to execute commands and run applications in Oracle Enterprise Manager.	Yes	No	Yes	Yes
Oracle Call Interface (OCI) An application programming interface (API) for accessing an Oracle database from a C or C++ program. You make calls directly to the OCI functions from within your C or C++ program to direct the execution of your SQL statements.	Yes	No	Yes	Yes
Oracle Connection Manager Allows you to multiplex multiple logical client sessions through a single transport connection to an Oracle server destination.	Yes	No	No	Yes *NT only*

Oracle8 Enterprise Edition Products	Installation Options Available on Each Operating System...			
	Oracle8 Enterprise Edition on Windows NT	Oracle8 Client on Windows NT, Windows 95, and Windows 98		Custom Installation on Windows NT/95/98
		Application User	Database Administrator	
Oracle Data Migration Assistant Migrates your existing Oracle7 database (release 7.1.3.3.6 or later) or upgrades previous releases of Oracle8 to an Oracle8 database.	Yes	No	No	Yes *NT only*
Oracle Database Assistant Creates and deletes databases.	Yes	No	No	Yes *NT only*
Oracle Documentation Available in HTML, viewable using a Web browser. PDF is also available but is not automatically installed. You can find the PDF documentation on the CD-ROM in the PDFDOC directory. The Adobe Acrobat Reader is located in the ACROREAD directory.	Yes	Yes	Yes	Yes
Oracle Enterprise Manager Combines a graphical console, agent processes, and common services to provide an integrated, comprehensive systems management platform for managing databases and networks.	Yes	No	Yes	Yes
Oracle Enterprise Manager Software Development Kit (SDK) Provides sample source files, libraries, and header files for integrating new applications into the Oracle Enterprise Manager Console.	Yes	No	Yes	Yes
Oracle File Packager Installed as part of Oracle Software Manager (OSM), which is part of Oracle Enterprise Manager. Only appears in *Software Asset Manager* window once installed. *This product cannot be separately installed.*	Yes	No	Yes	Yes

Oracle8 Enterprise Edition Products	Installation Options Available on Each Operating System...			
	Oracle8 Enterprise Edition on Windows NT	Oracle8 Client on Windows NT, Windows 95, and Windows 98		Custom Installation on Windows NT/95/98
		Application User	Database Administrator	
Oracle Installer A GUI application that lets you quickly install, update, and remove Oracle products. Oracle Home Selector is automatically installed with Oracle Installer. This product allows you to prioritize your Oracle home directories when using multiple Oracle home functionality.	Yes	Yes	Yes	Yes
Oracle Intelligent Agent Responds to, schedules, and executes database administration job requests initiated by the Oracle Enterprise Manger Console.	Yes	No	No	Yes *NT only*
Oracle Migration Assistant for Microsoft Access Complete and easy migration of schema and/or data from your Microsoft Access database to an Oracle8 database.	Yes	No	Yes	Yes
Oracle Net8 Assistant Advanced configuration and administration of Net8 products.	Yes	Yes	Yes	Yes
Oracle Net8 Products Net8 establishes and maintains a connection between the client application and the server and exchanges messages between them. Net8 is a software layer that is required to communicate between Oracle clients and servers. It provides both client/server and server/server communications across any network. It enables client tools to access, modify, share, and store data on Oracle8 Enterprise Edition servers over a network. See *Net8 Getting Started for Windows NT and Windows 95/98* for detailed information on each Net8 product.	Yes	Yes	Yes	Yes

Oracle8 Enterprise Edition Products	Installation Options Available on Each Operating System...			
	Oracle8 Enterprise Edition on Windows NT	Oracle8 Client on Windows NT, Windows 95, and Windows 98		Custom Installation on Windows NT/95/98
		Application User	Database Administrator	
Oracle Names Server A transparent naming service used to centrally manage name and address resolution in a heterogeneous network. It stores network names and addresses so that network components can contact one another easily without regard to their physical locations or specific configurations on the network.	Yes	No	No	Yes *NT only*
Oracle Net8 Client Provides products that allow client connections to databases across a network. A client-side application sends a request to Net8 to be transported across the network to the server. Oracle Net8 Easy Config is automatically installed with Oracle Net8 Client.	Yes	Yes	Yes	Yes
Oracle Net8 Easy Config Fast and simple configuration of Net8 products.	Yes	Yes	Yes	No
Oracle Net8 Server Provides products that allow the network listener, through an Oracle Protocol Adapter, to accept connections from client applications on the network.	Yes	No	No	Yes *NT only*

Oracle8 Enterprise Edition Products	Installation Options Available on Each Operating System...			
	Oracle8 Enterprise Edition on Windows NT	Oracle8 Client on Windows NT, Windows 95, and Windows 98		Custom Installation on Windows NT/95/98
		Application User	Database Administrator	
Oracle Protocol Adapters Oracle Protocol Adapters map Transparent Network Substrate (TNS) functionality to industry-standard protocols used in client/server connections. Each protocol adapter maps the equivalent functions between TNS and a specific protocol. Net8 Client and not Oracle Installer installs Oracle Named Pipes Protocol Adapter, and auto-detects TCP/IP and SPX. TP/IP and SPX are only installed in the installation packages if the appropriate software is detected on your system. If you explicitly select these Oracle Protocol Adapters in the Custom Installation option, they will be installed even if you do not have the appropriate software on your system. See *Net8 Getting Started for Windows NT and Windows 95/98* for detailed information on each protocol adapter.	Yes	Yes	Yes	Yes
Oracle LU6.2 Protocol Adapter See *Net8 Getting Started for Windows NT and Windows 95/98*.	Yes	No	No	Yes *NT only*
Oracle Named Pipes Protocol Adapter See *Net8 Getting Started for Windows NT and Windows 95/98*.	Yes	Yes	Yes	Yes
Oracle SPX Protocol Adapter See *Net8 Getting Started for Windows NT and Windows 95/98*.	Yes	Yes	Yes	Yes
Oracle TCP/IP Protocol Adapter See *Net8 Getting Started for Windows NT and Windows 95/98*.	Yes	Yes	Yes	Yes

Oracle8 Enterprise Edition Products	Installation Options Available on Each Operating System...			
	Oracle8 Enterprise Edition on Windows NT	Oracle8 Client on Windows NT, Windows 95, and Windows 98		Custom Installation on Windows NT/95/98
		Application User	Database Administrator	
Oracle Object Type Translator (OTT) OTT (executable name OTT80.EXE) is used to create C-struct representations of Abstract Data Types that have been created and stored in an Oracle8 database. To take advantage of objects, run OTT against the database, and a header file is generated that includes the C-structs.	Yes	No	Yes	Yes
Oracle INTYPE File Assistant Only installed if OTT is installed. This assistant is used in conjunction with Oracle development environments to build rapid object-oriented applications.	Yes	No	Yes	Yes
Oracle Objects for Object Linking and Embedding (OLE) A custom control (OCX or ActiveX) combined with an OLE in-process server that lets you plug native Oracle8 Enterprise Edition functionality into your Windows applications.	Yes	Yes	Yes	Yes
Oracle Parallel Server Option Provides the ability for multiple Oracle instances to share a single Oracle database. *This product requires a separate license.*	Yes	No	No	Yes *NT only*
Oracle Parallel Server Manager Server Allows Oracle Parallel Server nodes to manage multiple parallel server instances.	Yes	No	No	Yes *NT only*

Oracle8 Enterprise Edition Products	Installation Options Available on Each Operating System...			
	Oracle8 Enterprise Edition on Windows NT	Oracle8 Client on Windows NT, Windows 95, and Windows 98		Custom Installation on Windows NT/95/98
		Application User	Database Administrator	
Oracle Replication Manager Simplifies the complex tasks of managing and maintaining multiple copies of data in a distributed environment. The application provides immediate local access to data and allows local systems to function automatically, even when networks or other systems in the environment fail.	Yes	No	Yes	Yes
Oracle Security Server Manager Controls database security through the management of users, roles, and profiles.	No	No	No	Yes
Oracle SNMP Agent Enables key Oracle products running anywhere on an enterprise's network to be located, identified, and monitored by a management station running at a centrally located node.	No	No	No	Yes
Oracle Web Publishing Assistant Enables you to query a database and publish the data retrieved on a Web page.	Yes	No	Yes *NT only*	Yes *NT only*
Oracle Web Server Manager Performs the most common Web administrative tasks through Web pages. Web administrative tasks include creating, modifying, and deleting Database Connection Descriptors (DCDs).	No	No	No	Yes
Oracle7 Utilities A suite of products used for Oracle7 database administration. Oracle7 Utilities include NT Instance Manager, ORADIM73, Server Manager, Export Utility, Import Utility, SQL*Loader, DBVERIFY, NT Backup Manager, NT Recovery Manager, TKPROF, and Password Utility.	No	No	No	Yes

Oracle8 Enterprise Edition Products	Installation Options Available on Each Operating System...			
	Oracle8 Enterprise Edition on Windows NT	Oracle8 Client on Windows NT, Windows 95, and Windows 98		Custom Installation on Windows NT/95/98
		Application User	Database Administrator	
Oracle8 ConText Cartridge Enables text queries to be performed through SQL and PL/SQL from most Oracle interfaces. By installing Oracle8 ConText Cartridge with Oracle8 Enterprise Edition, client tools such as SQL*Plus, Oracle Forms, and Pro*C are able to retrieve and manipulate text in an Oracle database. *This product requires a separate license.*	Yes	No	No	Yes *NT only*
Oracle8 ConText Cartridge Workbench A suite of products used in conjunction with Oracle8 ConText Cartridge to enhance viewing, storage, and manipulation of text data. This product is only installed through the Oracle8 Enterprise Edition installation option if you have chosen to install Oracle8 ConText Cartridge. If you install Oracle8 ConText Cartridge Workbench, the following components are installed:	Yes	No	No	Yes
Oracle8 ConText Cartridge Configuration Manager A Web application for administering Oracle8 ConText Cartridge and managing the text objects in the Oracle8 ConText Cartridge data dictionary on non-Windows platforms, including network computers (NCs).	No	No	No	Yes
Oracle8 ConText Cartridge Demos A sample application illustrating the text querying and retrieval capabilities of Oracle8 ConText Cartridge and Oracle8 Enterprise Edition.	Yes	No	No	Yes

Oracle8 Enterprise Edition Products	Installation Options Available on Each Operating System...			
	Oracle8 Enterprise Edition on Windows NT	Oracle8 Client on Windows NT, Windows 95, and Windows 98		Custom Installation on Windows NT/95/98
		Application User	Database Administrator	
Oracle8 ConText Cartridge I/O Utility A stand-alone executable that can be used to load text to a database column, load text from a column into a file, execute SQL and PL/SQL code, and call other executables from the MS-DOS command prompt.	Yes	No	No	Yes
Oracle8 ConText Cartridge System Administration A GUI application that can be used to perform system and text administration tasks.	Yes	No	No	Yes
Oracle8 ConText Cartridge Viewer A document viewer supplied as a custom control (OCX), which can be embedded in any application developed in an environment (such as Visual Basic and Visual C++) that supports custom controls.	Yes	No	No	Yes
Oracle8 ConText Cartridge Viewer Cartridge A Java Web server cartridge that packages data for viewing using the Web browser plugin, and provides generic facilities for downloading large data types from the database to a Web browser.	Yes	No	No	Yes
Oracle8 ConText Cartridge Viewer Plugin Displays documents on the World Wide Web as they would appear in their native format. See *Oracle8 ConText Cartridge Workbench User's Guide* for details on how to configure and use the Viewer Plugin.	Yes	No	No	Yes

Oracle8 Enterprise Edition Products	Installation Options Available on Each Operating System...			
	Oracle8 Enterprise Edition on Windows NT	Oracle8 Client on Windows NT, Windows 95, and Windows 98		Custom Installation on Windows NT/95/98
		Application User	Database Administrator	
TextServer3 Dictionary Migration Tool Assists users migrating from TextServer3 to Oracle8 ConText. This tool is not installed by Oracle Installer. The tool is delivered as a PL/SQL package called CTXWMG_MIGRATE. The package generates SQL scripts that you can customize to meet your requirements before running them. This package must be created in the ConText database on the server after the ConText Workbench is installed on a client machine. See *Oracle8 ConText Cartridge Workbench User's Guide* for details on how to install and use the TextServer3 Dictionary Migration Tool.	No	No	No	No
Oracle8 Enterprise Edition The database component of Oracle8 Enterprise Edition software.	Yes	No	No	Yes *NT only*
Oracle8 Image Cartridge Provides for the storage, retrieval, and processing of two dimensional, static bitmapped images. Images are stored efficiently using popular compression schemes in industry standard desktop publishing image interchange formats. *This product requires a separate license.*	Yes	No	No	Yes *NT only*
Oracle8 Objects Option Creates and manipulates objects, as well as integrating objects with standard relational functionality. You must install this option before creating a database, otherwise you cannot use this option. *This product requires a separate license.*	Yes	No	No	Yes *NT only*

Oracle8 Enterprise Edition Products	Installation Options Available on Each Operating System...			
	Oracle8 Enterprise Edition on Windows NT	Oracle8 Client on Windows NT, Windows 95, and Windows 98		Custom Installation on Windows NT/95/98
		Application User	Database Administrator	
Oracle8 Open Database Connectivity Driver (ODBC) Provides support for ODBC connections from Windows NT, Windows 95, and Windows 98 client systems to Oracle8 databases. The Oracle8 ODBC Driver complies with version 3.00 of the Microsoft ODBC specification and supports all ODBC Core and the following Level 1 and Level 2 calls: ■ SQLBrowseConnect ■ SQLColumnPrivileges ■ SQLDescribeParam ■ SQLForeignKeys ■ SQLMoreResults ■ SQLPrimaryKeys ■ SQLProcedureColumns ■ SQLProcedures ■ SQLTablePrivileges	Yes	Yes	Yes	Yes
Oracle8 Partitioning Option Provides more control in managing tables and indexes by directing all maintenance operations to individual partitions rather than to tables and index names. You must install this option before creating a database, otherwise you cannot use this option. *This product requires a separate license.*	Yes	No	No	Yes *NT only*
Oracle8 Performance Monitor Enables database administrators to monitor local and remote database performance through the Windows NT Performance Monitor.	Yes	No	No	Yes *NT only*

Oracle8 Enterprise Edition Products	Installation Options Available on Each Operating System...			
	Oracle8 Enterprise Edition on Windows NT	Oracle8 Client on Windows NT, Windows 95, and Windows 98		Custom Installation on Windows NT/95/98
		Application User	Database Administrator	
Oracle8 Spatial Cartridge Makes the storage, retrieval, and manipulation of spatial data easier for users. *This product requires a separate license.*	Yes	No	No	Yes *NT only*
Oracle8 Spatial Data Cartridge Utilities A suite of tools that manage spatial data in an Oracle database.	Yes	No	No	Yes *NT only*
Oracle8 Time Series Cartridge Provides the ability to store and retrieve timestamped data through object data types (ODTs). *This product requires a separate license.*	Yes	No	No	Yes *NT only*
Oracle8 Utilities A suite of products used for database administration. Oracle8 Utilities include ORADIM80, Server Manager, Export Utility, Import Utility, SQL*Loader, DBVERIFY, NT Backup Manager, NT Recovery Manager, TKPROF, Migration Utility, Recovery Manager, OCOPY80, and Password Utility.	Yes	No	Yes	Yes
Oracle8 Visual Information Retrieval Cartridge Provides the ability to store, retrieve, and manipulate image data managed by an Oracle8 database. *This product requires a separate license.*	Yes	No	No	Yes *NT only*
Required Support Files A collection of files and libraries required by Oracle applications.	Yes	Yes	Yes	Yes

Oracle8 Enterprise Edition Products	Installation Options Available on Each Operating System...			
	Oracle8 Enterprise Edition on Windows NT	Oracle8 Client on Windows NT, Windows 95, and Windows 98		Custom Installation on Windows NT/95/98
		Application User	Database Administrator	
Required Support Files A collection of files and libraries required by Oracle applications. Required Support Files release 7.3.4 are supplied for third party applications linked with them.	No	No	No	Yes
SQL*Net Products A software layer required to communicate between Oracle clients and servers. It provides both client/server and server/server communications across any network. It enables client tools to access, modify, share, and store data on Oracle8 Enterprise Edition servers over a network. See *Net8 Getting Started for Windows NT and Windows 95* for detailed information on each SQL*Net product.	No	No	No	Yes
Oracle Names Server A transparent naming service used to centrally manage name and address resolution.	No	No	No	Yes
SQL*Net Server Provides products that allow the network listener, through an Oracle Protocol Adapter, to accept connections from client applications on the network.	No	No	No	Yes
SQL*Plus Enables you to use the SQL and PL/SQL database languages in the Windows NT, Windows 95, or Windows 98 environments. SQL*Plus has both command line and GUI versions.	Yes	Yes	Yes	Yes

3

Database Tools Overview

Oracle8 Enterprise Edition includes various tools to perform database functions. This chapter describes the preferred tools to perform common database administration tasks.

Specific topics discussed are:

- Choosing a Database Tool
- Starting Database Tools
- Using SQL*Loader
- Using Windows NT Tools

Choosing a Database Tool

Database tools is a collective term for tools, utilities, and assistants that you can use to perform database administration tasks. Some database tools perform similar tasks, though no one database tool performs all database administration tasks. The following sections indicate which database tools can be used on particular operating systems and the preferred tools to use for common database administration tasks.

Database Tools and Operating System Compatibility

This table lists database tools and the operating system(s) on which each can be used:

Database Tools	Windows NT	Windows 95 and Windows 98
Oracle8 Utilities		
DBVERIFY (DBVERF80)	Yes	Yes
Export Utility (EXP80)	Yes	Yes
Import Utility (IMP80)	Yes	Yes
Migration Utility (MIG80)	Yes	No
NT Backup Manager[1]	Yes	No
NT Recovery Manager	Yes	No
OCOPY80	Yes	Yes
ORADIM80[2]	Yes	No
Password Utility (ORAPWD80)[3]	Yes	No
Recovery Manager (RMAN80)	Yes	Yes
Server Manager (SVRMGR30)[4]	Yes	Yes
SQL*Loader (SQLLDR80)	Yes	Yes
TKPROF (TKPROF80)	Yes	Yes

Database Tools	Windows NT	Windows 95 and Windows 98
Windows NT Tools		
Control Panel	Yes	No
Event Viewer	Yes	No
Performance Monitor	Yes	No
Registry	Yes	Yes
User Manager	Yes	No
Oracle Enterprise Manager		
Backup Manager	Yes	Yes
Data Manager	Yes	Yes
Instance Manager	Yes	Yes
Oracle Net8 Assistant	Yes	Yes
Oracle Software Manager	Yes	Yes
Replication Manager	Yes	Yes
Schema Manager	Yes	Yes
Security Manager	Yes	Yes
SQL Worksheet	Yes	Yes
Storage Manager	Yes	Yes
Oracle Assistants		
Oracle Data Migration Assistant	Yes	No
Oracle Database Assistant	Yes	No
Oracle INTYPE File Assistant	Yes	Yes
Oracle Migration Assistant for Microsoft Access	Yes	Yes
Oracle Net8 Assistant	Yes	Yes
Oracle Net8 Easy Config	Yes	Yes
Oracle Web Publishing Assistant	Yes	No
Oracle8 Performance Monitor	**Yes**	**No**
SQL*Plus	**Yes**	**Yes**

[1] NT Backup Manager and NT Recovery Manager are Oracle Corporation products, distinct from the NT Backup Tool available with your Windows NT operating system.

[2] ORADIM80 only operates on local databases.

[3] ORAPWD80 does not work on password files for remote databases.

[4] The ORADEBUG utility can be used through Server Manager to send debug commands to Oracle processes. See "Using the ORADEBUG Utility" on page 10-26.

Preferred Database Tools

This table lists common database administration tasks and the various database tools you can use to perform them. Oracle Corporation recommends you use the tools listed in the "Preferred Database Tool" column of the table. After choosing a tool to perform a task, go to "Starting Database Tools" on page 3-6 for instructions on how to start the tool.

Database Administration Task	Preferred Database Tool	Other Database Tools
Create a database	Oracle Database Assistant	■ ORADIM80 and Server Manager (SVRMGR30) together ■ SQL Worksheet
Delete a database	Oracle Database Assistant	ORADIM80 and Server Manager (SVRMGR30) together
Delete a database service	Oracle Database Assistant	ORADIM80
Start a database	Instance Manager[1]	■ ORADIM80 and Server Manager (SVRMGR30) together ■ SQL Worksheet
Shut down a database	Instance Manager	■ ORADIM80 and Server Manager (SVRMGR30) together ■ Control Panel ■ SQL Worksheet
Change internal database passwords	ORAPWD80	ORADIM80[2]
Migrate a database From release 7.*x* to release 8.0.6	Oracle Data Migration Assistant	Migration Utility (MIG80)
Upgrade a database From release 8.0.*x* to release 8.0.6	Oracle Data Migration Assistant[3]	Run provided scripts in Server Manager
Export data	Data Manager	Export Utility (EXP80)
Import data	Data Manager	Import Utility (IMP80)
Load data	Data Manager	SQL*Loader (SQLLDR80)

Database Administration Task	Preferred Database Tool	Other Database Tools
Back up a database	Backup Manager	■ Recovery Manager (RMAN80) ■ NT Backup Manager ■ OCOPY80[4]
Recover a database	Backup Manager	■ Recovery Manager (RMAN80) ■ NT Recovery Manager ■ OCOPY80
Authenticate database administrators and users	Security Manager	■ Server Manager (SVRMGR30) ■ SQL*Plus ■ Windows NT operating system ■ SQL Worksheet
Grant database roles	Security Manager	User Manager
Create database objects[5]	Schema Manager	■ Server Manager ■ SQL*Plus

[1] Instance Manager can start up and shut down a database and perform other limited functions. This tool cannot be used to create database services, or create and delete databases. Instance Manager is an Oracle Enterprise Manager tool.

[2] ORADIM80 can only set a password when none was previously set. Also, ORADIM80 can change a password by deleting and recreating the Oracle8 services.

[3] Oracle Data Migration Assistant can only be used to upgrade release 8.0.*x* databases to release . It cannot be used to upgrade an earlier Oracle7 database release to a later Oracle7 database release. See your Oracle7 for Windows NT documentation for information on how to upgrade from an earlier Oracle7 release to a later Oracle7 release.

[4] Do not back up files while you are shutting down the database, otherwise your backup will be invalid. You cannot use an invalid backup to restore files at a later date.

[5] See *Oracle8 Administrator's Guide*for guidelines on creating databases objects. In particular, see Appendix A, "Space Estimations for Schema Objects" which provides equations for estimating the space requirements for clusters, non-clustered tables, and indexes. Windows NT uses the same fixed header, transaction header, and row header constants described in that guide.

Starting Database Tools

This section describes how to start each of the database tools in the following categories:

- Starting Database Tools in Multiple Oracle Homes
- Starting Oracle8 Utilities
- Starting Windows NT Tools
- Starting Oracle Enterprise Manager
- Starting Oracle Assistants
- Starting SQL*Plus

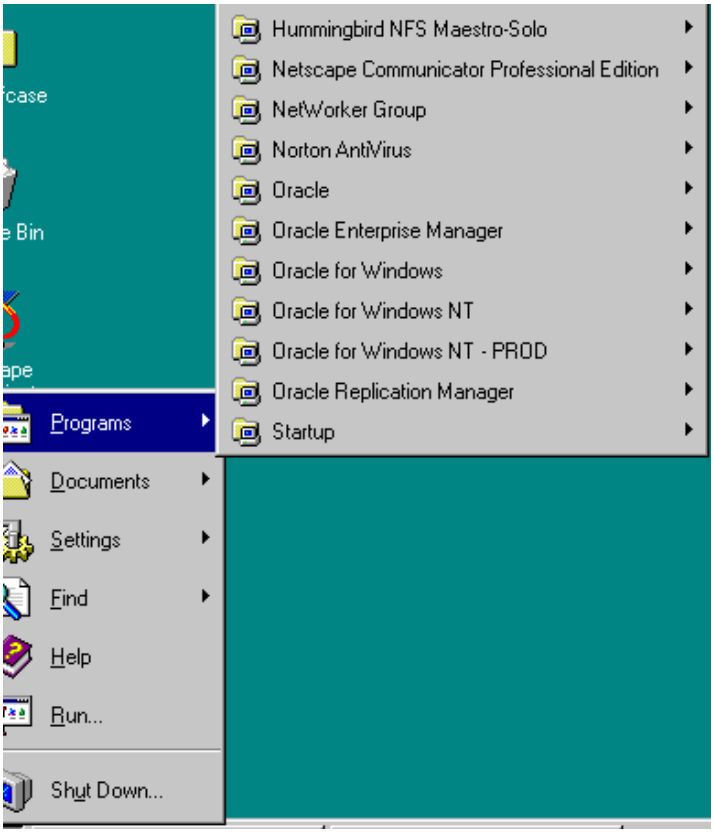
You will be referred back to this section for database tool startup procedures as you use this guide.

Starting Database Tools in Multiple Oracle Homes

If you are using multiple Oracle homes functionality, the command to start a tool includes [*HOME_NAME*] where [*HOME_NAME*] indicates the name of a different Oracle home. For example:

Start > Programs > Oracle for Windows NT - [*HOME_NAME*] > Oracle Database Assistant.

If you want to start Oracle Database Assistant from an Oracle home called PROD, choose Start > Programs > Oracle for Windows NT - PROD > Oracle Database Assistant.



Taskbar pathname for first Oracle8 database installation. No home name is required and none appears in the pathname.

Taskbar pathname for second Oracle8 database installation. The home name of PROD appears in the pathname.

Starting Oracle8 Utilities

This table describes how to start each Oracle8 Utility, and where to go for further information on using these products:

Oracle8 Utilities	To Start...	For More Information, See...

DBVERIFY (DBVERF80)	Enter the following at the MS-DOS command prompt:
	`C:\> DBVERF80`
	DBVERIFY starts and prompts you for a file name parameter. To obtain a list of parameters, enter the following at the MS-DOS command prompt:
	`C:\> DBVERF80 HELP=Y`
		Oracle8 Utilities

Export Utility (EXP80)	Enter the following at the MS-DOS command prompt followed by your user name and password:
	`C:\> EXP80`
	EXP80 starts and prompts you for parameters. To obtain a list of these parameters, enter the following at the MS-DOS command prompt:
	`C:\> EXP80 HELP=Y`
	Note: When running the Export utility, the default values for the following parameters under Windows NT are:
	BUFFER 4 KB
	RECORDLENGTH 2 KB
	Note: To export an entire database, you must use the user name SYSTEM. Do not use INTERNAL or SYS.
		■ *Oracle8 Utilities*, which describes how to use the Export utility
		■ *Oracle8 Error Messages* for information on error messages

Import Utility (IMP80)	Enter the following at the MS-DOS command prompt followed by your user name and password:
	`C:\> IMP80`
	IMP80 starts and prompts you for parameters. To obtain a list of these parameters, enter the following at the MS-DOS command prompt:
	`C:\> IMP80 HELP=Y`
	Note: When running the Import utility, the default values for the following parameters under Windows NT are:
	BUFFER 4 KB
	RECORDLENGTH 2 KB
		■ *Oracle8 Utilities*, which describes how to use the Import utility
		■ *Oracle8 Error Messages* for information on error messages

Oracle8 Utilities	To Start...	For More Information, See...

Migration Utility (MIG80)	Enter the following at the MS-DOS command prompt:
	`C:\> MIG80`
	To obtain a list of parameters, enter the following at the MS-DOS command prompt:
	`C:\> MIG80 HELP=Y`
		"Migrating Using MIG80" on page 7-24

NT Backup Manager	Choose Start > Programs > Oracle for Windows NT - [*HOME_NAME*] > NT Backup Manager	Online help included with this tool
NT Recovery Manager	Choose Start > Programs > Oracle for Windows NT - [*HOME_NAME*] > NT Recovery Manager	Online help included with this tool
OCOPY80	Enter the following at the MS-DOS command prompt: `C:\> OCOPY80`	"Backing Up Files with OCOPY80" on page 13-4

ORADIM80	Enter the following *with* parameters at the MS-DOS command prompt:
	`C:\> ORADIM80 PARAMETERS`
	To get a complete listing of ORADIM80 parameters, enter a question mark preceded by a dash after the executable name:
	`C:\> ORADIM80 -? | -H | -HELP`
	Note: If you enter ORADIM80 without parameters at the MS-DOS command prompt, a GUI Instance Manager screen appears. *This GUI tool is no longer supported for use on Oracle8 Enterprise Edition*. The function of the GUI tool was to easily create databases which can now be done with Oracle Database Assistant.
		"Using ORADIM80 to Administer the Oracle Instance" on page 9-22

Password Utility (ORAPWD80)	Enter the following at the MS-DOS command prompt:
	`C:\> ORAPWD80`
	Note that the password file is a hidden file. To see it in a file list, enter the following at the MS-DOS command prompt from the directory where the file resides.
	`C:\> ATTRIB`
		"Creating Password Files" on page 10-17

Recovery Manager (RMAN80)	Enter the following at the MS-DOS command prompt: `C:\> RMAN80 PARAMETERS`	"Recovery Manager (RMAN80.EXE) in command line mode" on page 13-2 and *Oracle8 Backup and Recovery* for instructions on using this tool.

Oracle8 Utilities	To Start...	For More Information, See...
Server Manager (SVRMGR30)	Enter the following at the MS-DOS command prompt: `C:\> SVRMGR30` **Note:** Server Manager is available only as a command line tool.	■ *Oracle Server Manager User's Guide* ■ Chapter 10, "Administering a Database", for examples of starting and stopping the database with Server Manager
SQL*Loader (SQLLDR80)	Invoke SQL*Loader at the MS-DOS command prompt followed by certain keywords. Enter the following and SQL*Loader displays a Help screen with the available keywords and default values: `C:\> SQLLDR80`	■ *Oracle8 Utilities*, which describes how to use the SQL*Loader utility ■ *Oracle8 Error Messages* for information on error messages ■ "Using SQL*Loader" on page 3-16
TKPROF (TKPROF80)	Enter the following at the MS-DOS command prompt: `C:\> TKPROF80`	*Oracle8 Tuning*

Starting Windows NT Tools

This table describes how to start each Windows NT tool, and where to go for more information on using these products:

Windows NT Tools	To Start...	For More Information, See...
Control Panel	Choose Start > Settings > Control Panel	■ "Control Panel" on page 3-18 ■ "Administering a Database" on page 10-1 ■ Your Microsoft Windows NT documentation
Event Viewer	Choose Start > Programs > Administrative Tools > Event Viewer	■ "Event Viewer" on page 3-19 ■ "Using the Event Viewer" on page 12-10 ■ Your Microsoft Windows NT documentation

Windows NT Tools	To Start...	For More Information, See...
Performance Monitor	Choose Start > Programs > Administrative Tools > Performance Monitor	■ "Performance Monitor" on page 3-20 ■ "Using Oracle8 Performance Monitor" on page 12-3 ■ Your Microsoft Windows NT documentation

Registry	■ Enter the following at the MS-DOS command prompt:
	`C:\> REGEDT32`
	The registry editor window appears.
	■ Enter the following at the MS-DOS command prompt:
	`C:\> REGEDIT`
	The registry editor window appears.
		■ "Registry" on page 3-22
		■ Appendix C, "Configuration Parameters and the Registry"
		■ Your Microsoft Windows NT documentation

User Manager	Choose Start > Programs > Administrative Tools > User Manager	■ "User Manager" on page 3-24 ■ Chapter 11, "Authenticating Database Users with Windows NT" ■ Your Microsoft Windows NT documentation

Starting Oracle Enterprise Manager

You can start Oracle Enterprise Manager tools:

- as separate applications
- from the Oracle Enterprise Manager Console

To start an Oracle Enterprise Manager tool separately:

1. Choose Start > Programs > Oracle Enterprise Manager > *tool*.

   For example, Start > Programs > Oracle Enterprise Manager > Instance Manager.

   The *Login Information* dialog box appears.

2. Enter the connect information in the *Login Information* dialog box.

Additional Information: See "Oracle Enterprise Manager" on page 8-4 for information on configuration tasks you must perform before using Oracle Enterprise Manager and information on how to connect to an Oracle8 database.

To start an Oracle Enterprise Manager tool from the Console:

1. Choose Start > Programs > Oracle Enterprise Manager > Oracle Enterprise Manager.

   The *Login Information* dialog box appears.

2. Log on when prompted.

3. You can now either:

   - Select the database you want to administer in the Navigator tree or in the Map window, then choose the tool from the Console Tools menu or in the Launch Palette.
   - Select the database you want to administer in the Navigator tree, then choose the tool from the Related Tools menu of the context-sensitive menu.
   - Choose the application from the Console Tools menu or from the Launch Palette, then enter the connect information in the *Login Information* dialog box.

Note: When you select a database before starting a tool, you are connected to the database according to the preferred credentials that have been set up for the database or the credentials you used to log on to the Console. If connection to the database fails for any reason, the *Login Information* dialog box appears.

This table describes how to start each Oracle Enterprise Manager tool through the Console, and where to go for further information on using these tools.

Oracle Enterprise Manager Tool	Choose Tools > Applications >	For More Information, See...
Backup Manager	Oracle Backup Manager	*Oracle Enterprise Manager Administrator's Guide*
Data Manager	Oracle Data Manager	*Oracle Enterprise Manager Administrator's Guide*
Instance Manager	Oracle Instance Manager	*Oracle Enterprise Manager Administrator's Guide*
Oracle Net8 Assistant	Oracle Net8 Assistant	*Net8 Administrator's Guide* and *Net8 Getting Started for Windows NT and Windows 95*
Oracle Software Manager	Oracle Software Manager	*Oracle Enterprise Manager Administrator's Guide*
Replication Manager	Oracle Replication Manager	*Oracle Enterprise Manager Administrator's Guide*
Storage Manager	Oracle Storage Manager	*Oracle Enterprise Manager Administrator's Guide*
Schema Manager	Oracle Schema Manager	*Oracle Enterprise Manager Administrator's Guide*
Security Manager	Oracle Security Manager	*Oracle Enterprise Manager Administrator's Guide*
SQL Worksheet	Oracle SQL Worksheet The new worksheet is connected to the database you have selected in the Navigator tree list or in the map window.	*Oracle Enterprise Manager Administrator's Guide*

Starting Oracle Assistants

This table describes how to start each assistant, and where to go for further information on using these products:

Assistant	Choose Start > Programs > Oracle for Windows NT - [*HOME_NAME*] >	For More Information, See...
Oracle Data Migration Assistant	Oracle Data Migration Assistant	■ "Migrating Using Oracle Data Migration Assistant" on page 7-22 ■ *Oracle8 Enterprise Edition Installation for Windows NT*
Oracle Database Assistant	Oracle Database Assistant	■ "Using Oracle Database Assistant" on page 9-3 ■ *Oracle8 Enterprise Edition Installation for Windows NT*
Oracle Migration Assistant for Microsoft Access	Oracle Migration Assistant for Microsoft Access	"Migrating a Microsoft Access Database" on page 7-51
Oracle Net8 Assistant	Oracle Net8 Assistant	■ *Net8 Getting Started for Windows NT and Windows 95/98* ■ *Net8 Administrator's Guide*
Oracle Net8 Easy Config	Oracle Net8 Easy Config	■ *Net8 Getting Started for Windows NT and Windows 95/98* ■ *Net8 Administrator's Guide*
Oracle Web Publishing Assistant	Oracle Web Publishing Assistant	*Oracle Web Publishing Assistant Getting Started for Windows NT*

Starting Oracle8 Performance Monitor

This table describes how to start Oracle8 Performance Monitor, and where to go for further information on using this product:

Oracle8 Performance Monitor	Choose Start > Programs > Oracle for Windows NT - [*HOME_NAME*] > Oracle8 Performance Monitor	"Using Oracle8 Performance Monitor" on page 12-3

Starting SQL*Plus

This table describes how to start SQL*Plus, and where to go for further information on using this product:

SQL*Plus	To Start...	For More Information, See...

	Enter either of the following at the MS-DOS command prompt:
	`C:\> SQLPLUS`
	Starts the line mode version of SQL*Plus
	or
	`C:\> PLUS80W`
	Starts the GUI version of SQL*Plus
	or
	`C:\> PLUS80`
	Starts the line mode version of SQL*Plus
	or
	Choose Start > Programs > Oracle for Windows NT - [*HOME_NAME*] > SQL Plus 8.0
	Starts the GUI version of SQL*Plus
		■ *SQL*Plus Getting Started for Windows NT and Windows 95*
		■ *SQL*Plus User's Guide and Reference*
		■ *SQL*Plus Quick Reference*

Using SQL*Loader

This section describes Windows NT-specific information for using SQL*Loader (SQLLDR80).

Windows NT Processing Options

These are the possible values for the Operating System Dependent (OSD) file processing specifications string option, referred to in the "SQL*Loader Control File Reference" chapter of *Oracle8 Utilities*.

Processing Option	Description
""[1]	Stream record format in which each record is terminated by a newline character. The maximum record size is 48 KB.
"FIX n"	Fixed record format in which each record is exactly *n* bytes long. If the record is terminated by a newline character, the newline character must be the *n*th byte.
"VAR xxxx"	Load variable length records. Specify the OSD "VAR *recsizehint*" in the control file for this option to take effect. The *xxxx* gives an estimate of the average record size to SQL*Loader so that it can approximate buffer sizes accurately and not waste memory. The default length is eighty characters. The *xxxx* does *not* specify how many leading bytes of length are included in each record. It only acts as a hint to SQL*Loader. Each record must always be preceded by five ASCII bytes containing the length of the remainder of the record. For example, a record must look like the following: `00024This is a 24 byte string` Any whitespace, carriage returns, or linefeeds at the end of the record are ignored unless specifically included in the byte count in the length field.

[1] Two double quote characters with no space in between.

Direct Path Option

SQL*Loader includes a direct path option that bypasses Oracle8 Enterprise Edition redo log and data verification features, thereby decreasing loading time. Use the direct path option with data files known to be error free.

Control File Conventions

When preparing a SQL*Loader control file (.CTL), you must follow certain syntax and notational conventions. When specifying datatypes in the SQL*Loader control file, note that the default sizes of native datatypes are specific to Windows NT. You cannot override these defaults in the control file.

Native Datatypes	Default Field Length
DOUBLE	8
FLOAT	4
INTEGER	4
SMALLINT	2

Additional Information: For a complete list of options and instructions on using SQL*Loader, see *Oracle8 Utilities*. The directory *ORACLE_HOME*\RDBMS80\LOADER contains a number of examples on the use of SQL*Loader.

Using Windows NT Tools

The following Windows NT tools can be used to administer an Oracle8 database:

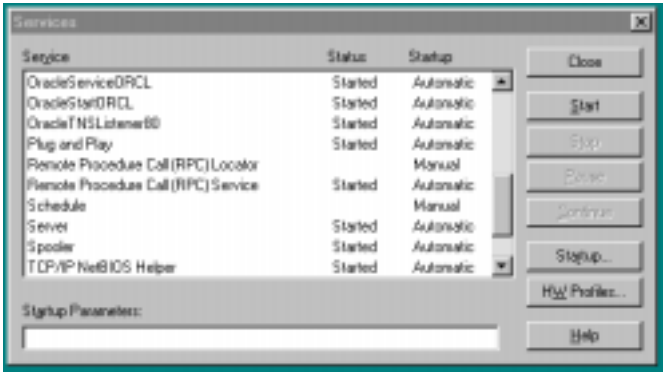
- Control Panel
- Event Viewer
- Performance Monitor
- Registry
- User Manager

Control Panel

The Control Panel enables you to modify system options such as computer services. A service is an executable process registered in the registry and administered by Windows NT. The registry automatically tracks and records security information for each service you create.

Which Oracle8 Services Appear in the Control Panel?

When you install the Oracle8 database and other products, Oracle services are created and displayed in the *Services* dialog box:



Use the *Services* dialog box to start, stop, pause, or continue each of the Oracle services available on the computer, and to pass startup parameters to the service.

Oracle services are the same as Windows NT services. In order to connect to and use an Oracle instance, an Oracle service is created during the database creation process and associated with the Oracle8 database

Once a service is created with your Oracle8 database, the service can run even while no user is logged on. This is because your Oracle8 database starts each instance as a service. This feature enables you to maintain workstation security while running your Oracle8 database.

You can now have multiple, active Oracle home directories on a single computer. This affects the naming conventions for Oracle services. See "Managing Oracle Services" on page 10-2 and Chapter 6, "Using Multiple Oracle Homes" for additional information.

> **Additional Information:** See Chapter 10, "Administering a Database", for specific instructions on using the Control Panel to start and stop Oracle8 database services. See also "Step 1: Start Oracle Services on Managed Oracle8 Database" on page 8-7, for specific instructions on using the Control Panel to start the Oracle Intelligent Agent service.

Event Viewer

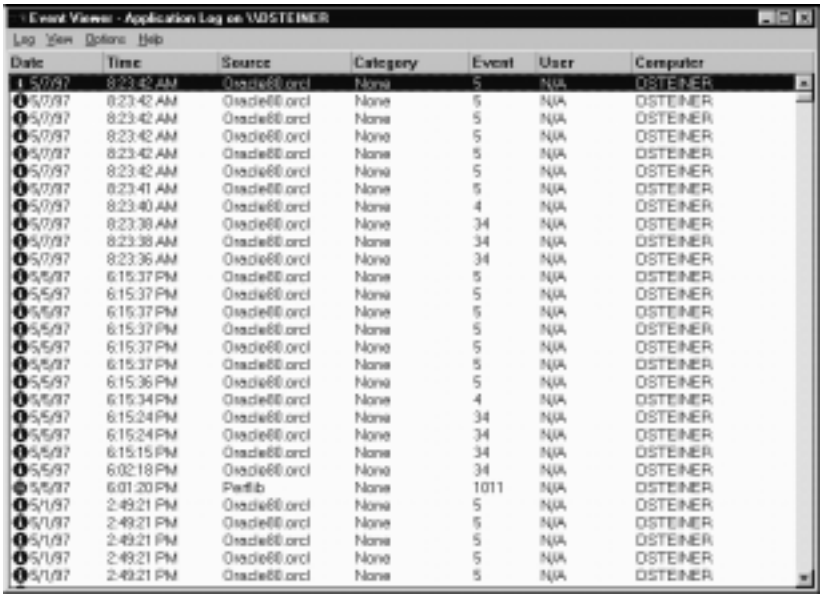
Event Viewer enables you to monitor events in your system. An event is an important occurrence in the system or application (such as your Oracle8 database) that requires user notification. While messages for major events can display on-screen as you work at your computer, events not requiring your immediate attention are recorded by Windows NT in the Event Viewer log file. You can then view this information at your convenience.

What Oracle8 Database Events Are Monitored?

Event Viewer can be used to monitor Oracle8 database events, such as:

- initialization of the System Global Area (SGA) for the active instance
- initialization of the Program Global Area (PGA) for the background processes of the active instance
- connection to the Oracle8 database with the CONNECT INTERNAL command

In addition, the operating system audit trail is logged to Event Viewer. The figure below shows Event Viewer displaying Oracle8 database events. Double-click an entry to find out specific information about an event.



Additional Information: See "Using the Event Viewer" on page 12-10, for specific instructions on accessing and using Event Viewer to monitor Oracle8 database events.

Performance Monitor

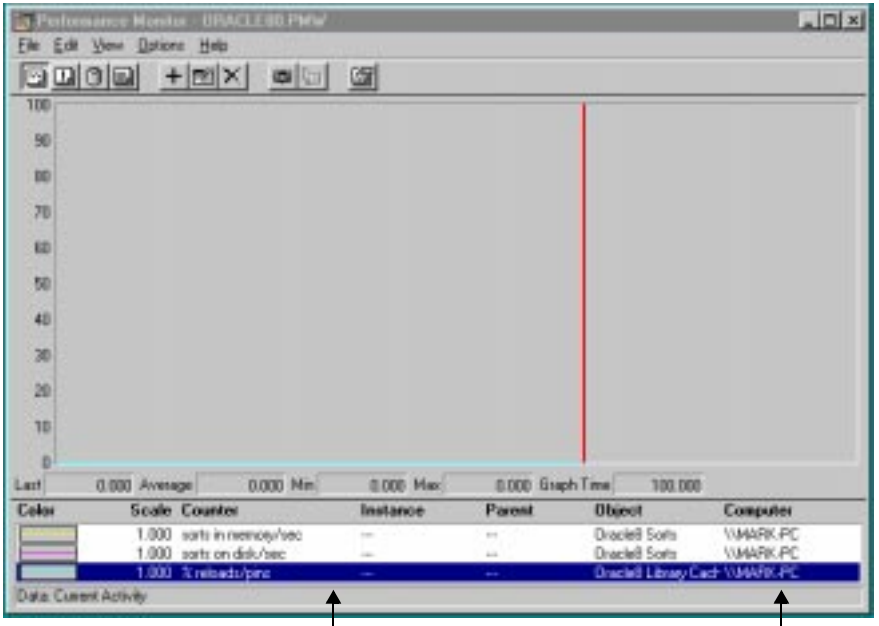
Performance Monitor measures computer performance. This tool enables you to view the performance of processors, memory, cache, threads, and processes. Performance information provided includes device usage, queue lengths, delays, throughput measurements, and internal congestion measurements. This information is provided in the form of charts, alerts, and reports.

What Oracle8 Database Information is Monitored?

If you install Oracle8 Performance Utility from your Oracle8 Enterprise Edition for Windows NT CD-ROM, you can use Performance Monitor to monitor key Oracle8 database information, such as:

- Library Cache
- Buffer Cache
- Data Dictionary Cache
- Redo Log Buffer Cache
- Thread Activity

You can use your findings to improve database performance. The figure below shows Performance Monitor monitoring Oracle8 database objects listed at the bottom of the screen:



Additional Information: See "Using Oracle8 Performance Monitor" on page 12-3, for specific instructions on accessing and using Performance Monitor to monitor Oracle8 database performance.

Registry

The Oracle8 database stores its configuration information in a structure known as the registry. You can view and modify this configuration information through the registry editor. The registry contains configuration information for your computer, and must not be accessible for editing by inexperienced users. Only experienced administrators should view and change this information.

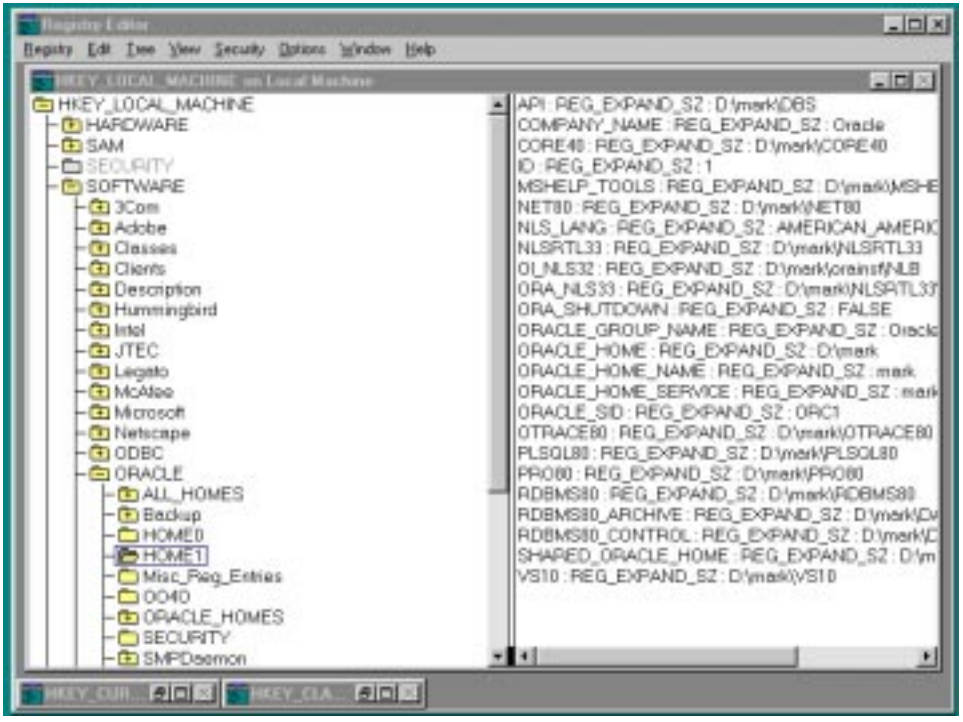
The registry editor displays configuration information in a tree-like format consisting of four keys (or folders). These keys are shown in the tree view in the left-hand window. In the right-hand window, the parameters and values assigned to that key are displayed.

What Database Parameters Are Configured?

When you install products from your Oracle8 Enterprise Edition for Windows NT CD-ROM, configuration parameters are automatically entered in the registry. These parameters are read each time your Windows NT computer is restarted and whenever an Oracle product is launched. These parameters include settings for:

- Oracle home directory
- Language
- Company name
- Oracle home subdirectories for individual products
- Individual products such as SQL*Plus
- services

The figure below shows some of the Oracle8 database configuration parameters in the registry:



Additional Information: See Appendix C, "Configuration Parameters and the Registry" for definitions of Oracle8 database configuration parameters and specific instructions on using the registry to modify Oracle8 database configuration parameters.

User Manager

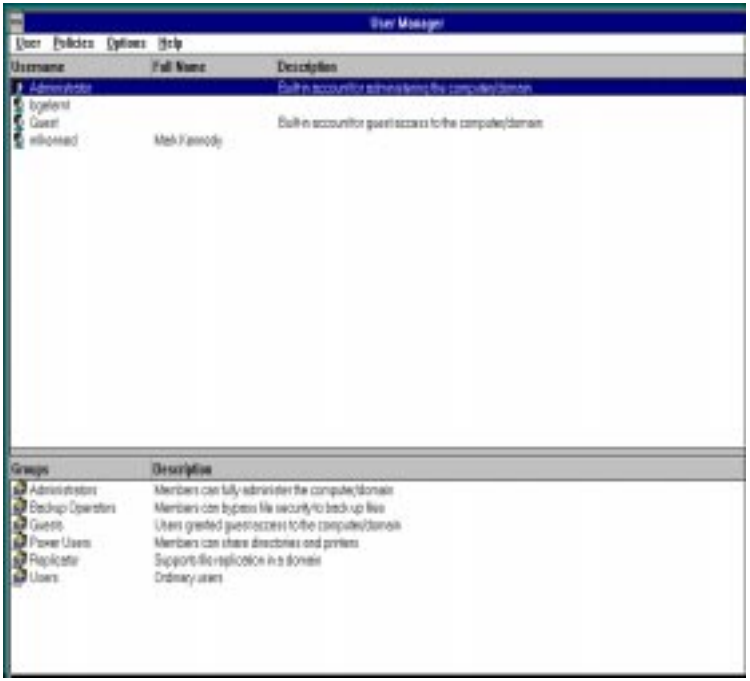
User Manager enables you to manage Windows NT computer security and create user accounts.

What Oracle8 Database Tasks Can User Manager Perform?

With User Manager, you can:

- Grant Oracle8 database roles
- Use operating system authentication for user accounts
- Create an NT user account that enables you to make secure client connections to Oracle8 Enterprise Edition without a password

The figure below shows User Manager:



Additional Information: See Chapter 11, "Authenticating Database Users with Windows NT" for specific instructions on using User Manager to perform Oracle8 database administration.

4

Oracle Enterprise Manager Overview

This chapter provides an overview of Oracle Enterprise Manager, Oracle's suite of products for managing Oracle8 databases over a distributed network.

Specific topics discussed are:

- Oracle Enterprise Manager Overview
- Oracle Enterprise Manager Components

Oracle Enterprise Manager Overview

Oracle Enterprise Manager enables database administrators (DBAs) to manage databases distributed across a network from a centralized Console. Database management is performed through an easy-to-use graphical user interface (GUI). From the Console, you can:

- Administer, diagnose, and tune multiple databases distributed across a network.
- Distribute software to multiple servers and clients.
- Accommodate growing distributed environments by easily scaling upwards to maintain performance and automate routine tasks.
- Automate remote task execution by scheduling jobs on multiple databases simultaneously or at varying time intervals.
- Schedule and run tasks such as remote database backups or report execution at off hours, providing the kind of "lights out" management vital in a large, distributed environment.
- Remotely monitor critical database and system events that you define, have detected events represented graphically on the Console (or be notified through e-mail or paging), and specify for corrective actions to be performed in response to an event.
- Run integrated third-party applications and tools.
- Accommodate both large database configurations and environments with numerous databases.
- Administer multiple databases simultaneously in separate windows.
- Localize task execution, so that tasks are completed even during network downtime. Messages are queued locally and saved until they can be delivered, even if a network connection is down.
- Allow DBAs single logon access to particular databases by storing their privileges in a credentials file used to manage connections. When connecting to a database from the Console, credentials are transparently passed, so you do not have to log in repeatedly.

Oracle Enterprise Manager Components

This section describes the components that enable Oracle Enterprise Manager to manage your distributed database network:

- Oracle Enterprise Manager Console Features
- Common Services for Managing Databases
- Integrated Applications

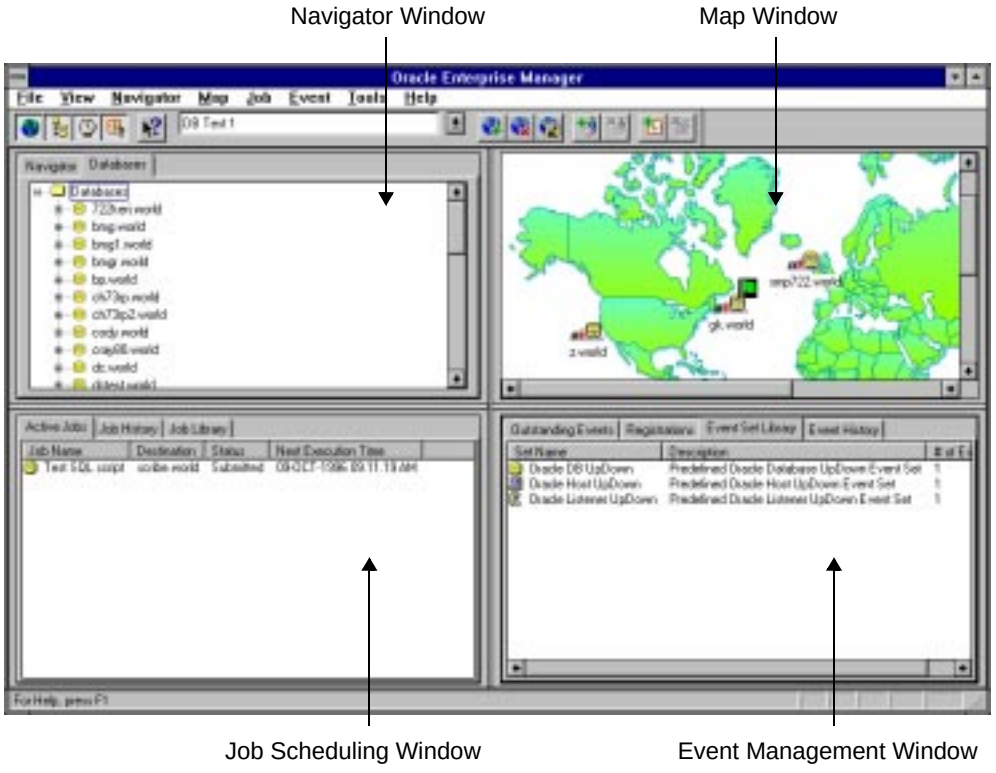
Oracle Enterprise Manager Console Features

The Oracle Enterprise Manager Console provides a central point of control through a GUI that provides drag and drop systems management. The Oracle Enterprise Manager Console consists of:

- Menus that primarily manipulate objects in the Console windows
- Toolbars that provide graphic icons that represent most menu items
- Tools palette for executing applications and utilities
- Four windows that provide a general view of the system being managed and an interface to the Oracle Enterprise Manager common services (described later in this chapter)

The menus, toolbars, and tools palette are context-sensitive. Integrated applications can also be launched from the Console. The menu options that display depend on which Console window is active. The tools available in a palette depend upon the type of service selected in the Navigator or Map windows. Press F1 to view the options.

This figure shows the four Console windows:



See *Oracle Enterprise Manager Administer's Guide* for information on using the Console menus, toolbars, tools palette, and windows. Brief descriptions of the four windows are provided in the following table.

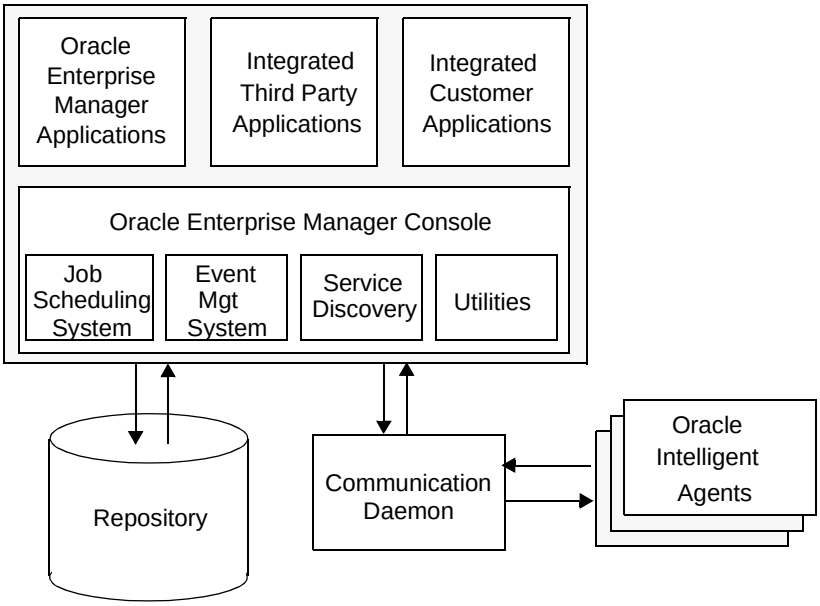
Window	Description
Navigator	The Navigator Window provides a hierarchical tree view of the network's nodes and services, and any objects they contain. This enables easy object manipulation of all objects in the system. (Objects include nodes, databases, listeners, users, roles, and profiles. A node contains databases and listeners. A database contains users, roles, and profiles.) Each type of object in the Navigator tree list is identified by an icon and a name. An object in the tree can also be copied by *dragging* and *dropping* it. For example, you can drag and drop users from one database to another.
Map	The Map Window provides a customized, graphical representation of key objects (such as databases) created by an administrator to manage and monitor a subset or group of objects in the system. Objects can be grouped based on any criteria, simplifying all operations performed on the group members. The map is useful for environments with many databases and for visually representing problems detected by the Event Management System.
Job Scheduling	The Job Scheduling Window enables you to automate repetitive tasks and provide the kind of "lights out" management vital in a large, distributed environment. You can schedule or cancel a job and view its status, or review historical information about jobs. You can also create and manage job scripts. See "Job Scheduling System" on page 4-8 for additional information.
Event Management	The Event Management Window enables you to create and register event sets, modify or cancel registrations, view the status of services being monitored, view summary information about events that have occurred, and further manage event information. You can choose to have the events of interest represented graphically on the Console when they are detected. The system can also notify you through e-mail or numeric and alphanumeric paging. The Oracle Enterprise Manager Console provides support for paging and e-mail when a preregistered event is encountered. The Console currently supports alphanumeric paging systems that use the Telocator Alphanumeric Paging (TAP) protocol for automatic paging and both the Simple Mail Transfer Protocol (SMTP) and Mail Application Programming Interface (MAPI) for e-mail notification.

Common Services for Managing Databases

Oracle Enterprise Manager has the following set of common services that help you manage Oracle8 databases throughout the network:

- Oracle Intelligent Agent and Communication Daemon
- Service Discovery
- Job Scheduling System
- Event Management System
- Repository
- Security

The figure below shows how these common services work together to perform distributed database management across a network. Each common service is then described.



Oracle Intelligent Agent and Communication Daemon

The Oracle Enterprise Manager uses Oracle Intelligent Agent and the communication daemon to manage Console tasks such as scheduling and running remote jobs, and monitoring events on remote sites. The Oracle Enterprise Manager is installed on a Windows NT, Windows 95, or Windows 98 Console workstation. Oracle Intelligent Agent is installed on each node with an Oracle8 Enterprise Edition for Windows NT database to be managed.

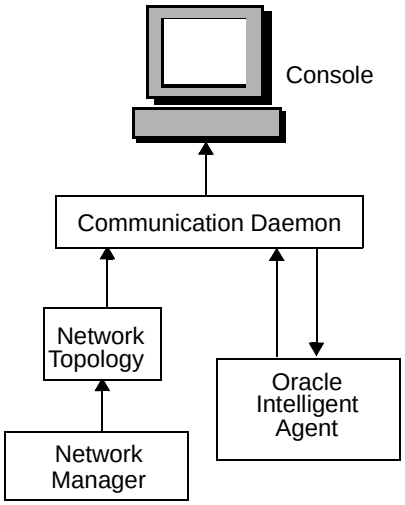
The communication daemon runs on the Console and communicates with Oracle Intelligent Agent to manage jobs and events.

Oracle Intelligent Agent is effective, nonintrusive, and functions as the executor of jobs and events sent by the Console through the communication daemon. High availability is ensured since Oracle Intelligent Agent can function regardless of the status of the Console or network connections. Oracle Intelligent Agent is responsible for managing and completing tasks requested from the Console workstation by the Oracle Enterprise Manager. Once installed, Oracle Intelligent Agent:

- listens for and responds to job requests initiated from the Oracle Enterprise Manager Console workstation
- schedules job requests (requests can include detecting and correcting abnormal conditions, performing standard database administration procedures, and monitoring events)
- executes the job request

Service Discovery

The communication daemon uses the dynamic discovery feature to identify nodes and services on the network. The figure below illustrates this process:



Job Scheduling System

The Job Scheduling System enables you to schedule and manage job tasks on remote sites. The Job Scheduling System, communication daemon, and Oracle Intelligent Agents work together to schedule and execute jobs. Use the Job Scheduling System to perform asynchronous tasks on multiple sites without having to maintain connections to all those sites. In addition, jobs can run simultaneously on different nodes in the system. See the *Oracle Enterprise Manager Administrator's Guide* for information on scheduling and managing jobs.

The process for scheduling a job is:

1. From the Console Job system, submit a job that you have set up.
2. The communication daemon sends the job information to the appropriate intelligent agent(s).
3. If a site or its agent is down, the communication daemon queues the job. Once the site can be contacted, the daemon submits the queued job to the agent.
4. The agent executes the job on schedule.
5. The agent returns any related job messages back to the daemon for display in the Console.

The Job Scheduling System, communication daemon, and Oracle Intelligent Agents work together to schedule and execute the job. You can use the Job Scheduling System to perform asynchronous tasks on multiple sites without having to maintain connections to all those sites. In addition, jobs can run simultaneously on different nodes in the system.

The features of the Job Scheduling System are described in the table below:

Feature	Description
Variety of predefined job tasks	Schedule and run jobs on remote sites throughout the network, including: ■ Backing up a database ■ Starting up or shutting down databases or listeners ■ Running SQL scripts or operating system programs You can also submit your own custom jobs to the Job Scheduling System.
Stored and forwarding job scheduling	Submit a job once, regardless of the number of nodes on which the job runs or how often it must be executed. Oracle Enterprise Manager ensures that the job is run on schedule on all specified databases, and keeps a history of the job and record of the job's status. You can view information about the job in the Job Scheduling Window. (This is because the task of submitting and managing jobs is centralized in the Console.) To schedule a job, you do not need to connect to the node on which the job runs. Instead, submit the job from the Console and specify the nodes or services on which it runs. When you submit a job to one or more destinations, it is possible that any one of those sites may be down. If a site or its Oracle Intelligent Agent is down, the communication daemon queues job requests not delivered to the sites. Once the site can be contacted, the daemon submits the queued job to the agent.
"Lights out" management	Automate repetitive and periodic tasks and problem correction. If the job has to be executed periodically, the agents reschedule the job without your intervention. Messages about a job's status are reported back to the Console. When you register an event to be monitored by Oracle Enterprise Manager, you can specify a *fixit* job, which is executed to correct the problem if the event occurs.

Feature	Description
Cross-operating system job scripts	Jobs are implemented as Tool Command Language (Tcl) scripts. Tcl is a scripting language used to write both job and event scripts. Oracle has also extended Tcl (OraTcl) to include database-specific commands. With OraTcl, you can: ■ Invoke operating system facilities, such as programs or shell scripts ■ Execute SQL and PL/SQL scripts ■ Start up and shut down Oracle databases ■ Communicate with Oracle Intelligent Agent Although you submit a job from the Console, the job scripts reside on the agent nodes. Because the manner in which a job is implemented can depend on the operating system, each agent keeps its own set of job scripts. This enables you to submit a job, such as backing up a database, without worrying about the specifics of the operating system. For example, you can select a group of databases residing on Windows NT computers, and send one backup job request to back up the databases. The agents on those nodes run backup job scripts that are specific to their operating systems.
Composite jobs	Combine two or more predefined jobs (such as backing up a database and then running a script) into one *composite job*. Each of the predefined jobs contained in the composite job is called a task. Composite jobs can contain test conditions based on the success of a task. For example, if a composite job consists of two tasks, starting up a database and then running a SQL script, you can specify that the script be run only if the database was successfully started.

Feature	Description
Scalability	Run jobs efficiently on multiple remote nodes. When you submit a job to run on a remote node, all the information needed to run the job is transferred to the agent servicing the node. When the job is executed, it is run by the agent on that node, minimizing network traffic between the remote node and the Console and daemon. The only communication between the agents and the Console and daemon are the initial transmission of job information and any subsequent messages about job status changes. Because jobs are run independently by agents, you can submit any number of jobs on multiple nodes without affecting the Console. For example, you can submit several jobs and then immediately start another task without waiting for the agents to schedule the jobs. In addition, because there is an Oracle Intelligent Agent residing on each managed node, jobs can be run on multiple nodes simultaneously. For example, you can submit a job to run a report on multiple databases worldwide. The job is scheduled and run independently by the agent that services each database. Therefore, the jobs can be executed by their respective agents at the same time.
Security	Jobs are normally run with your preferred credentials; therefore, you cannot run jobs to perform functions that you could not perform if you were logged into the computer directly. Because jobs are categorized by service types, such as database or node, the Job Scheduling System knows which credentials to pass to the agent. ■ If the job runs on a node, the Job Scheduling System passes either your preferred credentials for the node or, if none are specified, the user name and password used when logging into the Console. ■ If the job runs on a service, such as a database, the Job Scheduling System also passes your preferred credentials to the service. A job can also be run with the agent's credentials. This flexibility enables a site to easily incorporate the Job Scheduling System's authentication methods with existing security policies.

Event Management System

The Event Management System enables you to monitor specific events at remote sites throughout the network, such as problems on a node or database. The process to register an event set is:

1. From the Console, register a predefined event set or a set that you created.
2. The communication daemon sends the event information to the appropriate intelligent agent(s).
3. The agent does the monitoring and alerts you if the event occurs.
4. Optionally, you can specify a *fixit* job to execute if the event occurs.

When an event occurs, you can be notified in various ways, such as e-mail or paging. Also, events are logged in the repository and can be viewed in the Console.

The features of the Event Management System are described in the table below:

Feature	Description
Proactive Events Management	Automate problem detection and correction in response to an event. This ensures that a problem is corrected before it noticeably impacts end-users. You can also specify a *fixit* job to be run in response to a particular event. For example, you can have the Event Management System monitor the tablespace TEMP in the database HR_DB and generate an alert if TEMP runs out of free space. You can also have a data file automatically added to TEMP if this event occurs.
Unsolicited Error Detection	Detect events with tools and applications independent of Oracle Intelligent Agents. These tools and applications can be integrated into the Event Management System and communicate directly with Oracle Intelligent Agents. For example, a third-party application can detect an event on a node and report that event to Oracle Intelligent Agent on that node. Oracle Intelligent Agent then sends the message back to the Console.
Event Scripts	As with jobs, events are OraTcl scripts stored on the Oracle Intelligent Agent node. Event scripts can save state information. Saving a state between executions of an event script enables Oracle Intelligent Agent to remember if it has already detected a certain event and eliminate redundant event messages to the Console. This also enables event scripts to maintain a history of a database and adjust to typical behavior. **Note:** Unlike job scripts, event scripts are run with the permissions of Oracle Intelligent Agent.

Feature	Description
Scalability	The Event Management System allows one person to monitor a large system. If you are responsible for 100 databases, you cannot connect to each database every day to check on performance. Using the Event Management System, you can effectively monitor all databases 24 hours a day, and be alerted if a problem is detected. The Event Management System also enables you to focus on select systems and events. This control is vital in a large system. Rather than monitor all sites or a large number of sites, you can pinpoint only those services you want to monitor. An administrator can monitor a large number of sites with minimal performance impact on the Console. Because Oracle Intelligent Agents perform the monitoring independent of the Console, an administrator can monitor many sites without slowing other tasks.
Predefined Event Sets	Standard pre-defined event sets are provided. Advanced event sets are included with the optional Diagnostics Pack. The standard pre-defined events are the fault management events: ■ Database up / down ■ Listener up / down ■ Node up / down Pre-defined event sets included with the Diagnostics Pack are: ■ Space management and resource usage events, such as a disk becoming too full or a tablespace running out of extents ■ Performance management events, such as a CPU load being abnormal or a database system statistic being too high See the *Oracle Enterprise Manager Performance Monitoring and Planning Guide* and Chapter 12, "Monitoring a Database".
Optimized Intelligent Agents	The optimized intelligent agent has been optimized to monitor large numbers of systems and events efficiently. Event tests are generally executed by the agent process directly and can be run quickly.

Repository

The Oracle Enterprise Manager Repository is a database accessible from the Console. The repository:

- consists of database tables
- holds information used by Oracle Enterprise Manager
- can be installed in any accessible Oracle database in the system

You can have more than one repository in your system. A user is associated with one repository.

The repository provides a centralized location for storing information about the state of the environment managed by Oracle Enterprise Manager from the perspective of each Console user. It contains information on:

- configurations
- jobs and events
- historical collections
- tuning recommendations
- preferred credentials for each user
- other information associated with each Oracle Enterprise Manager Console login.

See the *Oracle Enterprise Manager Administrator's Guide* for information on creating your own repository.

Security

Access to Oracle Services on the network is controlled by a set of user-defined, preferred credentials for the available nodes and services. Oracle Enterprise Manager caches the user authentication information in encrypted form in the repository and provides it as part of the connection request from the Oracle Enterprise Manager Console or Console-launched applications.

To access services, you must log in to the Console by using an authorized user name and password. Oracle Enterprise Manager manages the connections made on your behalf and ensures that others cannot perform operations they are not privileged to perform.

Integrated Applications

Oracle Enterprise Manager has an open architecture that enables software to be integrated with the Console. The design of these integrated applications:

- executes tasks quickly
- performs multiple tasks concurrently
- administers multiple databases simultaneously in separate windows
- centralizes DBA tasks in a single locale

This section describes the following integrated application features:

- Database Administration Applications
- Common Features
- Integrating Additional Applications

Database Administration Applications

Oracle Enterprise Manager includes a standard set of integrated database administration (DBA) applications that automate and simplify DBA tasks. These applications can be launched directly from the Console or the Administration Toolbar. In addition, third-parties can write applications that integrate into the Console, use the available common services, and launch from the Console. The applications available are described in the following table:

DBA Application	Description
SQL Worksheet	Enables you to enter SQL statements, PL/SQL code, and DBA commands dynamically, and run scripts that are stored as files. SQL Worksheet maintains a history of the commands entered, enabling you to edit and re-execute an earlier command without retyping it. You can drag a SQL file and drop it into a worksheet to load it. You can have multiple SQL Worksheets open at a time, each separate from others. Therefore, you can commit or roll back work in each worksheet independently.
Instance Manager	Enables you to start up and shut down databases, examine and edit initialization parameters, manage in-doubt transactions, and manage user sessions.
Storage Manager	Enables you to perform DBA tasks associated with managing database storage. These tasks include managing tablespaces and rollback segments, and adding and renaming data files. You can also launch database tools and utilities from Storage Manager.

DBA Application	Description
Backup Manager	Enables you to perform tablespace backups, create backup scripts guided by a backup wizard, and administer redo logs. The Backup Manager manages the following groups: ■ database ■ tablespace ■ data files The Backup Manager simplifies backups through the use of a backup wizard. The Backup Wizard enables you to specify the: ■ status of the database required to complete the backup ■ particular tablespaces of the database to be backed up ■ backup method to be used ■ name of the file that contains the backup job script you are creating using the Tablespace Backup Wizard
Security Manager	Enables you to create, alter, and drop users, roles, and profiles, and add multiple privileges and roles for database users. Security Manager controls the security of Oracle databases. Profiles and roles assigned to a set of users are in constant change; Security Manager simplifies making changes by providing security lists that an administrator uses to determine which profiles and roles have been assigned to a set of users. Use property sheets to determine the security parameters for each database. Required changes can be made quickly.
Schema Manager	Enables you to create, edit, and examine status, owner, creation date, and last date modified information for the following schema objects: ■ clusters ■ database links ■ functions and procedures ■ indexes ■ packages and package bodies ■ refresh groups ■ sequences ■ snapshots and snapshot logs ■ synonyms ■ tables ■ triggers ■ views

DBA Application	Description
Data Manager	Enables you to automate (through wizards) the transfer of data to and from an Oracle database. Data Manager also provides job tasks that can be submitted with the Job Scheduling System. The Data menu of Data Manager includes Export, Import, and Load wizard options for: ■ Exporting data to a file. This option transfers data from an Oracle database to an Oracle binary operating system file. The file can then be used with the import operation. ■ Importing data from a file. This option transfers data to an Oracle database that has been exported from another Oracle database. ■ Loading data from an external file. This option loads data from operating system files, such as text files, to an Oracle database.
Oracle Software Manager	Enables you to manage software from a central location across the enterprise with: ■ An integrated toolset for managing software in a distributed fashion ■ A next generation architecture that offers network scalability through an advanced client-agent-server paradigm ■ An easy-to-use GUI that allows administrators to easily run software configuration jobs and track assets across the entire network The Oracle Enterprise Manager / Oracle Software Manager (OSM) network comprises one or more Oracle Enterprise Manager / OSM installations, each administering *host* servers that contain Oracle Intelligent Agents. Oracle Intelligent Agent can have *clients* that are administered as part of the network. OSM uses a lightweight store-and-forward messaging system that keeps network traffic to a minimum. In the event of network problems, any message that is waiting to be sent, either from the Console or Oracle Intelligent Agent, is held until the network is back online. Communications between the Console and agents are not resource intensive; they require only one connection per agent. If a host becomes unavailable, the connection is freed.
Oracle Net8 Assistant	Enables you to administer configuration of Net8 products.
Replication Manager	Enables you to administer advanced replication environments that support an update-anywhere data model.

See the *Oracle Enterprise Manager Administrator's Guide* for information on using these tools.

Common Features

The integrated database administrator applications share some common features:

Feature	Description
Tree Lists	All tools have a tree list of managed objects similar to the Navigator tree list in the Console. For example, in the Security Manager, the tree list has containers for users, roles, and profiles. These containers can be expanded or collapsed by clicking the + or - icons to the left of the container.
Multi-column Lists	A multi-column list is displayed when you select a group container. Each row in the list provides a quick view of summary information about objects in the selected container. Additionally, you can select and alter items through their respective property sheets.
Property Sheets	A property sheet is a dialog box used to specify options when you are creating or altering a composite instance, such as a user or tablespace. A property sheet consists of one or more pages that are labeled with page tabs. By default, one page is open when the sheet is entered, but all pages show page tabs. To access another page, select its page tab.
Record and Play Back	The integrated applications also provide a "record and play back" mechanism that makes it easy to record a task and perform it at multiple locations. For example, if you want to assign several privileges to a set of users who exist on ten databases, use the Security Manager and the logging mechanism to record the granting of the privileges, then use the Job Control System to perform the assignment at the ten databases.
Basic/Advanced User Modes	Advanced Mode displays additional property sheets that enable you to access an application's advanced database administration features.

Integrating Additional Applications

Additional systems management applications are available for Oracle Enterprise Manager. These applications are available from Oracle Corporation and third-party software developers.

Examples of Oracle applications integration into Enterprise Manager are:

- Oracle Replication Manager
- Oracle Media Server
- Oracle Parallel Server
- Oracle Web Application Server
- Oracle Advanced Networking Option-Network Security and Single Sign-On Biometric Manager

5

Starter Database Contents

This chapter describes the contents of the Oracle8 Enterprise Edition starter database.

Specific topics discussed are:

- Starter Database Guide
- Starter Database Contents

Starter Database Guide

Oracle8 Enterprise Edition is installed when you select the:

- Oracle8 Enterprise Edition installation option
- Custom installation option, then select Oracle8 Enterprise Edition in the *Software Asset Manager* window

> **Note:** Oracle8 Enterprise Edition cannot be installed through the Oracle8 Client option.

Both these installation processes prompt you to install either of three types of database configurations:

- Typical Configuration (installs the starter database)
- Custom Configuration, which starts Oracle Database Assistant at the end of installation and enables you to create a custom database
- None, which means you must manually create a database by following the instructions in "Using BUILD_DB.SQL" on page 9-7

This table describes some of the features available with each configuration:

Database Feature	Typical Configuration	Custom Configuration
Type of Database Created	Automatically creates a fully preconfigured and ready-to-use starter database with default INIT*SID*.ORA file parameter settings.	Enables you to create your own database with customized INIT*SID*.ORA parameter settings. This option is only for Oracle database administrators (DBAs) experienced with advanced database creation procedures.
Database Name	Automatically named ORC*x*[1].	Your choice.
System Identifier (SID) Name	Automatically named ORC*x*[1].	Your choice.

Database Feature	Typical Configuration	Custom Configuration
Cartridges and Options	Both configuration types allow you to select the following cartridges and options for installation: ■ Oracle8 ConText Cartridge ■ Oracle8 Spatial Cartridge ■ Oracle8 Image Cartridge ■ Oracle8 Time Series Cartridge ■ Oracle8 Visual Image Retrieval Cartridge ■ Oracle Parallel Server Option ■ Oracle8 Partitioning Option ■ Oracle8 Objects Option	
Advanced replication (updatable snapshots)	Automatically installed.	Your choice.
User names, database files, and tablespaces	Automatically creates the user names, database files, and tablespaces described in "Starter Database Contents" on page 5-4.	Automatically creates the SYS, SYSTEM, SCOTT, DEMO, and DBSNMP user names and INTERNAL alias described in "Starter Database Contents" on page 5-4, but enables you to customize tablespace and database file settings and create an extra control file and extra tablespace named INDEX. An Oracle8 Cartridge user name is only created if you select that specific cartridge for installation when running Oracle Database Assistant.
Initial archiving mode	Set to NOARCHIVELOG	Your choice.

[1] When you install the Oracle8 database for the first time on a computer, your SID and database name are typically named ORCL. For each additional Oracle8 database installation on the same computer, the last letter of ORCL is replaced by a number and automatically incremented (that is, for a second Oracle8 database installation, the SID and database name are ORC1, for a third Oracle8 database installation, the SID and database name are ORC2, etc.).

Additional Information: You can still create a custom database manually. See Chapter 9, "Creating a Database" for additional information.

Starter Database Contents

The starter database you receive if you select the Typical Configuration database option contains the following features:

- User Names
- System Identifier
- Tablespaces
- Data Files
- Initialization Parameter File
- Redo Log Files
- Control File
- Data Dictionary
- Rollback Segments

User Names

Your starter database contains these user names:

User Name	Passwords	Description
INTERNAL	ORACLE is automatically the password if you installed your Oracle8 database using the Oracle8 Enterprise Edition option. If you installed your Oracle8 database using the Custom option, the password is whatever you entered when prompted during installation.	DBA user name with which to perform database administration tasks, including starting up and shutting down a database. **Note:** INTERNAL is *not* a true user name; it is an alias for the SYS user name and SYSDBA privilege. **Note:** INTERNAL uses the SYS schema, listed below, with additional SYSDBA privileges. See the chapter "The Oracle Database Administrator" in *Oracle8 Administrator's Guide* for more information.

User Name	Passwords	Description
SYS	CHANGE_ON_INSTALL	DBA user name with the following database roles: ■ AQ_ADMINISTRATOR_ROLE ■ AQ_USER_ROLE ■ CONNECT ■ DBA ■ DELETE_CATALOG_ROLE ■ EXECUTE_CATALOG_ROLE ■ EXP_FULL_DATABASE ■ HS_ADMIN_ROLE ■ IMP_FULL_DATABASE ■ RECOVERY_CATALOG_OWNER ■ RESOURCE ■ SELECT_CATALOG_ROLE ■ SNMPAGENT
SYSTEM	MANAGER	DBA user name with DBA database role.
SCOTT	TIGER	User name with CONNECT and RESOURCE database roles.
DEMO	DEMO	User name with CONNECT and RESOURCE database roles. Oracle Corporation recommends that you drop this account if it is not needed.
DBSNMP	DBSNMP	User name with CONNECT, RESOURCE, and SNMPAGENT database roles. If you want to drop this role and user, run CATNSNMP.SQL.
MDSYS[1]	MDSYS	Oracle8 Spatial Cartridge administrator user name.
ORDSYS[1]	ORDSYS	Oracle8 Image, Time Series, and Visual Information Retrieval Cartridges administrator user name with CONNECT and RESOURCE database roles.

[1] If you install the starter database through the Oracle8 Enterprise Edition option, MDSYS and ORDSYS are automatically created even if you do not select their Oracle8 Cartridges for installation.

Note: Change the passwords for the SYS, SYSTEM, MDSYS, and ORDSYS user names immediately after installation with the following SQL statement at the Server Manager prompt:

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

See Chapter 3, "Database Tools Overview" for information on starting Server Manager.

Note: If you create an Oracle8 database through the Custom Configuration option, the Oracle8 Cartridge user names described in the previous table are only created if you select the cartridges for installation with which each are used.

System Identifier

Each Oracle8 database has a SID. A SID is a unique name for an Oracle database instance that can be up to four alphanumeric characters in length.

For example, if the SID for an Oracle8 database is ORCL, each database file in the *ORACLE_HOME*\DATABASE directory has ORCL as part of its name (for example, CTL1ORCL.ORA, LOG1ORCL.ORA, and INITORCL.ORA). The multiple Oracle homes feature enables you to have multiple, active Oracle8 databases installed on a single computer. Each database requires a unique SID. To ensure that each SID is unique, the last letter of ORCL is automatically replaced by a number and incremented each time you install Oracle products into a different home (that is, for a second Oracle8 database installation, the SID is ORC1, for a third Oracle8 database installation, the SID is ORC2, etc.). See Chapter 6, "Using Multiple Oracle Homes" for further information. Because of this, the data files, initialization files, redo log files, and control files described below use a variable of *SID* in their names. When you see *SID*, substitute it with the SID for your Oracle8 database.

Tablespaces

An Oracle8 database is subdivided into smaller logical areas of space known as tablespaces. Each tablespace corresponds to one or more physical data files. The four tablespaces in the Oracle8 database contain the following types of data:

Tablespace	Consists of This Type of Data...
SYSTEM	The data dictionary, including definitions of tables, views, and stored procedures needed by the Oracle8 database. Information in this area is maintained automatically. The SYSTEM tablespace is present in all Oracle8 databases.
USER_DATA	Your application data. As you create and enter data into tables, you fill this space with your data.
TEMPORARY_DATA	Temporary tables and/or indexes created during the processing of your SQL statement. You may need to expand this tablespace if you are executing a SQL statement that involves a lot of sorting, such as ANALYZE COMPUTE STATISTICS on a very large table, or the constructs GROUP BY, ORDER BY, or DISTINCT.
ROLLBACK_DATA	Rolling back transactions that fail to complete normally. You may need to expand this tablespace if you have long-running or high-data-volume transactions.

Additional Information: See the chapter "Tablespaces and Datafiles" of *Oracle8 Concepts* and the chapter "Managing Tablespaces" in *Oracle8 Administrator's Guide*.

Data Files

Data files contain the contents of logical database structures such as tables and indexes. One or more data files form a logical unit of storage called a tablespace. A data file can be associated with only one tablespace, and only one database. The starter database contains the following four data files located in the *ORACLE_HOME*\DATABASE directory:

This Data File...	Is Contained in the Tablespace...
SYS1*SID*.ORA	SYSTEM
USR1*SID*.ORA	USER_DATA
TMP1*SID*.ORA	TEMPORARY_DATA
RBS1*SID*.ORA	ROLLBACK_DATA

Additional Information: See the chapter "Tablespaces and Datafiles" of *Oracle8 Concepts* and the chapter "Managing Datafiles" in *Oracle8 Administrator's Guide*.

Initialization Parameter File

The starter database contains one initialization parameter file located in the *ORACLE_HOME*\DATABASE directory:

Initialization Parameter File	Description
INIT*SID*.ORA	The parameter file INIT*SID*.ORA must exist for an instance to start. A parameter file is a text file containing a list of instance configuration parameters. The starter database includes a file called INIT*SID*.ORA that has preconfigured parameters. No edits are required to this file in order to use the starter database.

Additional Information: See Appendix B, "Oracle8 Database Specifications for Windows NT" of this guide. This appendix lists the Oracle8 database-specific initialization parameters for Windows NT and their default values. See *Oracle8 Reference* for further information on initialization parameters.

Redo Log Files

The starter database contains four redo log files located in the *ORACLE_HOME*\DATABASE directory, each 1 MB in size:

Database Files	Disk Size	Group	Description
LOG1*SID*.ORA	1 MB	4	Redo log files hold a record of all changes made to data in the database buffer cache. If an instance failure occurs, the redo log files are used to recover the modified data that was in memory. Redo log files are used in a cyclical fashion. For example, if four files constitute the online redo log, the first file is filled, then the second file, then the third file, and then the forth file. The first file is then re-used and filled, the second file is re-used and filled, and so on.
LOG2*SID*.ORA	1 MB	3	
LOG3*SID*.ORA	1 MB	2	
LOG4*SID*.ORA	1 MB	1	

Additional Information: See the chapters "Managing the Online Redo Log" in *Oracle8 Administrator's Guide* and "Recovering a Database" of *Oracle8 Backup and Recovery*.

Control File

The starter database contains one control file located in the *ORACLE_HOME*\DATABASE directory:

Control Files	Description
CTL1*SID*.ORA	A control file is an administrative file required to start and run the database. The control file records the physical structure of the database. For example, a control file contains the database name, and the names and locations of the database's data files and redo log files.

Note: Oracle Corporation recommends that you keep at least two control files (on separate physical drives) for each database and set the CONTROL_FILES initialization parameter to list each control file. See the chapter "Managing Control Files" of the *Oracle8 Administrator's Guide* for information on setting this initialization parameter value.

Data Dictionary

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

- Names of the Oracle8 database users
- Privileges and roles granted to each user
- Names and definitions of schema objects (including tables, views, snapshots, indexes, clusters, synonyms, sequences, procedures, functions, and packages)
- Integrity constraints
- Space allocation for database objects
- Auditing information, such as who accessed or updated various objects

> **Additional Information:** See the chapter "The Data Dictionary" of *Oracle8 Concepts* and "Static Data Dictionary Views" in *Oracle8 Reference.*

Rollback Segments

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

The starter database contains the following rollback segments:

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

Creating Control, Data, and Log Files on Remote Computers

Although it is possible for Oracle to access database files on remote computers using Universal Naming Convention (UNC), it is not recommended because of performance and network reliability concerns.

UNC is a PC format for specifying the location of resources on a local area network. UNC uses the following format:

```
\\server-name\shared-resource-pathname
```

For example, to access the file SYSTEM01.DBF in the directory C:\ORACLE\ORA81\ORADATA\ORCL on the shared server ARGON, you reference the file as:

```
\\ARGON\ORACLE\ORA81\ORADATA\ORCL\SYSTEM01.DBF
```

Note that the location of archive log files cannot be specified using UNC. If you set the LOG_ARCHIVE_DEST initialization parameter to a UNC specification, the database does not start and you receive the following errors:

```
ORA-00256: error occurred in translating archive text string '\meldell\rmdrive'
ORA-09291: sksachk: invalid device specified for archive destination
OSD-04018: Unable to access the specified directory or device
O/S-Error: (OS 2) The system cannot find the file specified
```

Ensure that you set the LOG_ARCHIVE_DEST initialization parameter to a mapped drive.

Note: An ORA-00256 error also occurs if you enter:

```
\\\meldell\rmdrive
```

or

```
\\\meldell\\rmdrive
```

Control files required the additional backslashes for release 8.0.4, but redo files and data files did not.

6

Using Multiple Oracle Homes

This chapter describes how you work with multiple Oracle homes.

Specific topics discussed are:

- Multiple Oracle Homes Overview
- What Is Different About a Multiple Oracle Home Environment?
- Which Products Are Multiple Oracle Home Enabled?
- Product Installation Recommendations
- Working with Multiple Oracle Homes

Warning: **If you quit Oracle installer after you have entered the name and location for an Oracle home (for example, you need to quit Oracle Installer because you have insufficient disk space in the location specified), you will not be able to specify a different location for that home until you identify and delete the HOME*ID*** **key and the ID*x*** **key that corresponds to that Oracle home from the registry. To do this:**

1. **Read the value of the ORACLE_HOME_NAME parameter for each HOME*ID*** **subkey in the HKEY_LOCAL_MACHINE\ SOFTWARE\ORACLE key until you find the value that matches the name of the Oracle home you need to delete.**
2. **Delete the HOME*ID*** **subkey you have just identified.**
3. **Delete the appropriate ID*x*** **subkey located in the HKEY_ LOCAL_MACHINE\SOFTWARE\ORACLE\ ALL_HOMES key where *x* has the same value as the *ID* in HOME*ID*. For example, if the HOME*ID*** **subkey for the home name you want to delete is HOME1, then the appropriate ID*x*** **subkey is ID1.**

For more information on the registry keys and subkeys, see Appendix C, "Configuration Parameters and the Registry".

Multiple Oracle Homes Overview

An Oracle home corresponds to the environment in which Oracle products run. This environment includes:

- location of installed product files
- PATH variable pointing to the products' binary files
- registry entries
- service names
- program groups

Oracle homes also have a name, and a language associated with them. You specify the name, location, and language of an Oracle home at installation.

Releases of Oracle for Windows NT and Windows 95 prior to release 8.0.4 supported single Oracle homes, allowing you to install and run Oracle products in a single Oracle home. Different releases of Oracle products could be installed in the same Oracle home *provided* they had different second-digit release numbers. For example, you could install release 7.2 products and release 7.3 products in the same Oracle home. However, you could not install multiple third-digit releases of the same products. For example, you could not install release 7.3.2 and release 7.3.3 releases of the same Oracle products on the same computer; one installation would overwrite the other.

The Multiple Oracle homes feature enables you to install one or more releases of Oracle products on the same computer in multiple Oracle homes. For example, with multiple Oracle homes, you can install release 8.0.6, 8.0.5, and 8.0.4 products in different Oracle homes on the same computer. You can still install different releases of Oracle products in the same Oracle home *provided* they have different second-digit release numbers.

Why Use Multiple Oracle Homes?

The main benefit of using multiple Oracle homes is that you can run multiple releases of the same products concurrently. For example, you can test an 8.*x*.*x* database patch, before you run your production database 8.*x*.*x* against it.

When using third-party tools on your computer, if one tool is certified against release 8.*x*.1.*x* while another tool is certified against release 8.*x*.2.*x*, you may want to use the multiple Oracle homes feature so that you can install each third-party tool in a separate home.

When Should I Not Use Multiple Oracle Homes?

If you have previously installed release 8.0.*x* software and have no reason to keep the old release, overwrite the existing release by installing the 8.0.6 products in the home used for the previous release.

> **Warning: Multiple Oracle homes functionality only works with releases 8.0.4 and higher. If you have, for example, release 7.3.3 products already installed on your computer, you cannot install release 7.3.4 products in a separate Oracle Home. However, you can install release 8.0.6, 8.0.5, or 8.0.4 in the same home in which release 7.3.3 or 7.3.4 is installed and the version 7 release will be left intact.**

What Is Different About a Multiple Oracle Home Environment?

If you decide to use multiple (versus single) Oracle homes, note these differences:

Element	First Oracle Home	Each Additional Oracle Home
Service Names	OracleTNSListener80	Includes the Oracle home name in service names, for example: Oracle*HOME_NAME*TNSListener80
Program Groups	Oracle for Windows NT	Appends the Oracle home name to the program group, for example: Oracle for Windows NT - *HOME_NAME*
Registry Entries	Located in HKEY_ LOCAL_ MACHINE\SOFTWARE\ ORACLE	Subkeys for each Oracle home added below the HKEY_LOCAL_MACHINE\ SOFTWARE\ORACLE subkey (HOME0, HOME1, HOME2, and so on). For more information on the registry keys and subkeys, see Appendix C, "Configuration Parameters and the Registry".
SID for starter database	ORCL	Only the first starter database on your computer is called ORCL. Additional starter databases use the naming convention ORC*x* or OR*xx* where *x* is a number appended to ensure the SID is unique.

Which Products Are Multiple Oracle Home Enabled?

The products included on your CD-ROM are classified as follows:

- Multiple Oracle Home Enabled
- Multiple Oracle Home Compliant
- Non-Multiple Oracle Home

Multiple Oracle Home Enabled

You can install products multiple times in multiple Oracle homes. Products are multiple Oracle home enabled unless they are listed in "Multiple Oracle Home Compliant Products" on page 6-6 or "Non-Multiple Oracle Home Products" on page 6-6.

Note: Oracle Intelligent Agent is a multiple Oracle homes enabled product. However, although it can be installed multiple times, only one version can be running at a time.

Multiple Oracle Home Compliant

You can install products into any Oracle home, but only once per computer. When installing any of these products, if other releases are detected on your computer, you are prompted to:

- continue installation without installing the product.
- quit the installation so that you can delete the existing release before proceeding to install the new release.

Multiple Oracle Home Compliant Products

When installing groups of products, if any of the products listed below are included in the group and already exist on the computer, they will not be installed. You must first deinstall pre-existing copies of these products (which may break other applications) before you can install them in a different home.

- Oracle Enterprise Manager
- Oracle Enterprise Manager SDK
- Oracle Enterprise Manager DB Admin Applications
- Oracle Administrator Toolbar
- Oracle Replication Manager
- Oracle Web Server Manager
- Oracle Security Server Manager
- Oracle SNMP Support
- Oracle File Packager
- Open Database Connectivity Driver (ODBC)
- Oracle Objects for OLE
- Oracle SNMP Agent
- Oracle Migration Assistant for Microsoft Access
- Oracle8 ConText Cartridge System Administration
- Oracle8 Performance Monitor
- Oracle Parallel Server
- All products that are dependent on any of the products listed above

Non-Multiple Oracle Home

You can only install these products into an old-style Oracle home (pre-8.0.4 Oracle home).

Non-Multiple Oracle Home Products

All Oracle release 8.0.3 products and all Oracle7 Products are non-multiple Oracle home products.

Product Installation Recommendations

Installing Newer Oracle Components into Older Oracle Homes

Can I install newer releases of Oracle components into an Oracle home that contains older releases of these components?

Do not install the following components unless you are upgrading the database:

Do Not Install Release...	Into an Oracle Home Release...
8.0.6, 8.0.5, or 8.0.4	8.0.3
8.0.6 or 8.0.5	8.0.4
8.0.6	8.0.5

If you install these releases into older Oracle homes, Required Support Files of the newer release overwrite the Required Support Files of the previous database installation, breaking the previous database.

Instead, install release 8.0.6, 8.0.5 and 8.0.4 components into separate Oracle homes rather than a previous Oracle home if you want to maintain multiple versions. The following is an example scenario.

I am not ready to upgrade my local release 8.0.5 database yet, but I want to use Oracle Enterprise Manager 1.6 included on the Oracle8 Enterprise Edition release 8.0.6 for Windows NT CD-ROM. I installed Oracle Enterprise Manager release 1.6 into the Oracle home where release 8.0.5 resides, but now my 8.0.5 database no longer works. What is wrong?

Products that depend on Required Support Files release 8.0.6 for example, Oracle Enterprise Manager release 1.6, cannot be installed into an Oracle home where a release 8.0.5 database already exists. Required Support Files release 8.0.6 overwrite Required Support Files release 8.0.5 and break the release 8.0.5 database.

If you want to install Oracle Enterprise Manager release 1.6 in the same Oracle home as your database, you need to upgrade your release 8.0.5 database to release 8.0.6. If you do not want to upgrade your database, Oracle Corporation suggests installing Oracle Enterprise Manager into a new Oracle home to avoid the Required Support Files release 8.0.6 overwriting the Required Support Files release 8.0.5. Since Oracle Enterprise Manager can only be installed in one Oracle home, you must deinstall it first before installing into a new Oracle home.

Working with Multiple Oracle Homes

Unless you specify otherwise at installation time, the Oracle home in which you installed products most recently is the first directory listed in your PATH (primary home). As such, it has priority over the other Oracle home entries in your PATH. If you invoke a product from the MS-DOS command prompt, the release of the product invoked will be that stored in the Oracle home listed first in your path, unless you specifically invoke a different release of the product by:

- specifying the full pathname to the release of the product you want to use at the command line
- changing your PATH so that the first entry points to the binary files for the product release you want to use. See "Changing the Value of PATH" on page 6-8 for more information.
- changing to the directory that contains the executable you want to use

Changing the Value of PATH

You can change the value of PATH:

- using Oracle Home Selector.
- at the system level. The new value you assign to PATH exists until you change the value of PATH again.
- at the command line. The value of PATH reverts to its previous value when you quit the session.

Note: The first two methods of changing the value of PATH are only valid if you are a member of the Administrators group. After you have changed the value of PATH, you must open a new MS-DOS window to make it active. The change is not reflected in already opened MS-DOS windows.

To change the value of PATH using Oracle Home Selector:

Oracle Home Selector is a graphical user interface (GUI) tool that enables you to edit your environment path to make an appropriate Oracle home directory your primary home. This tool can only be used when you have multiple, active Oracle home directories on a single computer.

1. Choose Start > Programs > Oracle for Windows NT - [*HOME_NAME*] > Oracle Home Selector.

   The *Oracle Home Selector* window appears.

2. Select the Oracle home that you want as the primary Oracle home from the drop-down list.

To change the value of PATH at the system level:

On Windows NT:

1. Choose Start > Settings > Control Panel.

   The *Control Panel* window appears.

2. Double-click the System icon.

   The *System Properties* window appears.

3. Click the *Environment* tab.

   The System Variables appear.

4. Edit the value of the PATH in the Value field and click OK to exit.

On Windows 95:

1. Open the AUTOEXEC.BAT file.
2. Edit the value of the PATH statement.
3. Reboot your computer.

On Windows 98:

1. Open the AUTOEXEC.BAT file.
2. Edit the value of the PATH statement.
3. Reboot your computer.

To change the value of PATH at the command line:

At the command prompt enter:

```
C:\> PATH PATHNAME;%PATH%
```

where *PATHNAME* is the full path to the binary files for the products you want to use. This change is valid for the current session only. If you want to change the value of your PATH more permanently, use the Oracle Home Selector or change the value of PATH at the system level. Both methods are described above.

7

Installing, Migrating, and Upgrading Databases

This chapter describes the options available to you when you have *existing databases* on your computer and want to install the latest release of Oracle8 Enterprise Edition. In particular, it describes how to coexist different database releases in the same Oracle home or in multiple Oracle homes, and how to migrate an Oracle7 database or upgrade an earlier Oracle8 database release to the current release of Oracle8 Enterprise Edition. This chapter also includes information on migrating a Microsoft Access database to an Oracle8 database.

Specific topics discussed are:

- Intended Audience
- What To Do With Previous Oracle Database Releases
- Database Coexistence and Multiple Oracle Homes Overview
- Migrating, Upgrading, and Downgrading Overview
- Export/Import Overview
- Version 8 and Version 7 Client/Server Configurations
- Installing Two or More Databases Into the Same Oracle Home
- Installing Databases Into Multiple Oracle Homes
- Migrating an Oracle7 Database to Version 8
- Upgrading an Oracle8 Database Release 8.0.x to 8.0.6
- Downgrading an Oracle8 Database to Release 8.0.x or Version 7
- Migrating a Microsoft Access Database

Intended Audience

Read this chapter if you have *existing* Oracle7 and/or Oracle8 databases on your computer and you want to install Oracle8 Enterprise Edition release 8.0.6. If you are installing Oracle8 Enterprise Edition on a computer that has no other Oracle database releases, you do not have to read this chapter.

> **Additional Information:** See *Oracle8 Enterprise Edition Installation for Windows NT* if you want to install Oracle8 Enterprise Edition on a computer containing no other databases.

The generic *Oracle8 Migration* guide is the primary source of migration information in the Oracle documentation set. Read the first three chapters of that guide for information on how to prepare your existing databases for migration before performing a migration. Information on how to run the various migration and upgrade utilities is also provided in the generic guide, but the focus is on UNIX. This chapter provides information on using these utilities on Windows NT.

What To Do With Previous Oracle Database Releases

If you already have Oracle7, or Oracle7 and Oracle8 databases on your computer and want to install release 8.0.6, the following options are available to you.

- Install release 8.0.6 in an Oracle home where an Oracle7 release 7.*x* database already exists (this procedure is known as *database coexistence*). Note that you cannot coexist Oracle8 release 8.0.6 and release 8.0.*x* in the same Oracle home; the 8.0.6 installation overwrites the 8.0.*x* installations.
- Install release 8.0.6 in a separate Oracle home on the same computer (this procedure is known as using *multiple Oracle homes*).
- Migrate release 7.*x* to release 8.0.6.
- Upgrade release 8.0.*x* to release 8.0.6.
- Use Export/Import utilities to physically copy data in the previous database release to a new release 8.0.6 database.

If you are not sure what option is best for you, read the following overview sections:

- Database Coexistence and Multiple Oracle Homes Overview
- Migrating, Upgrading, and Downgrading Overview
- Export/Import Overview

Database Coexistence and Multiple Oracle Homes Overview

Releases of Oracle for Windows NT and Windows 95 prior to release 8.0.4 only supported single Oracle homes, allowing you to install and run Oracle products in a single Oracle home. Different versions of Oracle products could be installed in the same Oracle home *provided* they had different second-digit release numbers. For example, you could install release 7.2 products and release 7.3 products in the same Oracle home (*database coexistence*). However, you could not install multiple third-digit releases of the same products. For example, you could not install release 7.3.2 and release 7.3.3 versions of the same Oracle products on the same computer; one installation would overwrite the other.

The multiple Oracle homes feature enables you to install one or more releases of Oracle products on the same computer in multiple Oracle homes. For example, with multiple Oracle homes, you can install release 8.0.6 products and 8.0.4 products in different Oracle homes on the same computer. You can still install different releases of Oracle products in the same Oracle home *provided* they have different second-digit release numbers. See Chapter 6, "Using Multiple Oracle Homes" for more information.

Migrating, Upgrading, and Downgrading Overview

This section explains the difference between migrating, upgrading, and downgrading, and lists the Oracle database versions that can be migrated or upgraded.

What is Migrating?

Migrating is the process of transforming *one database version to a later database version*. For example, transforming an Oracle7 database to an Oracle8 database is migrating the database system. The term migrating is also used in this guide to refer to the transformation of a Microsoft Access database to an Oracle8 database.

What is Upgrading?

Upgrading is the process of transforming *one database release to another database release of the same database version*. For example, transforming an Oracle8 database release 8.0.4 to release 8.0.6 is upgrading the database system.

What is Downgrading?

Downgrading is the process of transforming *an installed version of an Oracle database from a later release back into an earlier release*. For example, transforming an Oracle database from release 8.0.6 back into release 8.0.3 is downgrading, and transforming an Oracle database from version 8 back into version 7 is downgrading.

Migrating and Upgrading Using Multiple Oracle Homes

You can easily migrate or upgrade databases across multiple Oracle homes. If you use the graphical user interface (GUI) Oracle Data Migration Assistant, all database instances on your system are displayed in a drop-down list. You select the Oracle database instance you want to migrate or upgrade and the assistant takes care of any multiple Oracle homes issues.

If you use the command line tools, MIG80 to migrate, or a U*.SQL script to upgrade, you need to copy files from one Oracle home directory to another. You must also ensure the PATH variable is set correctly so that any Oracle database tools you run are started from the correct Oracle home directory.

Checklist of Database Release Numbers

Check that your Oracle database release can be migrated or upgraded directly to Oracle8 Enterprise Edition. This table provides a list of the database releases you can migrate or upgrade and the tools you can use to perform these tasks:

Oracle Database Release	Use This Tool...
Releases prior to 7.1.3.3.6	If the database version precedes release 7.1.3.3.6, migrate it to at least release 7.1.3.3.6 before using MIG80 or Oracle Data Migration Assistant to migrate it to release 8.0.6. See the documentation that accompanied your previous database release for information on how to migrate it to release 7.1.3.3.6.
Release 7.1.3.3.6 or later	MIG80 can migrate databases that are Oracle7, release 7.1.*x* or later to release 8.0.6. Oracle Data Migration Assistant migrates from release 7.1.3.3.6 or later to release 8.0.6.
Release 8.0.3.0.0 or later	SQL scripts executed in Server Manager can upgrade databases release 8.0.3.0.0 or later to the current Oracle8 database release. Oracle Data Migration Assistant upgrades from release 8.0.3.0.0 or later to release 8.0.6.

Export/Import Overview

An alternative method of migrating or upgrading is to:

1. Export your data from the source database using the Export Utility (EXP80). The export physically copies the data to the export dump file.
2. Create the version 8 database into which you will import the exported data.
3. Import the exported data into the new version 8 database using the Import Utility (IMP80).

The Export Utility puts all of the data in one large binary file that can require large amounts of disk space.

> **Additional Information:** See "Choose a Migration Method" in Chapter 2 "Preparing to Migrate" of *Oracle8 Migration* for information on when to use the Export/Import utilities for migrating a database. See "Export an Existing Database" on page 9-8 and "Import a Database" on page 9-17 for information on using these tools.

Version 8 and Version 7 Client/Server Configurations

Oracle7 and Oracle8 clients can communicate either with Oracle7 or Oracle8 databases. This functionality gives you maximum flexibility when designing your network and deciding when to:

- Install Oracle7 and Oracle8 Databases in the Same Oracle Home
- Install Oracle7 and Oracle8 Databases in Multiple Oracle Homes
- Install Oracle7 and Oracle8 Databases on Separate Computers
- Migrate an Oracle7 Database to an Oracle8 Database
- Upgrade an Oracle8 Database to the Current Oracle8 Database Release
- Migrate Oracle7 Clients to Oracle8

Consider the following database coexistence issues before you decide which of the above options is most suitable for your requirements:

- Oracle7 Database Applications
- Oracle7 Client Connections to Oracle8 Databases
- Oracle8 Client Connections to Oracle7 Databases

Oracle7 Database Applications

Can all my Oracle7 applications run on an Oracle8 database?

Most Oracle7 applications can run on an Oracle8 database. Some applications cannot run on an Oracle8 database unless you upgrade them to versions that support Oracle8 databases. If you have a combination of Oracle7 and Oracle8 applications, you may want to have an Oracle7 database and Oracle8 database exist on the same computer, until you have time to upgrade all your Oracle7 applications to Oracle8. Contact your application vendor to check if your third-party applications are supported with Oracle8 Enterprise Edition.

Oracle7 Client Connections to Oracle8 Databases

Check the following criteria to ensure successful Oracle7 client connections to an Oracle8 database. If the Oracle7 client and Oracle8 database are located in:

- **the same Oracle home:**

  install both SQL*Net Client 2.3.*x* and Net8 Server in this home

- **different Oracle homes on the same computer:**

  install SQL*Net Client 2.3.*x* in the Oracle7 client home and Net8 Server in the Oracle8 home

- **different computers:**

  install SQL*Net Client 2.3.*x* in the Oracle7 client home and Net8 Server in the Oracle8 home

If you are using these releases:

- **Oracle7 client release 7.3.4 and SQL*Net Client release 2.3.4:**

  you can connect to the Oracle8 database without specifying a service name. Oracle7 client automatically uses the Bequeath Protocol Adapter when connecting to a local Oracle8 database.

- **Oracle7 release 7.3.3 (or lower) and SQL*Net release 2.3.3 (or lower):**

  you need to create a service name using SQL*Net Easy Configuration or Oracle Network Manager in the SQL*Net Client version 2.*x* TNSNAMES.ORA file. Ensure you specify this service name in the connect string when connecting to the Oracle8 database. The Bequeath Protocol Adapter is not supported when connecting from an Oracle7 client (release 7.3.3 or lower) to an Oracle8 database.

Oracle8 Client Connections to Oracle7 Databases

Check the following criteria to ensure successful Oracle8 client connections to an Oracle7 database. If the Oracle8 client and Oracle7 database are located in:

- **the same Oracle home:**

  install both Net8 Client and SQL*Net Server 2.3.*x* in this home

- **different Oracle homes on the same computer:**

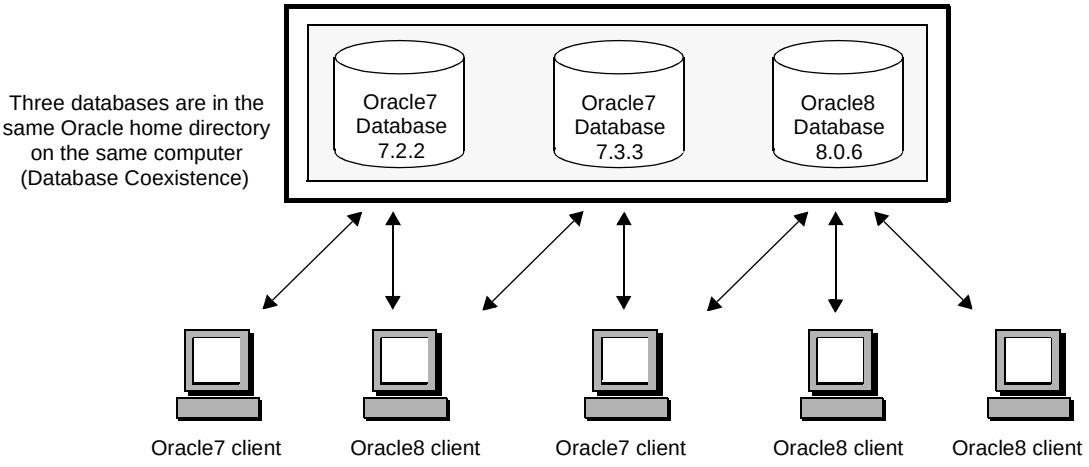
  install Net8 Client in the Oracle8 client home and SQL*Net Server 2.3.*x* in the Oracle7 home

- **different computers:**

  install Net8 Client in the Oracle8 client home and SQL*Net Server 2.3.*x* in the Oracle7 home

Install Oracle7 and Oracle8 Databases in the Same Oracle Home

Install Oracle7 and Oracle8 databases in the same Oracle home directory and have both Oracle7 and Net8 clients connecting to Oracle7 and Oracle8 databases. The figure below gives an example of this network configuration:



You can install different versions of Oracle databases in the same Oracle home *provided* they have different first or second-digit versions. For example, you can have release 7.2.*x*, 7.3.*x*, and 8.0.*x* databases in the same Oracle home.

You cannot install multiple third-digit releases of the same products. For example, you cannot install release 7.3.2 and release 7.3.3, or release 8.0.3 and release 8.0.4, in the same Oracle home; one installation overwrites the other.

Ensure that each database instance has a unique SID. In particular, be careful that you do not use the default SID ORCL for subsequent installations if you already have a starter database with the SID ORCL installed. If you do so, the services of the later installation overwrite the services of the earlier installation.

Install Oracle7 and Oracle8 Databases in Multiple Oracle Homes

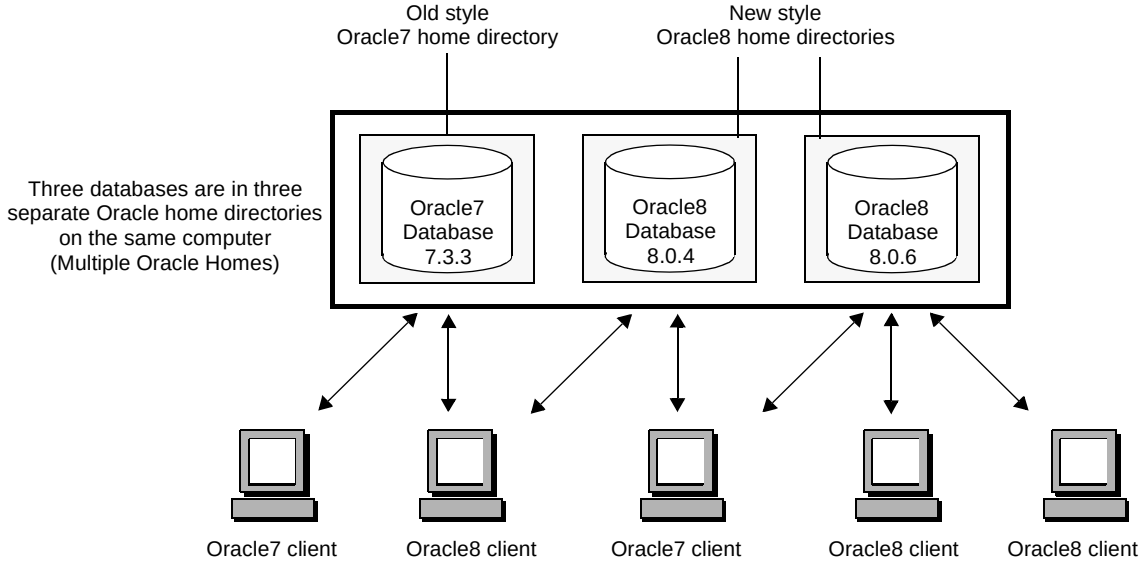
Install Oracle7 and Oracle8 databases in multiple (separate) Oracle homes and have both Oracle7 and Net8 clients connecting to Oracle7 and Oracle8 databases.

New Style Oracle Homes

Multiple Oracle homes functionality only works with releases 8.0.4, 8.0.5, and 8.0.6. These are known as new style Oracle homes.

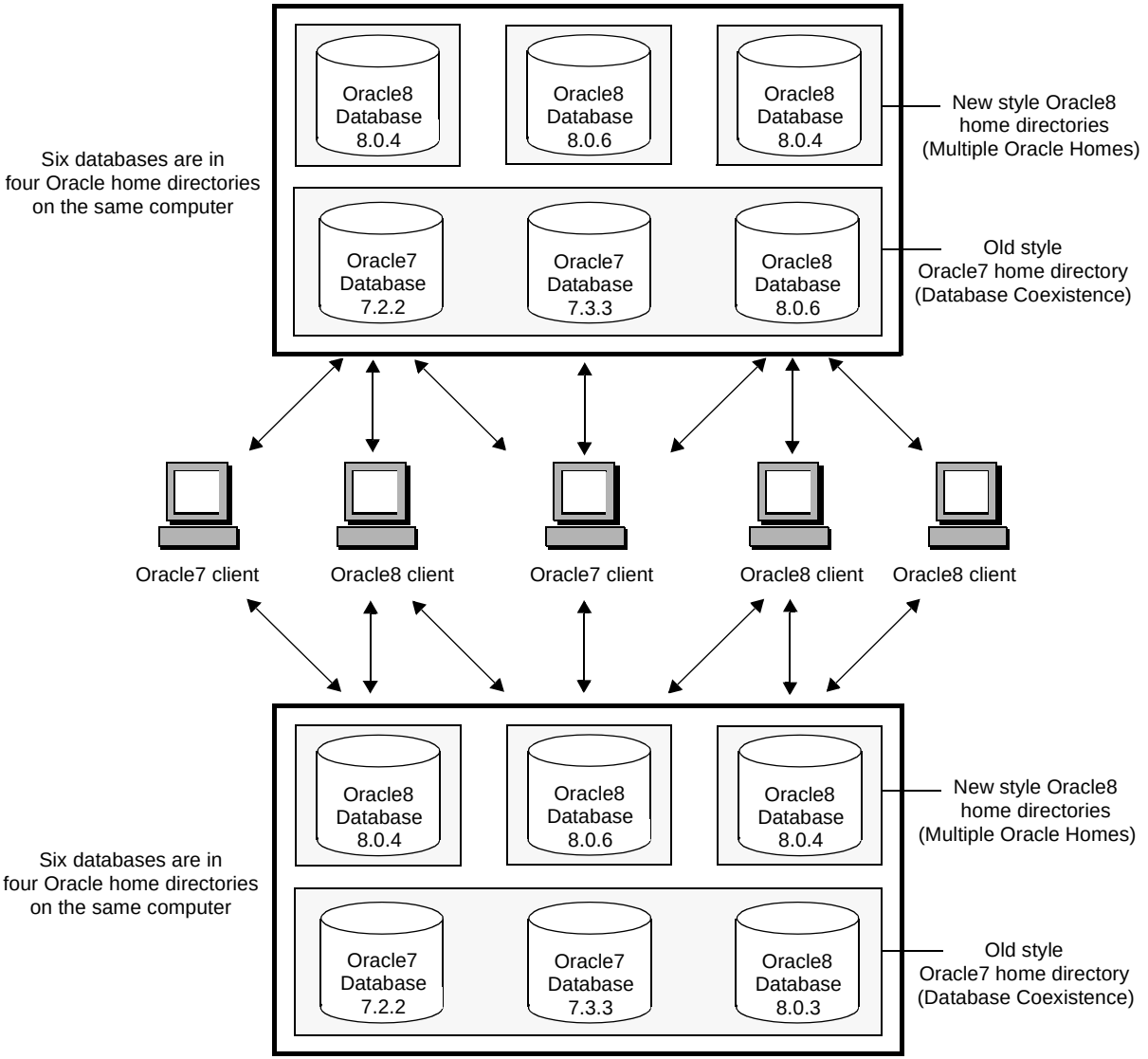
Old Style Oracle Homes

If you have, for example, release 7.3.3 products already installed, you cannot install any other release 7.*x* products in a separate Oracle home. Also, if you have release 8.0.3 or earlier 8.0.*x* products already installed, you cannot install any other of these products in a separate Oracle home. These are known as old style Oracle homes. The figure below gives an example of this network configuration:



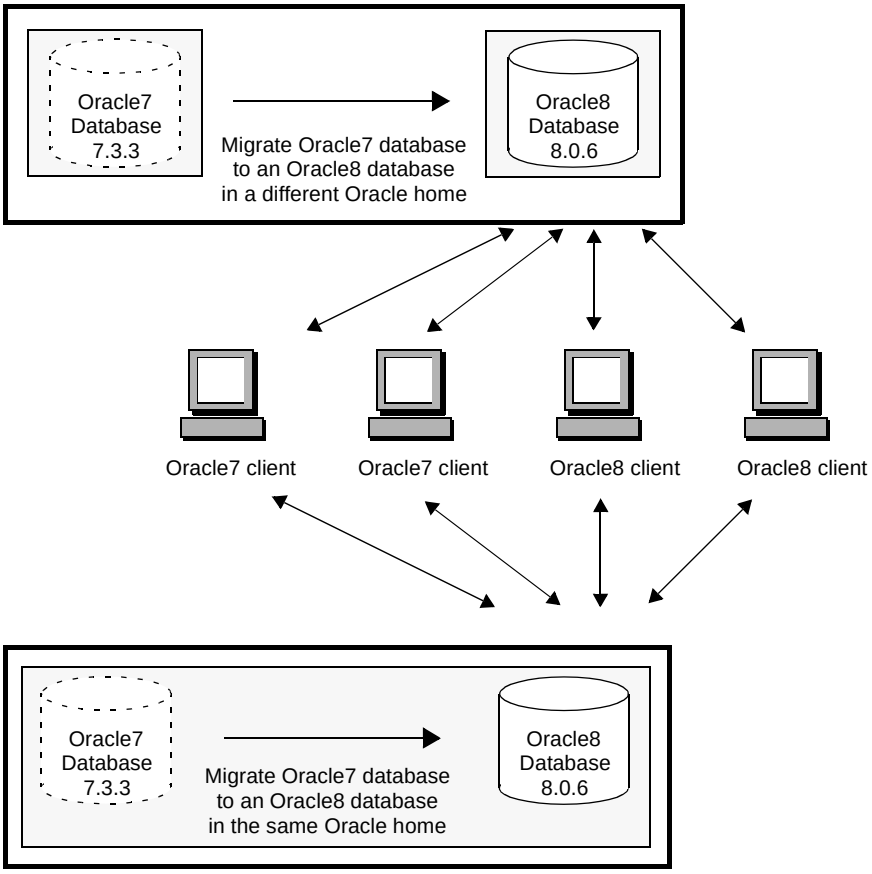
Install Oracle7 and Oracle8 Databases on Separate Computers

Install Oracle7 and Oracle8 databases on separate computers and have both Oracle7 and Net8 clients connecting to both databases. The figure below shows two computers and a number of Oracle7 and Oracle8 clients. On each computer you can have a mix of databases and products in both single and multiple Oracle homes.



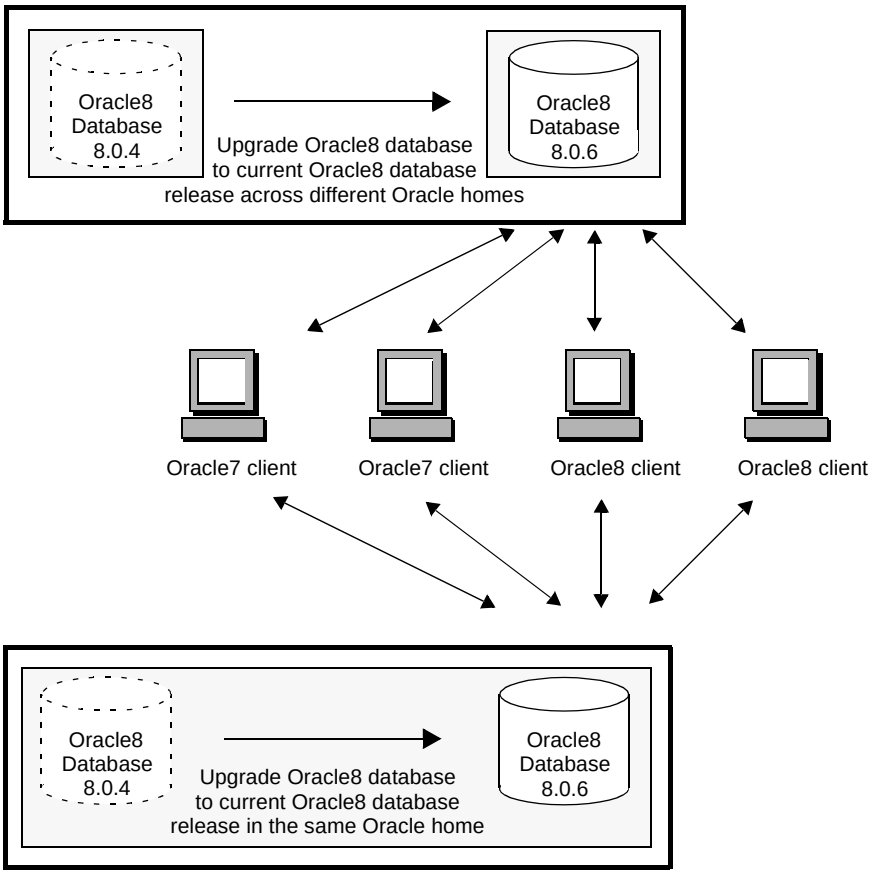
Migrate an Oracle7 Database to an Oracle8 Database

Migrate your Oracle7 database to an Oracle8 database and have both Oracle7 and Oracle8 clients connecting to the Oracle8 database. You can migrate your Oracle7 database to an Oracle8 database either in the same Oracle home or in a different Oracle home. See "Migrating an Oracle7 Database to Version 8" on page 7-17 for instructions. The figure below illustrates this network configuration:



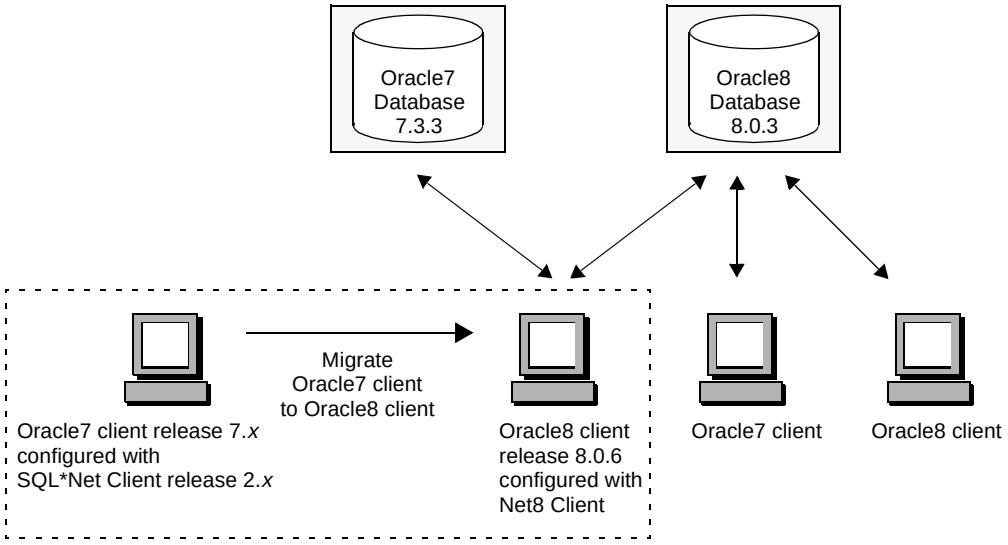
Upgrade an Oracle8 Database to the Current Oracle8 Database Release

Upgrade your Oracle8 database, for example, release 8.0.4 to release 8.0.6 and have both Oracle7 and Oracle8 clients connecting to the release 8.0.6 Oracle8 database. You can upgrade databases either in the same Oracle home or across different Oracle homes. See "Upgrading an Oracle8 Database Release 8.0.x to 8.0.6" on page 7-42 for instructions. The figure below illustrates this network configuration:



Migrate Oracle7 Clients to Oracle8

Migrate some or all of your Oracle7 clients to Oracle8 release 8.0.6 and migrate your Oracle7 database to an Oracle8 database or upgrade your Oracle8 database to the current Oracle8 release at a later date. See *Net8 Getting Started for Windows NT and Windows 95/98* for instructions. The figure below illustrates this network configuration.



Multi-Versioning

You can run different versions of Oracle databases on the same computer system at the same time. However, each version can only access a database that is consistent with its version. For example, if you have version 7 and version 8 of Oracle installed on the same computer system, the version 7 server can access version 7 databases, but not version 8 databases, and the version 8 server can access version 8 databases but not version 7 databases. The only way for a version 8 database to read version 7 database files is to perform a migration. You should be aware that after migration, the version 7 database will no longer be able to read the files.

Installing Two or More Databases Into the Same Oracle Home

In the following example, an Oracle7 release 7.3.3 starter database named ORACLE with a SID of ORCL is already installed in C:\ORANT. Now, create an Oracle release 8.0.6 database named PROD with a SID of PROD in C:\ORANT.

To install an Oracle8 database and Oracle7 database into the same Oracle home:

1. Ensure you have enough hard disk space and RAM for both databases. You need to add the system requirements for Oracle8 Enterprise Edition and Oracle7 Server to determine the total system requirements. See *Oracle8 Enterprise Edition Installation for Windows NT* for system requirements.
2. Ensure all Oracle7 services are stopped. See "Managing Oracle Services" on page 10-2 for information on how to stop services.
3. Install Oracle8 Enterprise Edition for Windows NT from the CD-ROM. See *Oracle8 Enterprise Edition Installation for Windows NT* for complete installation instructions.

   The *Oracle Installation Settings* dialog box appears.

   a. Do not enter a value in the *Name* field of the *Oracle Installation Settings* dialog box.

   b. Set the Oracle home directory location to the same directory where release 7.3.3 is already installed. In this example, enter C:\ORANT in the *Location* field of the *Oracle Installation Settings* dialog box. Click OK.

   The *Select Installation Settings* dialog box appears.
4. Select *Oracle8 Enterprise Edition* from the *Select Installation Options* dialog box, then click OK.

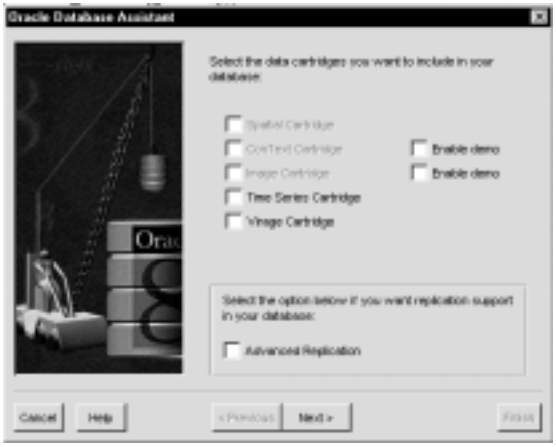
   The *Select Oracle8 Cartridge* dialog box appears.
5. Select any cartridges you are licensed to install, then click OK.

   The *Previous Version of Oracle Database Detected* dialog box appears indicating that Oracle Installer has detected an earlier version of the database. You are asked if you want to migrate your Oracle7 database to release 8.0.6 using Oracle Data Migration Assistant.
6. Click No. If you click Yes, Oracle Data Migration Assistant is launched at the end of installation. *Do not click Yes to run Oracle Data Migration Assistant while you are installing another database into the same Oracle home as an existing database.*

   The *Select a Starter Database Configuration* dialog box appears.
7. Select *Custom Configuration (allows you to create a customized database).*

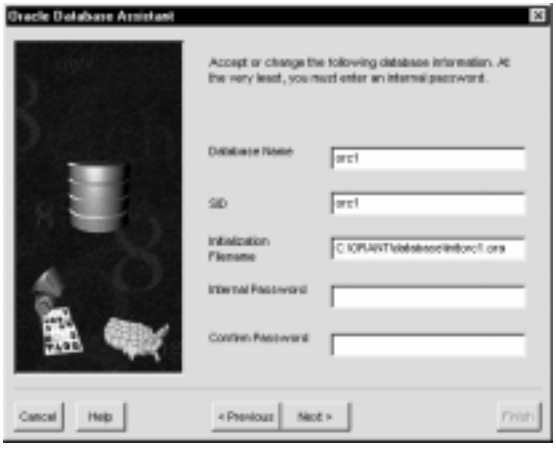
8. Complete Oracle8 Enterprise Edition installation. At the end of installation, the Oracle Database Assistant is launched.

   The following Oracle Database Assistant window appears:



9. Respond to instructions in each Oracle Database Assistant window, and click Next when you are ready to continue to the next window.

10. When the following Oracle Database Assistant window appears, you will notice that the Database Name and SID fields are automatically set to ORC1. Substitute PROD in both of these fields. Do not set the SID to ORCL, as you will overwrite the Oracle7 release 7.3.3 starter database.



   When you get to the last window, click Finish to start the creation of the PROD database. More documentation is included with the assistant Help.

Installing Databases Into Multiple Oracle Homes

In the following example, an Oracle7 release 7.3.3 starter database called ORACLE with a SID of ORCL is already installed in C:\ORANT. Now, install the Oracle release 8.0.6 starter database ORCL in a separate Oracle home directory called C:\ORANTv8 with an Oracle home name of TESTv8.

To install an Oracle8 database and Oracle7 database in multiple (separate) Oracle homes:

1. Ensure you have enough hard disk space and RAM for both databases. You need to add the system requirements for Oracle8 Enterprise Edition and Oracle7 Server to determine the total system requirements. See *Oracle8 Enterprise Edition Installation for Windows NT* for system requirements.
2. Ensure all Oracle7 services are stopped. See "Managing Oracle Services" on page 10-2 for information on how to stop services.
3. Install Oracle8 Enterprise Edition for Windows NT from the CD-ROM. See *Oracle8 Enterprise Edition Installation for Windows NT* for complete installation instructions.

   The *Oracle Installation Settings* dialog box appears.

   a. Enter the name of the new Oracle home in the *Name* field of the *Oracle Installation Settings* dialog box. In this example, enter TESTv8.

   b. Enter the location of the Oracle home directory where you want to install release 8.0.6. In this example, enter C:\ORANTv8 in the *Location* field of the *Oracle Installation Settings* dialog box. Click OK.

   The *Select Installation Settings* dialog box appears.
4. Select *Oracle8 Enterprise Edition* from the *Select Installation Options* dialog box, then click OK.

   The *Select Oracle8 Cartridge* dialog box appears.
5. Select any cartridges you are licensed to install, then click OK.

   The *Select a Starter Database Configuration* dialog box appears.
6. Select *Typical Configuration (allows you to install a pre-configured starter database).*
7. Complete Oracle8 Enterprise Edition installation.

   During installation of the release 8.0.6 database, Oracle Installer detects the listener of the previously installed release 7.3.3 database. To avoid conflicts of listening addresses (for example, the port number for TCP/IP), the new release 8.0.6 listener is not started and is set to Manual Startup mode. After installation is complete, modify the release 8.0.6 LISTENER.ORA file to resolve possible

conflicts in listening addresses, and then start the listener. This is required to enable the release 8.0.6 database to accept connections from clients. See *Net8 Getting Started for Windows NT and Windows 95/98* for information on how to modify the LISTENER.ORA file.

Migrating an Oracle7 Database to Version 8

This section describes how to migrate an Oracle7 database to the current Oracle8 database release. You can choose either of the following tools to perform a migration:

- Oracle Data Migration Assistant
- MIG80

Oracle Corporation recommends that new users use Oracle Data Migration Assistant to migrate databases because it is the easiest method to perform a migration. If you want to perform a migration manually using command line tools, use MIG80.

Before you start a migration using the assistant or MIG, read the following sections:

Ten Issues That Can Affect Oracle7 to Oracle8 Migration

The following table lists and describes the ten issues you should be aware of that can affect Oracle7 to Oracle8 migration.

Issues That Affect Migration	Description
1. Running out of space	■ Version 8 binaries may require as much as three times the disk space required by version 7 binaries. This requirement may cause you to run out of disk space during migration. It is very important that you read "System Considerations and Requirements" and "Prepare the Version7 Source Database for Migration" in *Oracle8 Migration* to find out more about this and other requirements before you migrate. ■ During migration, the data dictionary requires 50% more space to hold both Oracle7 and Oracle8 data dictionaries. Actual usage can be verified by running MIG in CHECK_ONLY mode.

Issues That Affect Migration		Description
2.	Duration of migration is unrelated to database size	The time it takes to migrate is not dependent on the size of the database, but on the number of objects in the data dictionary. For example, actual migration for a 3 1/2 GB database with 25,473 objects on a Sun E6000 with 20 CPUs, with datafiles stripped on the file system on 128 KB slices can take 1 1/2 hours. Remember to allow extra time for backing up and restoring database in case of problems.
3.	Avoiding problem areas	■ Check for usage of ROWIDs in both user columns as well as application code (including triggers & packaged procedures). These may require to be converted to use the DBMS_ROWID package. ■ Check the names of any Oracle7 database objects (for example, tables and columns) that use names that are key words or reserved words for Oracle8*i Enterprise Edition*. Usage of key words and reserved words can cause unexpected failures during migration. See Appendix C, "Oracle Reserved Words" of *Oracle8 SQL Reference* for a list of reserved words. ■ Certain version 7 initialization parameters are obsolete in version 8. Remove all obsolete parameters from the release 7.*x* INIT*SID*.ORA file that start a version 8 instance. Obsolete parameters may cause errors if used with a version 8 database. Also, alter any parameter whose syntax has changed in version 8. See Appendix B, "Changes to Initialization Parameters" of *Oracle8 Migration* for lists of new, changed, and obsolete parameters.
4.	Compatibility	Make sure that all Oracle product versions, operating system versions, and third-party software versions are certified against Oracle8. See "Overview" on page 2-2 for the list of supported Windows operating systems and versions. See "Oracle Products for Windows NT, Windows 95, and Windows 98" on page 2-5 for a list of supported Oracle product versions for this release.
5.	Invalid objects and lost statistics	Migration leaves all objects (packages, triggers, views, and so on) invalid except for tables. All other objects must be made valid again by recompilation. This can either be done manually (preferably by building a dependency tree before migration from dependency), otherwise this is done automatically as the objects are first accessed. The latter will of course slow down initial access. All estimated or calculated statistics are lost during migration. These need to be recalculated to ensure proper functionality of the Cost Based Optimizer. Some bitmapped indexes will get invalidated. Check all bitmapped indexes in the DBA_INDEXES table and recreate any that are marked as status unusable.
6.	Editing the registry	If you edit the registry for any reason during the migration process, you need to reboot your computer.

Issues That Affect Migration		Description
7.	Read-only tablespace confusions	Oracle7 read-only tablespaces are readable by Oracle8 and do not require any conversion. But to prevent Oracle8 rowid conversions to take place every time a table is accessed, the tablespaces in read-only mode should be made read-write. Perform full table scans on all tables in the tablespace. After the full table scans are complete, you can put the tablespaces in read-only mode again.
8.	The point of no return	You can return the database to an Oracle7 version up until the ALTER DATABASE CONVERT command is run. If a failure occurs during ALTER DATABASE CONVERT (when it is converting the physical file headers of the datafiles), you must restore the database from backup and rerun the migration. Do not open the database between running the migration and executing the ALTER DATABASE CONVERT command.
9.	Preventing large restores	To avoid restoring the entire database due to any failures during the ALTER DATABASE CONVERT, put all tablespaces, except SYSTEM and ROLLBACK into read-only or offline normal mode. This causes the ALTER DATABASE CONVERT command to only convert the datafile headers for SYSTEM and ROLLBACK. If any errors occur, you need only restore the datafiles for the SYSTEM and ROLLBACK and rerun the migration. If the migration is successful, the headers for the rest of the datafiles will be converted when they are read-write or online.
10.	Testing	Most migration problems can be avoided if a test migration is performed first. Performing a test migration helps raise any problems that can occur as well as letting you see the amount of time it takes to migrate. See "Test the Migration Process" in Chapter 2, "Preparing to Migrate" in *Oracle8 Migration*.

Migration Networking Issues

If you perform a migration, you may need to resolve the following networking issues:

- Migrating Oracle7 Clients
- Using the Net8 Listener
- Editing the LISTENER.ORA File for Multiple Oracle Homes
- Installing Appropriate Versions of SQL*Net

Migrating Oracle7 Clients

Although Oracle7 clients using SQL*Net Client version 2.*x* can connect to Oracle8 databases, they should be migrated to Oracle8 clients configured with Net8 when their applications are upgraded to version 8. Note that SQL*Net version 2.*x* can coexist with Net8 in the same Oracle home directory.

Using the Net8 Listener

To use the Net8 listener, you may need to change your network configuration on either the SQL*Net version 2.*x* or Net8 configurations to prevent a conflict. For example, you may need to change:

- Port numbers on a TCP/IP network so that they are unique
- Service name on an SPX/IPX network
- Pipe name on a Named Pipes network

You may also need to start the Net8 listener and change the status of the service to Automatic Startup, depending upon your network needs. If you make changes to the listener, you must make changes to client configuration files to reflect those listener changes.

SQL*Net version 2.*x* uses configuration files from *ORACLE_HOME*\NETWORK\ADMIN, while Net8 uses files from *ORACLE_HOME*\NET80\ADMIN by default. If you want SQL*Net version 2.*x* and Net8 to use configuration files from the same directory, you can set the registry variable TNS_ADMIN.

> **Additional Information:** See *Net8 Getting Started for Windows NT and Windows 95* for more information on setting TNS_ADMIN.

Editing the LISTENER.ORA File for Multiple Oracle Homes

Using MIG80 When you migrate from an Oracle7 database in one Oracle home to an Oracle8 database release 8.0.6 in a different Oracle home, remove the SID from the Oracle7 Oracle home's LISTENER.ORA file and add it to the release 8.0.6 Oracle home's LISTENER.ORA file.

Using Oracle Data Migration Assistant When you migrate from an Oracle7 database in one Oracle home to an Oracle8 database release 8.0.6 in a different Oracle home, the assistant does not remove the SID from the Oracle7 Oracle home's LISTENER.ORA file. To prevent a conflict when you start the Oracle7 listener, remove the SID entry from the Oracle7 Oracle home's LISTENER.ORA file.

Installing Appropriate Versions of SQL*Net

When migrating from Oracle7 Server release 7.3.*x* to Oracle8 release 8.0.6, install the appropriate version of SQL*Net for the server *before* using Oracle Data Migration Assistant or MIG80. Migration will be unsuccessful if you do not install the appropriate versions of SQL*Net. You do not need to install a SQL*Net patch when migrating from Oracle7 release 7.3.4 to Oracle8 release 8.0.6.

Migrating from...	Install...
Oracle7 release 7.3.2.*x* and higher to Oracle8	SQL*Net release 2.3.2.1.4 and SQL*Net patch 2.3.2.1.12 **Note:** If you do not have SQL*Net release 2.3.2.1.4 on your system, you must install it before installing SQL*Net patch 2.3.2.1.12. SQL*Net release 2.3.2.1.4 is not available on the release 8.0.6 CD-ROM. You must install it from the release 7.3.2 CD-ROM.
Oracle7 release 7.3.3.*x* and higher to Oracle8	SQL*Net release 2.3.3.0.3
	To install SQL*Net patch 2.3.2.1.12 or 2.3.3.0.3: **1.** Start Oracle Installer from the CD-ROM. See *Oracle8 Enterprise Edition Installation for Windows NT* for complete installation instructions. **2.** Answer questions about language and Oracle home directory location. **3.** Select Custom Installation. The *Software Asset Manager* window appears. **4.** Click From... **5.** Navigate to \PATCHES\SQLNET\232112 on the CD-ROM if you want to install SQL*Net patch 2.3.2.1.12. Navigate to \PATCHES\SQLNET\23303 if you want to install SQL*Net release 2.3.3.0.3. **6.** Select SQL*Net Server 2.3.2.1.12 and SQL*Net Client 2.3.2.1.12 if you want to install SQL*Net patch 2.3.2.1.12. Select SQL*Net Server 2.3.3.0.3 and SQL*Net Client 2.3.3.0.3 if you want to install SQL*Net patch 2.3.3.0.3. **7.** Click Install. A window appears showing the progress of the installation. After installation is complete, a message appears confirming the installation. **8.** Click Exit to quit Oracle Installer.

Migrating Using Oracle Data Migration Assistant

Oracle Data Migration Assistant helps you migrate data from an Oracle7 database to an Oracle8 database. During installation of Oracle8 Enterprise Edition, you are prompted to migrate a database with this assistant if Oracle Installer detects that an earlier database release exists on your computer. If you do not want to migrate a database during the installation process, you can just install the assistant and use it later.

What To Do Before Using Oracle Data Migration Assistant

Complete the following steps before you use this assistant:

- Read the READMEMIG.DOC located in the *ORACLE_HOME*\RDBMS80 directory for migration information that is new to this release. This file contains special migration, upgrade, downgrade, word-change, and rolling upgrade instructions for release 8.0.6.
- Read Chapter 4, "Migration Using the Oracle Data Migration Assistant" in *Oracle8 Migration* for background information before starting the migration process.

Note:

- Version 8 binaries may require as much as three times the disk space required by version 7 binaries. This requirement may cause you to run out of disk space during migration. It is very important that you read "System Considerations and Requirements" and "Prepare the Version7 Source Database for Migration" to find out more about this and other requirements before you migrate.
- You cannot use Oracle Data Migration Assistant in an Oracle Parallel Server environment.

- Ensure the database you want to migrate is at least release 7.1.3.3.6
- Ensure the service for the database instance is present in the *Services* window of the Control Panel
- Ensure SQL*Net Server release 2.*x* or later is installed

Note: If you are using the assistant to migrate a 7.1.*x* database, you must enter the following at the SQL*DBA prompt before using the assistant to perform a migration:

```
SQLDBA> ALTER TABLESPACE ROLLBACK_DATA ADD DATAFILE
'ORACLE_HOME\RDBMS71\RBSMIGSID.ORA' SIZE 20 M;
```

To migrate a database using Oracle Data Migration Assistant:

1. Install Oracle Data Migration Assistant from the Oracle8 Enterprise Edition for Windows NT CD-ROM. See *Oracle8 Enterprise Edition Installation for Windows NT* for complete installation instructions.
2. Choose Start > Programs > Oracle for Windows NT - [*HOME_NAME*] > Oracle Data Migration Assistant.

   The Oracle Data Migration Assistant welcome window appears:

3. Respond to instructions in each Oracle Data Migration Assistant window, and click Next when you are ready to continue to the next window. When you get to the last window, click Finish to start the migration of the database. More documentation on this product is included with the Help.

Migrating Using MIG80

This section describes how to use MIG80 to migrate your Oracle7 database to an Oracle8 database.

> **Note:** Information on how to run MIG80 (sometimes referred to as the Migration Utility) is provided in *Oracle8 Migration*, but the focus is on UNIX. This section provides information on using MIG80 on Windows NT.

To migrate an Oracle7 database using MIG80:

Step 1: What To Do Before Using MIG80

Step 2: Prepare for Database Backup

Step 3: Shut Down the Oracle7 Database

Step 4: Back Up the Oracle7 Database

Step 5: Install MIG80 From Oracle8 Enterprise Edition CD-ROM

Step 6: Run MIG80

Step 7: Create Oracle8 Services and Database Files

Step 8: Remove Oracle7 Software (Optional)

Step 1: What To Do Before Using MIG80

Complete the following steps before you use MIG80:

- Review Migration Concepts
- Use Appropriate SQL*DBA or Server Manager Versions
- Check Database To Be Migrated Version Number
- Check Character Set

Review Migration Concepts

- Read Chapter 1, "Migration Overview" and Chapter 2, "Preparing to Migrate" in *Oracle8 Migration* for background information before starting the migration process.
- Read "System Considerations and Requirements" and "Prepare the Version7 Source Database for Migration" in Chapter 3 "Migrating Using the Migration Utility" of *Oracle8 Migration* for information on *tasks you must perform* before using MIG80.

> **Note:** Version 8 binaries may require as much as three times the disk space required by version 7 binaries. This requirement may cause you to run out of disk space during migration. It is very important that you read "System Considerations and Requirements" to find out more about this and other requirements before you migrate.

- Read the READMEMIG.DOC located in the *ORACLE_HOME*\RDBMS80 directory for migration information that is new to this release. This file contains special migration, upgrade, downgrade, word-change, and rolling upgrade instructions for release 8.0.6.

Use Appropriate SQL*DBA or Server Manager Versions

When you are asked to enter commands at the SQL*DBA or Server Manager prompt, remember to use the appropriate version of the tool for the version of Oracle7 Server you are migrating:

Use...	When Migrating From...
SQLDBA71	Oracle7 release 7.1.*x*
SQLDBA72	Oracle7 release 7.2.*x*
SVRMGR23	Oracle7 release 7.3.*x*

Check Database To Be Migrated Version Number

Check that your database release can be directly migrated to Oracle8 Enterprise Edition. MIG80 only migrates databases that are Oracle7, release 7.1.*x* or later. If the database is an earlier version (for example, version 6), migrate it to at least Oracle7 release 7.1.3.3.6 before migrating it to an Oracle8 database.

Check Character Set

1. Check the character set of your Oracle7 database, and compare it with the character set in the NLS_LANG environment variable, or in the registry (if the character set does not exist as an environment variable). See "NLS_LANG Parameters and Components" on page E-2 for information on how to check the value of NLS-LANG.
2. Start Server Manager or SQL*DBA at the MS-DOS command prompt. If you are migrating from:

Oracle7 Release...	Enter at the MS-DOS Command Prompt...
7.1.*x*	`C:\> SQLDBA71 MODE=LINE`
7.2.*x*	`C:\> SQLDBA72 MODE=LINE`
7.3.*x*	`C:\> SVRMGR23`

3. Connect to the Oracle7 database as INTERNAL, where *PASSWORD* is the password of the database you want to migrate:

Oracle7 Release...	Enter at the SQLDBA or SVRMGR Command Prompt...
7.1.*x*	`SQLDBA> CONNECT INTERNAL/`*`PASSWORD`*
7.2.*x*	`SQLDBA> CONNECT INTERNAL/`*`PASSWORD`*
7.3.*x*	`SVRMGR> CONNECT INTERNAL/`*`PASSWORD`*

4. Obtain the value of NLS_CHARACTERSET:

Oracle7 Release...	Enter at the SQLDBA or SVRMGR Command Prompt...
7.1.*x*	`SQLDBA> SELECT VALUE FROM NLS_DATABASE_ PARAMETERS WHERE PARAMETER='NLS_ CHARACTERSET';`
7.2.*x*	`SQLDBA> SELECT VALUE FROM NLS_DATABASE_ PARAMETERS WHERE PARAMETER='NLS_ CHARACTERSET';`
7.3.*x*	`SVRMGR> SELECT VALUE FROM NLS_DATABASE_ PARAMETERS WHERE PARAMETER='NLS_ CHARACTERSET';`

The character set value is returned by the database. If the character sets are identical, then you can proceed to run MIG80.

If the character sets are different, before you run MIG80, you must set the NLS_LANG environment variable at the MS-DOS command prompt as follows:

AMERICAN_AMERICA.*database character set*

where *database character set* is substituted with the character set of your Oracle7 database. For example, if the character set of your Oracle7 database is JA16EUC, set the NLS_LANG environment variable as follows:

```
C:\> SET NLS_LANG=AMERICAN_AMERICA.JA16EUC
```

Messages output from MIG80 will now be in English. After MIG80 finishes, reset the NLS_LANG environment variable to its original value.

Step 2: Prepare for Database Backup

To obtain the list of database files you must back up:

a. Create a spool file called V7DBFILES.LOG:

Oracle7 Release...	Enter at the SQLDBA or SVRMGR Command Prompt...
7.1.*x*	`SQLDBA> SPOOL V7DBFILES.LOG`
7.2.*x*	`SQLDBA> SPOOL V7DBFILES.LOG`
7.3.*x*	`SVRMGR> SPOOL V7DBFILES.LOG`

b. Enter the following commands at the SQL*DBA or Server Manager prompt where the WHERE clause equals control_files, DB_FILES, or LOG_FILES. Note that control_files must be lowercase. The list of database files is output to V7DBFILES.LOG.

Oracle7 Release...	Enter at the SQLDBA or SVRMGR Command Prompt...

7.1.*x*	`SQLDBA> SELECT MEMBER FROM V$LOGFILE;`
	`SQLDBA> SELECT NAME FROM V$DATAFILE;`
	`SQLDBA> SELECT VALUE FROM V$PARAMETER WHERE NAME = 'control_files';`

7.2.*x*	`SQLDBA> SELECT MEMBER FROM V$LOGFILE;`
	`SQLDBA> SELECT NAME FROM V$DATAFILE;`
	`SQLDBA> SELECT VALUE FROM V$PARAMETER WHERE NAME = 'control_files';`

Oracle7 Release...	Enter at the SQLDBA or SVRMGR Command Prompt...

7.3.*x*	`SVRMGR> SELECT MEMBER FROM V$LOGFILE;`
	`SVRMGR> SELECT NAME FROM V$DATAFILE;`
	`SVRMGR> SELECT VALUE FROM V$PARAMETER WHERE NAME = 'control_files';`

c. Turn off the SPOOL command:

Oracle7 Release...	Enter at the SQLDBA or SVRMGR Command Prompt...
7.1.*x*	`SQLDBA> SPOOL OFF`
7.2.*x*	`SQLDBA> SPOOL OFF`
7.3.*x*	`SVRMGR> SPOOL OFF`

Step 3: Shut Down the Oracle7 Database

Shut down the database. Do *not* use SHUTDOWN IMMEDIATE or SHUTDOWN ABORT. If the database is not shut down before you start the migration, MIG80 stops and issues an error message. Also, if the database is not cleanly shutdown, any backup you make may be useless as it was taken while data was being written to the data files.

1. Start SQL*DBA or Server Manager:

Oracle7 Release...	Enter at the MS-DOS Command Prompt...
7.1.*x*	`C:\> SQLDBA71 MODE=LINE`
7.2.*x*	`C:\> SQLDBA72 MODE=LINE`
7.3.*x*	`C:\> SVRMGR23`

2. Connect to the Oracle7 database as INTERNAL, where *PASSWORD* is the password of the database you want to migrate:

Oracle7 Release...	Enter at the SQLDBA or SVRMGR Command Prompt...
7.1.*x*[1]	SQLDBA> CONNECT INTERNAL/*PASSWORD* SQLDBA> ALTER USER SYS DEFAULT TABLESPACE SYSTEM TEMPORARY TABLESPACE SYSTEM; SQLDBA> ALTER TABLESPACE SYSTEM ADD DATAFILE '*ORACLE_HOME*\RDBMS71\SYS2*SID*.ORA' SIZE 50 M; SQLDBA> ALTER TABLESPACE ROLLBACK_DATA ADD DATAFILE '*ORACLE_HOME*\RDBMS71\RBSMIG*SID*.ORA' SIZE 20 M;
7.2.*x*	SQLDBA> CONNECT INTERNAL/*PASSWORD*
7.3.*x*	SVRMGR> CONNECT INTERNAL/*PASSWORD*

[1]For Oracle7 release 7.1 only, edit the INIT*SID*.ORA file and set the REMOTE_LOGIN_PASSWORDFILE parameter to EXCLUSIVE or SHARED.

The message *Connected* appears if you successfully connected to the database.

3. Shut down the database:

Oracle7 Release...	Enter at the SQLDBA or SVRMGR Command Prompt...
7.1.*x*	SQLDBA> SHUTDOWN
7.2.*x*	SQLDBA> SHUTDOWN
7.3.*x*	SVRMGR> SHUTDOWN

Step 4: Back Up the Oracle7 Database

1. Back up the entire Oracle home directory and all its subdirectories.

   Warning: If anything goes wrong with the Oracle7 database during migration, you will need to restore the database from the backup. Back up your database now as a precaution!

   Ensure the database was cleanly shut down before you back up. Ensure you back up the database files in the following list (and any other database files you may have created). Also, back up any scripts you may have created.

   - Data files — SYS1*SID*.ORA, USR1*SID*.ORA, RBS1*SID*.ORA, TMP1*SID*.ORA
   - Initialization parameter file — INIT*SID*.ORA
   - Redo log files — LOG1*SID*.ORA, LOG2*SID*.ORA, LOG3*SID*.ORA, LOG4*SID*.ORA

     (the last two redo log files are only available for Oracle release 7.3.4)
   - Control files — CTL1*SID*.ORA and CTL2*SID*.ORA

   See Chapter 13, "Backing Up and Recovering Database Files", *Oracle8 Concepts*, *Oracle8 Backup and Recovery*, and *Oracle8 Administrator's Guide* for information on how to back up a database.

Step 5: Install MIG80 From Oracle8 Enterprise Edition CD-ROM

1. Log on to your Windows NT server as a member of the Administrators group.
2. Stop all Oracle applications (if applicable).
3. Stop all Oracle services (if applicable).

   To stop services:

   a. Choose Start > Settings > Control Panel.

   b. Double-click Services.

   c. If any Oracle services exist and have the status *Started*, select the service, and click Stop.

   d. Click Close to exit the *Services* window.
4. Insert the Oracle8 Enterprise Edition for Windows NT CD-ROM. See *Oracle8 Enterprise Edition Installation for Windows NT* for complete installation instructions.

   The operating system automatically detects your Oracle8 Enterprise Edition for Windows NT CD-ROM, and the *Oracle8-Autorun* dialog box appears.
5. Click Begin Installation.

Attention: Each time you insert your CD-ROM, the process described in Step 4 occurs. To restart Oracle Installer without removing and reinserting your CD-ROM, select the drive to which the CD-ROM is mapped, and double-click SETUP.EXE.

The *Oracle Installation Settings* dialog box appears.

6. Specify a company name, Oracle home name, Oracle home location, and Oracle home language where:

Field	Description
Company Name	Name of the company to which this copy of Oracle software is licensed.
Oracle Home Name	Name you want to use for this Oracle home. Ensure the same directory where the Oracle7 database to be migrated is already installed is entered in the *Location* field.
Oracle Home Language	The language you want to install and run Oracle products. The default language, English, is installed in addition to any other language you select.

   The *Select Installation Options* dialog box appears.

7. Select *Oracle8 Enterprise Edition*, then click OK.

   Note: If you select *Oracle8 Enterprise Edition*, you will install a complete Oracle8 software package that includes MIG80. If you just want to install MIG80, select the *Custom Installation* option and select Oracle8 Utilities, of which MIG80 is a component.

   The *Select Oracle8 Cartridge* dialog box appears.

8. Select any cartridges you are licensed to install, then click OK.

   The *Previous Version of Oracle Database* dialog box appears indicating that Oracle Installer has detected an earlier version of the database. You are asked if you want to migrate your Oracle7 database to release 8.0.6 using Oracle Data Migration Assistant.

9. Click No. If you click Yes, Oracle Data Migration Assistant is launched at the end of installation. *Do not click Yes to run Oracle Data Migration Assistant while you are performing a manual migration using MIG80.*

   The *Select a Starter Database Configuration* dialog box appears.

10. Choose None when prompted to install a database.

11. After installation is complete, copy the release 7.*x* INIT*SID*.ORA file to the correct location:

a. If you installed Oracle8 Enterprise Edition into the default Oracle home where Oracle7 release 7.*x* is already located:

Oracle7 Release...	Copy...
7.1.*x*	INIT*SID*.ORA file from *ORACLE_HOME*\RDBMS71 to *ORACLE_HOME*\DATABASE
7.2.*x*	*Not required* because the release 7.2.*x* initialization parameter file is already located in *ORACLE_HOME*\DATABASE
7.3.*x*	*Not required* because the release 7.3.*x* initialization parameter file is already located in *ORACLE_HOME*\DATABASE

b. If you installed Oracle8 Enterprise Edition into a separate Oracle home:

Oracle7 Release...	Copy INIT*SID*.ORA File From the Release...
7.1.*x*	7.1.*x* *ORACLE_HOME*\RDBMS71 directory to the release 8.0.6 *ORACLE_HOME*\DATABASE directory
7.2.*x*	7.2.*x* *ORACLE_HOME*\DATABASE directory to the release 8.0.6 *ORACLE_HOME*\DATABASE directory
7.3.*x*	7.3.*x* *ORACLE_HOME*\DATABASE directory to the release 8.0.6 *ORACLE_HOME*\DATABASE directory

Note: MIG80 is unable to connect to the Oracle7 database if SQL*Net version 2.*x* is not installed in the Oracle home directory. You will receive the error *ORA-12203: TNS: Unable to connect to destination*, if this is the case. If this product is not installed, install it from the Oracle8 Enterprise Edition CD-ROM.

12. Shut down and restart the computer *if you have installed Oracle8 Enterprise Edition into another Oracle home.* If you have installed Oracle8 Enterprise Edition into the same Oracle home as Oracle7 release 7.*x*, there is no need to do this.

Step 6: Run MIG80

MIG80 was installed as part of Oracle8 Utilities when you installed Oracle8 Enterprise Edition in "Step 5: Install MIG80 From Oracle8 Enterprise Edition CD-ROM" on page 7-31.

1. Ensure that you have DBA privileges, which are necessary to run MIG80.
2. Ensure that no other DBA (connected as INTERNAL or SYS) with the RESTRICTED SESSION privilege connects to the database while MIG80 is running. Normal users cannot connect to the database during this phase.
3. *Do not start the Oracle7 database.* MIG80 starts the Oracle7 database as part of its processing.
4. Check the Oracle7 service OracleService*SID* is started. It should already be started. If it is not started, start it at the MS-DOS command prompt:

   ```
   C:\> NET START OracleService SID
   ```

5. Set ORACLE_SID to the SID of the database you want to migrate. For example, if the database you want to migrate is the starter database with the SID named ORCL, enter the following at the MS-DOS command prompt. Note there are no spaces around the equal sign (=) character.

   ```
   C:\> SET ORACLE_SID=ORCL
   ```

6. Run MIG80. You can specify MIG80 HELP=YES at the MS-DOS command prompt for a complete list of parameters that can be included with the MIG80 command.

   a. **If you installed Oracle8 Enterprise Edition into the default Oracle home where Oracle7 release 7.*x* is already installed:**

Oracle7 Release...	Enter at the MS-DOS Command Prompt...
7.1.*x*	`C:\> MIG80 PFILE=`*ORACLE_HOME*`\RDBMS71\INIT`*SID*`.ORA SPOOL=C:\MIG.LOG` where *ORACLE_HOME* is the Oracle7 release 7.1.*x* Oracle home directory.
7.2.*x*	`C:\> MIG80 SPOOL=C:\MIG.LOG`
7.3.*x*	`C:\> MIG80 SPOOL=C:\MIG.LOG`

b. If you installed Oracle8 Enterprise Edition into another Oracle home:

Oracle7 Release...	Enter at the MS-DOS Command Prompt...
7.1.*x*	`C:\> MIG80 PFILE=`*`ORACLE_HOME`*`\RDBMS71\INIT`*`SID`*`.ORA` where *ORACLE_HOME* is the Oracle7 release 7.1.*x* Oracle home directory.
7.2.*x*	`C:\> MIG80 PFILE=`*`ORACLE_HOME`*`\DATABASE\INIT`*`SID`*`.ORA` where *ORACLE_HOME* is the Oracle7 release 7.2.*x* Oracle home directory.
7.3.*x*	`C:\> MIG80 PFILE=`*`ORACLE_HOME`*`\DATABASE\INIT`*`SID`*`.ORA` where *ORACLE_HOME* is the Oracle7 release 7.3.*x* Oracle home directory.

This command creates the CONVERT.ORA file that is required in a later step to create Oracle8 Enterprise Edition control files.

The prompt *Oracle7 Password* appears.

7. Enter the password for *Oracle7 Password*. This is the same password as the INTERNAL password for the Oracle7 database.

MIG80 runs and displays the operations being performed. MIG80 can take considerable time to run. Please wait until it has finished running.

Check the results after running MIG80. If there are error messages see Appendix A, "Migration Utility Messages" of *Oracle8 Migration* for more information before going to Step 8.

8. Stop the Oracle7 service at the MS-DOS command prompt when MIG80 has completed successfully:

```
C:\> NET STOP OracleService SID
```

9. Delete the Oracle7 services at the MS-DOS command prompt:

Oracle7 Release...	Enter at the MS-DOS Command Prompt...
7.1.*x*	`C:\> ORADIM71 -DELETE -SID` *`SID`*
7.2.*x*	`C:\> ORADIM72 -DELETE -SID` *`SID`*
7.3.*x*	`C:\> ORADIM73 -DELETE -SID` *`SID`*

MIG80 creates a convert file that contains the information of the version 7 control file. Later in the migration process, the convert file is used when you execute the ALTER DATABASE CONVERT command to create a new control file for version 8.

The default location of the convert file is *ORACLE_HOME*/RDBMS80 and the default filename in this directory is CONVERT.ORA.

Warning: Do not open the Oracle7 database, which was shut down by the version 8 MIG80 utility. To ensure data file version integrity, the SCNs in the dictionary, the convert file, and file header must all be consistent when the database is converted to version 8. If the Oracle7 database is opened after running MIG80, the SCN check will fail when the database is converted to version 8, and an ORA-01211 error will be displayed, stating "Oracle7 data file is not from migration to Oracle8." If the Oracle7 database is opened, you must rerun the Migration Utility, starting at "Step 3: Shut Down the Oracle7 Database" on page 7-28.

After successfully running MIG80, perform a cold backup of the Oracle7 database. This backup serves the following purposes:

- If you want to return to the Oracle7 database after executing the ALTER DATABASE CONVERT command, you can restore the backup and start the version 7 database.
- It can be used as the first version 8 backup for a version 8 recovery.
- If an error occurs at version 8 database convert time (ALTER DATABASE CONVERT or ALTER DATABASE OPEN RESETLOGS), you can restore this backup, fix the problem(s), and continue the conversion process. However, if you restore a backup performed before you ran MIG80, you must rerun MIG80.

  Additional Information: See Chapter 13, "Backing Up and Recovering Database Files", *Oracle8 Concepts*, *Oracle8 Backup and Recovery*, and *Oracle8 Administrator's Guide* for information on how to back up a database.

Step 7: Create Oracle8 Services and Database Files

1. If you have not already installed the Oracle8 software, do so now. Do not install a database when prompted.
2. Create the Oracle8 database service at the MS-DOS command prompt:

   ```
   C:\> ORADIM80 -NEW -SID SID -INTPWD PASSWORD -MAXUSERS USERS -STARTMODE AUTO
   -PFILE ORACLE_HOME\DATABASE\INITSID.ORA
   ```

   where:

   - *SID* is the release 8.0.6 SID.
   - *PASSWORD* is the password for the new release 8.0.6 database instance.
   - *USERS* is the maximum number of users who can be granted SYSDBA and SYSOPER privileges.
   - *ORACLE_HOME* is the release 8.0.6 Oracle home directory. Ensure you specify the full pathname with the -PFILE option, including drive letter of the Oracle home directory.

3. Either delete or rename the database's control files, or use the CONTROL_FILES parameter in the INIT*SID*.ORA file to specify new control file names. The ALTER DATABASE CONVERT command automatically creates new control files in Step 8. If you do not use the CONTROL_FILES parameter, this command uses the control file names of your pre-migration database and returns an error if the control files already exist. Therefore, in this case, you must delete or rename the control file(s). However, if you use the CONTROL_FILES parameter in the INIT*SID*.ORA file, the ALTER DATABASE CONVERT command creates the new control file(s) with the names you specify, and you do not need to remove the old control files. Check the file V7DBFILES.LOG that you created in "Step 4: Back Up the Oracle7 Database" on page 7-30 for the complete list and location of control files you must delete.
4. Before starting Server Manager:
   a. Ensure all release 7.*x* data files and log files are accessible and in the correct directories.
   b. Ensure all release 7.*x* control files are deleted or renamed.
   c. Change any parameters that point to RDBMS71, RDBMS72, or RDBMS73 to point to RDBMS80 in the release 7.*x* INIT*SID*.ORA file.

d. Certain version 7 initialization parameters are obsolete in version 8. Remove all obsolete parameters from the release 7.*x* INIT*SID*.ORA file that start a version 8 instance. Obsolete parameters may cause errors if used with a version 8 database. Also, alter any parameter whose syntax has changed in version 8. See Appendix C, "Version 8 INIT.ORA Changes" of *Oracle8 Migration* for lists of new, changed, and obsolete parameters.

e. Ensure the COMPATIBLE parameter is set to 8.0.0.0.0 in the release 7.*x* INIT*SID*.ORA file.

If you use the default setting (8.0.0.0.0), you cannot use new features of release 8.0.4 and later such as Propagation in Advanced Queuing (AQ) and Improved SCN Generation. To use these new features, set the COMPATIBLE parameter to the following:

```
COMPATIBLE=8.0.4.0.0
```

See Appendix C "Version 8 INIT.ORA Changes" of *Oracle8 Migration* for more information on COMPATIBLE parameter values.

5. Start the Oracle8 Enterprise Edition version of Server Manager at the MS-DOS command prompt:

```
C:\> SVRMGR30
```

6. Connect to the Oracle8 instance as INTERNAL:

```
SVRMGR> CONNECT INTERNAL/PASSWORD
```

7. Start an Oracle8 instance without mounting the new Oracle8 database:

```
SVRMGR> STARTUP NOMOUNT
```

Warning: Starting in any other mode will corrupt the database!

8. Create new version 8 control files:

```
SVRMGR> ALTER DATABASE CONVERT;
```

Warning: Successful execution of this command is the point of no return to Oracle7. If you need to return to the Oracle7 database, please restore it from the backup you made in "Step 4: Back Up the Oracle7 Database". If an error occurs during this step, you must correct the condition(s) that caused the error(s).

This command uses the CONVERT.ORA file that was created earlier when you ran MIG80. All data files that are online are converted to Oracle8 Enterprise Edition format, and new control files are built. Control files are considerably larger in version 8 than in version 7. Control files in the tens of kilobytes size range in version 7 could be expanded into the range of tens of megabytes automatically during migration to version 8. This size increase could be important if a control file is on a raw device or if its available disk space is restricted.

9. Open the Oracle8 database:

```
SVRMGR> ALTER DATABASE OPEN RESETLOGS;
```

All rollback segments that are online when the Oracle8 database is opened are also opened and converted to the Oracle8 database format.

10. Create a spool file called CATOUT.LOG by entering the following at the Server Manager prompt:

```
SVRMGR> SPOOL CATOUT.LOG
```

11. Run the following scripts in sequence:

Script	Required by...	Enter at the Server Manager Prompt...
CAT8000.SQL	All databases	`SVRMGR> @%ORACLE_HOME%\RDBMS80\ADMIN\CAT8000.SQL` where %*ORACLE_HOME*% represents your drive letter and release 8.0.6 Oracle home directory. This script can take over thirty minutes to run depending on the size of your database. Check CATOUT.LOG to verify that the operation was successful. CAT8000.SQL creates and alters certain system tables and drops the MIGRATE user. Objects in the MIGRATE user's schema are not needed after the conversion is complete. You can also delete the binary file (*ORACLE_HOME*\RDBMS80\CONVERT.ORA) that is used as part of the conversion process. CAT8000.SQL also runs the CATALOG.SQL and CATPROC.SQL scripts, which create the system catalog views and all the necessary packages for using PL/SQL.
PUPBLD.SQL	All databases	`SVRMGR> @%ORACLE_HOME%\DBS\PUPBLD.SQL` where %*ORACLE_HOME*% represents your drive letter and release 8.0.6 Oracle home directory. This script creates the USER PROFILE table.

Script	Required by...	Enter at the Server Manager Prompt...
CATREP8M.SQL	Advanced Replication	SVRMGR> @%ORACLE_HOME%\RDBMS80\ADMIN\CATREP8M.SQL where %*ORACLE_HOME*% represents your drive letter and release 8.0.6 Oracle home directory. Run this script only if you have Advanced Replication and want to use it. The CATREP8M.SQL script automatically runs the CATREP.SQL script. CATREP8M.SQL takes over an hour to run.
CATPARR.SQL	Oracle Parallel Server	SVRMGR> @%ORACLE_HOME%\RDBMS80\ADMIN\CATPARR.SQL where %*ORACLE_HOME*% represents your drive letter and release 8.0.6 Oracle home directory. Run this script only if you have Oracle Parallel Server and want to use it.
UTLRP.SQL	All databases	SVRMGR> @%ORACLE_HOME%\RDBMS80\ADMIN\UTLRP.SQL where %*ORACLE_HOME*% represents your drive letter and release 8.0.6 Oracle home directory. Oracle Corporation recommends you run this script to compile all existing PL/SQL modules that were previously in an INVALID state, such as packages, procedures, types, and so on. Doing this at this stage is optional; however, it will ensure that the cost of recompilation is incurred during installation time rather than later on.

Oracle Corporation supplies other scripts with Oracle8 Enterprise Edition that create additional structures you can use in managing your database and creating database applications. These scripts are also located in *ORACLE_HOME*\RDBMS80\ADMIN. See the chapter "SQL*Scripts" in *Oracle8 Reference* for a complete list and descriptions of available scripts.

12. Turn off the SPOOL command:

```
SVRMGR> SPOOL OFF
```

13. Check the spool file CATOUT.LOG and verify that the scripts you ran compiled every package and procedure successfully. Correct any problems you find in this file.

14. Shut down the Oracle8 database in NORMAL mode to perform a clean database shutdown. Do *not* use SHUTDOWN IMMEDIATE or SHUTDOWN ABORT. Note that NORMAL is the default parameter.

```
SVRMGR> SHUTDOWN
```

Performing a clean database shutdown flushes all caches, clears buffers, and performs other Relational Database Management System (RDBMS) housekeeping activities. These measures are an important final step to ensure the integrity and consistency of the newly migrated release 8.0.6 database.

15. Back up the Oracle8 database. See Chapter 13, "Backing Up and Recovering Database Files" for a list of tools to back up the database.

    The Oracle7 database has now been migrated to the Oracle8 database and is ready for use.

Note: After a migration, all objects have the status INVALID, which is the correct status at this time. To check the status of objects, enter the following at the Server Manager prompt.

```
SVRMGR> SELECT * FROM ALL_OBJECTS WHERE STATUS =
'INVALID';
```

Step 8: Remove Oracle7 Software (Optional)

You can remove Oracle7 software if you have successfully migrated to Oracle8 Enterprise Edition and have a backup of the Oracle7 software. Oracle Installer warns you of any product dependencies that might cause problems if particular products are removed, and prompts you to confirm the deinstallation.

To remove Oracle7 software:

1. Stop all Oracle services. For information on how to stop Oracle services, see "Managing Oracle Services" on page 10-2.
2. Choose Start > Programs > Oracle for Window NT - [*HOME_NAME*] > Oracle Installer to start Oracle Installer.

   The *Software Asset Manager* window appears.
3. Select the Oracle7 product(s) you want to remove from the Installed Products window of the *Software Asset Manager* window.
4. Click Remove.

Upgrading an Oracle8 Database Release 8.0.*x* to 8.0.6

This section describes how to upgrade an Oracle8 database release 8.0.*x* to release 8.0.6. You can choose either of the following database tools to upgrade:

- Oracle Data Migration Assistant
- SQL scripts

Oracle Corporation recommends that new users use Oracle Data Migration Assistant to upgrade databases because it is the easiest and quickest method to perform an upgrade. If you already have upgrade scripts from a previous Oracle database release, you can edit them to include the new upgrading scripts.

Upgrading Using Oracle Data Migration Assistant

Oracle Data Migration Assistant helps you upgrade data from an Oracle8 database release 8.0.*x* to release 8.0.6. During installation of Oracle8 Enterprise Edition, you are prompted to upgrade a database with this assistant if Oracle Installer detects that a release 8.0.*x* database exists on your system. If you do not want to upgrade during the installation process, you can just install this assistant and use it later.

Note: Oracle Data Migration Assistant cannot be used to upgrade the following product releases:

- Oracle8 Enterprise Edition release 8.0.1 and 8.0.2 Beta releases.
- Oracle8 Enterprise Edition software developer kit (SDK) releases 8.1.1 and 8.1.2.
- Oracle7 releases. For example, you cannot use the assistant to upgrade from release 7.1.3.3.6 to release 7.3.3.0.0. If you need to upgrade version 7 releases, see *Oracle7 Server Migration Guide* and the upgrading documentation that came with your Oracle7 software.
- Oracle Parallel Server

Before you use this assistant, ensure the Oracle8 database to be upgraded meets these requirements:

- the database you want to upgrade is at least release 8.0.3.0.0
- the service for the database instance is present in the *Services* window of the Control Panel
- SQL*Net Server release 2.*x* or later is installed

To upgrade a database using Oracle Data Migration Assistant:

1. Install Oracle Data Migration Assistant from the Oracle8 Enterprise Edition for Windows NT CD-ROM. See *Oracle8 Enterprise Edition Installation for Windows NT* for complete installation instructions.
2. Choose Start > Programs > Oracle for Windows NT - [*HOME_NAME*] > Oracle Data Migration Assistant.

   The Oracle Data Migration Assistant welcome window appears:

3. Respond to instructions in each Oracle Data Migration Assistant window, then click Next when you are ready to continue to the next window. When you get to the last window, click Finish to start the upgrade of the database. More documentation on this product is included with the Help.

Upgrading Using SQL Scripts

You can run SQL scripts in Server Manager to upgrade an Oracle8 database release 8.0.*x* to release 8.0.6.

Warning: If you are using mutually referencing types, downgrading back to your current release may not be supported after you upgrade to release 8.0.6. See the section "Downgrading From Release 8.0.6 to Release 8.0.*x*" of the READMEMIG.DOC located in the *ORACLE_HOME*\RDBMS80 directory for more information.

Before Using SQL Scripts to Upgrade

Review the following documents:

- Read Chapter 8, "Upgrading and Downgrading" in *Oracle8 Migration* for background information.
- Read the READMEMIG.DOC located in the *ORACLE_HOME*\RDBMS80 directory for upgrading information that is new to this release.

Upgrading consists of the following tasks:

Step 1: Shut Down the Release 8.0.x Database

Step 2: Back Up the Release 8.0.x Database

Step 3: Edit the COMPATIBLE Parameter in the 8.0.x INITSID.ORA File

Step 4: Install Oracle8 Enterprise Edition Release 8.0.6

Step 5: Run the SQL Scripts

Step 1: Shut Down the Release 8.0.*x* Database

1. Start Server Manager at the MS-DOS command prompt:

   ```
   C:\> SVRMGR30
   ```

2. Connect to the release 8.0.*x* database as INTERNAL, where *PASSWORD* is the password of the database you want to migrate.

   ```
   SVRMGR> CONNECT INTERNAL/PASSWORD
   ```

   The message *Connected* appears if you successfully connected to the database.

3. Shut down the database in NORMAL mode. Do *not* use SHUTDOWN IMMEDIATE or SHUTDOWN ABORT. If the database is not cleanly shutdown, any backup you make may be useless as it was taken while data was being written to the data files. Enter the following at the Server Manager prompt:

   ```
   SVRMGR> SHUTDOWN
   ```

Step 2: Back Up the Release 8.0.*x* Database

Perform a full offline backup of the database.

1. Back up the entire Oracle home directory and all of its subdirectories.

   Warning: If anything goes wrong with the release 8.0.*x* database during upgrade, you will need to restore the database from the backup. Back up your database now as a precaution!

   Ensure the database is cleanly shutdown before you back up. Ensure you back up the database files in the following list (and any other database files you may have created). Also, back up any scripts you may have created.

   - Data files — SYS1*SID*.ORA, USR1*SID*.ORA, RBS1*SID*.ORA, TMP1*SID*.ORA
   - Initialization parameter file — INIT*SID*.ORA
   - Redo log files — LOG1*SID*.ORA, LOG2*SID*.ORA
   - Control files — CTL1*SID*.ORA

To obtain the list of database files you must back up:

a. Create a spool file called V8DBFILES.LOG. Enter the following at the Server Manager prompt:

```
SVRMGR> SPOOL V8DBFILES.LOG
```

b. Enter the following commands at the Server Manager prompt, where the WHERE clause equals control_files, DB_FILES, or LOG_FILES. Note that control_files must be lowercase. The list of database files is output to V8DBFILES.LOG.

```
SVRMGR> SELECT MEMBER FROM V$LOGFILE;
SVRMGR> SELECT NAME FROM V$DATAFILE;
SVRMGR> SELECT VALUE FROM V$PARAMETER WHERE NAME = 'control_files';
```

c. Turn off the SPOOL command:

```
SVRMGR> SPOOL OFF
```

See Chapter 13, "Backing Up and Recovering Database Files", *Oracle8 Concepts*, *Oracle8 Backup and Recovery*, and *Oracle8 Administrator's Guide* for information on how to back up a database.

Step 3: Edit the COMPATIBLE Parameter in the 8.0.*x* INITSID.ORA File

Ensure the COMPATIBLE parameter is set to 8.0.0.0.0 or higher in the release 8.0.*x* INIT*SID*.ORA file.

If you use the default setting (8.0.0.0.0) or higher, you cannot use new features of releases 8.0.4 and later such as Propagation in Advanced Queuing (AQ) and Improved SCN Generation. To use these new features, set the COMPATIBLE parameter to the following:

```
COMPATIBLE=8.0.4.0.0
```

See Appendix C "Version 8 INIT.ORA Changes" of *Oracle8 Migration* for more information on COMPATIBLE parameter values.

Step 4: Install Oracle8 Enterprise Edition Release 8.0.6

1. Ensure all Oracle services are stopped. See "Managing Oracle Services" on page 10-2 for information on how to stop services.
2. Insert the Oracle8 Enterprise Edition CD-ROM into the mapped CD-ROM drive and install Oracle8 Enterprise Edition. See *Oracle8 Enterprise Edition Installation for Windows NT* for complete installation instructions.

   When the *Oracle Installation Settings* dialog box appears:

Using...	Do the Following...
One Oracle home directory	Accept the default Oracle Home Name, DEFAULT_HOME in the *Name* field. Ensure the same directory where the Oracle7 database to be upgraded is already installed is entered in the *Location* field.
Two or more Oracle home directories	Enter the name you want to use for the additional Oracle home directory in the *Name* field. Enter another directory location where you want to put Oracle8 Enterprise Edition release 8.0.6 in the *Location* field.

   The *Select Installation Options* dialog box appears.

3. Select *Oracle8 Enterprise Edition*, then click OK.

   The *Select Oracle8 Cartridge* dialog box appears.

4. Select any cartridges you are licensed to install, then click OK.

   The *Previous Version of Oracle Database* dialog box appears indicating that Oracle Installer has detected an earlier version of the database. You are asked if you want to upgrade your Oracle8 database to release 8.0.6 using Oracle Data Migration Assistant.

5. Click No. If you click Yes, Oracle Data Migration Assistant is launched at the end of installation. *Do not click Yes to run Oracle Data Migration Assistant while you are performing a manual upgrade using SQL scripts.*

   The *Select a Starter Database Configuration* dialog box appears.

6. Choose None when prompted to install a database in the *Starter Database Installation Options* dialog box.

7. After installation is complete, if you installed release 8.0.6 into another Oracle home, you must copy the release 8.0.*x* INIT*SID*.ORA file from the release 8.0.*x* *ORACLE_HOME*\DATABASE directory to the release 8.0.6 *ORACLE_HOME*\DATABASE directory. If you have installed Oracle8 Enterprise Edition into the same Oracle home as Oracle7 release 7.*x*, there is no need to do this.
8. Shut down and restart the computer *if you have installed Oracle8 Enterprise Edition release 8.0.6 into another Oracle home*. If you have installed Oracle8 Enterprise Edition into the same Oracle home as Oracle7 release 7.*x*, there is no need to do this.

Step 5: Run the SQL Scripts

1. Start the Oracle8 services of the release 8.0.*x* database you want to upgrade. For example, enter the following at the MS-DOS command prompt to start the services of the starter database with a SID of ORCL:

   ```
   C:\> NET START ORACLESERVICEORCL
   ```

2. Set ORACLE_SID to the SID of the release 8.0.*x* database you want to upgrade. For example, if the database you are upgrading is the starter database with a SID of ORCL, enter the following at the MS-DOS command prompt. Note there are no spaces around the equal sign (=) character.

   ```
   C:\> SET ORACLE_SID=ORCL
   ```

3. Start Server Manager at the MS-DOS command prompt:

   ```
   C:\> SVRMGR30
   ```

4. Connect to the release 8.0.*x* Oracle8 instance as INTERNAL:

   ```
   SVRMGR> CONNECT INTERNAL/PASSWORD
   ```

5. Run STARTUP RESTRICT:

   ```
   SVRMGR> STARTUP RESTRICT
   ```

   Note: STARTUP RESTRICT only applies to a single instance, not to the database. If you are using Oracle Parallel Server, either use STARUP RESTRICT to start up one instance with PARALLEL_SERVER=FALSE, or start up all instances using STARTUP RESTRICT.

6. Create a spool file called UPGRADE.LOG:

```
SVRMGR> SPOOL UPGRADE.LOG
```

7. Run the following scripts:

To Upgrade...	Run Script[1]	Enter at the Server Manager Prompt...
8.0.1	Not supported	
8.0.2 to 8.0.6	Not supported	
8.0.3 to 8.0.6	U0800030.SQL	`SVRMGR> @%ORACLE_HOME%\RDBMS80\ADMIN\U0800030.SQL` where `%ORACLE_HOME%` represents your drive letter and release 8.0.6 Oracle home directory.
8.0.4 to 8.0.6	U0800040.SQL	`SVRMGR> @%ORACLE_HOME%\RDBMS80\ADMIN\U0800040.SQL` where `%ORACLE_HOME%` represents your drive letter and release 8.0.6 Oracle home directory.
8.0.4S	Not supported	
8.0.5 to 8.0.6	U0800050.SQL	`SVRMGR> @%ORACLE_HOME%\RDBMS80\ADMIN\U0800050.SQL` where `%ORACLE_HOME%` represents your drive letter and release 8.0.6 Oracle home directory.

[1] When you run any of these U*.SQL scripts, the CATALOG.SQL and CATPROC.SQL scripts, which create the system catalog views and all the necessary packages for using PL/SQL, are also run.

Note:

- You must use the version of the script supplied with the release 8.0.6 installation.
- You must run the script in the release 8.0.6 environment.
- You only need to run one script, even if your upgrade spans several releases. For example, if your current release is 8.0.3, then you only need to run U0800030.SQL.

Oracle Corporation supplies other scripts with Oracle8 Enterprise Edition that create additional structures you can use in managing your database and creating database applications. These scripts are also located in *ORACLE_HOME*\RDBMS80\ADMIN. See *Oracle8 Reference* for a complete list and descriptions of available scripts.

8. Run the UTLRP.SQL script. This is a script that Oracle Corporation recommends you run to compile all existing PL/SQL modules that were previously in an INVALID state, such as packages, procedures, types, and so on. Doing this at this stage is optional; however, it will ensure that the cost of recompilation is incurred during installation time rather than later on. Enter at the Server Manager prompt:

```
SVRMGR> @%ORACLE_HOME%\RDBMS80\ADMIN\UTLRP.SQL
```

9. Turn off the SPOOL command.

```
SVRMGR> SPOOL OFF
```

Check the spool file UPGRADE.LOG you created in Step 6. and verify that every package and procedure compiled successfully. Correct any problems you find in the file. If you are upgrading from release 8.0.2, also check the UPGRADE2.LOG spool file.

10. Run ALTER SYSTEM DISABLE RESTRICTED SESSION:

```
SVRMGR> ALTER SYSTEM DISABLE RESTRICTED SESSION
```

11. Run UTLCONST.SQL to check for bad date constraints. If you already ran UTLCONST.SQL after you migrated or upgraded to a previous version 8 release, you do not need to run it again. However, running the script many times will not damage your system; therefore, if you are unsure about whether it has been run on your system, run it now.

```
SVRMGR> SPOOL UTLRESULT.LOG

SVRMGR> @%ORACLE_HOME%\RDBMS80\ADMIN\UTLCONST.SQL

SVRMGR> SPOOL OFF
```

A bad date constraint involves invalid date manipulation. An invalid date manipulation is one that implicitly assumes the century in the date, causing problems at the year 2000. The UTLCONST.SQL script runs through all of the check constraints in the database and sets constraints as bad if they include any invalid date manipulation. UTLCONST.SQL selects all the bad constraints at the end. After you run the script, the UTLRESULT.LOG file includes all the constraints that have invalid date constraints. UTLCONST.SQL does not correct bad date constraints, but it does disable them. Either drop the bad constraints or recreate them after you make the necessary changes.

12. Exit Server Manager:

```
SVRMGR> EXIT
```

> **Additional Information:** Read the READMEMIG.DOC located in the *ORACLE_HOME*\RDBMS80 directory for information on upgrading the Advanced Queuing option.

Downgrading an Oracle8 Database to Release 8.0.*x* or Version 7

Read the READMEMIG.DOC file located in the *ORACLE_HOME*\RDBMS80 directory for information on how to downgrade.

Migrating a Microsoft Access Database

Oracle Migration Assistant for Microsoft Access helps you migrate data from a Microsoft Access database to an Oracle8 database. Specifically, Oracle Migration Assistant for Microsoft Access:

- Migrates the structure and data of a Microsoft Access database(s) to an Oracle8 database. The Oracle8 database is then used to manage the migrated data and referential integrity.
- Provides an option that enables your unmodified Microsoft Access forms and reports to work with the newly created Oracle8 database through an Oracle Open Database Connectivity Driver (ODBC) connection.
- Enables Oracle products such as Oracle Power Objects to work with the newly migrated data.

Oracle Migration Assistant for Microsoft Access can migrate several types of Microsoft Access databases, including:

- Single Microsoft Access databases with both fixed and dynamically attached tables.
- Multiple Microsoft Access databases that share attached tables with other Microsoft Access databases.
- Microsoft Access databases that contain Object Linking and Embedding (OLE) or MEMO fields.

Oracle Migration Assistant for Microsoft Access can be used to migrate both 16-bit Access 2.0 databases and 32-bit Microsoft Access 7.0 databases.

To prepare a Microsoft Access database for migration:

1. Compact and back up your Microsoft Access database files.
2. Separate your Microsoft Access data tables and referential integrity into a different .MDB file from the application (forms, reports, macros, and modules) and create attachments. The .MDB file containing the data tables and referential integrity is the .MDB file to migrate to Oracle8 Enterprise Edition.

Note: Microsoft Access tables with two or more MEMO or OLE datatype columns, which need to be mapped to a LONG or LONGRAW in Oracle8 Enterprise Edition, are not converted. The Oracle Migration Assistant for Microsoft Access tries to convert these datatypes to a VARCHAR2(2000) so the table can be converted. However, if the existing data does not permit this, the Microsoft Access table is not converted. Change the Microsoft Access structure to move the additional MEMO or OLE columns to a separate table. Oracle8 Enterprise Edition does not support two LONG columns in one table.

To migrate a database using Oracle Migration Assistant for Microsoft Access:

1. Choose Start > Programs > Oracle for Windows NT - [*HOME_NAME*] > Oracle Migration Assistant for Microsoft Access.

   The Oracle Migration Assistant for Microsoft Access welcome window appears:

2. Respond to instructions in each Oracle Migration Assistant for Microsoft Access window, then click Next when you are ready to continue to the next window. When you get to the last window, click Finish to complete the migration of the database. More documentation on this product is included with the Help.

Known Issues, Restrictions and Workarounds

This section lists known issues and restrictions with Oracle Migration Assistant for Microsoft Access.

- Can only be used to migrate to Oracle database releases 7.3.3, 7.3.4, 8.0.3, 8.0.4, 8.0.5 and 8.0.6.
- Does not support Microsoft Access 97 or Access dynasets.
- Supports only migrating schemas that have English or ISO Latin 1 object names; that is, table names, index names, column names, and so on.
- Cannot migrate a Microsoft Access 2.0 database on Windows NT 4.0 or a database that has reference to the attached database.
- If you do not have a default printer selected, the assistant successfully migrates your Microsoft Access database to Oracle. However it will not give you any feedback about the progress of the migration.
- The Oracle account's password created after the migration is oracle.
- Takes the name of the .MDB file and creates a user with the same name for Oracle. Do *not* use names for the .MDB files that are Oracle reserved words.
- When using Query mapping layer and attachments, a table t1 is attached from database db1 to database db2 as attachment t2. The databases are migrated to Oracle and the query mapping layer is built. In this case, the backup attachment t2_L that is created in database db2 for the original attachment t2 does not point to the proper table in database db1.
- When you create the backup attachment t2_L in database db2, it still points to table t1 in database db1. But since table t1 in database db1 no longer exists (a query is created with the same name for the table instead), the attachment is no longer valid. To avoid the problem, manually delete and re-create the backup attachment t2_L in database db2 pointing to table t1_L instead of table t1 in database db1.
- When generating reports, if you select File as the destination for your report, you create a Crystal Reports viewable file format. If you want to create a text file, select Window as the destination of your report. After generating the report, select the briefcase icon at the bottom of the report window. Choose text as the format and disk file as the destination to create a text file of the report.
- Use Windows NT or Windows 95 when migrating the AutoNumber column with the Structured Only option. The Oracle sequence number starts with the last number of the Microsoft Access auto number.

8

Post-Installation Configuration Tasks

This chapter describes post-installation configuration tasks for Oracle8 Enterprise Edition.

Specific topics discussed are:

- What Must You Configure?
- Net8
- Oracle Enterprise Manager
- Oracle8 Spatial Cartridge
- Oracle8 ConText Cartridge
- Oracle8 ConText Cartridge Workbench
- Oracle8 Image Cartridge
- Oracle8 Time Series Cartridge
- Oracle8 Visual Information Retrieval Cartridge
- Advanced Replication

What Must You Configure?

The configuration tasks that you must perform are determined by the products that you install and the network configuration files that you use. Some products such as Oracle Enterprise Manager must always be manually configured, while the configuration requirements for other products such as Oracle8 cartridges are determined by how you install the product and the network configuration files you use. The following table describes the circumstances under which Oracle products are automatically configured or must be manually configured:

Did You...	If Yes...	If No...
Install the Oracle8 Spatial, Image, Time Series, and Visual Information Retrieval Cartridges during the same installation as Oracle8 Enterprise Edition release 8.0.6?	Cartridge configuration was automatically performed for you.[1]	You *must* manually perform cartridge configuration.
Manually copy your Oracle7 TNSNAMES.ORA and LISTENER.ORA files into your Oracle8 network files directory?	Your TNSNAMES.ORA and LISTENER.ORA network configuration files require several modifications in order for some cartridges to function properly.	Your network configuration files do *not* require any modification.

[1] Oracle8 ConText Cartridge must always be manually configured.

Review the table below and the sections / documents referenced to identify the configuration responsibilities for your products.

Product	Is Configuration Automatic?	See the Following for Instructions...
Net8 network software	For server configuration files, configuration is usually automatic. For client configuration files, configuration must typically be manually performed (unless you use the Host Adapter).	"Net8" on page 8-3
Oracle Enterprise Manager	No.	"Oracle Enterprise Manager" on page 8-4
Oracle8 Options		
■ Oracle Parallel Server	No.	*Oracle Parallel Server Getting Started for Windows NT*

Product	Is Configuration Automatic?	See the Following for Instructions...
■ Oracle8 Objects	Yes.	No manual configuration is required
■ Oracle8 Partitioning	Yes.	No manual configuration is required
PL / SQL External Procedures	Depends upon network configuration files used.	"Building External Procedures" on page 15-2
Oracle8 Cartridges:		
■ Oracle8 Spatial	Depends upon how product was installed.	"Oracle8 Spatial Cartridge" on page 8-18
■ Oracle8 ConText (and Workbench)	No.	"Oracle8 ConText Cartridge" on page 8-21
■ Oracle8 Image	Depends upon how product was installed and network configuration files used.	"Oracle8 Image Cartridge" on page 8-37
■ Oracle8 Time Series	Depends upon how product was installed and network configuration files used.	"Oracle8 Time Series Cartridge" on page 8-40
■ Oracle8 Visual Information Retrieval	Depends upon how product was installed and network configuration files used.	"Oracle8 Visual Information Retrieval Cartridge" on page 8-43
Advanced Replication Support	Depends upon how support was installed.	"Advanced Replication" on page 8-46
Multi-threaded External Callouts	No.	"Step 6: Enabling Multi-threaded Callout Support" on page 15-9

Net8

Net8 is the Oracle network software that enable applications running on Windows NT and Windows 95 client workstations to access, modify, share, and store data on Oracle8 databases. An easy-to-use network configuration tool, Oracle Net8 Easy Config, enables you to configure Windows NT and Windows 95 clients to communicate with Oracle8 databases. Use Oracle Net8 Easy Config to create and modify server and client configuration files.

Additional Information: See "Oracle Products for Windows NT, Windows 95, and Windows 98" on page 2-5 for information on how this product is installed. See also *Net8 Getting Started for Windows NT and Windows 95/98* for instructions on using Oracle Net8 Easy Config.

Oracle Enterprise Manager

Before describing how to configure Oracle Enterprise Manager, the key components are briefly described.

Oracle Enterprise Manager Console Oracle Enterprise Manager works with Oracle Intelligent Agent (installed in the Oracle8 database to be managed) to perform remote database management from a single console computer. Oracle Enterprise Manager is installed on a console computer, a Windows NT or Windows 95 client.

Oracle Intelligent Agent and Managed Oracle8 Databases Oracle Intelligent Agent runs on the Oracle8 database to be managed. This Oracle8 database is the one you use for your production work. Oracle Intelligent Agent manages and completes tasks on the Oracle8 database that are requested from the Oracle Enterprise Manager Console computer. Oracle Intelligent Agent:

- listens for and responds to job requests initiated by the Oracle Enterprise Manager Console computer
- schedules job requests (requests can include detecting and correcting abnormal conditions, performing standard database administration procedures, and monitoring events)
- executes job requests

Oracle8 Repository Database The Oracle Enterprise Manager Console uses an Oracle8 database as a repository for storing key configuration information. The Oracle8 repository database can be installed on:

- the same computer as the Oracle Enterprise Manager Console if it is a Windows NT computer
- any computer to which a Windows 95 or Windows NT Oracle Enterprise Manager Console can remotely connect. The repository can reside in an Oracle database on any platform.

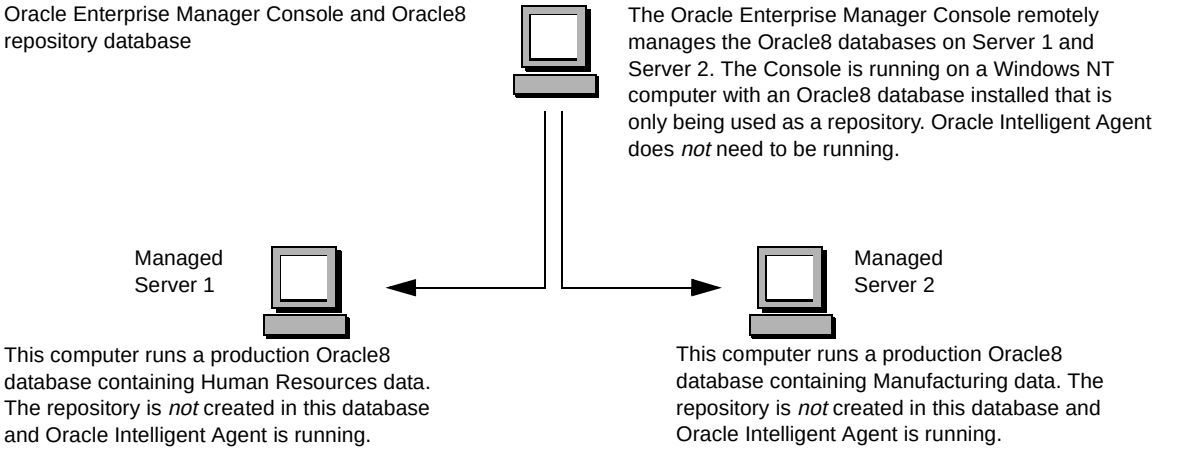
The sole responsibility of the repository database is to act as the Oracle Enterprise Manager's storage resource. The Oracle8 repository database is:

- a separate database from the managed Oracle8 database that you use for your production work
- installed on a separate computer from the managed Oracle8 database

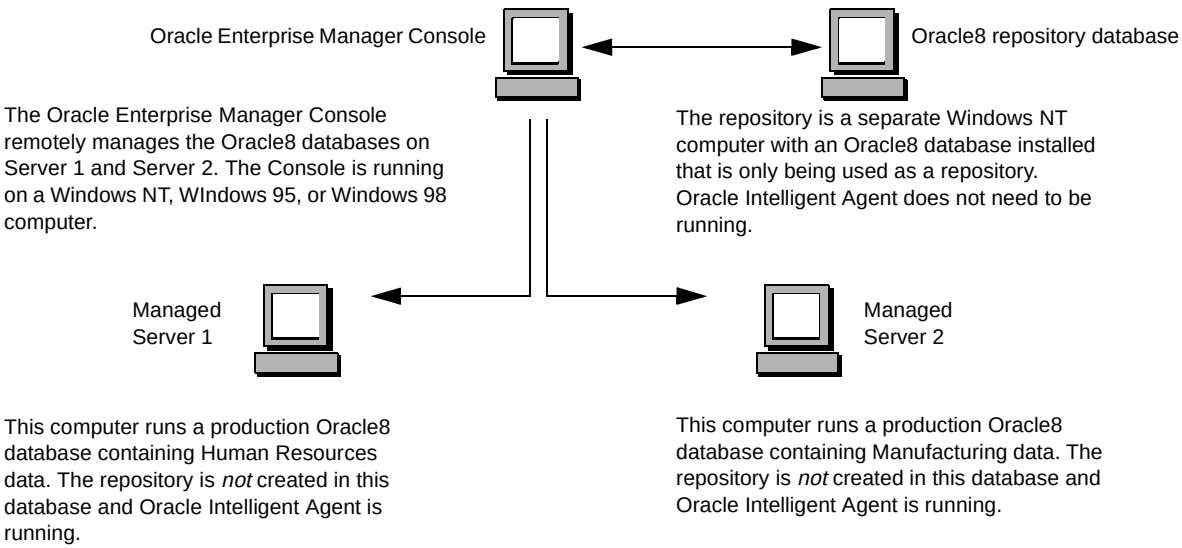
Do *not* create a repository and a production database in the same Oracle8 database. If you do, you will not be able to perform many database administration tasks, such as starting or shutting down the database.

Set up your Oracle Enterprise Manager Console, managed Oracle8 database(s), and Oracle8 repository environment in either of two ways:

Environment 1: Console and Repository on same computer



Environment 2: Console and Repository on separate computers



Oracle Enterprise Manager setup involves configuring the computers on which your Oracle Enterprise Manager, managed Oracle8 database(s), and Oracle8 repository database are installed. This table describes the tasks that must be performed to configure the two Oracle Enterprise Manager environments illustrated previously and the computers on which to perform these tasks. Each task is then fully described in the sections that follow. Use this table as a reference as you perform your configuration tasks.

Perform This Task...	On Managed Oracle8 databases?	If Console and Repository are on same computer?	If Console and Repository are on separate computers?
Step 1: Start Oracle Services on Managed Oracle8 Database	Yes	No	No
Step 2: Create a Repository User Account	No	Yes	Yes, but *only* perform this task on the computer on which you create the repository
Step 3: Create a Windows NT User Account on Managed Oracle8 Database Server	Yes	No	No
Step 4: Create Network Configuration Files	No	No	Yes
Step 5: Create the Repository and Discover Services	No	Yes	Yes, but *only* perform this task on the computer on which you create the repository

Step 1: Start Oracle Services on Managed Oracle8 Database

Ensure that the Oracle8 database services OracleService*SID*, OracleTNSListener80 (or Oracle*HOME_NAME*TNSListener80 if using an Oracle home directory with a home name), and OracleAgent are started. Oracle Intelligent Agent automatically locates the services on the computer where it resides and passes this information to the Oracle Enterprise Manager Console.

To start Oracle Services:

1. Go to the Oracle8 database to be managed.
2. Start the Oracle services listed above in either of two ways:
   - From the MS-DOS command prompt, enter:

     ```
     C:\> NET START SERVICE_NAME
     ```

   - From the Control Panel's *Services* window, select the service, and click Start.
3. Continue to "Step 2: Create a Repository User Account".

Note: Oracle Intelligent Agent automatically creates SNMP_RO and SNMP_RW. These are used instead of the SNMP.ORA file of some previous releases. If you want to use an SNMP.ORA file that you configured with a previous release instead of SNMP_RO and SNMP_RW, set the following line to TRUE in the SNMP.ORA file.

```
nmi.register_with_names=true
```

If you set this line to FALSE, Oracle Intelligent Agent uses SNMP_RO and SNMP_RW.

Step 2: Create a Repository User Account

You need to have a user account with database administrator (DBA) privileges set up on the Oracle8 repository database. Oracle Enterprise Manager places the repository in the default tablespace of the user account to which you are connected when creating the repository. Because of this, Oracle Corporation recommends that you create a new user account so that the repository can be created in its own tablespace. It is also recommended that you create a new tablespace and the newly-created user be customized to use this tablespace as their default tablespace.

To create a repository user account on the Oracle8 repository database:

1. Go to the computer on which the Oracle8 database that will become your repository is installed.
2. Start Server Manager:

   ```
   C:\> SVRMGR30
   ```

3. Connect to the Oracle8 repository database:

   ```
   SVRMGR> CONNECT SYSTEM/PASSWORD
   ```

   where *PASSWORD* is MANAGER for the SYSTEM user account by default. If you have changed this password, substitute MANAGER with the correct password.

4. Create a special tablespace for the Oracle Enterprise Manager repository:

   ```
   SVRMGR> CREATE TABLESPACE REPOSIT_TABLESPACE DATAFILE
   'ORACLE_HOME\DATABASE\DATAFILE' SIZE XM;
   ```

   where:

   - *REPOSIT_TABLESPACE* is the tablespace name
   - '*ORACLE_HOME* \ DATABASE \ *DATAFILE*' is the complete path (including drive letter) to the data file (single quotes are required)
   - *X* is the tablespace size in megabytes (20 MB is a good starting place)

5. Create a user account and password where the user's default tablespace is the one created in step 4:

   ```
   SVRMGR> CREATE USER USERNAME IDENTIFIED BY PASSWORD DEFAULT TABLESPACE
   REPOSIT_TABLESPACE;
   ```

6. Grant the SYSTEM privileges to this user account:

   ```
   SVRMGR> GRANT DBA TO USERNAME;
   ```

7. Exit Server Manager:

   ```
   SVRMGR> EXIT
   ```

   Exiting Server Manager closes the database connection.

8. Follow Steps 3-6 for additional repository user accounts.
9. Continue to "Step 3: Create a Windows NT User Account on Managed Oracle8 Database Server".

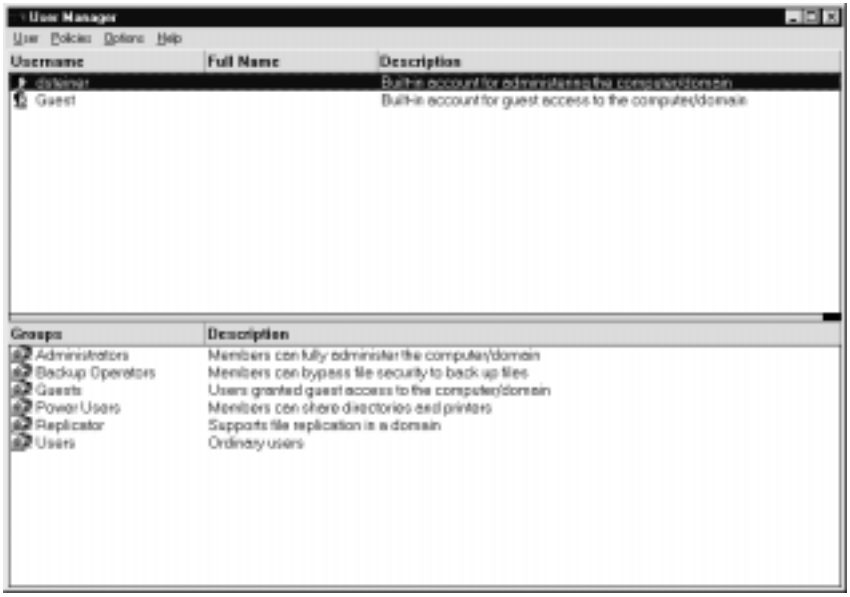
Step 3: Create a Windows NT User Account on Managed Oracle8 Database Server

After a repository user account is created, an NT user account must be created on the managed Oracle8 database server.

To create a user account on the managed Oracle8 database server:

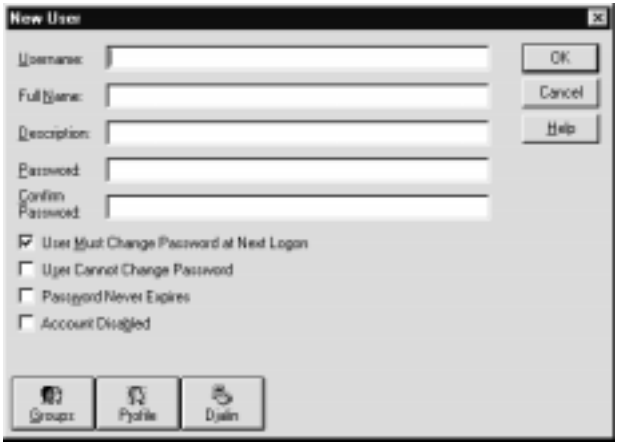
1. Go to the Oracle8 database to be managed.
2. Choose Start > Programs > Administrative Tools > User Manager.

   The *User Manager* window appears:



3. Choose New User from the User menu.

   The *New User* dialog box appears:



4. Enter the appropriate information in the dialog box:

   a. Enter a user name in the Username field.

   b. Enter the same password in both the Password and Confirm Password fields.

      The user name and password that you enter here do not need to match those that you created in "Step 2: Create a Repository User Account".

   c. Make sure the *User Must Change Password at Next Logon* check box is not checked and *Password Never Expires* check box is checked.

   d. Make the user a member of the Administrator's group by clicking Groups.

The *Group Memberships* dialog box appears:

e. Select Administrators from the *Not member of* list box and click <- Add.

Administrators is added to the *Member of* list box.

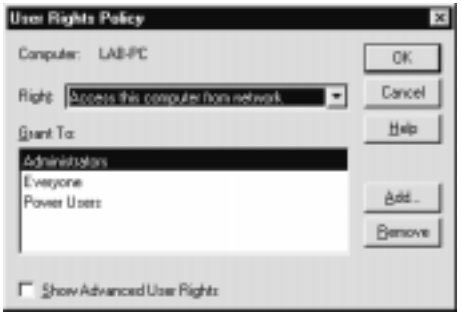
f. Click OK to close the *Group Memberships* dialog box and return to the *New User* dialog box.

5. Click OK in the *New User* dialog box to accept the user information.

The user is added and the *User Manager* window reappears.

6. Select the newly created user and choose User Rights from the Policies menu.

The *User Rights Policy* dialog box appears:



7. Click the *Show Advanced User Rights* check box and select *Log on as a batch job* from the Right drop-down list box.

8. Select Users from the Grant To list box.

If Users does not exist, create it:

a. Click Add.

The *Add Users and Groups* dialog box appears:

b. Select the name of the local host computer from the List Names From drop-down list box.

c. Select Users from the Names list box and click Add.

d. Click OK.

Users appears in the Grant To list box.

9. Click OK in the *User Rights Policy* dialog box.

The *User Manager* window reappears.

10. Click Exit from the User menu.

11. Repeat Steps 1-9 for any other repository user accounts you created.

12. Continue to "Step 4: Create Network Configuration Files".

Step 4: Create Network Configuration Files

If Oracle Enterprise Manager is installed on the same computer as the repository database, you do not need to configure your network. If Oracle Enterprise Manager is installed on a Windows 95 or Windows NT client console separate from the computer on which the repository database is installed, you must configure the client computer so it can connect to the Oracle8 repository database:

To create network configuration files:

1. Use Oracle Net8 Easy Config to configure your network. See *Net8 Getting Started for Windows NT and Windows 95/98* for instructions on using Oracle Net8 Easy Config.
2. Continue to "Step 5: Create the Repository and Discover Services".

Step 5: Create the Repository and Discover Services

Before you can use Oracle Enterprise Manager, you need a repository. The repository is a set of base tables in a database that contains status and environment information for your managed databases. A separate repository must be created for each user wanting to use Oracle Enterprise Manager.

The Oracle Enterprise Manager Console workstation must also discover network services, such as databases, listeners, and nodes, to populate the Oracle Enterprise Manager Navigator tree. In addition to discovery, Oracle Enterprise Manager must also be able to manage these services for the Job Scheduling and Event Management systems. This can be achieved with the Discovery Wizard.

When the agent starts up and is explicitly requested by the Oracle Enterprise Manager with the Navigator Discovery feature, the agent passes information from the Oracle Enterprise Manager Console to populate the Navigator tree.

To create a repository:

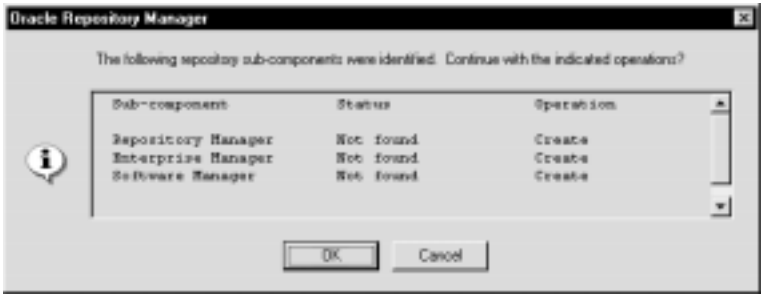
1. Go to the computer on which the Oracle8 database that will become your repository is installed.
2. Choose Start > Programs > Oracle Enterprise Manager > Enterprise Manager.

   The Oracle Enterprise Manager *Repository Login Information* dialog box appears.

3. Enter the following information and click OK:

   - Repository user name and password you created earlier in "Step 2: Create a Repository User Account"
   - Net8 service name (or database alias) of the repository database; it is only necessary to enter a service name if you are connecting from a client console to the Oracle8 repository database on a different computer

   The *Oracle Repository Manager* window appears, prompting you to build the repository:



4. Click OK.

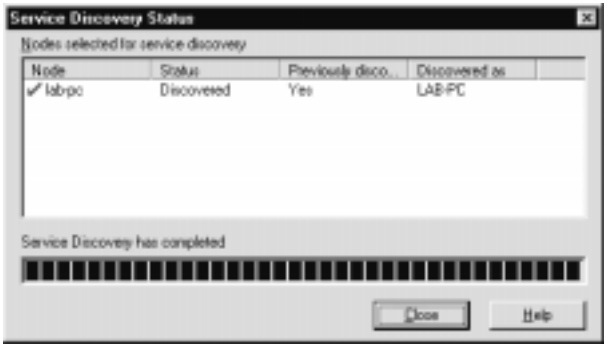
   The repository is built. A dialog box asking if you want a quick tour of Oracle Enterprise Manger appears.

5. Click Continue to dismiss this dialog box.

The Discover New Services Wizard appears:

6. Follow the wizard instructions to discover services.

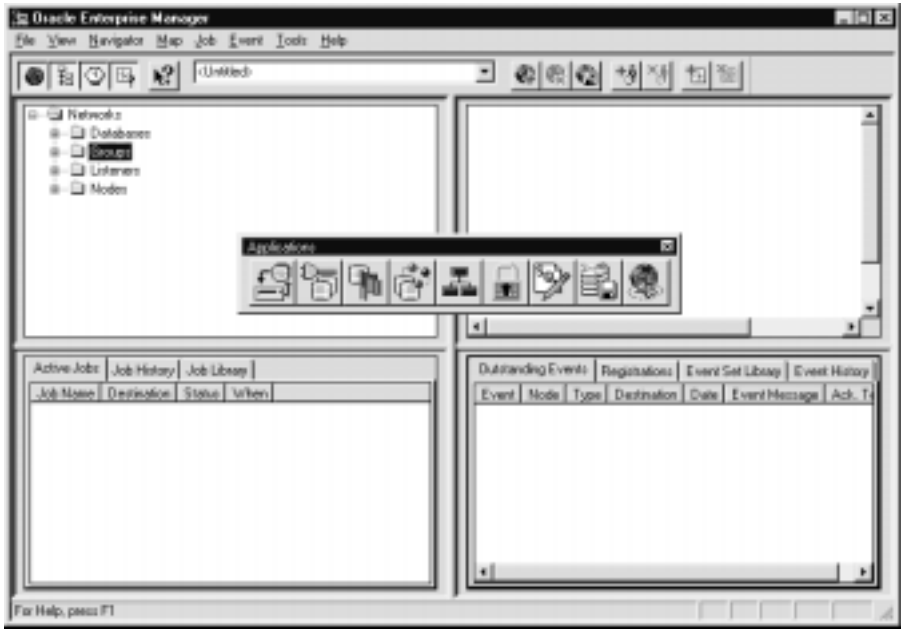
   Services are discovered when you see the dialog box below with a status of *Discovered*:



   If the services are not discovered, click Help for troubleshooting hints. The wizard can be restarted by selecting Service Discovery under Navigator in the main menu.

7. Click Close.

The *Oracle Enterprise Manager* Console appears:



Configuration is complete. Oracle Enterprise Manager is now available for use.

Oracle8 Spatial Cartridge

Oracle8 Spatial Cartridge makes the storage, retrieval, and manipulation of spatial data easier and more intuitive to users. An example of spatial data is a road map. A road map is a 2-dimensional object containing points, lines, and polygons representing cities, roads, and political boundaries such as states. A road map represents geographic information. The locations of cities, roads, and political boundaries are projected onto a 2-dimensional display or piece of paper, preserving the relative positions and relative distances of the objects.

Review the table below to determine your configuration responsibilities:

If You Installed...	Then...
Oracle8 Spatial Cartridge during the *same* installation as Oracle8 Enterprise Edition	No manual configuration is required. All tasks described in "Configuring Oracle8 Spatial Cartridge" were automatically performed.
Oracle8 Spatial Cartridge during a *separate* installation from Oracle8 Enterprise Edition	You must manually configure Oracle8 Spatial Cartridge by either: ■ Performing the tasks in "Configuring Oracle8 Spatial Cartridge" on page 8-18. ■ Starting Oracle Database Assistant and selecting Modify a Database. Then following the onscreen instructions.

Configuring Oracle8 Spatial Cartridge

To configure Oracle8 Spatial Cartridge:

1. Go to the computer on which Oracle8 Spatial Cartridge is installed.
2. Start Server Manager at the MS-DOS command prompt:

   ```
   C:\> SVRMGR30
   ```

3. Start the Oracle8 database if it is not currently running. Otherwise, go to step 4.
   a. Connect to the database as INTERNAL:

      ```
      SVRMGR> CONNECT INTERNAL/PASSWORD
      ```

   b. Start the Oracle8 database:

      ```
      SVRMGR> STARTUP
      ```

4. Connect to the database as the SYSTEM user:

   ```
   SVRMGR> CONNECT SYSTEM/PASSWORD
   ```

where *PASSWORD* is MANAGER for the SYSTEM user account by default. If you have changed this password, substitute MANAGER with the correct password.

5. Create a user called MDSYS with a password of MANAGER:

```
SVRMGR> CREATE USER MDSYS IDENTIFIED BY MANAGER;
```

6. Grant the following privileges to the MDSYS user:

```
SVRMGR> GRANT ALL PRIVILEGES TO MDSYS IDENTIFIED BY MANAGER WITH ADMIN
OPTION;

SVRMGR> ALTER USER MDSYS QUOTA UNLIMITED ON SYSTEM;
```

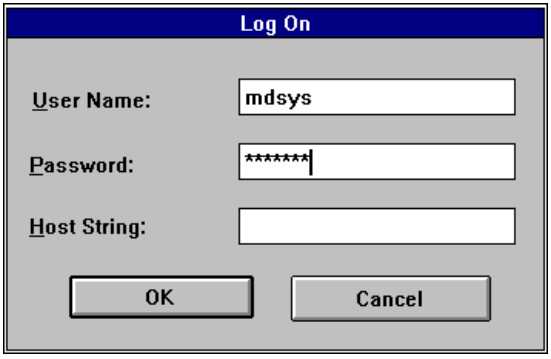
7. Exit Server Manager:

```
SVRMGR> EXIT
```

8. Start SQL*Plus from the MS-DOS command prompt:

```
C:\> PLUS80W
```

9. Connect to the database as MDSYS/MANAGER:



The Host String field can be left blank as this is a local database connection. This field is for specifying a service name when connecting to a remote database.

Note: You must use SQL*Plus to run CATMD.SQL. Server Manager *cannot* run CATMD.SQL.

---

10. Run the CATMD.SQL script:

```
SQL> @%ORACLE_HOME%\MD80\ADMIN\CATMD.SQL
```

This script creates the following:

- MD3 data dictionary tables
- MD3 data dictionary user views
- MDSQL packages for MD operations
- MDGTRIG package for generating triggers

For information on using Oracle8 Spatial Cartridge, see the *Oracle8 Spatial Cartridge User's Guide and Reference.*

Note: In order to develop applications that work with Oracle8 Spatial Cartridge, you must link with SDO80.LIB, which is located in the *ORACLE_HOME*\MD80 directory.

Oracle8 ConText Cartridge

Oracle8 ConText Cartridge provides search, retrieval, and viewing capabilities for text stored in an Oracle8 database. Oracle8 ConText Cartridge manages textual data in concert with traditional data types in an Oracle8 database. When text is inserted, updated, or deleted, Oracle8 ConText Cartridge automatically manages the change. Oracle8 ConText Cartridge enables text queries to be performed through SQL and PL/SQL from most Oracle interfaces, using tools such as SQL*Plus, Oracle Forms, and Pro*C/C++.

Review the following table to determine your configuration responsibilities.

If...	Then...
You installed Oracle8 ConText Cartridge release 2.4.6 from the Oracle8 Enterprise Edition CD-ROM and you do *not* have a previous release of ConText installed	Follow the instructions in: ■ "Configuring Oracle8 ConText Cartridge" on page 8-32 ■ "Configuring the CTXLING, CTXPLUS, and CTXQUERY Demos" on page 8-34
You installed Oracle8 ConText Cartridge release 2.4.6 from the Oracle8 Enterprise Edition CD-ROM and you want to upgrade a previously installed release of ConText to Oracle8 ConText Cartridge release 2.4.6	Follow the instructions in: ■ "Upgrading Oracle8 ConText Cartridge" on page 8-21 ■ "Configuring the CTXLING, CTXPLUS, and CTXQUERY Demos" on page 8-34

Upgrading Oracle8 ConText Cartridge

This section describes how to upgrade from previous releases of ConText to Oracle8 ConText Cartridge release 2.4.6.

The following table lists the release numbers of ConText with the corresponding Oracle Server releases:

ConText Release	Oracle Server Release
1.1.2	7.3.2
2.0.4	7.3.3
2.0.6	8.0.3
2.3.4	7.3.4
2.3.6	8.0.4
2.4.5	8.0.5
2.4.6	8.0.6

Follow the instructions appropriate to your situation:

- Migrating from Release 1.1.2 to Release 2.4.6
- Upgrading from Release 2.0.4 to Release 2.4.6
- Upgrading from Release 2.0.6 to Release 2.4.6
- Upgrading from Release 2.3.4 to Release 2.4.6
- Upgrading from Release 2.3.6 to Release 2.4.6
- Upgrading from Release 2.4.5 to Release 2.4.6

Migrating from Release 1.1.2 to Release 2.4.6

To migrate from release 1.1.2 to release 2.4.6:

1. Ensure that there are no ConText servers currently running. See the *Oracle8 ConText Cartridge Administrator's Guide* for information about how to shut down ConText servers.
2. Migrate the Oracle database from release 7.3.2 to release 8.0.6, if you have not already done so.
3. Start the Oracle database by entering the following at the MS-DOS command prompt:

   ```
   C:\> SVRMGR30

   SVRMGR> CONNECT SYS/PASSWORD

   SVRMGR> STARTUP [PFILE=PATH\FILENAME]
   ```

   where PFILE is the option to specify the full path and file name of an initialization parameter file (INIT*SID*.ORA) that exists in a location other than that for the default INIT*SID*.ORA file.
4. Exit Server Manager:

   ```
   SVRMGR> EXIT
   ```
5. Start SQL*Plus from the *ORACLE_HOME*\CTX80\ADMIN directory:

   ```
   C:\ORACLE_HOME\CTX80\ADMIN> PLUS80
   ```
6. Connect as SYS:

   ```
   Enter user-name: SYS/PASSWORD
   ```
7. Run the SYS20000.SQL script:

   ```
   SQL> @SYS20000.SQL;
   ```

8. Connect as CTXSYS:

```
SQL> CONNECT CTXSYS/PASSWORD;
```

9. Run the UPG20000.SQL script:

```
SQL> @UPG20000.SQL;
```

10. Run the UPG23600.SQL script:

```
SQL> @UPG23600.SQL;
```

11. Run the UPG24500.SQL script:

```
SQL> @UPG24500.SQL;
```

12. Run the UPG24600.SQL script:

```
SQL> @UPG24600.SQL;
```

13. Run the DR0PACK.SQL script:

```
SQL> @DR0PACK.SQL;
```

14. Run the DRGUS.SQL script:

```
SQL> @DRGUS.SQL;
```

15. If you want to use the ConText Linguistics and your text is in English, perform the following steps:

    a. Remove all of the rows from the CTX_SETTINGS table:

    ```
    SQL> TRUNCATE TABLE CTX_SETTINGS;
    ```

    b. Run the DRLNGSET.SQL script:

    ```
    SQL> @DRLNGSET.SQL;
    ```

16. Exit SQL*Plus:

```
SQL> EXIT
```

17. Start a ConText server:

```
C:\ORACLE_HOME\CTX80\ADMIN> START CTXSRV80 -USER CTXSYS/PASSWORD
-PERSONALITY DQM
```

18. Run the PL/SQL function CTX_DDL.UPGRADE_INDEX for each existing ConText index that must be upgraded for use with release 2.4.6. The owner of the index should perform this task, but it can also be performed by CTXSYS. The following syntax assumes that CTXSYS owns the index:

    ```
    C:\ORACLE_HOME\CTX80\ADMIN> PLUS80

    Enter user-name: CTXSYS/PASSWORD

    SQL> EXEC CTX_DDL.UPGRADE_INDEX('DOC_POL1');
    ```

    where *DOC_POL1* is the name of the policy of the index to be upgraded.

Upgrading from Release 2.0.4 to Release 2.4.6

To upgrade from release 2.0.4 to release 2.4.6:

1. Ensure that there are no ConText servers currently running. See the *Oracle8 ConText Cartridge Administrator's Guide* for information about how to shut down ConText servers.
2. Migrate the Oracle database from release 7.3.3 to release 8.0.6, if you have not already done so.
3. Start the Oracle database by entering the following at the MS-DOS command prompt:

    ```
    C:\> SVRMGR30

    SVRMGR> CONNECT SYS/PASSWORD

    SVRMGR> STARTUP [PFILE=PATH\FILENAME]
    ```

    where PFILE is the option to specify the full path and file name of an initialization parameter file (INIT*SID*.ORA) that exists in a location other than that for the default INIT*SID*.ORA file.
4. Exit Server Manager:

    ```
    SVRMGR> EXIT
    ```
5. Start SQL*Plus from the *ORACLE_HOME*\CTX80\ADMIN directory:

    ```
    C:\ORACLE_HOME\CTX80\ADMIN> PLUS80
    ```
6. Connect as CTXSYS:

    ```
    Enter user-name: CTXSYS/PASSWORD
    ```
7. Run the UPG23600.SQL script:

    ```
    SQL> @UPG23600.SQL;
    ```

8. Run the UPG24500.SQL script:

```
SQL> @UPG24500.SQL;
```

9. Run the UPG24600.SQL script:

```
SQL> @UPG24600.SQL;
```

10. Run the DR0PACK.SQL script:

```
SQL> @DR0PACK.SQL;
```

11. Run the DRGUS.SQL script:

```
SQL> @DRGUS.SQL;
```

12. If you want to use the ConText Linguistics and your text is in English, perform the following steps:

    a. Remove all of the rows from the CTX_SETTINGS table:

    ```
    SQL> TRUNCATE TABLE CTX_SETTINGS;
    ```

    b. Run the DRLNGSET.SQL script:

    ```
    SQL> @DRLNGSET.SQL;
    ```

13. Exit SQL*Plus:

```
SQL> EXIT
```

14. Start a ConText server:

```
C:\ORACLE_HOME\CTX80\ADMIN> START CTXSRV80 -USER CTXSYS/PASSWORD
-PERSONALITY DQM
```

15. Run the PL/SQL function CTX_DDL.UPGRADE_INDEX for each existing ConText index that must be upgraded for use with release 2.4.6. The owner of the index should perform this task, but it can also be performed by CTXSYS. The following syntax assumes that CTXSYS owns the index:

```
C:\ORACLE_HOME\CTX80\ADMIN> PLUS80

Enter user-name: CTXSYS/PASSWORD

SQL> EXEC CTX_DDL.UPGRADE_INDEX('DOC_POL1');
```

    where *DOC_POL1* is the name of the policy of the index to be upgraded.

Upgrading from Release 2.0.6 to Release 2.4.6

To upgrade from release 2.0.6 to release 2.4.6:

1. Ensure that there are no ConText servers currently running. See the *Oracle8 ConText Cartridge Administrator's Guide* for information about how to shut down ConText servers.
2. Upgrade the Oracle database from release 8.0.3 to release 8.0.6, if you have not already done so.
3. Start the Oracle database by entering the following at the MS-DOS command prompt:

   ```
   C:\> SVRMGR30

   SVRMGR> CONNECT SYS/PASSWORD

   SVRMGR> STARTUP [PFILE=PATH\FILENAME]
   ```

   where PFILE is the option to specify the full path and file name of an initialization parameter file (INIT*SID*.ORA) that exists in a location other than that for the default INIT*SID*.ORA file.
4. Exit Server Manager:

   ```
   SVRMGR> EXIT
   ```
5. Start SQL*Plus from the *ORACLE_HOME*\CTX80\ADMIN directory:

   ```
   C:\ORACLE_HOME\CTX80\ADMIN> PLUS80
   ```
6. Connect as CTXSYS:

   ```
   Enter user-name: CTXSYS/PASSWORD
   ```
7. Run the UPG23600.SQL script:

   ```
   SQL> @UPG23600.SQL;
   ```
8. Run the UPG24500.SQL script:

   ```
   SQL> @UPG24500.SQL;
   ```
9. Run the UPG24600.SQL script:

   ```
   SQL> @UPG24600.SQL;
   ```
10. Run the DR0PACK.SQL script:

    ```
    SQL> @DR0PACK.SQL;
    ```
11. Run the DRGUS.SQL script:

    ```
    SQL> @DRGUS.SQL;
    ```

12. If you want to use the ConText Linguistics and your text is in English, perform the following steps:

    a. Remove all of the rows from the CTX_SETTINGS table:

    ```
    SQL> TRUNCATE TABLE CTX_SETTINGS;
    ```

    b. Run the DRLNGSET.SQL script:

    ```
    SQL> @DRLNGSET.SQL;
    ```

13. Exit SQL*Plus:

    ```
    SQL> EXIT
    ```

14. Start a ConText server:

    ```
    C:\ORACLE_HOME\CTX80\ADMIN> START CTXSRV80 -USER CTXSYS/PASSWORD
    -PERSONALITY DQM
    ```

15. Run the PL/SQL function CTX_DDL.UPGRADE_INDEX for each existing ConText index that must be upgraded for use with release 2.4.6. The owner of the index should perform this task, but it can also be performed by CTXSYS. The following syntax assumes that CTXSYS owns the index:

    ```
    C:\ORACLE_HOME\CTX80\ADMIN> PLUS80

    Enter user-name: CTXSYS/PASSWORD

    SQL> EXEC CTX_DDL.UPGRADE_INDEX('DOC_POL1');
    ```

    where *DOC_POL1* is the name of the policy of the index to be upgraded.

Upgrading from Release 2.3.4 to Release 2.4.6

To upgrade from release 2.3.4 to release 2.4.6:

1. Ensure that there are no ConText servers currently running. See the *Oracle8 ConText Cartridge Administrator's Guide* for information about how to shut down ConText servers.
2. Migrate the Oracle database from release 7.3.4 to release 8.0.6, if you have not already done so.
3. Start the Oracle database by entering the following at the MS-DOS command prompt:

   ```
   C:\> SVRMGR30

   SVRMGR> CONNECT SYS/PASSWORD

   SVRMGR> STARTUP [PFILE=PATH\FILENAME]
   ```

   where PFILE is the option to specify the full path and file name of an initialization parameter file (INIT*SID*.ORA) that exists in a location other than that for the default INIT*SID*.ORA file.
4. Exit Server Manager:

   ```
   SVRMGR> EXIT
   ```
5. Start SQL*Plus from the *ORACLE_HOME*\CTX80\ADMIN directory:

   ```
   C:\ORACLE_HOME\CTX80\ADMIN> PLUS80
   ```
6. Connect as CTXSYS:

   ```
   Enter user-name: CTXSYS/PASSWORD
   ```
7. Run the UPG24500.SQL script:

   ```
   SQL> @UPG24500.SQL;
   ```
8. Run the UPG24600.SQL script:

   ```
   SQL> @UPG24600.SQL;
   ```
9. Run the DR0PACK.SQL script:

   ```
   SQL> @DR0PACK.SQL;
   ```
10. Run the DRGUS.SQL script:

    ```
    SQL> @DRGUS.SQL;
    ```

11. If you want to use the ConText Linguistics and your text is in English, perform the following steps:

    a. Remove all of the rows from the CTX_SETTINGS table:

    ```
    SQL> TRUNCATE TABLE CTX_SETTINGS;
    ```

    b. Run the DRLNGSET.SQL script:

    ```
    SQL> @DRLNGSET.SQL;
    ```

12. Exit SQL*Plus:

    ```
    SQL> EXIT
    ```

Upgrading from Release 2.3.6 to Release 2.4.6

To upgrade from release 2.3.6 to release 2.4.6:

1. Ensure that there are no ConText servers currently running. See the *Oracle8 ConText Cartridge Administrator's Guide* for information about how to shut down ConText servers.
2. Upgrade the Oracle database from release 8.0.4 to release 8.0.6, if you have not already done so.
3. Start the Oracle database by entering the following at the MS-DOS command prompt:

    ```
    C:\> SVRMGR30

    SVRMGR> CONNECT SYS/PASSWORD

    SVRMGR> STARTUP [PFILE=PATH\FILENAME]
    ```

    where PFILE is the option to specify the full path and file name of an initialization parameter file (INIT*SID*.ORA) that exists in a location other than that for the default INIT*SID*.ORA file.

4. Exit Server Manager:

    ```
    SVRMGR> EXIT
    ```

5. Start SQL*Plus from the *ORACLE_HOME*\CTX80\ADMIN directory:

    ```
    C:\ORACLE_HOME\CTX80\ADMIN> PLUS80
    ```

6. Connect as CTXSYS:

    ```
    Enter user-name: CTXSYS/PASSWORD
    ```

7. Run the UPG24500.SQL script:

```
SQL> @UPG24500.SQL;
```

8. Run the UPG24600.SQL script:

```
SQL> @UPG24600.SQL;
```

9. Run the DR0PACK.SQL script:

```
SQL> @DR0PACK.SQL;
```

10. Run the DRGUS.SQL script:

```
SQL> @DRGUS.SQL;
```

11. If you want to use the ConText Linguistics and your text is in English, perform the following steps:

    a. Remove all of the rows from the CTX_SETTINGS table:

    ```
    SQL> TRUNCATE TABLE CTX_SETTINGS;
    ```

    b. Run the DRLNGSET.SQL script:

    ```
    SQL> @DRLNGSET.SQL;
    ```

12. Exit SQL*Plus:

```
SQL> EXIT
```

Upgrading from Release 2.4.5 to Release 2.4.6

To upgrade from release 2.4.5 to release 2.4.6:

1. Ensure that there are no ConText servers currently running. See the *Oracle8 ConText Cartridge Administrator's Guide* for information about how to shut down ConText servers.
2. Upgrade the Oracle database from release 8.0.5 to release 8.0.6, if you have not already done so.
3. Start the Oracle database by entering the following at the MS-DOS command prompt:

```
C:\> SVRMGR30

SVRMGR> CONNECT SYS/PASSWORD

SVRMGR> STARTUP [PFILE=PATH\FILENAME]
```

   where PFILE is the option to specify the full path and file name of an initialization parameter file (INIT*SID*.ORA) that exists in a location other than that for the default INIT*SID*.ORA file.

4. Exit Server Manager:

   ```
   SVRMGR> EXIT
   ```

5. Start SQL*Plus from the *ORACLE_HOME*\CTX80\ADMIN directory:

   ```
   C:\ORACLE_HOME\CTX80\ADMIN> PLUS80
   ```

6. Connect as CTXSYS:

   ```
   Enter user-name: CTXSYS/PASSWORD
   ```

7. Run the UPG24600.SQL script:

   ```
   SQL> @UPG24600.SQL;
   ```

8. Run the DR0PACK.SQL script:

   ```
   SQL> @DR0PACK.SQL;
   ```

9. Run the DRGUS.SQL script:

   ```
   SQL> @DRGUS.SQL;
   ```

10. If you want to use the ConText Linguistics and your text is in English, perform the following steps:

    a. Remove all of the rows from the CTX_SETTINGS table:

       ```
       SQL> TRUNCATE TABLE CTX_SETTINGS;
       ```

    b. Run the DRLNGSET.SQL script:

       ```
       SQL> @DRLNGSET.SQL;
       ```

11. Exit SQL*Plus:

    ```
    SQL> EXIT
    ```

Configuring Oracle8 ConText Cartridge

This section describes how to configure Oracle8 ConText Cartridge release 2.4.6 when you do *not* have a previous release of ConText installed.

Step 1: Increase the SHARED_POOL_SIZE Initialization Parameter (Optional)

To configure Oracle8 ConText Cartridge, the SHARED_POOL_SIZE initialization parameter for your database must be at least 11534336. If the SHARED_POOL_SIZE initialization parameter is less than 11534336, you must increase the parameter.

To increase the SHARED_POOL_SIZE initialization parameter:

1. Start Server Manager at the MS-DOS command prompt:

   ```
   C:\> SVRMGR30
   ```

2. Connect as INTERNAL:

   ```
   SVRMGR> CONNECT INTERNAL/PASSWORD
   ```

3. Shut down the database:

   ```
   SVRMGR> SHUTDOWN
   ```

4. Use any ASCII text editor to open the INIT*SID*.ORA file.

5. Increase the SHARED_POOL_SIZE parameter so that the value is at least 11534336. For example:

   ```
   shared_pool_size = 12000000
   ```

6. Save the INIT*SID*.ORA file.

7. Start the database:

   ```
   SVRMGR> STARTUP
   ```

8. Exit Server Manager:

   ```
   SVRMGR> EXIT
   ```

Step 2: Start the OracleConTextService80 Service

To start the OracleConTextService80 Service:

1. Choose Start > Settings > Control Panel.

   The *Control Panel* window appears.

2. Double-click the Services icon.

   The *Services* window appears.

3. If the OracleConTextService80 service does not have a status of *Started*, select the service and click Start.

Step 3: Use Oracle Database Assistant to Configure Oracle8 ConText Cartridge

The following procedure creates the user name CTXSYS with the password CTXSYS, and then creates the ConText data dictionary.

If you select Enable Demo, the procedure also creates the user name CTXDEMO with the password CTXDEMO, and then creates and populates the CTXDEMO.EMP and CTXDEMO.DEPTNO tables.

1. Choose Start > Programs > Oracle for Windows NT - [*HOME_NAME*] > Oracle Database Assistant.
2. Select Modify a database, and click Next.
3. Select the instance for the database that you want to modify, type the password for the INTERNAL user name, and click Next.
4. Select Configure Oracle cartridges, and click Next.
5. Select ConText Cartridge.
6. Select Enable Demo if you want to create and populate the CTXDEMO.EMP and CTXDEMO.DEPTNO tables. ConText indexes will be created for these tables.
7. Click Finish.

   A message appears showing the progress of the configuration. Note that the configuration can take more than an hour.
8. If you selected Enable Demo, a message appears indicating that you need to start a ConText server. Enter the following at the MS-DOS command prompt:

   ```
   C:\> START CTXSRV80 -USER CTXSYS/PASSWORD -PERSONALITY DQL
   ```
9. Click Retry.

   A message appears indicating that your database has been successfully modified.
10. Click OK.

    Oracle Database Assistant closes.

Configuring the CTXLING, CTXPLUS, and CTXQUERY Demos

This section describes how to perform the initial setup required to use the CTXLING, CTXPLUS, and CTXQUERY demos.

The CTXLING and CTXPLUS demos are installed with Oracle8 ConText Cartridge. The CTXQUERY demo is installed with Oracle8 ConText Cartridge Workbench.

Demo	Location	Description
CTXLING	*ORACLE_HOME*\CTX80\DEMO\CTXLING	SQL*Plus linguistic extraction
CTXPLUS	*ORACLE_HOME*\CTX80\DEMO\CTXPLUS	SQL*Plus text query
CTXQUERY	*ORACLE_HOME*\CTXW\DEMO	Oracle Forms text query

Step 1: Create the CTXDEMO User Name (Optional)

If you do not have the CTXDEMO user name, you must create it.

> **Note:** If you performed the steps in "Configuring Oracle8 ConText Cartridge" on page 8-32 and selected Enable Demo, the CTXDEMO user was created for you.

To create the CTXDEMO user name:

1. Start SQL*Plus:

   ```
   C:\> PLUS80
   ```

2. Connect as CTXSYS:

   ```
   Enter user-name: CTXSYS/PASSWORD
   ```

3. Enter the following commands:

   ```
   SQL> GRANT CONNECT, RESOURCE TO CTXDEMO IDENTIFIED BY PASSWORD;
   SQL> GRANT CTXAPP TO CTXDEMO;
   ```

4. Exit SQL*Plus:

   ```
   SQL> EXIT
   ```

Step 2: Set Up the CTXLING, CTXPLUS, and CTXQUERY Demos

In this step, you import a dump file, start a ConText server, and then run a SQL script.

To set up the CTXLING, CTXPLUS, and CTXQUERY demos:

1. Choose Start > Settings > Control Panel.

   The *Control Panel* window appears.

2. Double-click the Services icon.

   The *Services* window appears.

3. If the OracleConTextService80 service does not have a status of *Started*, select the service and click Start.

4. Run the Import utility from the *ORACLE_HOME*\CTX80\DEMO\INSTALL directory to import the DEMO.DMP file:

   ```
   C:\ORACLE_HOME\CTX80\DEMO\INSTALL> IMP80 CTXSYS/PASSWORD FILE=DEMO.DMP
   IGNORE=Y TABLES=ARTICLES
   ```

   Importing the DEMO.DMP file:

   - creates the ARTICLES table
   - populates the ARTICLES.TEXT column with the text of the articles used in the demos

5. Start a ConText Server with the DDL (D), Query (Q), and Linguistics (L) personalities:

   ```
   C:\ORACLE_HOME\CTX80\DEMO\INSTALL> START CTXSRV80 -USER CTXSYS/PASSWORD
   -PERSONALITY DQL
   ```

6. Start SQL*Plus:

   ```
   C:\ORACLE_HOME\CTX80\DEMO\INSTALL> PLUS80
   ```

7. Connect as CTXDEMO:

   ```
   Enter user-name: CTXDEMO/PASSWORD
   ```

8. Run the DEMOINST.SQL script:

   ```
   SQL> @DEMOINST.SQL
   ```

   This script creates the policies, preferences, views, and results tables used by the demos and creates a text index for the ARTICLES table. The script serves as an example of the tasks that you must perform to set up any table for processing text queries.

9. If you plan to use the CTXLING demo, see the README.TXT file in the *ORACLE_HOME*\CTX80\DEMO\CTXLING directory for further setup instructions.

Oracle8 ConText Cartridge Workbench

Oracle8 ConText Cartridge Workbench consists of administrative tools and application development tools for Oracle8 ConText Cartridge.

Specific topics discussed in this section are:

- Upgrading Oracle8 ConText Cartridge Workbench
- Configuring Oracle8 ConText Cartridge Viewer Cartridge
- Configuring Oracle8 ConText Cartridge Configuration Manager
- Configuring Oracle8 ConText Cartridge Workbench Demo

Upgrading Oracle8 ConText Cartridge Workbench

To upgrade from previous releases of Oracle8 ConText Cartridge Workbench, install the current release of Oracle8 ConText Cartridge Workbench in the same Oracle home directory as the previous release using Oracle Installer. Oracle Installer automatically upgrades all Workbench files to the current release.

Configuring Oracle8 ConText Cartridge Viewer Cartridge

Chapter 3 of the *Oracle8 ConText Cartridge Workbench User's Guide* describes how to configure Oracle8 ConText Cartridge Viewer Cartridge.

Configuring Oracle8 ConText Cartridge Configuration Manager

Chapter 2 of the *Oracle8 ConText Cartridge Workbench User's Guide* describes how to configure Oracle8 ConText Cartridge Configuration Manager.

Configuring Oracle8 ConText Cartridge Workbench Demo

"Configuring the CTXLING, CTXPLUS, and CTXQUERY Demos" on page 8-34 describes how to configure the CTXQUERY demo.

Oracle8 Image Cartridge

Oracle8 Image Cartridge provides image storage, retrieval, and format conversion capabilities through an object data type (ODT). Oracle8 Image Cartridge supports image storage using Binary Large Objects (BLOBS) and references to image data residing in external files (BFILEs).

Review the table below to determine your configuration responsibilities:

If You...	Then...
Installed Oracle8 Image Cartridge during the *same* installation as Oracle8 Enterprise Edition	No manual configuration is required. All tasks described in "Configuring Oracle8 Image Cartridge" on page 8-38 were automatically performed.
Installed Oracle8 Image Cartridge during a *separate* installation from Oracle8 Enterprise Edition	You must manually configure Oracle8 Image Cartridge by either: ■ Performing the tasks in "Configuring Oracle8 Image Cartridge" on page 8-38. ■ Starting Oracle Database Assistant and selecting Modify a Database. Then following the onscreen instructions.
Want to use the demos	You must manually configure Oracle8 Image Cartridge Demos by either: ■ Performing the tasks in "Configuring Oracle8 Image Cartridge Demos" on page 8-38. ■ Starting Oracle Database Assistant and selecting Modify a Database. Then following the onscreen instructions.
Manually copied your Oracle7 LISTENER.ORA and TNSNAMES.ORA files into your Oracle8 network directory	You must modify the TNSNAMES.ORA and LISTENER.ORA network configuration files on your server to enable external procedure calls to work and Oracle8 Image Cartridge to function properly. Follow the tasks in "Configuring External Procedure Calls" in Chapter 8 of *Net8 Getting Started for Windows NT and Windows 95*.
Want to use Oracle8 Visual Information Retrieval Cartridge with Oracle8 Image Cartridge	Install Oracle8 Image Cartridge first. If you selected both cartridges for installation in the *Select Cartridges and Options* dialog box, Oracle8 Image Cartridge was installed first.
Want to build the Oracle8 Image Cartridge sample application	Install a C compiler.
Did not install Oracle8 Objects Option	Install Oracle8 Objects Option, which is required for Oracle8 Image Cartridge to function properly.
Want multi-threaded external callout functionality	Perform the tasks in "Step 6: Enabling Multi-threaded Callout Support" on page 15-9.

Configuring Oracle8 Image Cartridge

To configure Oracle8 Image Cartridge:

1. Start Server Manager:

   ```
   C:\> SVRMGR30
   ```

2. Connect to the database with the INTERNAL account:

   ```
   SVRMGR> CONNECT INTERNAL/PASSWORD
   ```

3. Start the database:

   ```
   SVRMGR> STARTUP
   ```

4. Run the following script:

   ```
   SVRMGR> @%ORACLE_HOME%\ORD80\IMG\ADMIN\ORDIINST.SQL
   ```

5. Enter the password for INTERNAL when prompted by the ORDIINST.SQL script:

   ```
   Password: PASSWORD
   ```

6. Change the password for ORDSYS (if necessary):

   a. Connect to the database with the INTERNAL account:

      ```
      SVRMGR> CONNECT INTERNAL/PASSWORD
      ```

   b. Enter the following command:

      ```
      SVRMGR> ALTER USER ORDSYS IDENTIFIED BY NEW_PASSWORD;
      ```

7. Exit Server Manager:

   ```
   SVRMGR> EXIT
   ```

Configuring Oracle8 Image Cartridge Demos

Oracle8 Image Cartridge Demos provide a sample demonstration showing how an image is extracted from an Oracle8 database.

To configure Oracle8 Image Cartridge Demos:

1. Start Server Manager:

   ```
   C:\> SVRMGR30
   ```

2. Connect to the database with the INTERNAL account:

   ```
   SVRMGR> CONNECT INTERNAL/PASSWORD
   ```

3. Run the following script:

   ```
   SVRMGR> @%ORACLE_HOME%\ORD80\IMG\DEMO\IMGDEMO.SQL
   ```

4. Enter the password for INTERNAL when prompted by the IMGDEMO.SQL script:

   ```
   Password: PASSWORD
   ```

5. Exit Server Manager:

   ```
   SVRMGR> EXIT
   ```

6. Go to the following directory:

   ```
   C:> CD ORACLE_HOME\ORD80\IMG\DEMO
   ```

7. Make the Oracle8 Image Cartridge Demo program:

If Using a...	Then Enter...
Microsoft C compiler	MAKE
Borland C compiler	BMAKE

Oracle8 Time Series Cartridge

Oracle8 Time Series Cartridge stores and retrieves timestamped data through object data types (ODTs). Oracle8 Time Series Cartridge is a building block for applications, rather than being an end-user application. For example, applications can use this cartridge to process historical data derived from financial market transactions, such as trades of stocks, bonds, and mutual fund shares. From this you can find the opening, closing, low, and high prices for a stock on a specific date; calculate monthly volumes for a stock for a specific year; and derive the 30-day moving average for a stock over a year.

Review the table below to determine your configuration responsibilities:

If You...	Then...
Installed Oracle8 Time Series Cartridge during the *same* installation as Oracle8 Enterprise Edition	No manual configuration is required. All tasks described in "Configuring Oracle8 Time Series Cartridge" were automatically performed.
Installed Oracle8 Time Series Cartridge during a *separate* installation from Oracle8 Enterprise Edition	You must manually configure Oracle8 Time Series Cartridge by either: ■ Performing the tasks in "Configuring Oracle8 Time Series Cartridge" on page 8-41. ■ Starting Oracle Database Assistant and selecting Modify a Database. Then following the onscreen instructions.
Want to use the demos	Perform the tasks in "Configuring Oracle8 Time Series Cartridge Demos" on page 8-42.
Manually copied your Oracle7 LISTENER.ORA and TNSNAMES.ORA files into your Oracle8 network directory	You must modify the TNSNAMES.ORA and LISTENER.ORA network configuration files on your server to enable external procedure calls to work and Oracle8 Time Series Cartridge to function properly. Follow the tasks in "Configuring External Procedure Calls" in Chapter 8 of *Net8 Getting Started for Windows NT and Windows 95*.
Did not install Oracle8 Objects Option	Install Oracle8 Objects Option, which is required for Oracle8 Time Series Cartridge to function properly.
Want multi-threaded external callout functionality	Perform the tasks in "Step 6: Enabling Multi-threaded Callout Support" on page 15-9.

Configuring Oracle8 Time Series Cartridge

> **Note:** Oracle8 Time Series Cartridge uses the same user name as Oracle8 Image Cartridge and Oracle8 Visual Information Retrieval Cartridge (ORDSYS). If you automatically or manually configured either of these cartridges first, then the error ORA-01920 can appear on-screen when running the script below. This error message can be ignored.

To configure Oracle8 Time Series Cartridge:

1. Start Server Manager:

   ```
   C:\> SVRMGR30
   ```

2. Connect to the database with the INTERNAL account:

   ```
   SVRMGR> CONNECT INTERNAL/PASSWORD
   ```

3. Create the user ORDSYS (if it does not currently exist):

   ```
   SVRMGR> CREATE USER ORDSYS IDENTIFIED BY ORDSYS;
   ```

4. Grant the following privileges to ORDSYS:

   ```
   SVRMGR> GRANT CONNECT,RESOURCE,CREATE LIBRARY TO ORDSYS;
   SVRMGR> GRANT GRANT ANY PRIVILEGE TO ORDSYS;
   ```

5. Connect as ORDSYS:

   ```
   SVRMGR> CONNECT ORDSYS/PASSWORD
   ```

6. Run the following script:

   ```
   SVRMGR> @%ORACLE_HOME%\ORD80\TS\ADMIN\ORDTINST.SQL
   ```

   This script:

   - defines calendar and time series types
   - defines utility, calendar, and time series functions
   - grants EXECUTE privileges to PUBLIC for all public types and packages

7. Change the password for ORDSYS (if necessary):

   a. Connect to the database with the INTERNAL account:

      ```
      SVRMGR> CONNECT INTERNAL/PASSWORD
      ```

b. Enter the following command:

```
SVRMGR> ALTER USER ORDSYS IDENTIFIED BY NEW_PASSWORD;
```

8. Exit Server Manager:

```
SVRMGR> EXIT
```

Configuring Oracle8 Time Series Cartridge Demos

Five Oracle8 Time Series Cartridge Demos are provided:

Demo	This Demo...
Usage	Creates a sample database for use with Oracle8 Time Series Cartridge and demonstrates several basic queries. This demo is used as the basis for all five demos.
Extend	Includes sample PL/SQL code to extend the functionality of Oracle8 Time Series Cartridge with new functions. The Oracle8 Objects Option is required to extend the Oracle8 Time Series Cartridge.
OCI	Provides C examples of client side time series access.
Pro*C	Provides examples of several approaches to client side time series access. Users must have Pro*C to build this demo.
Developers	Includes a Developer 2000 Form that incorporates a Developer 2000 Graphic, both of which access data using the Oracle8 Time Series Cartridge. This demo requires Developer 2000 Release 2.0 or higher.

To configure Oracle8 Time Series Cartridge Demos:

1. Go to the *ORACLE_HOME*\ORD80\TS\DEMO directory.
2. Read the README file in this directory for an overview of the five Oracle8 Time Series Cartridge Demos.
3. Go to the appropriate subdirectory of *ORACLE_HOME*\ORD80\TS\DEMO for instructions on configuring the demo that you want to use (for example, directory PROC for Pro*C).
4. Follow the README file instructions in the subdirectory to configure the demo.

> **Note:** Each of the five subdirectories contains a README that provides configuration instructions.

Oracle8 Visual Information Retrieval Cartridge

Oracle Visual Information Retrieval Cartridge stores, retrieves, and manipulates image data managed by an Oracle8 database. This cartridge supports image storage using BLOBS and references to image data residing in external files (BFILEs). This cartridge is a building block for various imaging applications, rather than being an end-user application. Some example applications for this cartridge are digital art galleries and museums, real estate marketing, document imaging, and stock photo collections (such as for fashion designers and architects).

Review the table below to determine your configuration responsibilities:

> **Note:** When you select Oracle8 Visual Information Retrieval Cartridge for installation, Oracle8 Image Cartridge is installed automatically. To function properly, Oracle8 Visual Information Retrieval Cartridge requires Oracle8 Image Cartridge.

If You...	Then...
Installed Oracle8 Visual Information Retrieval Cartridge during the *same* installation as Oracle8 Enterprise Edition	No manual configuration is required. All tasks described in "Configuring Oracle8 Visual Information Retrieval Cartridge" on page 8-44 were automatically performed.
Installed Oracle8 Visual Information Retrieval Cartridge during a *separate* installation from Oracle8 Enterprise Edition	You must manually configure Oracle8 Visual Information Retrieval by either: ■ Performing the tasks in "Configuring Oracle8 Visual Information Retrieval Cartridge" on page 8-44. ■ Starting Oracle Database Assistant and selecting Modify a Database. Then following the onscreen instructions.
Want to use the demos	Perform the tasks in "Configuring Oracle8 Visual Information Retrieval Cartridge Demos" on page 8-45.
Want to build an Oracle8 Visual Information Retrieval Cartridge sample application.	Install a C compiler.
Manually copied your Oracle7 LISTENER.ORA and TNSNAMES.ORA files into your Oracle8 network directory	You must modify the TNSNAMES.ORA and LISTENER.ORA network configuration files on your server to enable external procedure calls to work and Oracle8 Visual Information Retrieval Cartridge to function properly. Follow the tasks in "Configuring External Procedure Calls" in Chapter 8 of *Net8 Getting Started for Windows NT and Windows 95*.

If You...	Then...
Did not install Oracle8 Objects Option	Install Oracle8 Objects Option, which is required for Oracle8 Visual Information Retrieval Cartridge to function properly.
Want multi-threaded external callout functionality	Perform the tasks in "Step 6: Enabling Multi-threaded Callout Support" on page 15-9.

Configuring Oracle8 Visual Information Retrieval Cartridge

> **Note:** Oracle8 Visual Information Retrieval Cartridge uses the same user name as Oracle8 Image Cartridge and Oracle8 Time Series Cartridge (ORDSYS). If you automatically or manually configured either of these cartridges first, then the error ORA-01920 can appear on-screen when running the script below. This error message can be ignored.

To configure Oracle8 Visual Information Retrieval Cartridge:

1. Ensure that Oracle8 Image Cartridge is already configured. If not, see "Oracle8 Image Cartridge" on page 8-37 for instructions.
2. Start Server Manager:

   ```
   C:\> SVRMGR30
   ```

3. Connect to the database with the INTERNAL account:

   ```
   SVRMGR> CONNECT INTERNAL/PASSWORD
   ```

4. Run the following script:

   ```
   SVRMGR> @%ORACLE_HOME%\ORD80\VIR\DEMO\ORDRINST.SQL
   ```

5. Enter the password for INTERNAL when prompted by the ORDRINST.SQL script:

   ```
   Password: PASSWORD
   ```

6. Change the password for ORDSYS (if necessary):
   a. Connect to the database with the INTERNAL account:

      ```
      SVRMGR> CONNECT INTERNAL/PASSWORD
      ```

   b. Enter the following command:

      ```
      SVRMGR> ALTER USER ORDSYS IDENTIFIED BY NEW_PASSWORD;
      ```

7. Exit Server Manager:

   ```
   SVRMGR> EXIT
   ```

Configuring Oracle8 Visual Information Retrieval Cartridge Demos

Oracle8 Visual Information Retrieval Cartridge Demos provide a sample demonstration showing how an image is extracted from an Oracle8 database.

To configure Oracle8 Visual Information Retrieval Cartridge Demos:

1. Start Server Manager:

   ```
   C:\> SVRMGR30
   ```

2. Connect to the database with the INTERNAL account:

   ```
   SVRMGR> CONNECT INTERNAL/PASSWORD
   ```

3. Run the following script:

   ```
   SVRMGR> @%ORACLE_HOME%\ORD80\VIR\ADMIN\VIRDEMO.SQL
   ```

4. Enter the password for INTERNAL when prompted by the VIRDEMO.SQL script:

   ```
   Password: PASSWORD
   ```

5. Exit Server Manager:

   ```
   SVRMGR> EXIT
   ```

6. Go to the following directory:

   ```
   CD ORACLE_HOME\ORD80\VIR\DEMO
   ```

7. Make the Oracle8 Visual Information Retrieval Demos program:

If Using a...	Then Enter...
Microsoft C compiler	MAKE
Borland C compiler	BMAKE

Advanced Replication

Review the table below to determine your configuration responsibilities:

If You...	Then...
Selected: ■ Typical Configuration when prompted for a database type during Oracle8 Enterprise Edition installation. ■ Oracle8 Enterprise Edition during Custom installation in the *Software Asset Manager* window. ■ Advanced Replication while creating a customized Oracle8 Enterprise Edition with Oracle Database Assistant	All configuration tasks described in "Configuring Advanced Replication Support" on page 8-46 were automatically performed. No manual configuration is required.
Want to add replication support to a *previously* installed Oracle8 Enterprise Edition	You must manually configure Advanced Replication support by following the procedures in "Configuring Advanced Replication Support" on page 8-46.

Configuring Advanced Replication Support

Follow the procedures described below:

- Step 1: Checking Tablespace Requirements
- Step 2: Checking Initialization Parameters
- Step 3: Performing Configuration Tasks
- Step 4: Monitoring Data Dictionary Tables
- Step 5: Upgrading Advanced Replication

See *Oracle8 Enterprise Edition Installation for Windows NT* for Advanced Replication installation requirements.

Additional Information: There are many configuration and usage possibilities with Advanced Replication. For more information about advanced replication and for definitions of master sites and snapshot sites, see:

- *Oracle8 Distributed Database Systems*
- *Oracle8 Replication*
- *Oracle8 Concepts*
- *Oracle8 Administrator's Guide*

Step 1: Checking Tablespace Requirements

The following are recommended tablespace requirements for Advanced Replication:

Tablespace	Requirement
SYSTEM	At least 20 MB of free space is required for replication packages. Replication triggers and procedures are stored here.
ROLLBACK SEGMENTS	■ Rollback Initial Extent = 50 KB ■ Rollback Next Extent = 50 KB
ROLLBACK	At least 5 MB of free space.
TEMPORARY	At least 10 MB of free space.
USER	No specific requirement.

Step 2: Checking Initialization Parameters

Certain initialization parameter values must be set or added to the INIT*SID*.ORA file (recommended values are included) if you use Advanced Replication.

Master Site Add these initialization parameters to the master site:

Parameter Name	Recommended Value
SHARED_POOL_SIZE	At least 10 MB
DISTRIBUTED_LOCK_TIMEOUT	300 seconds
DISTRIBUTED_TRANSACTIONS	5
GLOBAL_NAMES	TRUE

Parameter Name	Recommended Value
OPEN_LINKS	4
PROCESSES	Add 9 to current value
JOB_QUEUE_PROCESSES	2 (depends on number of n-way sites)
JOB_QUEUE_INTERVAL	10 seconds

Snapshot Sites Add these initialization parameters for snapshot sites:

Parameter Name	Recommended Value
JOB_QUEUE_PROCESSES	2
JOB_QUEUE_INTERVAL	60 seconds

Step 3: Performing Configuration Tasks

After setting up the INIT*SID*.ORA file with the initialization parameters for Advanced Replication, perform the following steps:

To configure Advanced Replication:

1. Start Server Manager:

   ```
   C:\> SVRMGR30
   ```

2. Connect to the database with the INTERNAL account:

   ```
   SVRMGR> CONNECT INTERNAL/PASSWORD
   ```

3. Start the database if it is not currently running:

   ```
   SVRMGR> STARTUP
   ```

4. Run the script CATREP8M.SQL once the database has started.

   The script is found in the *ORACLE_HOME*\RDBMS80\ADMIN directory. It takes approximately one hour to run. Spool output to a log file first before running CATREP8M.SQL.

   a. Enter the following command:

      ```
      SVRMGR> SPOOL OUTPUT.LOG
      ```

      This creates a file called OUTPUT.LOG to which to output all on-screen activity while the SPOOL session is open.

   b. Run CATREP8M.SQL:

```
SVRMGR> @%RDBMS80%\ADMIN\CATREP8M.SQL
```

c. Close the SPOOL file by entering OFF when the script completes running:

```
SVRMGR> SPOOL OFF
```

OUTPUT.LOG is saved to your current directory.

5. Confirm that CATREP8M.SQL ran correctly by running a query on ALL_OBJECTS where STATUS = 'INVALID':

```
SVRMGR> SELECT * FROM ALL_OBJECTS WHERE STATUS = 'INVALID';
```

If all package bodies compiled successfully, the following message displays:

```
0 rows selected.
```

If you find that any of the package bodies compiled incorrectly, recompile them manually. The syntax for running them manually is:

```
SVRMGR> ALTER PACKAGE PACKAGE NAME COMPILE BODY;
```

If CATREP8M.SQL ran successfully, a number of replication tables are created in the SYSTEM subdirectory. The database is now set up for Advanced Replication support.

6. Exit Server Manager:

```
SVRMGR> EXIT
```

7. See *Oracle8 Replication* for details on setting up:

- master definition site
- master sites
- updatable snapshot sites
- conflict resolution

Note: Execute the following statement on the master site when setting up updatable snapshot sites:

```
SVRMGR> GRANT EXECUTE ON DBMSOBJGWRAPPER TO PUBLIC;
```

Step 4: Monitoring Data Dictionary Tables

The practical limit to the number of master sites an environment can have is 36. The processes SNP0 to SNP9 (total of 10) and SNPA to SNPZ (total of 26) each handle one destination master at a time.

If you use Advanced Replication and intend to set up a large number of replicated objects, monitor the following data dictionary tables with the SQL SELECT command:

SOURCE$	I_ARGUMENT1
IDL_UB1$	IDL_SB4$
IDL_UB2$	IDL_CHAR$
I_SOURCE1I$	TRIGGER$
ARGUMENT$	

If necessary, increase the storage parameters to accommodate the storage requirements of large numbers of replicated objects.

Step 5: Upgrading Advanced Replication

If you are upgrading from a previous version of the Oracle8 database and want to use Advanced Replication, you must first complete the upgrade (see Chapter 7, "Installing, Migrating, and Upgrading Databases" in this guide). After upgrading, Advanced Replication is automatically installed with the Oracle8 database during Release 8.0 installation (see *Oracle8 Enterprise Edition Installation for Windows NT*).

Advanced Replication is an advanced feature. Please consult your *Oracle8 Replication* documentation for concepts and details before proceeding. For additional information, contact Oracle Education.

9

Creating a Database

This chapter describes how to create a database.

Specific topics discussed are:

- Before You Create a Database
- Creating a Database Overview
- Using Oracle Database Assistant
- Using BUILD_DB.SQL
- Using ORADIM80 to Administer the Oracle Instance

Before You Create a Database

Before you create a database, consider the following requirements:

Naming Conventions for Oracle8 Databases

Before creating a database, it is important to understand that starting with Oracle8 Enterprise Edition, all mounted Oracle databases in a cluster *must* have unique database names. A database name is associated with a database at "CREATE DATABASE" time and stored in the control file(s) of the database. If the database keyword is provided in the CREATE DATABASE statement, then that value becomes the database name for that database. If not, then the value of the DB_NAME parameter in the INIT*SID*.ORA file is used. If the DB_NAME parameter is not specified, then the default DB_NAME value is ORC*x*.

If you attempt to mount two Oracle8 databases with the same database name, you receive the following error during the second mount:

```
ORA-01102: cannot mount database in EXCLUSIVE mode
```

If there are two or more Oracle8 databases on the same computer located in different Oracle homes:

- each database name must be unique
- each SID must be unique

To change the name of an existing database, you must use the CREATE CONTROLFILE statement to recreate your control file(s) and specify a new database name. This restriction is imposed only on Oracle8 instances. Any Oracle7 instances running simultaneously with an Oracle8 instance are not subject to this restriction.

Installing Oracle8 Server (the Database Component)

Note that the Oracle8 Server RDBMS component (the database software) must be installed from either the Oracle8 Enterprise Edition or Custom Installation options on Windows NT. It is not available with the Client option. See *Oracle8 Enterprise Edition Installation for Windows NT* for more information.

Creating a Database Overview

This section describes how to create a new database. You can choose either of the following tools to create a database:

- Oracle Database Assistant
- BUILD_DB.SQL script

Use Oracle Database Assistant to create a database because it is the easiest method. If you want to create a database using command line tools, you can use the BUILD_DB.SQL script located in *ORACLE_HOME*\RDBMS80\ADMIN.

Using Oracle Database Assistant

During installation of Oracle8 Enterprise Edition, you can select either of the following options to install Oracle Database Assistant. If you select:

- Typical Configuration, Oracle Database Assistant is installed as part of your Oracle8 software package. After installation is finished, you can use the assistant to create a database as described in "To create a database using Oracle Database Assistant:" on page 9-4.
- Custom Configuration, Oracle Database Assistant is immediately launched at the end of the installation process. You can create a database at this time, or you can quit the assistant and create a database at a later date.
- If you use the Oracle Database Assistant to create a new database in a new multiple Oracle home, the LISTENER.ORA file located in *ORACLE_HOME*\NET80\ADMIN is updated with the SID information if you click Yes in the dialog box, but the TNSNAMES.ORA file is not updated. You must use the Oracle Net8 Assistant or the Oracle Net8 Easy Config tool to specify a new service name for the new SID. See *Net8 Getting Started for Windows NT and Windows 95* for more information.

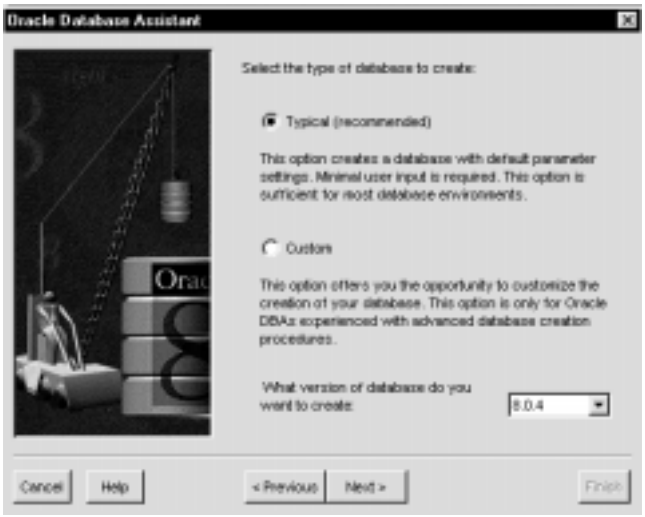
To create a database using Oracle Database Assistant:

1. Choose Start > Programs > Oracle for Windows NT - [*HOME_NAME*] > Oracle Database Assistant.

   The Oracle Database Assistant welcome window appears:

2. Select Create a database, then click Next.

The following window appears:



3. Choose the Typical or Custom option to create a database:

Option	Description
Typical	Creates a standard database with default INIT*SID*.ORA parameter settings.
Custom	Customizes the creation of your database. This option is only for Oracle database administrators experienced with advanced database creation procedures, such as customizing: ■ Data, control, and redo log file settings ■ Tablespace sizes ■ Extent sizes ■ Database memory parameters ■ Archiving formats and destinations ■ Trace file destinations ■ Character set values

4. Respond to instructions in each Oracle Database Assistant window, then click Next when you are ready to continue to the next screen. When you get to the last screen, click Finish to start the creation of the Oracle8 database.

Configure Oracle8 Cartridges Using Oracle Database Assistant

You can modify an Oracle8 database to support the following cartridges that you installed from your CD-ROM, but have not yet configured:

- Oracle8 ConText Cartridge
- Oracle8 Spatial Cartridge
- Oracle8 Image Cartridge
- Oracle8 Time Series Cartridge
- Oracle8 Visual Information Retrieval Cartridge

These cartridges (if installed during a separate installation from *Oracle8 Enterprise Edition*) are not automatically configured during installation. The Oracle ConText Cartridge is never automatically configured. The Modify option of Oracle Database Assistant automatically configures your cartridges. If you installed Oracle cartridges through the Oracle8 Enterprise EditionOracle8 option on the CD-ROM, your cartridges were automatically configured for the starter database ORCL.

Note: If you installed the Oracle8 Visual Information Retrieval Cartridge and its check box is shaded, you must select the Oracle8 Image Cartridge check box first. This action clears the Oracle8 Visual Information Retrieval Cartridge check box.

Delete a Database Using Oracle Database Assistant

The Delete a Database option of Oracle Database Assistant lets you quickly and easily delete databases.

Enable and Disable Multi-Threaded Support Using Oracle Database Assistant

You can choose options in Oracle Database Assistant to enable or disable multi-threaded server support in your Oracle8 database. Multi-threaded server (MTS) support enables many client user processes to share a small number of server processes. Many client users can connect to a dispatcher process. The dispatcher process then routes client requests to the next available shared server process. There is no dedicated server process for each user process that remains associated with the client user process for the duration of the connection. Instead, inactive server processes are "recycled" and used as needed. This reduces system overhead and enables you to increase the number of supported users. See *Net8 Administrator's Guide*, *Oracle8 Concepts*, and *Oracle8 Reference* for more information.

Using BUILD_DB.SQL

This section describes the steps to create a database manually using a SQL script. There are a number of ways to create a database depending on if you want to:

- Copy an existing database to a new database and remove the old database.
- Copy an existing database to a new database and keep the old database.
- Create a new database when no other database exists on your system that you can copy.

The table below summarizes the steps to create a new database for each of the above database creation scenarios. Each step is explained in detail in the following sub-sections.

Perform These Tasks...	If You Want To...		
	Copy an existing database and remove the old database	**Copy an existing database and keep the old database**	**Create a new database when no other database exists that you can copy**
Export an Existing Database	Yes	Yes. Only if you want to copy data from an existing database to the additional database	Not applicable
Delete Database Files	Yes	No	Not applicable
Modify the INITSID.ORA File	Yes	Yes	Yes
Create and Start an Oracle8 Service	No	Yes	Yes
Put CREATE DATABASE Statement in a Script	Yes	Yes	Yes
Create a Database	Yes	Yes	Yes
Import a Database	Yes	Yes. Only if you want to import tables and other objects exported from an existing database	Not applicable
Update ORACLE_SID in the Registry	No	Only if you want to change the default SID	Yes
Back Up the New Database	Yes	Yes	Yes

Create Database Example

An example is used in the following sections to demonstrate the commands to create a database. In this example, you will copy an existing database (the starter database with a SID of ORCL located in the C:\ ORANT directory) to a new database with a SID of PROD located in the C:\MYDIR directory. You will delete the ORCL database after you have created the PROD database.

Create \MYDIR Directory

Create a directory, for example, C:\MYDIR in which to put the new database PROD.

Export an Existing Database

It is only necessary to export if you want to copy the contents of an existing database to a new database. You must perform this task if you are going to remove the old database and put its data in the new database. If you are going to create an additional database, you only need to do this if you want a copy of the data from the old database in the new database.

You can invoke the Export Utility using parameter mode or interactive mode. Parameter mode is the recommended mode. Interactive mode provides less functionality than parameter mode. It exists for backward compatibility.

Example 9–1 Parameter Mode

```
C:\ORANT> EXP80 SYSTEM/PASSWORD FILE=MYEXP.DMP FULL=Y LOG=MYEXP.LOG
```

Example 9–2 Interactive Mode

```
C:\ORANT> EXP80 SYSTEM/PASSWORD
```

Enter only the command EXP80 USERNAME/*PASSWORD* to begin an interactive session and let the Export Utility prompt you for the information it needs.

See *Oracle8 Utilities* for more information on using the Export Utility in parameter or interactive mode.

Note: If you use Parameter mode, the Export Utility considers file names and directory names to be invalid if a blank space is present. Enclose the full path in the FILE= parameter in triple quotes. For example:

```
FILE="""C:\PROGRAM FILES\EXPORT.DMP"""
```

or

```
FILE="""C:\PROGRAM FILES\EXPORT FILE.DMP"""
```

If the Export Utility is used in Interactive mode, the file name or directory name can contain a space without quotes.

To export all data from an existing database to a new database:

1. Set ORACLE_SID to the database service of the database whose contents you want to export. For example, if the database you want to export is the starter database ORCL, enter the following at the MS-DOS command prompt. Note there are no spaces around the equal sign (=) character.

   ```
   C:\ORANT> SET ORACLE_SID=ORCL
   ```

2. Start the Export utility from the MS-DOS command prompt:

   ```
   C:\ORANT> EXP80 SYSTEM/PASSWORD FILE=MYEXP.DMP FULL=Y LOG=MYEXP.LOG
   ```

   You now have a full database export of the starter database ORCL in the file MYEXP.DMP, with all messages from the Export utility logged in the MYEXP.LOG file.

Delete Database Files

It is only necessary to delete database files if you want to copy an existing database to a new database and then remove the old database. In the following example, we delete the database files of the starter database ORCL.

To delete database files:

1. Shut down the starter database ORCL at the MS-DOS command prompt:

   ```
   C:\ORANT> ORADIM80 -SHUTDOWN -SID ORCL -USRPWD PASSWORD -SHUTTYPE INST
   -SHUTMODE I
   ```

2. Delete the following database files located in the *ORANT*\DATABASE directory:

   - SYS1ORCL.ORA
   - USR1ORCL.ORA
   - RBS1ORCL.ORA
   - TMP1ORCL.ORA
   - LOG1ORCL.ORA
   - LOG2ORCL.ORA
   - LOG3ORCL.ORA
   - LOG4ORCL.ORA
   - CTL1ORCL.ORA

LOG3ORCL.ORA AND LOG4ORCL.ORA database files are only available with release 7.3.4 and 8.0.4 databases. Do not delete the INITORCL.ORA file, as it will be the basis for the new initialization parameter file INITPROD.ORA in "Modify the INITSID.ORA File" on page 9-10.

Modify the INIT*SID*.ORA File

If you are using the starter database ORCL as the basis for your new database, copy C:\ORANT\DATABASE\INITORCL.ORA to C:\MYDIR\DATABASE\INITPROD.ORA and modify the file.

If you do not have an existing database on your system, you cannot copy an initialization parameter file to use as the basis for your INITPROD.ORA file. You can use the sample initialization parameter file INITORCL.80 provided in the C:\ORANT\DATABASE directory as the basis for INITPROD.ORA.

You *must* modify the CONTROL_FILES and DB_NAME initialization parameters in the INITPROD.ORA file or you will not be able to start the PROD database. Modifying the initialization parameters GLOBAL_NAMES and DB_FILES is highly recommended to optimize performance.

Initialization Parameter	How to Modify...

CONTROL_FILES	This parameter lists the control files of the database. You do not have the control files on your file system at this point, because the control files are created when you execute the CREATE DATABASE statement.
	Ensure you specify the complete path and file name, including drive letter. For example,
	`CONTROL_FILES = (C:\MYDIR\DATABASE\CTL1PROD.ORA,`
	`ORACLE_HOME\DATABASE\CTL2PROD.ORA)`

DB_NAME	This parameter indicates the name of the database, and must match the name used in the CREATE DATABASE statement in "Using BUILD_DB.SQL" on page 9-7. This name does not need to match the SID of the database service. You give a unique database name to each database. For example, `DB_NAME=PROD` You can use up to eight characters for the database name.
GLOBAL_NAMES	The default value of this parameter is FALSE; however, it is recommended to set this parameter to TRUE. See the *Oracle8 Administrator's Guide* to find out more about global names and how they relate to database links.

Initialization Parameter	How to Modify...
DB_FILES	Set this initialization parameter to the same number as the value of the MAXDATAFILES option of the CREATE DATABASE statement. The value of 100 is used for this example. `DB_FILES=100`

Additional Information: See Appendix B, "Oracle8 Database Specifications for Windows NT" for information on other initialization parameters you may want to add to the INITPROD.ORA file.

Create and Start an Oracle8 Service

It is only necessary to create and start an Oracle8 service if you want to:

- Copy an existing database to a new database and keep the old database.
- Create a new database when no other database exists on your system that you can copy.

Before you create the database, first create a Windows NT service to run the database. This service is the Oracle8 database process, ORACLE80.EXE, installed in the form of a Windows NT service. Use ORADIM80 to create the service. Upon creation, the service starts automatically. See "Using ORADIM80 to Administer the Oracle Instance" on page 9-22 for information on how to use ORADIM80.

To create a Windows NT service:

1. Go to the \MYDIR directory.

   ```
   C:\> CD MYDIR
   ```

2. Run ORADIM80 from the MS-DOS command prompt:

   ```
   C:\MYDIR> ORADIM80 -NEW -SID PROD -INTPWD PASSWORD -STARTMODE AUTO
   -PFILE C:\MYDIR\DATABASE\INITPROD.ORA
   ```

   Note that the previously created INITPROD.ORA file is specified, with complete path, including drive name. You do not receive a message indicating the success or failure of this command. You can check if the service is started in the services window of the Windows NT Control Panel.

3. Set ORACLE_SID to equal PROD. Note there are no spaces around the equal sign (=) character:

   ```
   C:\MYDIR> SET ORACLE_SID=PROD
   ```

Put CREATE DATABASE Statement in a Script

The CREATE DATABASE statement is a sequence of SQL statements that creates the database. Create a script containing this statement that you can reuse anytime you want to create a database. Use the BUILD_DB.SQL script located in C:\ORANT\RDBMS80\ADMIN as a basis for your script.

To prepare the CREATE DATABASE script:

1. Copy C:\ORANT\RDBMS80\ADMIN\BUILD_DB.SQL to C:\MYDIR\RDBMS80\ADMIN\BUILD_PROD.SQL and make the following changes to the BUILD_PROD.SQL script:

   a. Set PFILE so it points to the C:\MYDIR\DATABASE\INITPROD.ORA initialization file.

   b. Modify CREATE DATABASE ORCL to CREATE DATABASE PROD.

   c. Modify all the log file and data file names. Change all occurrences of ORCL to PROD. For example, change LOG1ORCL.ORA to LOG1PROD.ORA.

   d. Modify the location of the Oracle home directory including drive name, if necessary. Change all occurrences of ORANT to MYDIR. For example, change C:\ORANT\DATABASE to C:\MYDIR\DATABASE.

   A sample script follows:

```
-- This file must be run out of the directory containing the
-- initialization file.
startup nomount pfile=C:\mydir\DATABASE\initprod.ora
--  Create database
create database prod
controlfile reuse
logfile 'C:\mydir\DATABASE\log1prod.ora' size 1M reuse,
'C:\mydir\DATABASE\log2prod.ora' size 1M reuse,
'C:\mydir\DATABASE\log3prod.ora' size 1M reuse,
'C:\mydir\DATABASE\log4prod.ora' size 1M reuse
datafile 'C:\mydir\DATABASE\sys1prod.ora' size 10M reuse autoextend on
next 10M maxsize 200M
character set WE8ISO8859P1;
```

```
create rollback segment rb_temp;
-- Create additioanal tablespaces ...
-- USER_DATA: Create user sets this as the default tablespace
-- TEMPORARY_DATA: Create user sets this as the temporary tablespace
-- ROLLBACK_DATA: For rollback segments
create tablespace user_data
datafile 'C:\mydir\DATABASE\usr1prod.ora' size 3M reuse autoextend on
next 5M maxsize 150M;
create tablespace rollback_data
datafile 'C:\mydir\DATABASE\rbs1prod.ora' size 5M reuse autoextend on
next 5M maxsize 150M;
create tablespace temporary_data
datafile 'C:\mydir\DATABASE\tmp1prod.ora' size 2M reuse autoextend on
next 5M maxsize 150M;
alter rollback segment rb_temp online;-
-- Change the SYSTEM users' password, default tablespace and
-- temporary tablespace.
alter user system temporary tablespace temporary_data;
alter user system default tablespace user_data;
-- Create 16 rollback segments.  Allows 16 concurrent users with open
-- transactions updating the database. This should be enough.
create public rollback segment rb1 storage(initial 50K next 50K)
tablespace rollback_data;
create public rollback segment rb2 storage(initial 50K next 50K)
tablespace rollback_data;
create public rollback segment rb3 storage(initial 50K next 50K)
tablespace rollback_data;
create public rollback segment rb4 storage(initial 50K next 50K)
tablespace rollback_data;
```

```
create public rollback segment rb5 storage(initial 50K next 50K)
tablespace rollback_data;
create public rollback segment rb6 storage(initial 50K next 50K)
tablespace rollback_data;
create public rollback segment rb7 storage(initial 50K next 50K)
tablespace rollback_data;
create public rollback segment rb8 storage(initial 50K next 50K)
tablespace rollback_data;
create public rollback segment rb9 storage(initial 50K next 50K)
tablespace rollback_data;
create public rollback segment rb10 storage(initial 50K next 50K)
tablespace rollback_data;
create public rollback segment rb11 storage(initial 50K next 50K)
tablespace rollback_data;
create public rollback segment rb12 storage(initial 50K next 50K)
tablespace rollback_data;
create public rollback segment rb13 storage(initial 50K next 50K)
tablespace rollback_data;
create public rollback segment rb14 storage(initial 50K next 50K)
tablespace rollback_data;
create public rollback segment rb15 storage(initial 50K next 50K)
tablespace rollback_data;
create public rollback segment rb16 storage(initial 50K next 50K)
tablespace rollback_data;
```

You will run this script at the Server Manager prompt in the "Create a Database" on page 9-15.

Create a Database

Before you run the BUILD_PROD.SQL script to create a database, you must perform the following tasks:

1. Check if the service is started in the Windows NT Control Panel. In this example, the service name is OracleServicePROD, and its status column should display *Started*. If not, single-click the service name and choose the Start button to start the service. Alternatively, check the status of the service by entering the following at the MS-DOS command prompt:

   ```
   C:\MYDIR> NET START
   ```

   A list of all Windows NT services currently running on the system appears. If OracleServicePROD is missing from the list, enter:

   ```
   C:\MYDIR> NET START ORACLESERVICEPROD
   ```

2. Make PROD the current SID:

   ```
   C:\MYDIR> SET ORACLE_SID=PROD
   ```

3. Start Server Manager from the MS-DOS command prompt, and connect to the database as INTERNAL:

   ```
   C:\MYDIR> SVRMGR30
   ```

   ```
   SVRMGR> CONNECT INTERNAL/PASSWORD
   ```

   The password is the one you previously used to create the service, with the ORADIM80 -NEW command in "To create a Windows NT service:" on page 9-11. You should see the message *Connected*.

4. Turn on spooling to save the messages and run the BUILD_PROD.SQL script you created in "Put CREATE DATABASE Statement in a Script" on page 9-12:

   ```
   SVRMGR> SPOOL BUILD_PROD.LOG
   SVRMGR> @BUILD_PROD.SQL
   ```

This command assumes the script file is located in the directory from which Server Manager was invoked. If this is not the case, specify the complete path in front of the file name. If the database is created successfully, the message *Statement processed* appears. If you receive any errors, there are three possible causes:

Cause of Error	Solution
The BUILD_PROD.SQL script contained syntax errors.	Correct them.
Some of the files to be created by the BUILD_PROD.SQL script already exist in the file system.	Make sure you are not using any file names already used by another database on the system.

There was an error at the operating system level, such as a file or directory permission problem.	You should have received a series of errors in Server Manager, the last one of which should have the OSD- prefix. At the end of the OSD error you typically see an operating system error number in parentheses. To see what the error means:
	From the MS-DOS command prompt, enter:
	`C:\> NET HELPMSG n`
	or
	From the Server Manager prompt, enter:
	`SVRMGR> HOST NET HELPMSG n`
	where *n* is the operating system error number. See "Operating System Permission Issues" on page F-6 for more information.

You *must* correct these problems before attempting to recreate a database.

5. Run the following script to generate the data dictionary:

```
SVRMGR> @%RDBMS80%\ADMIN\CATALOG.SQL
```

6. Run the following script to install the objects used by the Oracle8 database's PL/SQL functionality:

```
SVRMGR> @%RDBMS80%\ADMIN\CATPROC.SQL
```

Run the following script if you want Advanced Replication functionality with the new database. Ensure that the rollback segments are large enough and are online before you run CATREP8M.SQL.

```
SVRMGR> @%RDBMS80%\ADMIN\CATREP8M.SQL
```

Note that CATREP8M.SQL requires at least an hour to run, depending on your system.

7. Turn off spooling after all scripts have finished running:

```
SVRMGR> SPOOL OFF
```

8. Examine the BUILD_PROD.SQL.LOG file for any errors.

Note: You may see many messages such as *object to be dropped does not exist* and *name already used by another object* while the scripts are running. These are information messages and are intended to occur while creating a new database. If you see any unusual errors in the BUILD_PROD.SQL.LOG log file, see *Oracle8 Error Messages* for suggested actions.

IMPORTANT: The new database contains two users, SYS and SYSTEM, with passwords CHANGE_ON_INSTALL and MANAGER, respectively. For security reasons, change the passwords now. Use the ALTER USER statement to change the passwords:

```
SVRMGR> ALTER USER SYS IDENTIFIED BY NEW_SYS_PASSWORD;
SVRMGR> ALTER USER SYSTEM IDENTIFIED BY NEW_SYSTEM_PASSWORD;
```

Import a Database

You can choose to import the full export created in the "Export an Existing Database" on page 9-8 into the new database.

You can invoke the Import Utility using Parameter mode or Interactive mode. Parameter mode is the recommended mode. Interactive mode provides less functionality than parameter mode. It exists for backward compatibility.

Example 9–3 Parameter Mode

```
C:\ORANT> IMP80 SYSTEM/PASSWORD FILE=MYEXP.DMP FULL=Y LOG=MYEXP.LOG
```

Example 9–4 Interactive Mode

```
C:\ORANT> IMP80 SYSTEM/PASSWORD
```

Enter only the command IMP80 USERNAME/*PASSWORD* to begin an interactive session and let the Export Utility prompt you for the information it needs.

See *Oracle8 Utilities* for more information on using the Import Utility in parameter or interactive mode.

Note: If you use Parameter mode, the Import Utility considers file names and directory names to be invalid if a blank space is present. Enclose the full path in the FILE= parameter in triple quotes. For example:

```
FILE="""C:\PROGRAM FILES\EXPORT.DMP"""
```

or

```
FILE="""C:\PROGRAM FILES\EXPORT FILE.DMP"""
```

If the Import Utility is used in Interactive mode, the file name or directory name can contain a space without quotes.

To import data:

1. Exit Server Manager:

   ```
   SVRMGR> EXIT
   ```

2. Run the Import utility:

   ```
   C:\MYDIR> IMP80 SYSTEM/PASSWORD FILE=MYEXP.DMP FULL=Y LOG=MYIMP.LOG
   ```

IMPORTANT: If the original database from which the export file was generated contains tablespaces that are not in the new database, then the Import utility attempts to create those tablespaces with associated data files. The easy solution is to ensure both databases contain the same tablespaces. The data files do not have to be identical. Only the tablespace names are important.

Update ORACLE_SID in the Registry

If this is the first database on the system or if you want to make the new database the default database, you must make a change in the registry.

1. Invoke the registry editor at the MS-DOS command prompt by entering REGEDT32. For example:

   ```
   C:\MYDIR> REGEDT32
   ```

   The registry editor window appears.

2. Choose the \HKEY_LOCAL_MACHINE\SOFTWARE\ORACLE subkey for the *first* Oracle home on your computer. For subsequent installations to different Oracle homes on the same computer, the path is \HKEY_LOCAL_MACHINE\SOFTWARE\ORACLE\HOME*ID*, where *ID* is the unique number identifying the Oracle home. See Appendix C, "Configuration Parameters and the Registry" for more information on the subkey locations for multiple Oracle homes.

3. Locate the ORACLE_SID parameter on the right side of the registry editor window.

4. Double-click the parameter name, and change the data to the new SID, which is PROD in this example.

If you do not have ORACLE_SID because this is the first database on your system, you must create the ORACLE_SID parameter.

To create ORACLE_SID parameter:

1. Start the registry in either of two ways:

   - From the MS-DOS command prompt, enter:

     ```
     C:\> REGEDT32
     ```

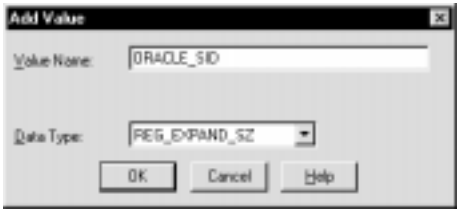
   - Choose Start > Run, enter `REGEDT32` in the Open field, and click OK.

   The *registry editor* window appears.

2. Navigate to HKEY_LOCAL_MACHINE\SOFTWARE\ORACLE if this is the *first* Oracle home on your computer. For additional Oracle homes on the same computer, the path is \HKEY_LOCAL_MACHINE\SOFTWARE\ORACLE\HOME*ID*, where *ID* is the unique number identifying the Oracle home.

3. Choose Add Value... from the Edit menu.

The *Add Value* dialog box appears:



4. Enter ORACLE_SID in the Value Name field.
5. Enter REG_EXPAND_SZ (for an expandable string) in the Data Type box
6. Click OK.

   A string editor dialog box appropriate for the data type appears:

7. Enter PROD in the string editor dialog box.

   The registry editor adds the ORACLE_SID parameter.
8. Choose Exit from the registry menu.

   The registry exits.

Back Up the New Database

WARNING: If anything goes wrong while operating the new database without a backup, you must repeat the database creation procedure. Back up your database now to prevent such damage.

To back up the new database:

1. Shut down the database instance and stop the service:

   ```
   C:\MYDIR> ORADIM80 -SHUTDOWN -SID PROD -USRPWD PASSWORD
   -SHUTTYPE SRVC,INST -SHUTMODE I
   ```

   WARNING: Although ORADIM80 returns the prompt immediately, you must wait for the database and the service to stop completely before continuing to Step 2. Wait until the Control Panel indicates the OracleServicePROD service has stopped. If you do not do this, the backup may be useless as it was taken while data was being written to the data files.

2. Using the tool of your choice, back up the database files. Data files consist of the initialization parameter file, control files, online redo log files, and data files.

   You can now start the database again, create users and objects if necessary, make any other changes, and use the database. Ensure you make a database backup, if possible, after making any significant change to the database, such as switching the ARCHIVELOG mode or adding a tablespace or data file.

   Additional Information: See Chapter 13, "Backing Up and Recovering Database Files", *Oracle8 Concepts*, *Oracle8 Backup and Recovery*, and *Oracle8 Administrator's Guide* for more information on archiving and backup / recovery.

Using ORADIM80 to Administer the Oracle Instance

ORADIM80 is a command line tool that is only available on Oracle8 Enterprise Edition for Windows NT.

You only need to use ORADIM80 if you are *manually* creating, deleting, or modifying databases. Oracle Database Configuration Assistant is an easier tool to use for this purpose.

> **Note:** This is the only place in the product information set where you will find information on ORADIM80

ORADIM80 and Oracle Database Configuration Assistant perform similar tasks. The following table compares what you can do with these tools.

ORADIM80	Oracle Database Assistant
■ Use ORADIM80 to create, start, stop, modify, and delete instances (and not any associated database files) at the MS-DOS command prompt.	■ Use the assistant to create and delete databases (and their associated instances and services). Note that the assistant cannot start or stop existing databases.
■ Can be used to modify an instance. You can modify an existing instance to change such values as the instance name, the password, the startup mode, and the number of users.	■ Cannot be used to modify an instance.
■ Only creates the password file and the related service. The database (that is, the database files) is not created.	■ Creates the database, the associated instance, the service, and the password file.

When you use ORADIM80, a log file called ORADIM80.LOG is opened in *ORACLE_HOME*\RDBMS80. All operations (both successful and failed) are logged in this file. You *must* check this file to verify the success of an operation. The following sections describe the ORADIM80 commands and parameters. Note that each command is preceded by a dash (-).

To Get a List of ORADIM80 Parameters And Descriptions:	
Use this syntax:	`ORADIM80 -? | -H | -HELP`
Example:	`C:\MYDIR> ORADIM80 -?`

Creating an Instance

To Create an Instance:

Use this syntax:

```
ORADIM80 -NEW -SID SID -INTPWD INTERNAL_PWD
[-USERS NUMBER][-STARTMODE AUTO, MANUAL][-PFILE FILENAME]
```

Example to create an instance called PROD:

```
C:\MYDIR> ORADIM80 -NEW -SID PROD -INTPWD MYPASSWORD1 -STARTMODE
AUTO -PFILE C:\MYDIR\DATABASE\INITPROD.ORA
```

Syntax description:

■ -NEW	indicates that you want to create a new instance. This is a mandatory parameter.
■ -SID *SID*	is the name of the instance you want to create. This is a mandatory parameter.
■ -INTPWD *INTERNAL_PWD*	is the password for the INTERNAL account. This is a mandatory parameter unless DBA_AUTHORIZATION or DBA_*SID*_AUTHORIZATION is set to BYPASS in the registry.
■ -MAXUSERS *NUMBER*	is the number of users defined in the password file. The default is 5.
■ -STARTMODE AUTO, MANUAL	indicates whether to start the instance automatically or manually at startup. The default setting is MANUAL.
■ -PFILE *FILENAME*	is the INIT*SID*.ORA file to be used with this instance. Ensure you specify the complete pathname of this file, including drive letter.

Starting an Instance

To Start an Instance:

Use this syntax:	`ORADIM80 -STARTUP -SID SID [-USRPWD USER_PWD] -STARTTYPE SRVC, INST [-PFILE FILENAME]`	
Example to start an instance called PUMA:	`C:\MYDIR> ORADIM80 -STARTUP -SID PUMA -STARTTYPE SRVC -PFILE C:\MYDIR\DATABASE\INITPUMA.ORA`	
Syntax description:	■ -STARTUP	indicates that you want to start an instance that already exists. This is a mandatory parameter.
	■ -SID *SID*	is the name of the instance you want to start. This is a mandatory parameter.
	■ -USERPWD *USER_PWD*	is the password.
	■ -STARTTYPE *SRVC, INST*	indicates whether to start the service or the instance. Both can be specified. This is a mandatory parameter.

Stopping an Instance

To Stop an Instance:

Use this syntax:	`ORADIM80 -SHUTDOWN -SID SID [-USRPWD USER_PWD] -SHUTTYPE SRVC, INST -SHUTMODE [A, I, N]`	
Example to stop an instance called PUMA:	`C:\MYDIR> ORADIM80 -SHUTDOWN -SID PUMA -SHUTTYPE SRVC INST`	
Syntax description:	■ -SHUTDOWN	indicates that you want to stop an instance. This is a mandatory parameter.
	■ -SID *SID*	is the name of the instance you want to stop. This is a mandatory parameter.
	■ -USERPWD *USER_PWD*	is the password.
	■ -SHUTTYPE *SRVC, INST*	indicates whether to stop the service or the instance. Both can be specified. This is a mandatory parameter.
	■ -SHUTMODE A, I, N	specifications on how to stop an instance; A indicates abort mode, I indicates immediate mode, and N indicates normal mode. This is an optional parameter. If you do not specify how to stop an instance, normal is the default mode.

Modifying an Instance

To Modify an Instance:

Use this syntax:	`ORADIM80 -EDIT -SID` *`SID`* `[-NEWSID` *`NEWSID`*`] -INTPWD` *`INTERNAL_PWD`* `[-STARTMODE AUTO, MANUAL][-PFILE` *`FILENAME`*`]`		
Example to modify an instance called PROD:	`C:\MYDIR> ORADIM80 -EDIT -SID PROD -NEWSID LYNX -INTPWD MYCAT123 -STARTMODE AUTO -PFILE C:\MYDIR\DATABASE\INITLYNX.ORA`		
Note:	You can modify an existing instance, in this example PROD, to change such values as the instance name, the password, the startup mode, and the number of users.		
Syntax description:	■	-EDIT	indicates that you want to modify an instance. This is a mandatory parameter.
	■	-SID *SID*	is the name of the instance you want to modify. This is a mandatory parameter.
	■	-NEWSID *NEWSID*	is the new instance name. This is an optional parameter.
	■	-INTPWD *INTERNAL_PWD*	is the password for the INTERNAL account. This is a mandatory parameter unless DBA_AUTHORIZATION or DBA_*SID*_AUTHORIZATION is set to BYPASS in the registry. **Note:** This parameter cannot be used to change the password, as it does not overwrite the existing password file. It can only create a new password file when none already exists. To create a new password file, use ORAPWD80, or delete the Oracle8 services (this action implicitly deletes the associated password file) and then recreate the Oracle8 services (this action implicitly creates the associated password file). See "Password Utility (ORAPWD80)" on page 3-2.
	■	-STARTMODE AUTO, MANUAL	indicates whether to start the instance automatically or manually at startup. The default setting is MANUAL.
	■	-PFILE *FILENAME*	is the INIT*SID*.ORA file to be used with this instance. Ensure you specify the complete pathname of this file, including drive letter.

Deleting an Instance

To Delete an Instance:		
Use this syntax:	`ORADIM80 -DELETE -SID` *`SIDA SIDB SIDC`* `-SVRC` *`SVRCA SVRCB SVRCC`*	
Example to delete the instances PUMA and LYNX:	`C:\MYDIR> ORADIM80 -DELETE -SID PUMA LYNX -SRVC ORACLESERVICEPUMA ORACLESERVICELYNX`	
Syntax description:	■ -DELETE	indicates that you want to delete an instance or instances.
	■ -SID *SIDA, SIDB, SIDC*	are the names of the SIDs to delete.
	■ -SVRC *SRVCA, SRVCB, SRVCC*	are the services to delete.

10

Administering a Database

This chapter describes how to administer Oracle8 Enterprise Edition.

Specific topics discussed are:

- Managing Oracle Services
- Starting and Shutting Down a Database with Server Manager
- Starting and Shutting Down a Database with Oracle Enterprise Manager
- Shutting Down a Database By Stopping a Service
- Running Multiple Instances
- Creating Password Files
- Connecting as INTERNAL with a Password File
- Changing the INTERNAL Password
- Encrypting Database Passwords
- Archiving Redo Log Files
- Using the ORADEBUG Utility

Managing Oracle Services

This section provides information on the following:

- Oracle Service Naming Conventions for Multiple Oracle Homes
- Available Oracle Services
- Starting Oracle Services
- Stopping Oracle Services
- Auto-starting Oracle Services

Oracle Service Naming Conventions for Multiple Oracle Homes

Oracle8 Enterprise Edition allows you to have multiple, active Oracle home directories on a single computer. Chapter 6, "Using Multiple Oracle Homes" describes this feature. Multiple Oracle homes affect the naming conventions for Oracle services. If you have only one Oracle home directory on a computer, there are no differences between the naming conventions for service names in this release and previous releases (that is, no Oracle *home name* and the SID is typically the default of ORCL). However, as you perform additional installations into Oracle home directories:

- you must specify a different Oracle *home name* for each Oracle home directory during installation, which is added to some service names
- your system identifier (SID) is automatically incremented with each Oracle8 database installation

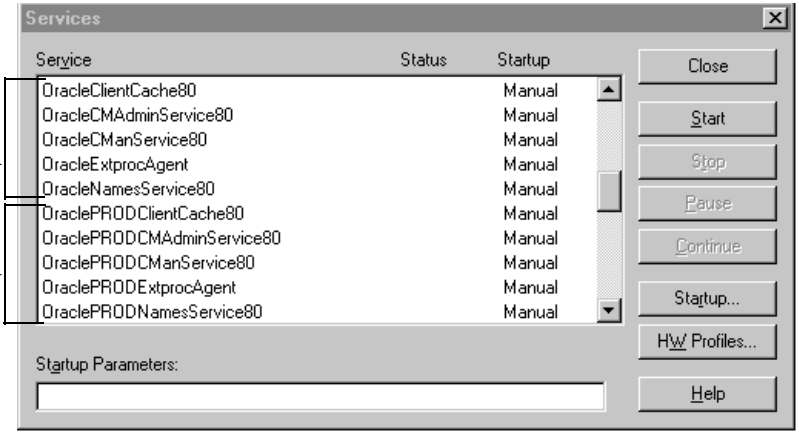
This affects service names. This table describes how two service names, OracleTNSListener80 and OracleServiceORCL, are affected when you install three Oracle8 databases into separate directories:

For the...	The Home Name is...	The SID is Named...	The Services are Named...
First Oracle home installation on a computer.	Not required.	ORCL	OracleTNSListener80 OracleServiceORCL
Second Oracle home installation on a computer.	Required; for this example, PROD is entered when prompted during installation.	ORC1	OraclePRODTNSListener80 OracleServiceORC1
Third Oracle home installation on a computer.	Required; for this example, SALES is entered when prompted during installation.	ORC2	OracleSALESTNSListener80 OracleServiceORC2

These two figures show how the *Services* dialog box appears with two Oracle8 databases on a single computer:

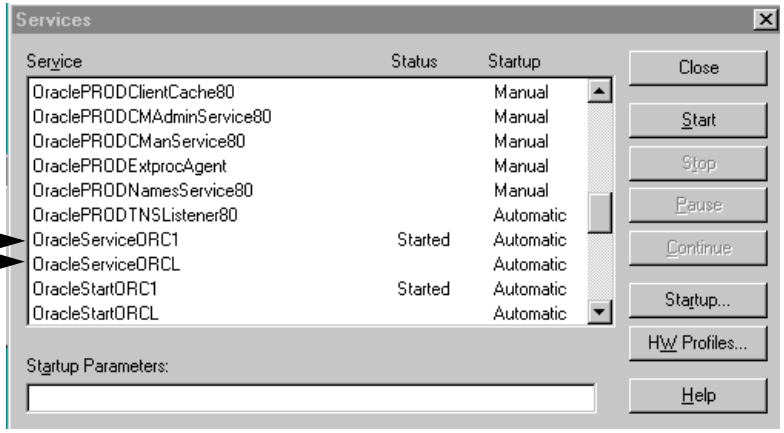
Service names for first Oracle8 database installation. No home name is required or part of service names.

Service names for second Oracle8 database installation. The home name of PROD is part of service names.



Service name for second Oracle8 database installation. SID is incremented to ORC1.

Service name for first Oracle8 database installation. Default SID of ORCL is used.



Available Oracle Services

Depending on the products that you have installed, a number of Oracle services are started when you restart your Windows NT computer. The three main Oracle services are:

Service Name	Description
OracleService*SID*	Created for the database instance *SID*. An Oracle instance is a logical term that refers to: ■ an Oracle service called OracleService*SID* ■ a database Each Oracle instance must have a system identifier (SID). A SID is a unique name for an Oracle database instance that can be up to four alphanumeric characters in length. For example, if the SID for the Oracle8 database is ORCL, it is appended to the service OracleService. Each file for the database instance ORCL in the *ORACLE_HOME*\DATABASE directory has ORCL as part of its name (for example, CTL1ORCL.ORA, LOG1ORCL.ORA, and INITORCL.ORA). The instance name is the same as the value of the ORACLE_SID registry configuration parameter. To connect to a specific Oracle database, users must specify a service name (database alias) that contains a SID for that database.
OracleStart*SID*	Starts the database instance *SID* automatically whenever the Windows NT computer restarts.
OracleTNSListener80[1]	Listens for and accepts incoming connection requests from client applications. Automatically starts when the Windows NT computer restarts.

[1] This is the name for this service if you have only one Oracle home directory on your computer. Each additional Oracle home directory on your computer uses the naming convention Oracle*HOME_NAME*TNSListener80 for this service. See Chapter 6, "Using Multiple Oracle Homes" for information.

See Appendix F, "Troubleshooting" for error messages that you can receive if you attempt to connect to the Oracle8 database without these services running.

Additional Oracle services related to specific products or database features are also available:

Service Name	Description
OracleAgent	Listens for and responds to job and event requests sent from the Oracle Enterprise Manager console.
OracleConTextService80[1]	ConText server processes started on an NT server are normally terminated by Windows NT when the user logs off. This service can be used to start server processes that survive logouts.
OracleExtprocAgent[1]	Enables external procedure callouts from PL/SQL to the database to be implemented with multiple, light-weight threads instead of a single dedicated process.
OracleWebAssistant[2]	Enables information from database queries to be published to a Web page at specified time intervals.

[1] These are the names for these services if you have only one Oracle home directory on your computer. Each additional Oracle home directory on your computer uses the naming convention Oracle*HOME_NAME*ConTextService80 or Oracle*HOME_NAME*ExtprocAgent for these services. See Chapter 6, "Using Multiple Oracle Homes" for information.

[2] This is the name for this service if you have only one Oracle home directory on your computer. Each additional Oracle home directory on your computer uses the naming convention OracleWebAssistant1, OracleWebAssistant2, and so on for this service. See Chapter 6, "Using Multiple Oracle Homes" for information.

Services for network products are also available. See *Net8 Getting Started for Windows NT and Windows 95/98* for information on Oracle network services.

Starting Oracle Services

Oracle services must be started for you to use the Oracle8 database and its products.

Start Oracle services in either of two ways:

- From the Control Panel
- From the MS-DOS command prompt

To start Oracle Services from the Control Panel:

1. Choose Start > Settings > Control Panel.

   The *Control Panel* window appears.

2. Double-click Services.

   The *Services* dialog box appears.

3. Find the service you want to start in the list, and verify that it has a status of Started. If it does not, select it and choose Start.

4. Click Close to exit the *Services* dialog box.

To start Oracle Services from the MS-DOS command prompt:

Enter the following command to start an Oracle service at the MS-DOS command prompt:

```
C:\> NET START SERVICE
```

where *SERVICE* is a specific service name, such as OracleServiceORCL.

If you cannot find OracleService*SID* or OracleTNSListener80 (or Oracle*HOME_NAME*TNSListener80) in the list, use ORADIM80 to create them. See Chapter 9, "Creating a Database" for instructions on using ORADIM80.

Stopping Oracle Services

On occasion (for example, if you want to re-install the Oracle8 database), you must stop Oracle services. Stop Oracle services in either of two ways:

- From the Control Panel
- From the MS-DOS Command Prompt

To stop Oracle8 Services from the Control Panel:

1. Choose Start > Settings > Control Panel.

   The *Control Panel* window appears.

2. Double-click Services.

   The *Services* dialog box appears.

3. Select OracleTNSListener80 (or Oracle*HOME_NAME*TNSListener80, where *HOME_NAME* is the Oracle home name for the listener to stop*)* and choose Stop.

4. Select OracleService*SID* and choose Stop.

   The *Stopping* dialog box informs you that OracleStart*SID* will also be stopped.

5. Click OK.

   Both OracleService*SID* and OracleStart*SID* are stopped.

To stop Oracle Services from the MS-DOS command prompt:

Enter the following command to stop an Oracle service at the MS-DOS command prompt:

```
C:\> NET STOP SERVICE
```

where *SERVICE* is a specific service name, such as OracleServiceORCL.

Auto-starting Oracle Services

You can start Oracle services whenever the Windows NT computer is restarted. Use the *Service* dialog box to configure when and how the Oracle8 database is started.

To automatically start the Oracle8 database each time you restart:

1. Choose Start > Settings > Control Panel.

   The *Control Panel* window appears.

2. Double-click Services.

   The *Services* dialog box appears.

3. Select the service OracleStart*SID* and choose the Startup button.

   The *Service* dialog box appears.

4. Choose Automatic from the Startup Type field.

5. Click OK.

6. Click Close to exit the *Services* dialog box.

Starting and Shutting Down a Database with Server Manager

These instructions assume that a database instance is created and the services are started.

To start or shut down an Oracle8 database:

1. Go to your Oracle8 database server.

2. Start Server Manager at the MS-DOS command prompt:

   ```
   C:\> SVRMGR30
   ```

3. Connect to the Oracle8 database with the INTERNAL user name:

   ```
   SVRMGR> CONNECT INTERNAL/PASSWORD
   ```

4. Follow the instructions below:

If You Want to...	Then Enter...
Start a database with the default parameter file	`SVRMGR> STARTUP` This command uses the default INIT*SID*.ORA file located in the *ORACLE_HOME*\DATABASE directory.
Start a database with a file other than the default parameter file	`SVRMGR> STARTUP PFILE=`*`PATH\FILENAME`* This command uses the INIT*SID*.ORA file specified in *PATH\FILENAME*. This example starts the database using a file named INIT2.ORA in C:\ORANT\RDBMS80: `SVRMGR> STARTUP PFILE=C:\ORANT\RDBMS80\INIT2.ORA`
Stop the database	`SVRMGR> SHUTDOWN [`*`MODE`*`]` where *MODE* is one of the following: ■ Normal The database waits for all currently connected users to disconnect and disallows any new connections before shutting down. If you execute the SHUTDOWN command without any option, it *default*s to this mode. ■ Immediate The database terminates and rolls back active transactions, disconnects clients, and shuts down. ■ Abort The database terminates active transactions and disconnects users; it does not roll back transactions. The database performs automatic recovery and rollback the next time it is started. Use this mode only in emergencies.

5. Exit Server Manager:

   ```
   SVRMGR> EXIT
   ```

6. You are returned to the MS-DOS command prompt.

> **Note:** See "Choosing a Database Tool" on page 3-2 for a list of other tools that can start the database and the *Oracle8 Administrator's Guide* for information on options you can specify when starting your database.

Starting and Shutting Down a Database with Oracle Enterprise Manager

Oracle Enterprise Manager enables you to start and shut down your Oracle8 database in several different ways. This section describes how to use the Navigator and Instance Manager. You can also use SQL Worksheet.

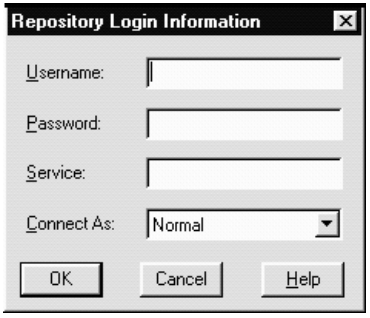
See the *Oracle Enterprise Manager Administrator's Guide* for information on using these tools to start your database.

These instructions assume that a database instance is created and the services are started**.**

To start or shut down a database:

1. Ensure that you:
   - Configured Oracle Enterprise Manager by following the procedures in "Oracle Enterprise Manager" on page 8-4.
   - Used Oracle Net8 Easy Config or Oracle Net8 Assistant to create a network connection from your Oracle Enterprise Manager Console computer to the Oracle8 database you want to start or shut down. See *Net8 Getting Started for Windows NT and Windows 95/98* for instructions.
2. Go to your Oracle Enterprise Manager Console computer.
3. Choose Start > Programs > Oracle Enterprise Manager > Enterprise Manager.

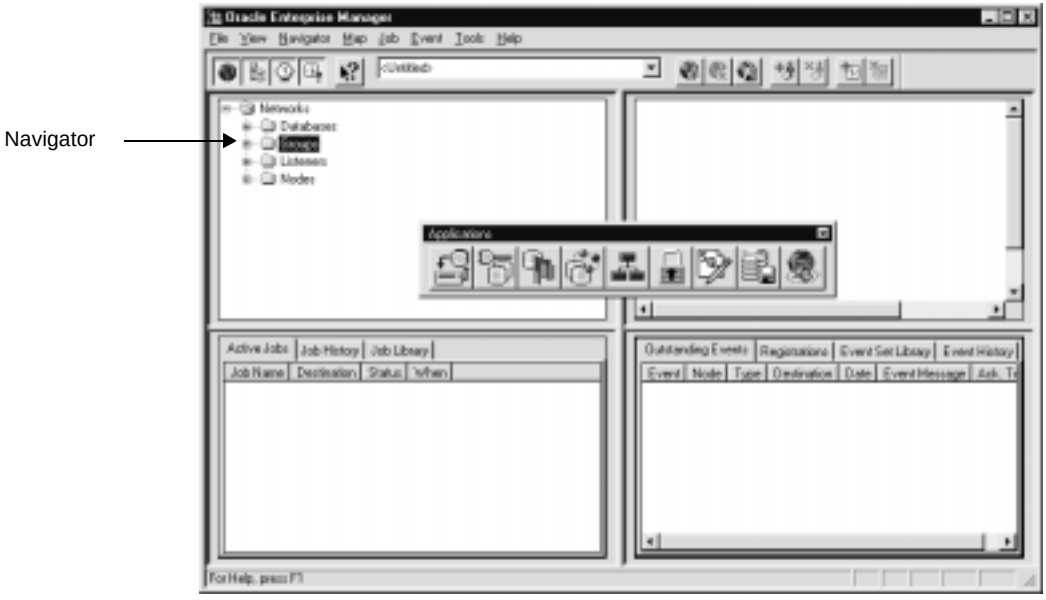
   The *Repository Login Information* dialog box appears:



4. Enter the login information you created in "Step 2: Create a Repository User Account" on page 8-7:

   - Repository user name and password
   - Net8 service name (or database alias) of the repository database; it is only necessary to enter a service name if you are connecting from a client console to the Oracle8 repository database on a different computer

   The *Oracle Enterprise Manager* Console appears. The *Navigator* Window displays in the upper-left portion of the console.



5. Double-click Databases in the *Navigator* window of the Oracle Enterprise Manager Console.

   The list of databases in your Oracle Enterprise Manager network appears.

6. If you have never started or shut down a database with the Navigator, you must first perform steps 6a through 6h. If you have previously started or shut down a database with the Navigator, go to step 7.

   a. Select the database to administer.

   b. Choose Tools > Applications > Oracle Instance Manager from the main menu.

      The *Login Information* dialog box appears.

c. Enter the INTERNAL user name and password, and Net8 service name for the Oracle8 database to start up or shut down.

d. Click OK.

The *Oracle Instance Manager* window appears.

e. Double-click Initialization Parameters in the Navigator tree.

The initialization parameters appear for the Oracle8 database that you want to start or shut down.

f. Click Save.

The *Save Configuration* dialog box appears.

g. Enter an appropriate configuration name for the initialization parameters (for example, SALES_DB) and click OK.

This action stores the initialization parameter information for the managed Oracle8 database in the repository.

h. Choose Exit from the File menu.

You are returned to the Oracle Enterprise Manager Console.

7. Right-click the database in the Navigator tree that you want to start or stop.

A menu appears with options for starting or shutting down the database:

8. If you have never started or shut down a database with the Navigator, you must first perform steps 8a through 8b. If you have previously started or shut down a database with the Navigator, go to step 9.

a. Choose Connect from the menu that appears.

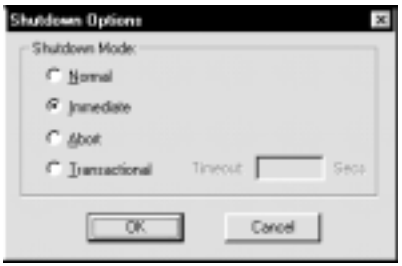
The *Login Information* dialog box appears.

b. Enter the INTERNAL user name and password, and click OK.

You are returned to the same menu with options for starting and shutting down the database.

9. Select one of the following:

If You Want to...	Then...
Start the database	**1.** Choose Startup. The *Startup* dialog box appears: **2.** Provide the appropriate information and choose OK. Your Oracle8 database starts.

If You Want to...	Then...
Shut down the database	**1.** Choose Shutdown. The *Shutdown Options* dialog box appears:  **2.** Provide the appropriate information and choose OK. Your Oracle8 database shuts down.

Shutting Down a Database By Stopping a Service

You can immediately shut down the Oracle8 database by stopping the service OracleService*SID*. This automated procedure is equivalent to manually entering the following commands:

```
C:\> SVRMGR30

SVRMGR> CONNECT INTERNAL/PASSWORD

SVRMGR> SHUTDOWN IMMEDIATE
```

This causes the database to terminate and roll back active transactions, disconnect clients, and shut down.

To use this feature, you must manually set either of two registry parameter values to TRUE in the registry:

Registry Parameter	When set to TRUE...
ORA_SHUTDOWN	Enables the selected Oracle8 database to be shut down. This includes any database in the current Oracle home.
ORA_*SID*_SHUTDOWN	Shuts down the Oracle8 database identified by the *SID* value.

If either of these parameters is set to FALSE (the default setting), you cannot shut down the database by stopping OracleService*SID*. In addition, two other registry parameters are available:

- ORA_SHUTDOWN_TIMEOUT, which sets the maximum time to wait for the shutdown to complete for any database instance in the current Oracle home.
- ORA_*SID*_SHUTDOWN_TIMEOUT, which sets the maximum time to wait before the service for a particular SID stops.

ORA_SHUTDOWN_TIMEOUT, ORA_*SID*_SHUTDOWN, and ORA_*SID*_ SHUTDOWN_TIMEOUT must be added to the registry. Where to add these parameters is determined by the Oracle home directory that you are using:

If You Have...	Then Add These Parameters in...
One home directory	HKEY_LOCAL_MACHINE\SOFTWARE\ORACLE
Additional directories	HKEY_LOCAL_MACHINE\SOFTWARE\ORACLE\HOME*ID* where *ID* is incremented for each additional Oracle home directory on your computer.

To immediately shut down the database by stopping OracleService*SID*:

1. Set ORA_SHUTDOWN or ORA_*SID*_SHUTDOWN to TRUE in the registry. The exact location of these parameters is determined by the number of Oracle home directories on your computer:

If You Have...	These Parameters are Located in...
One home directory	HKEY_LOCAL_MACHINE\SOFTWARE\ORACLE
Two or more home directories	HKEY_LOCAL_MACHINE\SOFTWARE\ORACLE\HOME*ID* where *ID* is incremented for each additional Oracle home directory on your computer.

   See Appendix C, "Configuration Parameters and the Registry" for instructions on adding and editing registry parameters.

2. Stop and restart OracleService*SID* and restart the database for the change to take effect.

3. Choose Start > Settings > Control Panel.

   The *Control Panel* window appears.

4. Double-click Services.

   The *Services* dialog box appears.

5. Select OracleService*SID* and choose Stop.

   This automatically starts Server Manager, issues the SHUTDOWN IMMEDIATE command, and shuts down your Oracle8 database.

Running Multiple Instances

To run multiple instances, ensure that you have already created each instance and started the services for each instance using ORADIM80 or the *Services* dialog box in Windows NT. You then run multiple instances by starting each of the instances using Server Manager.

To run multiple instances:

1. Ensure that you have already created each instance.
2. Ensure that you started the services for each instance using ORADIM80 or the *Services* dialog box of the Windows NT Control Panel.
3. Set the ORACLE_SID configuration parameter at the MS-DOS command prompt to the SID for each instance you want to run:

   ```
   C:\> SET ORACLE_SID=SID
   ```

   where *SID* is the name of the Oracle8 database instance.

4. Start Server Manager:

   ```
   C:\> SVRMGR30
   ```

5. Connect as INTERNAL:

   ```
   SVRMGR> CONNECT INTERNAL/PASSWORD
   ```

6. Start up the database with the new instance:

   ```
   SVRMGR> STARTUP PFILE=ORACLE_HOME\DATABASE\INITSID.ORA
   ```

   where *SID* is the name of the instance. With Server Manager, you can use the %ORACLE_HOME% variable for *ORACLE_HOME*.

Creating Password Files

Use the Password Utility ORAPWD80 to create password files. ORAPWD80 is automatically installed with the Oracle8 Utilities. Password files are located in the *ORACLE_HOME*\DATABASE directory and are named PWD*SID*.ORA, where *SID* identifies the Oracle8 database instance. Password files can be used for local or remote connections to an Oracle8 database. The example below describes how to perform a local connection.

To create a password file:

1. Create a password file with ORAPWD80:

   ```
   C:\> ORAPWD80 FILE=PWDSID.ORA PASSWORD=PASSWORD ENTRIES=MAX_USERS
   ```

   The essential elements of a password file are:

Element	Description
FILE	Specifies the password file name.
PASSWORD	Sets the password for the INTERNAL and SYS accounts.
ENTRIES	Sets the maximum number of entries in the password file. This corresponds to the maximum number of distinct users allowed to connect to the database with the SYSDBA and SYSOPER DBA privileges simultaneously.

2. Set the INIT*SID*.ORA file parameter REMOTE_LOGIN_PASSWORDFILE to EXCLUSIVE or SHARED. Definitions for all possible values are described below:

Element	Description
EXCLUSIVE	Specifies that only one instance can use the password file and that the password file contains names other than SYS and INTERNAL. Oracle8 looks in the registry for the value of the ORA_*SID*_PWFILE parameter. If a value is unspecified, it looks in the registry for the value of the ORA_PWFILE parameter, which points to a file containing the INTERNAL password as well as user names, passwords, and privileges. If that is not set, it uses the default of *ORACLE_HOME*\DATABASE\PWD*SID*.ORA.

Element	Description
SHARED	Specifies that multiple instances can use the password file (for example, a parallel server environment). However, the only users recognized by the password file are SYS and INTERNAL. You cannot log in with SYSOPER or SYSDBA privileges even if those privileges are granted in the password file. The SHARED value of this parameter affords backward compatibility with earlier releases. The Oracle8 database looks for the same files as it does when the value is EXCLUSIVE, but only the INTERNAL account is available for privileged access. This is the default value.
NONE	Specifies that the Oracle8 database ignores the password file and that privileged users are authenticated by the Windows NT operating system.

3. Start Server Manager:

```
C:\> SVRMGR30
```

4. Connect as INTERNAL:

```
SVRMGR> CONNECT INTERNAL/PASSWORD
```

5. Start the Oracle8 database:

```
SVRMGR> STARTUP
```

6. Grant appropriate privileges to each user who needs to perform database administration. For example:

```
SVRMGR> GRANT SYSDBA TO SCOTT;
```

   If successful, the following message displays:

```
Statement Processed.
```

   This adds SCOTT to the password file and enables SCOTT to connect to the database with SYSDBA privileges. Use Server Manager to add or delete user names, user passwords, and user privileges in password files.

7. Connect to the Oracle8 database with DBA privileges for SCOTT:

```
SVRMGR> CONNECT SCOTT/TIGER AS SYSDBA
```

   You are connected to the Oracle8 database.

Caution: Copying or manually moving password files may result in ORADIM80 not being able to find a password to start an instance.

The password file is automatically hidden. This table describes how to see the password file:

To...	Enter...

See the password file	`C:\ORANT\DATABASE> ATTRIB`
	The password file displays:
	`A H C:\ORANT\DATABASE\PWDSID.ORA`

Make the password file visible	`C:\ORANT\DATABASE> ATTRIB -H PWD`*SID*`.ORA` **Note:** The password file must be visible before you can move or copy it.
Hide the password file again	`C:\ORANT\DATABASE> ATTRIB +H PWD`*SID*`.ORA`

Connecting as INTERNAL with a Password File

You can connect as INTERNAL with a password file. The password for INTERNAL is ORACLE if you installed Oracle8 Enterprise Edition through the Oracle8 Enterprise Edition option. If you installed Oracle8 Enterprise Edition through the Custom installation option, the password for INTERNAL is whatever you entered when prompted during installation.

To connect as INTERNAL with a password file:

1. Follow the procedures in "Creating Password Files" on page 10-17 to create a password file with ORAPWD80.
2. Set the INIT*SID*.ORA file parameter REMOTE_LOGIN_PASSWORDFILE to EXCLUSIVE or SHARED.

> **Note:** When REMOTE_LOGIN_PASSWORDFILE is set to NONE, connecting remotely to a database as INTERNAL is prohibited even if the correct password is supplied.

3. Start Server Manager:

   ```
   C:\> SVRMGR30
   ```

4. Connect to your Oracle8 database as follows:

   ```
   SVRMGR> CONNECT INTERNAL/PASSWORD
   ```

   where *PASSWORD* is the password created with ORAPWD80 or ORADIM80.

Changing the INTERNAL Password

Change the INTERNAL user account password with either ORADIM80 or ORAPWD80.

To change the password with ORADIM80:

1. Delete the SID for the password you want to change:

   ```
   C:\> ORADIM80 -DELETE -SID SID
   ```

   where *SID* is the SID to delete.

2. Verify that the PWD*SID*.ORA and STRT*SID*.CMD files have been removed from the \ORANT\DATABASE directory. If these files have not already been removed, remove them now.

3. Create the same SID again and specify a new INTERNAL password:

   ```
   C:\> ORADIM80 -NEW -SID SID -INTPWD NEW_PASSWORD - STARTMODE AUTO - MAXUSERS
   N -PFILE <drive: \path\init{sid}.ora>
   ```

   where *SID* is the same SID to recreate, *NEW_PASSWORD* is the new INTERNAL password, and *N* is the maximum number of DBAs/operators who can be logged in at once with this password.

To change the password with ORAPWD80:

See the *Oracle8 Administrator's Guide* for specific instructions on using the ORAPWD80 Password Utility.

To change the password with SQL*Plus:

The section assumes the password file is already created and the INIT*SID*.ORA file parameter REMOTE_LOGIN_PASSWORDFILE is set to SHARED or EXCLUSIVE.

1. Start SQL*Plus:

   ```
   C:\> SQLPLUS
   ```

2. Connect with the INTERNAL user name:

   ```
   SQL> CONNECT INTERNAL
   ```

3. Change the password for the SYS user name, for which INTERNAL is an alias:

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

   This also changes the INTERNAL password.

Encrypting Database Passwords

With the Oracle8 database, you can encrypt the password used to verify a remote database connection.

To enable password encryption:

1. Add DBLINK_ENCRYPT_LOGIN to the initialization parameter INIT*SID*.ORA file on the server computer.
2. Set DBLINK_ENCRYPT_LOGIN equal to TRUE.
3. Set the ORA_ENCRYPT_LOGIN configuration variable in the client computer to TRUE. See Appendix C, "Configuration Parameters and the Registry" for instructions on adding and setting configuration parameters in the registry.

Once these parameters are set to TRUE, whenever a user attempts a remote login, the Oracle8 database encrypts the password before sending it to the remote database. If the connection fails, the failure is noted in the audit log. The Oracle8 database then checks if either of these parameters is set to FALSE. If so, the Oracle8 database attempts the connection again using an unencrypted version of the password. If the connection is successful, the success is noted in the audit log, and the connection proceeds.

Note: Releases prior to release 7.1 do not support encrypted passwords. If you are connecting to an earlier version of the Oracle database, you must set the initialization parameter DBLINK_ ENCRYPT_LOGIN to FALSE for the connection to succeed.

Archiving Redo Log Files

When running Oracle Installer, there are two configuration options for installing an Oracle8 database. This table describes the archiving options provided with each option:

Configuration Option	What is the Archive Mode?	Is Automatic Archiving Enabled?
Typical	Automatically set to NOARCHIVELOG	No
Custom (through Oracle Database Assistant)	Enables you to create your Oracle8 database in ARCHIVELOG mode by selecting the Archive Log check box of Oracle Database Assistant	No

In NOARCHIVELOG mode, redo logs are not archived. This protects the database from instance failure, but not from disk failure. Setting your archive mode to ARCHIVELOG and enabling automatic archiving causes redo log files to be archived. This protects the database from both instance and disk failure.

This section describes how to change the archive mode to ARCHIVELOG and enable automatic archiving. See the chapter "Archiving Redo Information" of the *Oracle8 Administrator's Guide* for complete descriptions of the ARCHIVELOG and NOARCHIVELOG modes.

Step 1: Change the Archive Mode to ARCHIVELOG

To change the archive mode to ARCHIVELOG:

1. Start Server Manager at the MS-DOS command prompt:

   ```
   C:\> SVRMGR30
   ```

2. Connect to the Oracle8 database with the INTERNAL user name:

   ```
   SVRMGR> CONNECT INTERNAL/PASSWORD
   ```

3. If the database is open, shut it down:

   ```
   SVRMGR> SHUTDOWN
   ```

4. Mount the database:

   ```
   SVRMGR> STARTUP MOUNT
   ```

5. Enter the following command:

   ```
   SVRMGR> ARCHIVE LOG LIST
   ```

The following output indicates the database is not in archive mode:

```
Database log mode              No Archive Mode
Automatic archival             Disabled
Archive destination            %RDBMS80%\
Oldest online log sequence     34
Current log sequence           37
```

6. Change the archive mode to ARCHIVELOG:

```
SVRMGR> ALTER DATABASE ARCHIVELOG;
```

7. Enter the following command:

```
SVRMGR> ARCHIVE LOG LIST
```

The following output indicates the database is now in archive mode:

```
Database log mode              Archive Mode
Automatic archival             Disabled
Archive destination            %RDBMS80%\
Oldest online log sequence     34
Current log sequence           37
```

8. Open the database:

```
SVRMGR> ALTER DATABASE OPEN;
```

9. Continue to "Step 2: Enable Automatic Archiving" on page 10-24.

Step 2: Enable Automatic Archiving

To enable automatic archiving:

1. Open the *ORACLE_HOME*\DATABASE\INIT*SID*.ORA file.
2. Find the following three parameters:

```
# LOG_ARCHIVE_START = TRUE
# LOG_ARCHIVE_DEST = %ORACLE_HOME%\DATABASE\ARCHIVE
# LOG_ARCHIVE_FORMAT = "%%ORACLE_SID%%T%TS%S.ARC"
```

3. Remove the # sign from in front of each.

> **Note:** The double quotes around LOG_ARCHIVE_FORMAT do not need to be removed.

4. Edit the LOG_ARCHIVE_DEST value to identify an existing drive and directory in which to archive your filled redo logs.
5. Edit the LOG_ARCHIVE_FORMAT value to indicate the appropriate archiving format:

Format	Description	Example
%%ORACLE_SID%%%T.ARC	Specifies the thread number. This number is padded to the left by zeroes. The default value is one with a range of up to three characters.	*SID*0001.ARC
%%ORACLE_SID%%%S.ARC	Specifies the log sequence number. This number is padded to the left by zeroes. The default value is one with a range of up to five characters.	*SID*0001.ARC
%%ORACLE_SID%%%t.ARC	Specifies the thread number. The number is not padded. The default value is one with no range limit on characters.	*SID*1.ARC
%%ORACLE_SID%%%sARC	Specifies the log sequence number. The number is not padded. The default value is one with no range limit on characters.	*SID*1.ARC

6. Save your changes.

7. Exit the file.
8. Shut down the database:

   ```
   SVRMGR> SHUTDOWN
   ```

9. Restart the database

   ```
   SVRMGR> STARTUP
   ```

10. Enter the following command:

    ```
    SVRMGR> ARCHIVE LOG LIST
    ```

    The following output indicates that automatic archiving of redo log files is enabled and an archiving destination is specified:

    ```
    Database log mode              Archive Mode
    Automatic archival             Enabled
    Archive destination            C:\BACKUP
    Oldest online log sequence     34
    Current log sequence           37
    ```

Using the ORADEBUG Utility

The ORADEBUG utility is a debugging tool that sends debug commands through Server Manager to Oracle processes. It is primarily for use by developers and Oracle Support Services personnel. Only use this utility when instructed to do so by Oracle Support Services. Note that you must have database administrator privileges to use ORADEBUG.

To start ORADEBUG:

1. Start Server Manager from the MS-DOS command prompt and connect to the database as INTERNAL. For example:

   ```
   C:\> SVRMGR30
   SVRMGR> CONNECT INTERNAL/PASSWORD
   ```

2. Enter the following at the Server Manager prompt:

   ```
   SVRMGR> ORADEBUG
   ```

   ORADEBUG runs and prompts you for parameters. To obtain a list of these parameters, enter the following at the Server Manager prompt:

   ```
   SVRMGR> ORADEBUG HELP
   ```

   The output from most debug commands is written to a trace file. Trace files are created in the directory specified by the INIT*SID*.ORA initialization parameters BACKGROUND_DUMP_DEST and USER_DUMP_DEST. By default, these parameters are set to *ORACLE_HOME*\RDBMS80\TRACE. If you want to find the location of your trace file, enter the following at the Server Manager prompt:

   ```
   SVRMGR> ORADEBUG TRACEFILE_NAME
   ```

   If the output from a debug command produces more than one line of output, the result is sent to a trace file, and a message indicating that the command has completed is relayed to Server Manager. If the output from a debug command produces only one line of output, the output is relayed directly to Server Manager.

Note: There is currently a limitation when using ORADEBUG that can cause Server Manager to hang if you attempt to debug a thread that is blocking on input/output (I/O) until that I/O completes.

11

Authenticating Database Users with Windows NT

This chapter describes how to authenticate Oracle8 database users with Windows NT.

Specific topics discussed are:

- Authentication Overview
- Connecting Without a Password as a Nonprivileged Database User
- Connecting as SYSOPER and SYSDBA Without a Password
- Connecting as INTERNAL Without a Password
- Granting Database Roles through Windows NT

Authentication Overview

The Oracle8 database can use information maintained by Windows NT to authenticate database users. The benefits of Windows NT authentication include:

- Enabling users to connect to an Oracle8 database without supplying a user name or password
- Centralizing Oracle8 database user authorization information in Windows NT, which frees Oracle8 from storing or managing user passwords
- Allowing Oracle8 and Windows NT user names to be the same

The Windows NT Native Authentication Adapter (automatically installed with Net8 Server and Net8 Client) enables database user authentication through Windows NT. This enables client computers to make secure connections to an Oracle8 database on a Windows NT server. A secure connection is when a Windows NT client user name is retrieved on a Windows NT server through the Windows NT Native Authentication Adapter. The Windows NT server then permits the user name to perform the database actions on the server.

The Windows NT Native Authentication Adapter provides database users with the following privileges:

- Connecting Without a Password as a Nonprivileged Database User
- Connecting as SYSOPER and SYSDBA Without a Password
- Connecting as INTERNAL Without a Password
- Granting Database Roles through Windows NT

Each connection privilege is described in this chapter.

Attention: Granting database roles through Windows NT is an advanced database administration task not appropriate for all database environments. You cannot use both Windows NT and the Oracle8 database to grant roles concurrently. Select a role granting process appropriate to your database environment.

Note: For Windows NT authentication to work, the SQLNET.AUTHENTICATION_SERVICES parameter must be set as follows in your *ORACLE_HOME*\NET80\ADMIN\SQLNET.ORA file on both client and server:

```
SQLNET.AUTHENTICATION_SERVICES = (NTS)
```

Connecting Without a Password as a Nonprivileged Database User

This section describes how to authenticate nonprivileged database users (nondatabase administrators) using Windows NT so that a password is not required when accessing the database. When you use Windows NT to authenticate nonprivileged database users, your database relies solely on Windows NT to restrict access to database user names. In the steps below, the following Windows NT user names are authenticated:

User Name	This User...
Local user FRANK	Logs into their local Windows NT client computer to access an Oracle8 database. The database can be on a different computer. To access other databases and resources on other computers, the local user must provide a user name and password each time.
Domain user FRANK on domain SALES	Logs into a domain (SALES in the steps below) that includes many other Windows NT computers and resources, one of which contains an Oracle8 database. The domain user can access all the resources the domain provides with a single user name and password.

The local and domain user name FRANK and the domain SALES are used in the steps below. Substitute the appropriate local and domain user name and domain name for your environment.

Follow the steps below to connect without a password as a nonprivileged database user:

- Step 1: Perform Authentication Tasks on the Oracle8 Database Server
- Step 2: Perform Authentication Tasks on the Client Computer

Step 1: Perform Authentication Tasks on the Oracle8 Database Server

To perform authentication tasks on an Oracle8 database server:

1. Add the OS_AUTHENT_PREFIX parameter to your INIT*SID*.ORA file.

   The OS_AUTHENT_PREFIX value is prefixed to local or domain user names attempting to connect to the server with the user's operating system name and password. The prefixed user name is compared with the Oracle user names in the database when a connection request is attempted.

2. Set OS_AUTHENT_PREFIX to an appropriate value. Values are case insensitive. For example:

Set OS_AUTHENT_PREFIX to...	Result
XYZ	XYZ is prefixed to the beginning of the Windows NT user name (for example, XYZFRANK for local user FRANK or XYZSALES\FRANK for domain user FRANK on domain SALES). **Note:** XYZ is only an example of an acceptable parameter value. Use a value appropriate to your environment.
""	This is recommended, as it eliminates the need for any prefix to the Windows NT user names (for example, FRANK for local user FRANK or SALES\FRANK for domain user FRANK on domain SALES).
Not included in INIT*SID*.ORA file	The value defaults to OPS$ (for example, OPS$FRANK for local user FRANK or OPS$SALES\FRANK for domain user FRANK on domain SALES).

The parameter value XYZ is used in the steps below. Substitute XYZ with the value you set for OS_AUTHENT_PREFIX.

3. Use User Manager to create a Windows NT local or domain user name for FRANK (if the appropriate name does not currently exist). See your Windows NT documentation or your network administrator if you do not know how to do this.

   Follow the substeps below to create a new registry parameter *only* if you are authenticating a domain name (FRANK on domain SALES). Using the OS_AUTHENT_PREFIX_DOMAIN parameter in the registry (and not in the INIT*SID*.ORA file) with the Windows NT Native Authentication Adapter, is the recommended method for performing secure, trusted client connections to your server. Setting this parameter requires the database user to be qualified with the domain name. For example, the Oracle user must be created as "SALES\FRANK" instead of just FRANK. Otherwise, go to step 4.

   a. Start the registry editor from the MS-DOS command prompt:

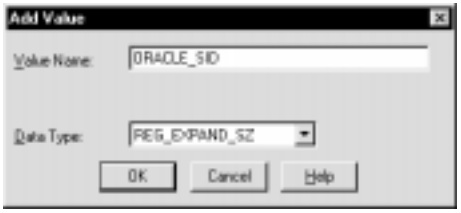
      ```
      C:\> REGEDT32
      ```

   b. Go to the registry subkey of the Oracle home directory that you are using. The location in which to add this parameter is determined by how many Oracle home directories are on your machine:

If You Have...	Go to...
One home directory	HKEY_LOCAL_MACHINE\SOFTWARE\ORACLE
Additional directories	HKEY_LOCAL_MACHINE\SOFTWARE\ORACLE\HOME*ID* where *ID* is incremented for each additional Oracle home directory on your computer.

   c. Choose the Add Value option in the Edit menu.

The *Add Value* dialog box appears:



d. Enter OSAUTH_PREFIX_DOMAIN in the Value Name field.

e. Choose REG_EXPAND_SZ from the Data Type drop-down list box.

f. Click OK.

The *String Editor* dialog box appears:

g. Enter TRUE in the String field to enable authentication at the domain level.

TRUE enables the server to differentiate between multiple FRANK user names, whether they are local user FRANK, domain user FRANK on SALES, or domain user FRANK on another domain in your network. Entering FALSE causes the domain to be ignored and local user FRANK to become the default value of the operating system user returned to the server.

h. Click OK.

The Registry Editor adds the parameter.

i. Choose Exit from the registry menu.

The registry exits.

4. Remove the # sign from in front of SQLNET.AUTHENTICATION_SERVICES and set it as follows in your *ORACLE_HOME*\NET80\ADMIN\SQLNET.ORA file:

```
SQLNET.AUTHENTICATION_SERVICES = (NTS)
```

5. Follow the substeps below if you want to provide an additional level of authentication security by requiring nonprivileged local or domain users to be members of Windows NT local groups. Otherwise, go to step 6.

a. Start the registry editor from the MS-DOS command prompt:

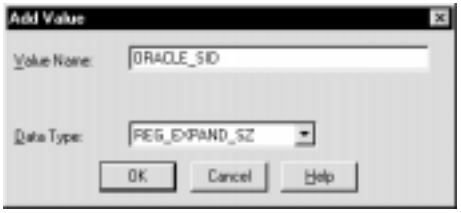
```
C:\> REGEDT32
```

b. Go to the registry subkey of the Oracle home directory that you are using. The location in which to add this parameter is determined by how many Oracle home directories are on your machine:

If You Have...	Go to...
One home directory	HKEY_LOCAL_MACHINE\SOFTWARE\ORACLE
Additional directories	HKEY_LOCAL_MACHINE\SOFTWARE\ORACLE\HOME*ID* where *ID* is incremented for each additional Oracle home directory on your computer.

c. Choose the Add Value option in the Edit menu.

The *Add Value* dialog box appears:



d. Enter OSAUTH_ENFORCE_STRICT in the Value Name field.

e. Choose REG_EXPAND_SZ from the Data Type drop-down list box.

f. Click OK.

The *String Editor* dialog box appears:

g. Enter TRUE in the String field to enable authentication at the domain level.

TRUE causes the server to only accept connections from nonprivileged users who are a member of the ORA_USER or ORA_*SID*_USER Windows NT local group.

h. Click OK.

The Registry Editor adds the parameter.

i. Choose Exit from the registry menu.

The registry exits.

j. Open User Manager.

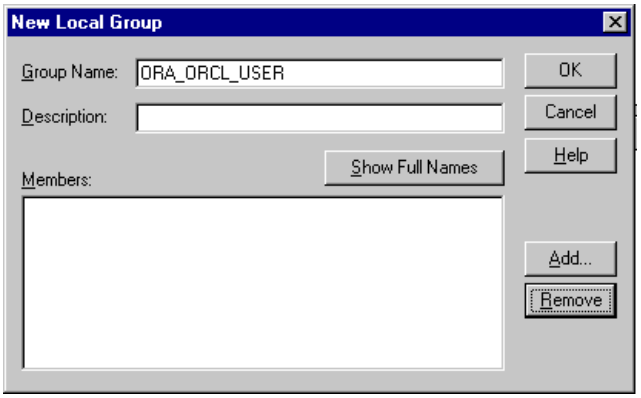
k. Go to New Local Group from the User Menu.

The *New Local Group* dialog box appears.

l. Enter one of the following Windows NT local group names in the Group Name field.

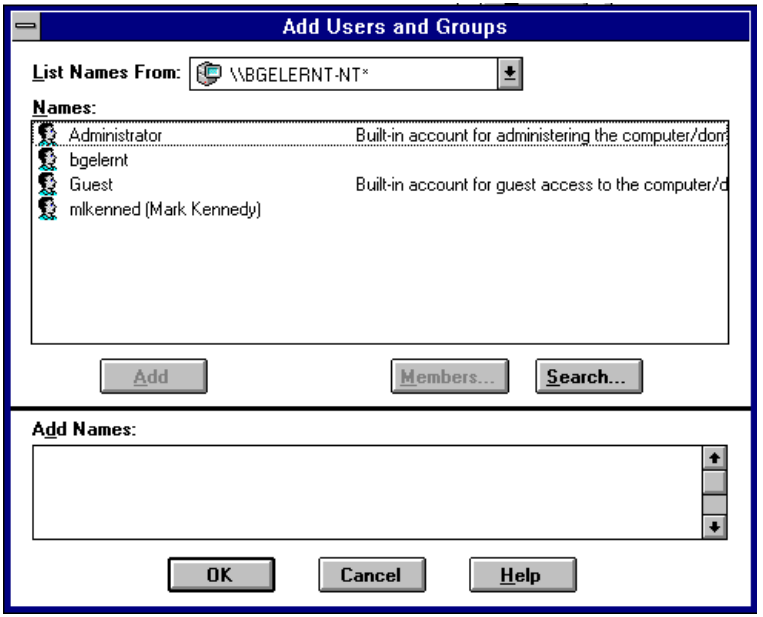
Local Group	This Local Group Includes...
ORA_USER	Unprivileged database users; applicable for all SIDs.
ORA_*SID*_USER	Unprivileged database users; applicable only for the SID specified in the name.

For this example, the SID entered is ORCL:



m. Click Add.

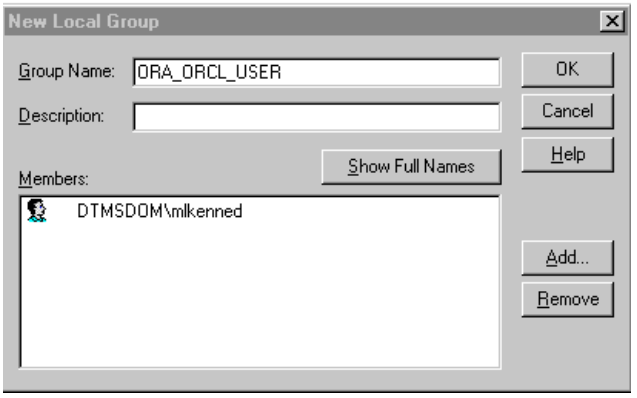
The *Add Users and Groups* dialog box appears:



n. Select an appropriate Windows NT local or domain user from the Names field and click Add.

o. Click OK.

Your selection is added to the Members field of the *New Local Group* dialog box:



p. Click OK.

q. Exit User Manager.

6. Start Server Manager:

```
C:\> SVRMGR30
```

7. Connect to the database with the SYSTEM database administrator (DBA) name:

```
SVRMGR> CONNECT SYSTEM/PASSWORD
```

Unless you have changed it, the SYSTEM password is MANAGER by default.

8. Create an operating system-authenticated user by entering the following:

If Authenticating a...	Then Enter...
Local user name	`SVRMGR> CREATE USER XYZFRANK IDENTIFIED EXTERNALLY;`
Domain user name	`SVRMGR> CREATE USER "XYZSALES\FRANK" IDENTIFIED EXTERNALLY;`

Where:	Is the...
XYZ	Value set for the OS_AUTHENT_PREFIX initialization parameter.
FRANK	Windows NT local user name.
SALES\FRANK	Domain name and Windows NT domain user name. The double quotes are required and the entire syntax *must* be in uppercase.

9. Grant the Windows NT local user FRANK or domain user FRANK appropriate database roles:

If Authenticating a...	Then Enter...
Local user name	SVRMGR> GRANT RESOURCE TO XYZFRANK; SVRMGR> GRANT CONNECT TO XYZFRANK;
Domain user name[1]	SVRMGR> GRANT RESOURCE TO "XYZSALES\FRANK"; SVRMGR> GRANT CONNECT TO "XYZSALES\FRANK";

[1] Enter the syntax for domain users in uppercase and with double quotes around the domain user name.

10. Connect to the database with the INTERNAL DBA name:

```
SVRMGR> CONNECT INTERNAL/PASSWORD
```

11. Shut down the database:

```
SVRMGR> SHUTDOWN
```

12. Restart the database:

```
SVRMGR> STARTUP
```

This causes the change to the OS_AUTHENT_PREFIX parameter value to take effect.

Step 2: Perform Authentication Tasks on the Client Computer

To perform authentication tasks on the client computer:

1. Create Windows NT local or domain user name FRANK with the same user name and password that exist on the Windows NT server (if the appropriate name does not currently exist).
2. Remove the # sign from in front of SQLNET.AUTHENTICATION_SERVICES and set it as follows in your *ORACLE_HOME*\NET80\ADMIN\SQLNET.ORA file:

   ```
   SQLNET.AUTHENTICATION_SERVICES = (NTS)
   ```

3. Use Oracle Net8 Assistant or Oracle Net8 Easy Config to create a network connection from your client computer to the Windows NT server on which your Oracle8 database is installed. See *Net8 Getting Started for Windows NT and Windows 95/98* for instructions.
4. Access the Oracle8 database from your client computer in either of two ways:
   - Log onto a client computer with local or domain user name FRANK.
   - Access a shared area on the Windows NT computer hosting the Oracle8 database with the local or domain user name (for example, using NET USE).
5. Start Server Manager:

   ```
   C:\> SVRMGR30
   ```

6. Connect to your Windows NT server:

   ```
   SVRMGR> CONNECT /@SERVICE_NAME
   ```

   where *SERVICE_NAME* is the Net8 service name for the Oracle8 database that you created in Step 3.

   The Oracle8 database searches the data dictionary for an automatic login user name corresponding to the Windows NT local or domain user name, verifies it, and allows you to connect as XYZFRANK or XYZSALES\FRANK.

7. Verify that you have connected to the Oracle8 database as local or domain user FRANK by viewing the roles assigned in Step 9 of "Step 1: Perform Authentication Tasks on the Oracle8 Database Server".

```
SVRMGR> SELECT * FROM USER_ROLE_PRIVS;
```

which outputs for local user FRANK:

```
USERNAME                       GRANTED_ROLE                   ADM DEF OS_
------------------------------ ------------------------------ --- --- ---
XYZFRANK                       CONNECT                        NO  YES NO
XYZFRANK                       RESOURCE                       NO  YES NO
2 rows selected.
```

or, for domain user FRANK:

```
USERNAME                       GRANTED_ROLE                   ADM DEF OS_
------------------------------ ------------------------------ --- --- ---
XYZSALES\FRANK                 CONNECT                        NO  YES NO
XYZSALES\FRANK                 RESOURCE                       NO  YES NO
2 rows selected.
```

As the Oracle8 user name is the whole name XYZFRANK or XYZSALES\FRANK, all objects created by XYZFRANK or XYZSALES\FRANK (that is, tables, views, indexes, and so on) are prefixed by this name. For another user to reference the table SHARK owned by XYZFRANK, for example, the user must enter:

```
SVRMGR> SELECT * FROM XYZFRANK.SHARK
```

Attention: Automatic authorization is supported for all Net8 protocols.

Connecting as SYSOPER and SYSDBA Without a Password

This section describes how to enable Windows NT to grant the SYSOPER and SYSDBA privileges to DBAs. This enables DBAs to issue the following commands from a client computer and connect to the Oracle8 database without entering a password:

- `CONNECT / AS SYSOPER`
- `CONNECT / AS SYSDBA`

To enable this feature, the Windows NT local or domain user name of the client must belong to one of the following four Windows NT local groups on the server:

Local Group	This Local Group Includes All...
ORA_OPER	SYSOPER database privileges; applicable for all system identifiers (SIDs).
ORA_DBA	SYSDBA database privileges; applicable for all SIDs.
ORA_*SID*_DBA	SYSDBA database privileges; applicable only for the SID specified in the name.
ORA_*SID*_OPER	SYSOPER database privileges; applicable only for the SID specified in the name.

The SYSOPER and SYSDBA privileges are mapped to the following Windows NT local groups:

This Privilege...	Maps to the Local Group...
SYSOPER	ORA_*SID*_OPER, ORA_OPER
SYSDBA	ORA_*SID*_DBA, ORA_DBA, ORA_*SID*_OPER, ORA_OPER

Follow the steps below to connect as SYSOPER or SYSDBA without a password:

- Step 1: Perform Authentication Tasks on the Oracle8 Database Server
- Step 2: Perform Authentication Tasks on the Client Computer

---

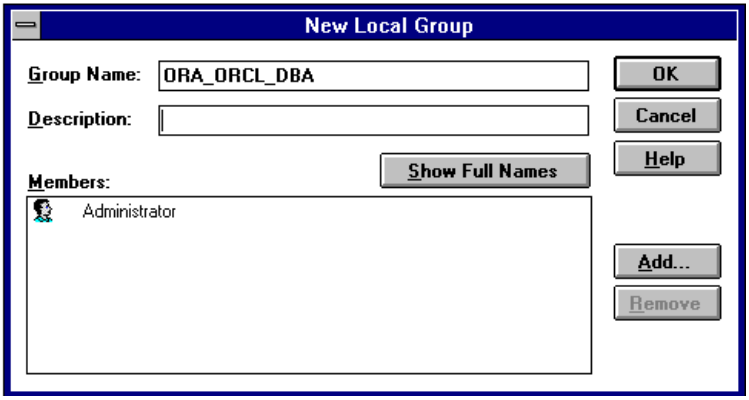
Note: Use Server Manager to connect as SYSOPER or SYSDBA without a password. SQL*Plus and the Oracle Enterprise Manager applications cannot be used for this type of connection.

Step 1: Perform Authentication Tasks on the Oracle8 Database Server

To perform authentication tasks on the Oracle8 database server:

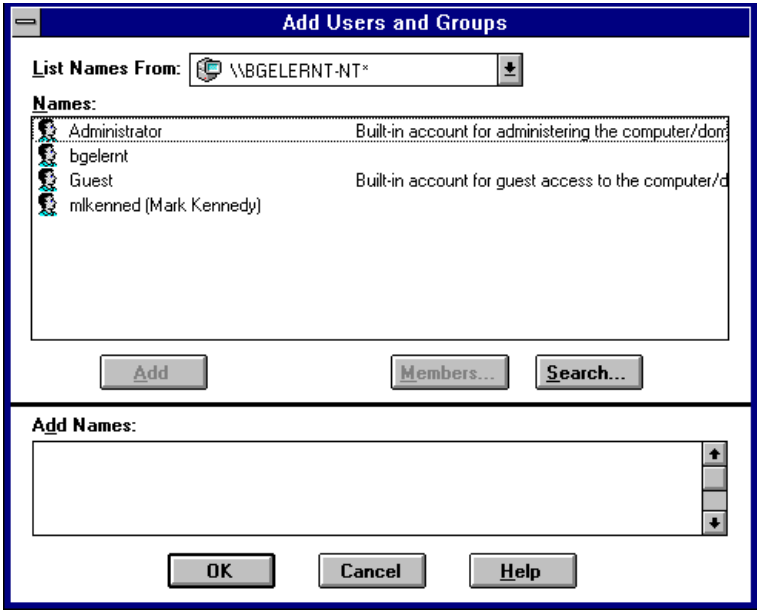
1. Open User Manager on the Windows NT server where your Oracle8 database is installed.
2. Choose New Local Group from the User Menu.

   The *New Local Group* dialog box appears.
3. Enter the appropriate Windows NT local group name in the Group Name field. For this example, the SID entered is ORCL.



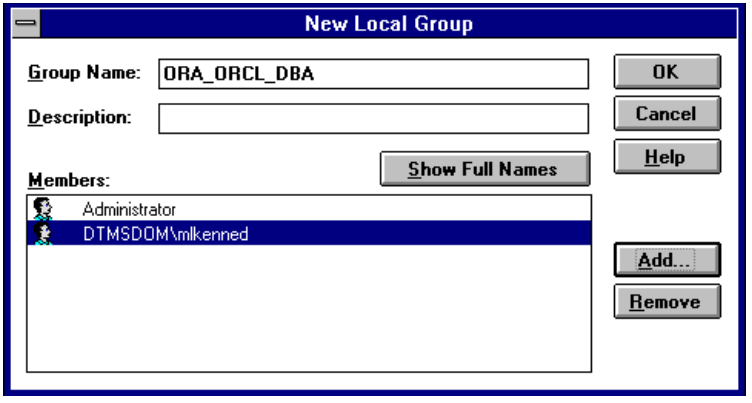
4. Click Add.

The *Add Users and Groups* dialog box appears:



5. Select an appropriate Windows NT user from the Names field and click Add.
6. Click OK.

   Your selection is added to the Members field of the *New Local Group* dialog box:



7. Click OK.
8. Exit User Manager.
9. Remove the # sign from in front of SQLNET.AUTHENTICATION_SERVICES and set it as follows in your *ORACLE_HOME*\NET80\ADMIN\SQLNET.ORA file:

   ```
   SQLNET.AUTHENTICATION_SERVICES = (NTS)
   ```

Step 2: Perform Authentication Tasks on the Client Computer

To perform authentication tasks on the client computer:

1. Create a Windows NT local or domain user name with the same user name and password that exist on the Windows NT server (if the appropriate user name does not currently exist).
2. Remove the # sign from in front of SQLNET.AUTHENTICATION_SERVICES and set it as follows in your *ORACLE_HOME*\NET80\ADMIN\SQLNET.ORA file:

   ```
   SQLNET.AUTHENTICATION_SERVICES = (NTS)
   ```

3. Use Oracle Net8 Assistant or Oracle Net8 Easy Config to create a network connection from your client computer to the Windows NT server on which your Oracle8 database is installed. See *Net8 Getting Started for Windows NT and Windows 95/98* for instructions.
4. Access the Oracle8 database in either of two ways:
   - Log onto a client computer with the local or domain user name.
   - Access a shared area on the Windows NT computer hosting the Oracle8 database with the local or domain user name (for example, using NET USE).
5. Start Server Manager:

   ```
   C:\> SVRMGR30
   ```

6. Connect to the Oracle8 database:

   ```
   SVRMGR> SET INSTANCE SERVICE_NAME
   ```

   where *SERVICE_NAME* is the Net8 service name for the Oracle8 database that you created in Step 3.

7. Connect as SYSOPER or SYSDBA based on the local group you specified in step 3 of "Step 1: Perform Authentication Tasks on the Oracle8 Database Server":

If The Local Group Is...	Then Enter...
ORA_DBA or ORA_*SID*_DBA	SVRMGR> CONNECT / AS SYSOPER or SVRMGR> CONNECT / AS SYSDBA
ORA_OPER or ORA_*SID*_OPER	SVRMGR> CONNECT / AS SYSOPER

You are connected to the Windows NT server. If you connect with SYSDBA, you are given DBA privileges.

Connecting as INTERNAL Without a Password

This section describes how to connect as INTERNAL without a password. To do this, you must create one of the following new local Windows NT user groups and add a Windows NT operating system local or domain user to that group:

Local Group	This Local Group Includes All...
ORA_DBA	SYSDBA database privileges. This group is applicable for all SIDs.
ORA_*SID*_DBA	SYSDBA database privileges. This group is applicable only for the SID specified in the name.

This enables you to log into a local computer or a Windows NT domain. In the domain, your Oracle8 database is just one of many resources to which you have access. Once you access this domain, you are automatically validated as an authorized DBA who can access the Oracle8 database without a password.

Note: The Oracle8 database does not support setting the registry DBA_AUTHORIZATION parameter to the value of BYPASS. Server Manager uses the value of DBA_AUTHORIZATION as a password for INTERNAL to retry a failed login attempt when no password is provided.

Follow the steps below to connect as INTERNAL without a password:

- Step 1: Perform Authentication Tasks on the Oracle8 Database Server
- Step 2: Perform Authentication Tasks on the Client Computer

> **Note:** Use Server Manager to connect as INTERNAL without a password. SQL*Plus can also be used, but only when connecting locally to an Oracle8 database. Remote SQL*Plus connections and the Oracle Enterprise Manager applications cannot be used for this type of connection.

Step 1: Perform Authentication Tasks on the Oracle8 Database Server

To perform authentication tasks on the Oracle8 database server:

1. Create a Windows NT user name (local or domain) if one does not already exist.
2. Set the INIT*SID*.ORA file REMOTE_LOGIN_PASSWORDFILE parameter to NONE to enable operating system authenticated logins for the INTERNAL user name.

   > **Note:** REMOTE_LOGIN_PASSWORDFILE can also be set to SHARED. However, to perform secure, trusted operating system-authenticated connections, it is recommended that you set this parameter to NONE.

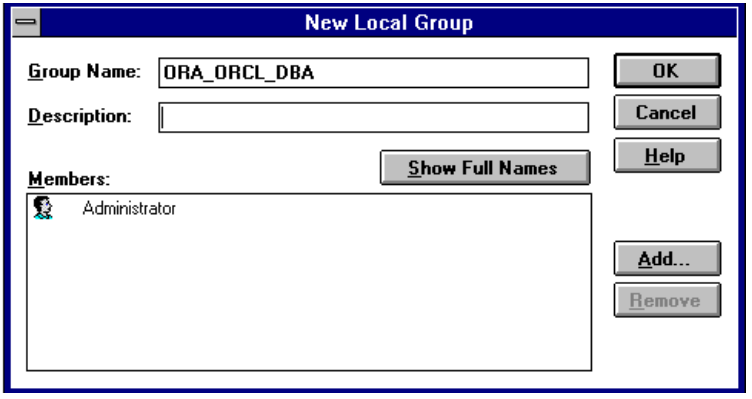
3. Remove the # sign from in front of SQLNET.AUTHENTICATION_SERVICES and set it as follows in your *ORACLE_HOME*\NET80\ADMIN\SQLNET.ORA file:

   ```
   SQLNET.AUTHENTICATION_SERVICES = (NTS)
   ```

4. Open User Manager.
5. Go to New Local Group from the User Menu.

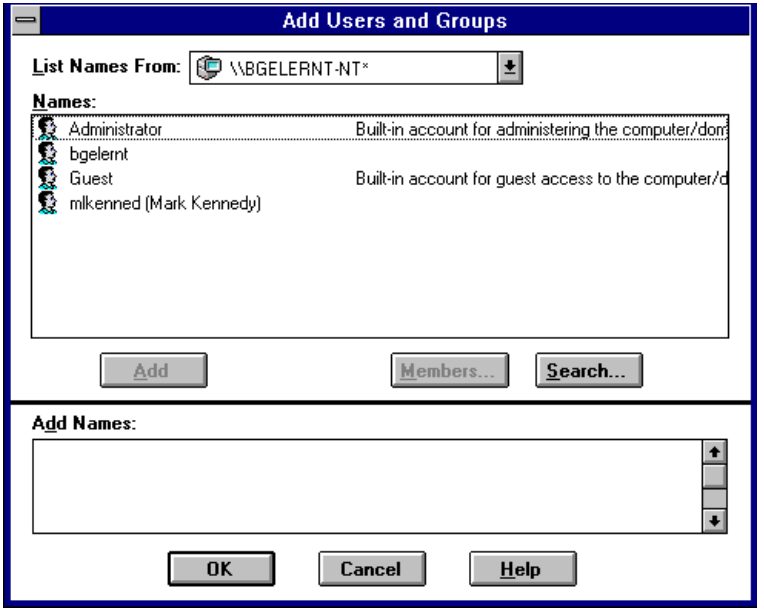
   The *New Local Group* dialog box appears.

6. Enter the ORA_*SID*_DBA or ORA_DBA Windows NT local group name in the Group Name field. For this example, the SID entered is ORCL:



7. Click Add.

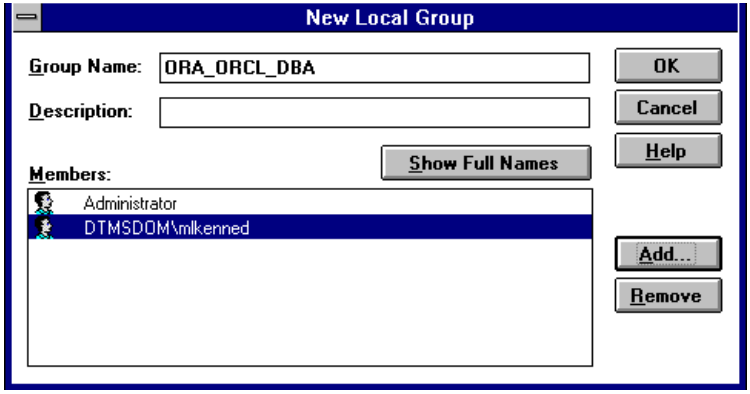
   The *Add Users and Groups* dialog box appears:



8. Select an appropriate Windows NT local or domain user from the Names field and click Add.

9. Click OK.

   Your selection is added to the Members field of the *New Local Group* dialog box:



10. Click OK.
11. Exit User Manager.
12. Connect to the database with the INTERNAL DBA name:

    ```
    SVRMGR> CONNECT INTERNAL/PASSWORD
    ```

13. Shut down the database:

    ```
    SVRMGR> SHUTDOWN
    ```

14. Restart the database:

    ```
    SVRMGR> STARTUP
    ```

Step 2: Perform Authentication Tasks on the Client Computer

To perform authentication tasks on the client computer:

1. Create a Windows NT local or domain user name with the same user name and password that exist on the Windows NT server (if the appropriate user name does not currently exist).
2. Remove the # sign from in front of SQLNET.AUTHENTICATION_SERVICES and set it as follows in your *ORACLE_HOME*\NET80\ADMIN\SQLNET.ORA file:

   ```
   SQLNET.AUTHENTICATION_SERVICES = (NTS)
   ```

3. Use Oracle Net8 Assistant or Oracle Net8 Easy Config to create a network connection from your client computer to your Oracle8 database. See *Net8 Getting Started for Windows NT and Windows 95/98* for instructions.
4. Access the Oracle8 database in either of two ways:
   - Log onto a client computer with a local or domain user name.
   - Access a shared area on the Windows NT computer hosting the Oracle8 database with the local or domain user name (for example, using NET USE).
5. Start Server Manager:

   ```
   C:\> SVRMGR30
   ```

6. Connect to the Oracle8 database:

   ```
   SVRMGR> SET INSTANCE SERVICE_NAME
   ```

   where *SERVICE_NAME* is the Net8 service name for the Oracle8 database that you created in Step 3.
7. Connect to your Windows NT server:

   ```
   SVRMGR> CONNECT INTERNAL
   ```

   You are connected to the Windows NT server.

Granting Database Roles through Windows NT

This section describes how to grant Oracle8 database roles to users directly through Windows NT. When you use Windows NT to authenticate users, Windows NT local groups can grant these users database roles. Through User Manager, you can create, grant, or revoke database roles to users.

Note: All privileges for these roles are active when the user connects. When using operating system roles, all roles are granted and managed through the operating system. You cannot use both operating system roles and Oracle roles at the same time.

Follow the steps below to grant database roles with Windows NT:

- Step 1: Perform Authentication Tasks on the Oracle8 Database Server
- Step 2: Perform Authentication Tasks on the Client Computer

Step 1: Perform Authentication Tasks on the Oracle8 Database Server

To perform authentication tasks on the Oracle8 database server:

1. Add the OS_ROLES initialization parameter to the INIT*SID*.ORA file.
2. Set OS_ROLES to TRUE.

   The default setting for this parameter is FALSE.
3. Remove the # sign from in front of SQLNET.AUTHENTICATION_SERVICES and set it as follows in your *ORACLE_HOME*\NET80\ADMIN\SQLNET.ORA file:

   ```
   SQLNET.AUTHENTICATION_SERVICES = (NTS)
   ```
4. Create a new database role:

   ```
   SVRMGR> CREATE ROLE DBSALES3 IDENTIFIED EXTERNALLY;
   ```

   where DBSALES3 is the name of the role for these steps. Substitute a role name appropriate to your database environment.
5. Grant Oracle roles to DBSALES3 that are appropriate to your database environment:

   ```
   SVRMGR> GRANT DBA TO DBSALES3 WITH ADMIN OPTION;
   ```

```
SVRMGR> GRANT RESOURCE TO DBSALES3 WITH ADMIN OPTION;
SVRMGR> GRANT CONNECT TO DBSALES3 WITH ADMIN OPTION;
```

6. Connect to the database with the INTERNAL DBA name:

   ```
   SVRMGR> CONNECT INTERNAL/PASSWORD
   ```

7. Shut down the database:

   ```
   SVRMGR> SHUTDOWN
   ```

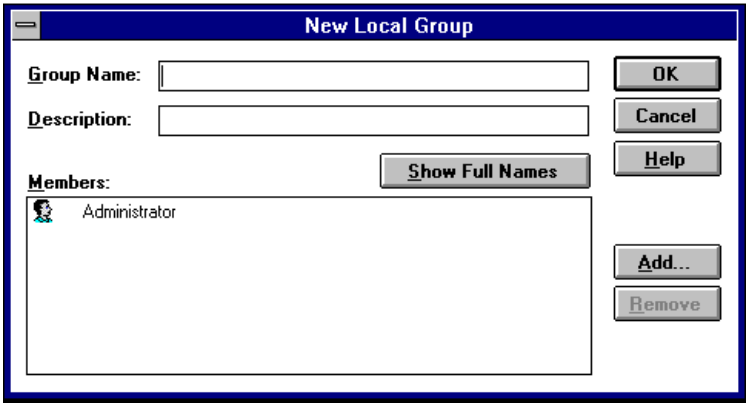
8. Restart the database:

   ```
   SVRMGR> STARTUP
   ```

9. Open the Windows NT User Manager.

10. Choose New Local Group from the User menu.

    The *New Local Group* dialog box appears:



11. Enter the Windows NT local group name corresponding to the database role in the Group Name field with the following syntax:

    ```
    ORA_SID_ROLENAME [_D] [_A]
    ```

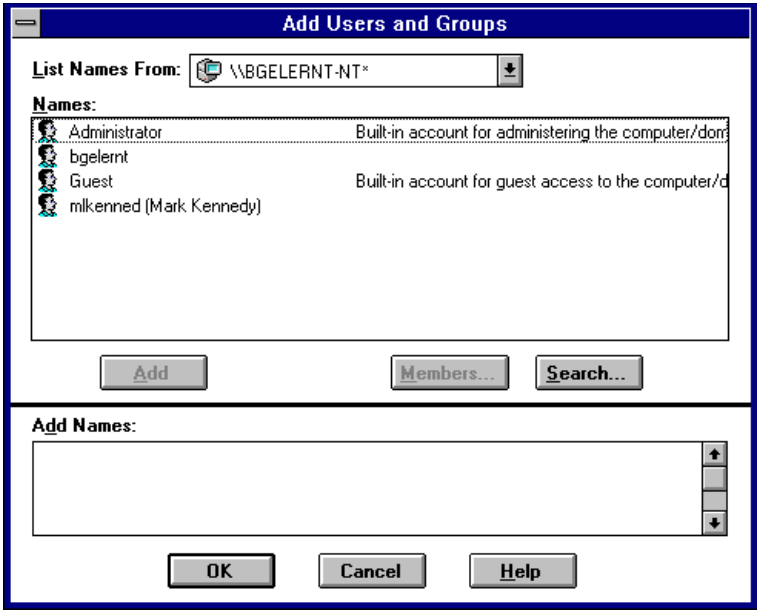
where:

SID	Indicates the database instance.
ROLENAME	Identifies the database role granted to users of a database session.
D	Optional character indicating that this database role is to be the default role of the database user. If specified, this character must be preceded by an underscore.
A	Optional character indicating that this database role includes the ADMIN OPTION. This enables the user to grant the role to other roles only. If specified, this character must be preceded by an underscore.

For this example, ORA_ORCL_DBSALES3_D is entered.

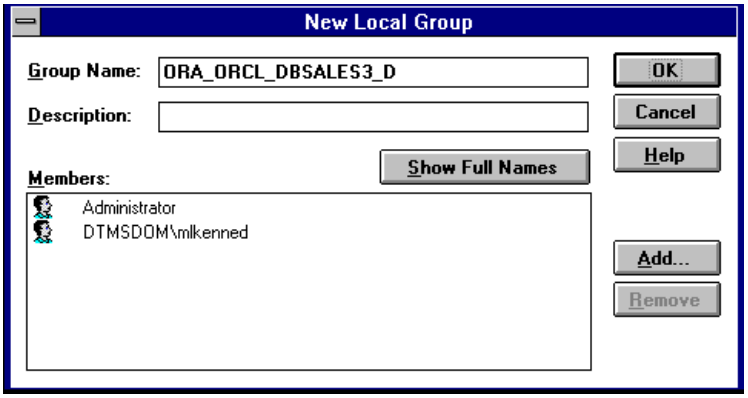
12. Click Add.

The *Add Users and Groups* dialog box appears:



13. Select the appropriate Windows NT local or domain user name and click Add.
14. Click OK.

    Your selection is added to the Members field of the *New Local Group* dialog box:



You can convert additional database roles to several possible Windows NT groups, as shown in the following table. Then, users connecting to the ORCL instance in this example and authenticated by Windows NT as members of these Windows NT local groups have the privileges associated with DBSALES3 and DBSALES4 by default (because of the _D option). DBSALES1 and DBSALES2 are available for use by the user if they first connect as members of DBSALES3 or DBSALES4 and use the SET ROLE command. If a user tries to connect with DBSALES1 or DBSALES2_A without first connecting with a default role, they are unable to connect. Additionally, users can grant DBSALES2 and DBSALES4 to other roles.

Database Roles	Windows NT Groups
DBSALES1	ORA_ORCL_DBSALES1
DBSALES2	ORA_ORCL_DBSALES2_A
DBSALES3	ORA_ORCL_DBSALES3_D
DBSALES4	ORA_ORCL_DBSALES4_DA

Note: When the Oracle8 database converts the group name to a role name, it changes the name to uppercase.

15. Click OK.
16. Exit User Manager.

Step 2: Perform Authentication Tasks on the Client Computer

To perform authentication tasks on the client computer:

1. Create a Windows NT local or domain user name with the same user name and password that exist on the Windows NT server (if the appropriate user name does not currently exist).
2. Remove the # sign from in front of SQLNET.AUTHENTICATION_SERVICES and set it as follows in your *ORACLE_HOME*\NET80\ADMIN\SQLNET.ORA file:

   ```
   SQLNET.AUTHENTICATION_SERVICES = (NTS)
   ```

3. Use Oracle Net8 Assistant or Oracle Net8 Easy Config to create a network connection from your client computer to your Oracle8 database. See *Net8 Getting Started for Windows NT and Windows 95/98* for instructions.
4. Access the Oracle8 database in either of two ways:
   - Log onto a client computer with a local or domain user name.
   - Access a shared area on the Windows NT computer hosting the Oracle8 database with the local or domain user name (for example, using NET USE).
5. Start Server Manager:

   ```
   C:\> SVRMGR30
   ```

6. Connect to the correct instance:

   ```
   SVRMGR> SET INSTANCE SERVICE_NAME
   ```

   where *SERVICE_NAME* is the Net8 service name for the Oracle8 database that you created in Step 3.

7. Connect to the Oracle8 database:

```
SVRMGR> CONNECT SCOTT/TIGER
```

You are connected to the Windows NT server over Net8 with the Oracle user name SCOTT/TIGER. The roles applied to the Oracle user name SCOTT consist of all roles defined for the Windows NT user name that were mapped to the database roles above (in this case, ORA_DBSALES3_D). All roles available under an authenticated connection are determined by the Windows NT user name and the Oracle-specific Windows NT local groups to which the user belongs (for example, ORA_*SID*_DBSALES1 or ORA_*SID*_DBSALES4_DA).

12

Monitoring a Database

This chapter describes how to monitor Oracle8 Enterprise Edition.

Specific topics discussed are:

- Database Monitoring Overview
- Using Oracle8 Performance Monitor
- Using the Event Viewer
- Using Trace and Alert Files
- Using Performance Management Packs

Database Monitoring Overview

The following tools enable you to monitor your Oracle8 database:

This Tool	Enables You To...
Oracle8 Performance Monitor	Monitor database objects, such as CPU usage, buffer cache, and background processes.
Event Viewer	Monitor database events.
Trace Files	Record occurrences and exceptions of database operations.
Alert Files	Record important information about error messages and exceptions during database operations.
Oracle Enterprise Manager's Performance Management Packs	Monitor and tune using tools with real-time graphical performance information.

Each tool is described in the following sections.

> **Additional Information:** See *Oracle8 Tuning* for general tuning information and your operating system documentation for additional information on Windows NT Performance Monitor results and optimizing database performance.

Using Oracle8 Performance Monitor

Oracle8 Performance Monitor is a graphical tool for measuring the performance of Oracle8 Enterprise Edition objects on a local server or other servers on a network. This tool is the same in appearance and operation as the Windows NT Performance Monitor, except it has been preloaded with Oracle8 database performance elements.

On each computer, you can view the behavior of objects, such as the buffer cache, data dictionary cache, data files, threads, and processes. An *object* is a graphical representation of an element in your system. Every element, resource, and device in your system can be represented as an object.

There is a set of counters associated with each object. A *counter* is a unit of measurement used by the Performance Monitor to display activity. The type of activity the counter measures is dependent upon the type of object.

Certain object types and their respective counters are present on all systems. Other counters, such as application-specific counters (like Server Manager), appear only if the computer is running the associated software.

Each of these objects has an associated set of counters that provide information about device usage, queue lengths, delays, and information used to measure throughput and internal congestion.

Installation

To use Oracle8 Performance Monitor to monitor and analyze Oracle8 database performance, you *must* first install Oracle8 Performance Utility. The Oracle8 Performance Utility enables the Windows NT Performance Monitor to monitor Oracle8 database objects.

Registry Information

When you install Oracle8 Performance Utility, values are automatically set in the registry as described in Appendix C, "Configuration Parameters and the Registry".

The Oracle8 Performance Monitor allows you to monitor only one database instance at a time. For this reason, the registry contains the following values:

- Hostname
- Username
- Password

Note: Oracle Corporation recommends setting the security level on each of these registry values.

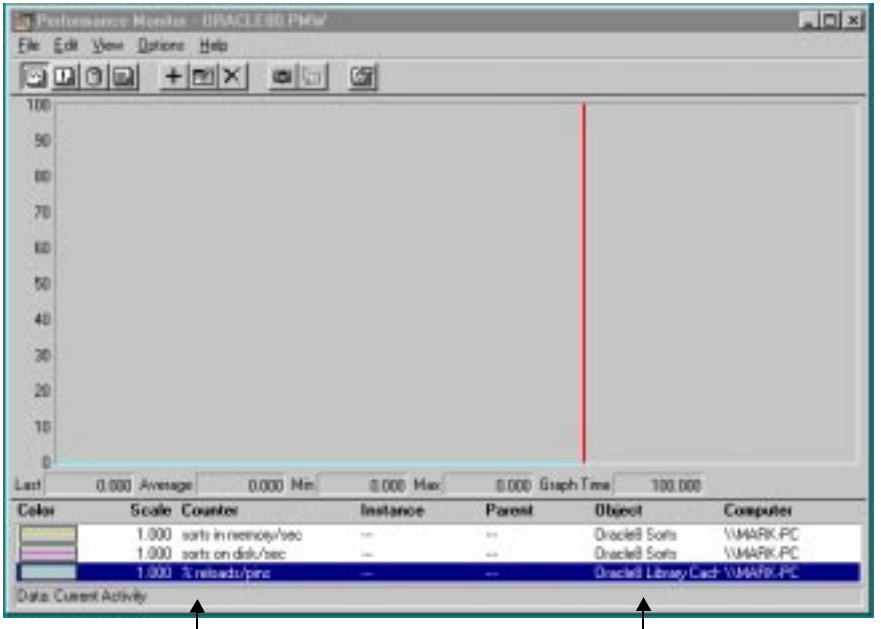
To use Oracle8 Performance Monitor for another database instance on the same computer or a UNIX computer, change the values appropriately in the registry. You can also monitor non-NT Oracle databases by changing the Hostname registry value so it points to another computer specified in the TNSNAMES.ORA file.

Accessing Oracle8 Performance Monitor

To access Oracle8 Performance Monitor:

Choose Start > Programs > Oracle for Windows NT - [*HOME_NAME*] > Oracle8 Performance Monitor.

The *Performance Monitor* window appears with the *Chart View*:



The Oracle8 Performance Monitor has four views you can choose from the View menu:

View	Description
Chart View	Displays database activity in real-time.
Alert View	Lets you know when certain minimum performance criteria are not being met, or maximum criteria are being exceeded.
Log View	Maintains continuous records on performance.
Report View	Saves information about specific criteria.

Additional Information: For complete information about the four views, see your Windows NT documentation.

Monitoring Oracle8 Objects

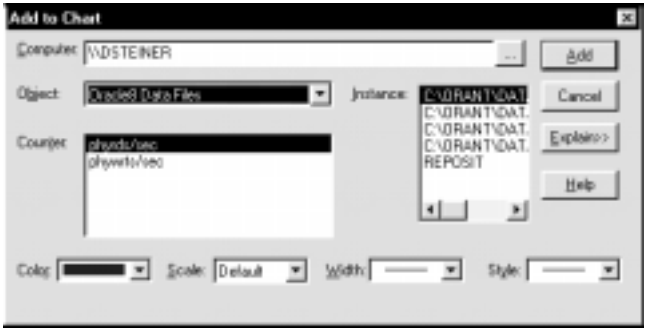
For each view (Chart, Alert, Log, and Report), you can decide on the objects you want to monitor and save those settings to a file. When an object is chosen, it is assigned a counter, a color, and added to the status bar at the bottom of Oracle8 Performance Monitor.

To add objects to a view:

1. Choose Add To (Chart, Alert, Log, Report) from the Edit menu.

   The *Add to* (*Chart*, *Alert*, *Log*, *Report*) dialog box appears.

Below is the *Add to Chart* dialog box. Note the corresponding dialog boxes for the other views are different.



2. Select the objects you want to monitor, then click Add.

   Below are the elements of the *Add to Chart* dialog box. The other views' dialog boxes have similar features.

Element	Description
Computer list box	Specify the computer you want to monitor.
Object drop-down list box	Select an object to monitor. **Note:** If no data or Oracle8 objects appear, either the database is not running, or an invalid host string or password has been entered. If the database is not started, exit Oracle8 Performance Monitor, start the database, and restart Oracle8 Performance Monitor.
Counter list box	Select a counter (or multiple counters) for the object you have selected. Note that the contents of the Counter box change depending upon your selection in the Object box. If you want details on how a counter works, highlight the counter and choose Explain.
Instance box	Select an instance for this counter.
Color box	Choose a color for the display of the selected counter.
Scale box	Choose the scale at which you want to display the counter.
Width box	Specify the width of the line on the graph.
Style box	Choose a different style for your graph line.

3. Click Done when you are finished.

   The selections you have chosen to monitor are displayed.

Understanding Oracle8 Performance Objects

All Oracle8 system resources that can be monitored through Oracle8 Performance Monitor begin with *Oracle8*. These measures are defined in *ORACLE_HOME*\DBS\PERF80.ORA. The following table shows the Oracle8 objects and their associated counters. For additional information on these objects, see *Oracle8 Tuning*.

Note: You can only monitor one instance at a time using Oracle8 Performance Monitor on a given computer.

Object	Counter	Description
Oracle8 Buffer Cache	phyrds / gets %	The percentage of phyrds / gets is calculated as a Miss ratio. If the Miss counter is higher than 30% to 40%, increase the number of buffers in the buffer cache to improve performance. To make the buffer cache larger, increase the value of the DB_BLOCK_BUFFERS initialization parameter. This value is not time-derived.
Oracle8 Data Dictionary Cache	getmisses / gets %	The value of this counter must be less than 10 or 15% for frequently accessed data dictionary caches. If the ratio continues to increase above this threshold while your application is running, increase the amount of memory available to the data dictionary cache. To increase the memory available to the cache, increase the value of the initialization parameter SHARED_POOL_SIZE. (See *Oracle8 Tuning* for more detailed information on tuning memory allocation in the Oracle8 database.) This value is not time-derived.
Oracle8 Data Files	■ phyrds / sec ■ phywrts / sec	Disk contention occurs when multiple processes try to access the same disk simultaneously. There are many ways of reducing disk contention, depending on the results from monitoring disk activity. Some corrective actions include: ■ distributing I / O ■ separating data files and redo log files ■ separating tables and indexes ■ striping table data These values are time-derived.

Object	Counter	Description
Oracle8 Redo Log Buffer	redo log space requests	The value of this counter must be near zero. If this value increments consistently, processes have had to wait for space in the redo log buffer. In this case, it may be necessary to increase the size of the redo log buffer.
Oracle8 DBWR stats1		These counters are helpful in tuning the Buffer Cache.
	■ buffers scanned / sec	Buffers scanned / sec is the number of buffers the DBWR scanned per second. The buffers scanned are on the LRU list.
	■ LRU scans / sec	LRU_scans / sec is the number of times the DBWR scanned the Least Recently Used buffer list per second.
Oracle8 DBWR stats2		These counters are helpful in determining how much work the DBWR has been requested to perform.
	■ timeouts / sec	Timeouts / sec is the number of times the DBWR timed-out per second. The DBWR is on a three second timeout interval. If the DBWR has not been posted within a three second interval, it times out.
	■ checkpoints / sec	Checkpoints / sec is the number of checkpoint messages processed by the database writer per second. Whenever a checkpoint occurs, the DBWR must be messaged (posted) to "write dirty buffers to disk".
Oracle8 Dynamic Space Management	recursive calls / sec	Dynamic extension causes Oracle8 to execute SQL statements in addition to those SQL statements issued by user processes. These SQL statements are called recursive calls. If Oracle8 makes excessive recursive calls while an application is running, it may be necessary to determine the cause. Examine the recursive calls statistic through the dynamic performance table V$SYSSTAT.
Oracle8 Free List	free list waits / requests %	Contention for free lists is reflected by contention for free data blocks in the buffer cache. You can determine if contention for free lists is reducing performance by querying V$WAITSTAT. If the number of free list waits for free blocks is greater than 1% of the total number of requests, consider adding more free lists to reduce contention.
Oracle8 Library Cache	reloads / pins %	The percentage of SQL statements, PL / SQL blocks, and object definitions that required reparsing. Total Reloads must be near zero. If the ratio of Reloads to Pins is greater than 1%, then reduce the library cache misses. This value is not time-derived.
Oracle8 Sorts	■ sorts in memory / sec ■ sorts on disk / sec	The default sort area size is adequate to hold all the data for most sorts. However, if your application often performs large sorts on data that does not fit into the sort area, then you may want to increase the sort area size.

Oracle8 Performance Monitor Troubleshooting Information

If no data or Oracle8 objects appear in the Objects list of the *Add to Chart* dialog box, either:

- the database is not running
- an invalid host string or password has been entered in the registry

The OPERF80.LOG file located in *ORACLE_HOME*\DBS contains error messages about Oracle8 Performance Monitor.

To resolve this problem:

1. Check the *ORACLE_HOME*\DBS\OPERF80.LOG file for error messages.
2. Resolve the problem as follows:
   - If the log file indicates an invalid host string or password, check the registry for correct values for Hostname, Password, and Username. See "Parameters for Oracle8 Performance Monitor" on page C-12 for further information about these values.
   - If the database is not started, exit Oracle8 Performance Monitor and restart the database.
3. Restart Oracle8 Performance Monitor.

Using the Event Viewer

Oracle8 Enterprise Edition problems and other significant occurrences are recorded as events. These events are recorded in an application event log. View and manage these recorded events in the Event Viewer.

Accessing the Event Viewer

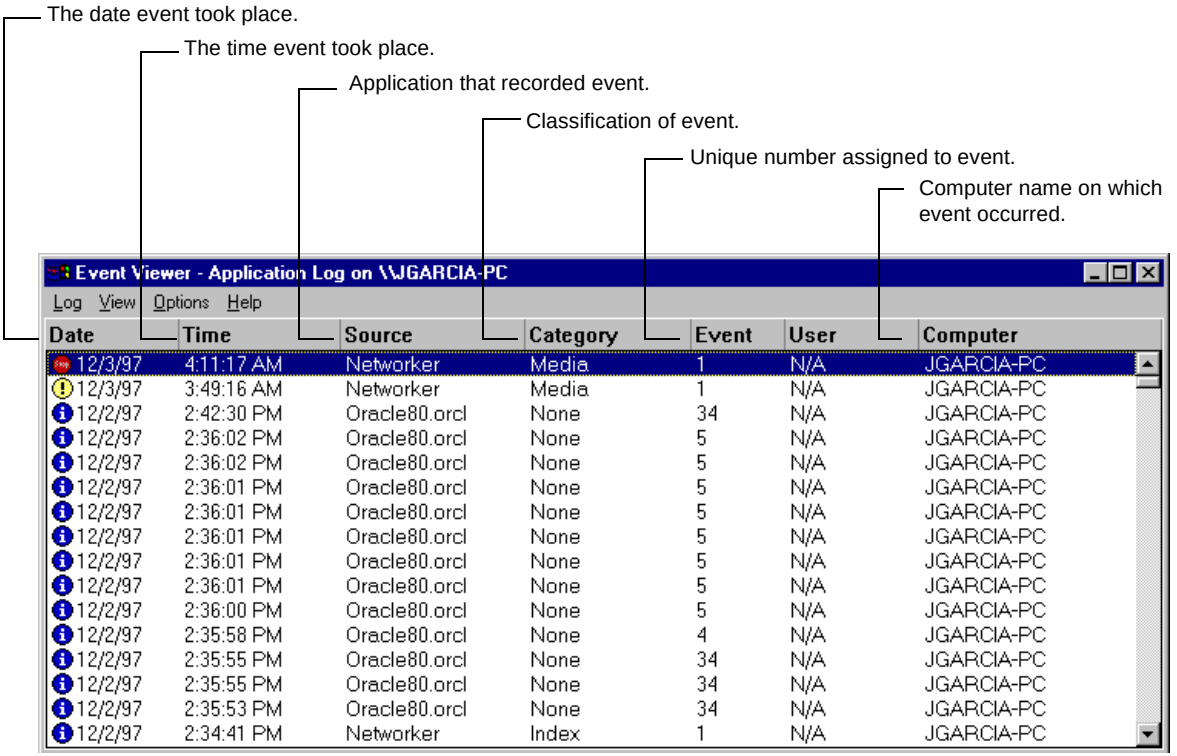
To access the Event Viewer:

1. Choose Start > Programs > Administrative Tools > Event Viewer.

   The *Event Viewer* window appears.

2. Choose Application from the Log menu.

   The *Application* view displays the following information:



Reading the Event Viewer

The icons beside each event determine the type of event.

Icon	Event Type	Description
red (stop sign)	Error	Indicates an error. Always check these icons.
blue (informational)	Information	Indicates a non-critical system event. You can ignore these icons unless you want to track a specific event.
yellow (exclamation point)	Warning	Indicates a special event, such as the termination of an instance or the shutdown of services. Investigate these icons, but they are usually non-critical.

Oracle8 Enterprise Edition events display with a source of Oracle80.orcl. Oracle80.orcl consists of the following event IDs:

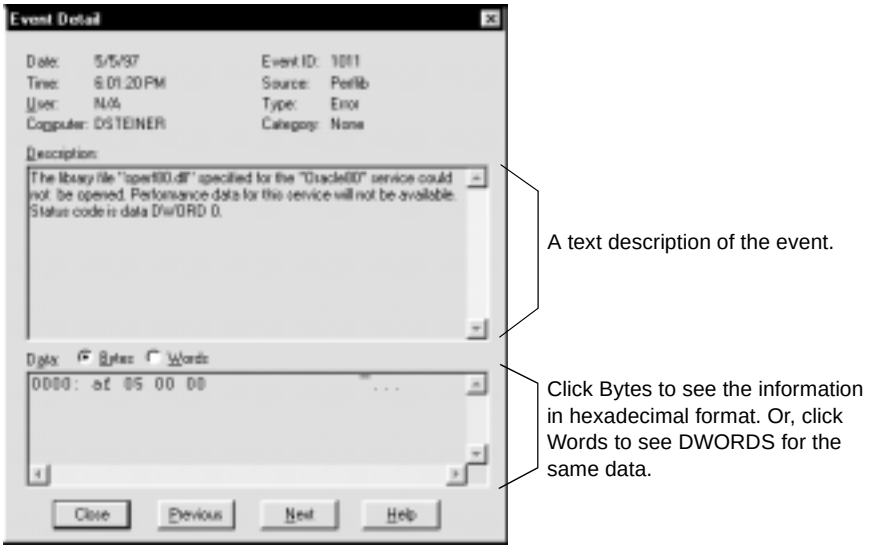
Event ID	Description
IDs other than 34	Specifies general database activities, such as an instance being started or stopped.
34	Specifies an audit trail event. These events are recorded if the AUDIT_TRAIL parameter is set to DB (TRUE) or OS in the INIT*SID*.ORA file. The OS option enables system-wide auditing and causes audited records to be written to the Event Viewer. The DB option enables system-wide auditing and causes audited records to be written to the database audit trail (the SYS.AUD$ table). Some records, however, are written to the Event Viewer.

Using the Event Viewer

To use the Event Viewer:

1. Look at the icons.
2. Double-click an icon to analyze (especially red icons).

   The *Event Detail* dialog box appears with more information about the selected event:



Additional Information: See your Microsoft Windows NT documentation for more information on using the Windows NT Event Viewer.

Managing the Event Viewer

Setting AUDIT_TRAIL to DB or OS causes more records to be written to the Event Viewer. This can fill up the Event Viewer log file. Follow these procedures to increase the log file size.

To increase log file size:

1. Choose Log Settings from the Log menu.

   The *Event Log Settings* dialog box appears.

2. Adjust the setting in the Maximum Log Size field to an appropriate level.

3. Click OK.

   You are returned to the Event Viewer.

Warning: Audit information cannot be spooled to a file. The AUDIT_FILE_DEST parameter is not supported in Windows NT and should not be added to the INIT.ORA file.

Using Trace and Alert Files

Oracle8 Enterprise Edition background threads use trace files to record occurrences and exceptions of database operations, as well as errors. Background thread trace files are created regardless of whether the BACKGROUND_DUMP_DEST parameter is set in the INIT*SID*.ORA initialization parameter file. If BACKGROUND_DUMP_DEST is set, the trace files are stored in the directory specified. If the parameter is not set, the trace files are stored in the *ORACLE_HOME*\RDBMS80\TRACE directory.

Oracle8 database creates a different trace file for each background thread. The name of the trace file contains the name of the background thread, followed by the extension .TRC. Sample trace file syntax includes:

- *SID*DBWR.TRC
- *SID*SMON.TRC

where *SID* represents the name of the instance.

Trace files are also created for user threads if the USER_DUMP_DEST parameter is set in the initialization parameter file. The trace files for the user threads have the form ORA*xxxxx*.TRC, where *xxxxx* is a 5-digit number indicating the Windows NT thread ID.

The alert file contains important information about error messages and exceptions that occur during database operations. Each Oracle8 Enterprise Edition instance has one alert file; information is appended to the file each time you start the instance. All threads can write to the alert file.

For example, when automatic archiving of redo logs is halted because no disk space is available, a message is placed in the alert file. The alert file is the first place to check if something goes wrong with the database and the cause is not immediately obvious.

The alert file is named *SID*ALRT.LOG and is found in the directory specified by the BACKGROUND_DUMP_DEST parameter in the INIT*SID*.ORA initialization parameter file. If the BACKGROUND_DUMP_DEST parameter is not set, the *SID*ALRT.LOG file is generated in *ORACLE_HOME*\RDBMS80\TRACE.

Using Performance Management Packs

Oracle Corporation offers three optional performance management packs that are integrated into Oracle Enterprise Manager:

- Oracle Diagnostics Pack
- Oracle Tuning Pack
- Oracle Change Management Pack

The three packs together offer a powerful set of tools for monitoring performance, analyzing performance findings, and implementing improvements in your Oracle8 database environment. These packs are not on your Oracle8 Enterprise Edition for Windows NT CD-ROM. They must be purchased separately.

Oracle Diagnostics Pack

Oracle Diagnostics Pack consists of the following tools:

- Oracle Performance Manager
- Oracle Capacity Planner
- Oracle Advanced Events
- Oracle TopSessions
- Oracle Lock Manager
- Oracle Trace

Oracle Performance Manager

Oracle Performance Manager is a tool for monitoring database performance in real time. It provides dozens of predefined charts for displaying a wide variety of database performance statistics regarding:

- users
- throughput
- tablespaces
- redo logs
- buffers
- caches
- I/O

> **Additional Information:** See *Oracle Enterprise Manager Performance Monitoring and Planning Guide* for specific information on using this tool.

Oracle Capacity Planner

Oracle Capacity Planner provides you with a comprehensive set of database and operating system statistics that can be collected. These collections are completely customizable, enabling you to select any set of statistics to collect and the interval at which they can be sampled.

> **Additional Information:** See *Oracle Enterprise Manager Performance Monitoring and Planning Guide* for specific information on using this tool.

Oracle Advanced Events

Oracle Advanced Events enables you to automatically monitor and detect problems on remote servers that may not be accessible from a graphical monitor. Oracle Advanced Events features include autonomous database and node monitoring, user-defined event threshold and monitoring intervals, user-defined event sets, multifaceted event notification, and automated problem correction.

> **Additional Information:** See *Oracle Enterprise Manager Performance Monitoring and Planning Guide* for specific information on using this tool.

Oracle TopSessions

Oracle TopSessions enables you to monitor how connected sessions use database instance resources in real time. You can obtain an overview of session activity by displaying the top *n* sessions sorted by a statistic of your choice. For any given session, you can drill down for more detail. You can further customize the information you display by specifying manual or automatic data refresh, the rate of automatic refresh, and the number of sessions to display.

In addition to these monitoring capabilities, Oracle TopSessions provides a methodology for identifying and correcting certain database performance problems. For example, when a sudden file I/O load is detected, you can first identify the sessions contributing to most of the problem, and then isolate the executing SQL statements in user applications for those sessions. You can then analyze the SQL explain plans for those SQL statements to determine how best to resolve the problem.

> **Additional Information:** See *Oracle Enterprise Manager Performance Monitoring and Planning Guide* and *Oracle Enterprise Manager Getting Started with Oracle TopSessions and Oracle Lock Manager* for specific information on using this tool.

Oracle Lock Manager

Oracle Lock Manager enables you to monitor locks, which are mechanisms that prevent destructive interaction between users accessing the same resource.

The main window displays a multi-column list that includes a row for each current lock in the database. The information displayed in the columns includes:

- user name
- session ID
- owner of the locked object
- name of the object
- type of the object

> **Additional Information:** See *Oracle Enterprise Manager Performance Monitoring and Planning Guide* and *Oracle Enterprise Manager Getting Started with Oracle TopSessions and Oracle Lock Manager* for specific information on using this tool.

Oracle Trace

Oracle Trace is a general-purpose data collection product that captures data for specific software events, such as an application transaction, a user log on, or any event particular to the software product. With Oracle Trace, you can collect a wide variety of data, such as performance statistics, diagnostics data, system resource usage, and business transaction details.

Two Oracle Corporation products are currently enabled for Oracle Trace collection:

- Oracle8 Enterprise Edition (for performance data collection)
- Net8 (for diagnostics data collection)

The Oracle8 Enterprise Edition performance data collected by Oracle Trace includes SQL statements, detailed statistics on SQL events, transactions events, and other useful information.

Oracle Trace provides a graphical Oracle Trace Manager application to create, schedule, and administer Oracle Trace collections for host products containing the Oracle Trace application programming interface (API). You can store data collected by Oracle Trace in Oracle8 database tables for access by SQL reporting tools and other products.

Oracle Trace has an API that contains data collection service calls. Software developers can use the Oracle Trace API to pre-configure their products for Oracle Trace data collection. Users of a product containing the Oracle Trace API calls, such as the Oracle8 database, can then automatically use Oracle Trace to collect data about specific events that occur in that product.

Most Oracle Trace users perform collections for products that already include the Oracle Trace API. Therefore, most users only need to be familiar with the data that can be collected for the host product and how to use the Oracle Trace Collection Manager application to create and administer data collections.

> **Additional Information:** See *Oracle Enterprise Manager Oracle Trace User's Guide* for specific information on using this tool.

Oracle Tuning Pack

Oracle Tuning Pack consists of the following tools:

- Oracle Tablespace Manager
- Oracle SQL Analyze
- Oracle Expert

Oracle Tablespace Manager

Oracle Tablespace Manager enables you to monitor and manage tablespace fragmentation. You can display an overview of table space usage information, either for all tablespaces in a database, or for the data file(s) within a tablespace.

To find out more about a given tablespace or data file, you can display how storage has been allocated for its segments. Clicking a segment in a segment list displays the extents in the tablespace or data file storing data for that segment. If data storage for a segment is fragmented, you can defragment it. You can also use the coalescing feature of Oracle Tablespace Manager to join adjacent free blocks.

> **Additional Information:** See *Oracle Enterprise Manager Performance Monitoring and Planning Guide* and *Oracle Enterprise Manager Getting Started with Oracle Tablespace Manager* for specific information on using this tool.

Oracle SQL Analyze

Oracle SQL Analyze examines your database SQL workload to determine which statements significantly impact performance. Data for all open cursors is captured and evaluated dynamically based upon user-selected criteria, such as resource usage and I/Os per statement. Extensive details are provided for examining SQL statements, including:

- parse number
- number of executes
- rows fetched
- sorts in memory or on disk
- table scans

> **Additional Information:** See *Oracle Enterprise Manager Getting Started with Oracle SQL Analyze* for specific information on using this tool.

Oracle Expert

Oracle Expert enables you to optimize the performance of your database environment. It assists you with the initial Oracle8 database configuration and the collection and evaluation of the performance characteristics of existing databases. Oracle Expert provides many advantages. Oracle Expert:

- uses trends to ensure continued performance as the database environment changes over time
- provides consistent and complete recommendations
- performs interdependency checking during analysis
- detects and reports symptoms of poor performance
- sifts through vast quantities of data quickly to identify performance problems
- identifies situations where advanced performance features of the database can be applied

Oracle Expert also serves as:

- an educational tool that explains all of its tuning recommendations through detailed reports
- a methodology tool that guides DBAs, analysts, and designers through the process of improving Oracle8 database performance
- a maintenance tool that uses historical trends to inform DBAs of degrading performance and impending bottlenecks
- an information tool that collects tuning data from numerous sources. This data not only feeds the tuning process, but can be displayed, edited, and reported on

> **Additional Information:** See *Oracle Enterprise Manager Oracle Expert User's Guide* for specific information on using this tool.

Oracle Change Management Pack

The Oracle Change Management Pack consists of six applications:

- DB Alter
- DB Capture
- DB Diff
- DB Propagate
- Plan Manager
- Quick Change

These applications allow you to make complex changes to schema objects (like dropping a column from a table), track changes to schemas and databases over time, make copies of schemas or objects, and compare and synchronize schemas and databases.

> **Additional Information:** See *Oracle Enterprise Manager Getting Started with Oracle Change Management Pack* for specific information on using this tool.

13

Backing Up and Recovering Database Files

This chapter provides information on backing up and recovering your database.

Specific topics discussed are:

- Selecting a Backup and Recovery Tool
- Backing Up Files with OCOPY80
- Recovering Files with OCOPY80
- Using Legato Storage Manager to Back Up Tapes

Selecting a Backup and Recovery Tool

Backing up and recovering your Oracle8 database is one of the most critical operations that a database administrator (DBA) performs. For this reason, it is extremely important to choose the correct tools. The table below describes available backup and recovery tools and makes recommendations on which tool to use with your Oracle8 database:

Tool	Description	Analysis of Tool	To Use this Tool, See...
Oracle Enterprise Manager Backup Manager	The Oracle Enterprise Manager Database Application Tools include a Backup Manager for backing up and recovering your Oracle8 database. The Backup Manager: ■ Enables users to perform database backups to disk and tape. ■ Creates backup scripts guided by a backup wizard. ■ Enables users to administer redo logs and online tablespace backups. ■ Enables users to perform both hot and cold backups. The Backup Manager enables you to back up and recover your database through a graphical user interface (GUI). This GUI enables you to use either of the two backup subsystems: ■ Operating system backup ■ Recovery Manager (which uses the executable RMAN80.EXE as its underlying functionality)	Highly recommended for backing up and recovering your Oracle8 database because of capabilities and ease of use. Works in conjunction with Recovery Manager (RMAN80.EXE). Backing up to tape requires an optional media management layer (MML) from a third-party vendor, such as Legato Storage Manager (LSM).	*Oracle Enterprise Manager Administrator's Guide*.
Recovery Manager (RMAN80.EXE) in command line mode	Recovery Manager in command line mode is an Oracle8 tool that manages the process of backing up, restoring, and recovering files. Recovery Manager is automatically installed with Oracle8 Utilities. Recovery Manager uses a special PL/SQL interface to the server for invoking backup functions. The user is unaware of this interface and instead interfaces only with a command line.	Command line usage only. Must clearly understand the command line syntax described in *Oracle8 Backup and Recovery* before using. Backing up to tape requires an optional MML from a third-party vendor.	Chapter 3, "Database Tools Overview" for instructions on accessing this tool and *Oracle8 Backup and Recovery* for instructions on using this tool.

Tool	Description	Analysis of Tool	To Use this Tool, See...
Third-party vendor products	Third-party vendors such as Legato provide tape backup software that works with Backup Manager and RMAN80.EXE.	Can back up to tape. Contact your third-party vendors for additional information.	*Legato Storage Manager Administrator's Guide* and other third-party vendor documentation.
NT Backup Manager and NT Recovery Manager (GUI tools)	NT Backup Manager and NT Recovery Manager are Oracle tools that enable you to perform database backups to disk or tape. Both tools are automatically installed with the Oracle8 Utilities.	Can back up to 4mm tape. Can perform hot and cold backups. This is the *last* release of this product on Oracle8.	Online help included with these tools.
OCOPY80	An Oracle executable that behaves like Windows NT's XCOPY command. OCOPY80 is needed when performing a hot backup manually (that is, backing up a tablespace that is in offline backup mode).	Command line usage only. Can back up only to disk. Can only perform local backups.	"Backing Up Files with OCOPY80" on page 13-4 and "Recovering Files with OCOPY80" on page 13-6.

Note: Before performing a cold backup, and regardless of the backup tool you use (Oracle NT Backup, Oracle Enterprise Manager Backup Manager, or a third party tool), it may be necessary to stop the OracleService*SID* service in order to clear locks on the database files. If you do not stop this service, some database files may not be backed up.

Backing Up Files with OCOPY80

Use OCOPY80 for both hot and raw database file backups of the following file types:

File	Description
File Allocation Table (FAT) *or* NT File System (NTFS) files	File allocation table (FAT) or NT file system (NTFS) files you want to back up.
Logical raw files	A logical drive (accessed with the direct I/O) identified by the name: `\\.\`*x*`:` where *x:* is the logical drive designator.
Physical raw files	A physical hard drive (accessed with direct I/O) identified by a device name of the form: `\\.\physicaldrive`*N* where *N* is 0, 1, 2, and so on, representing each of the physical drives in the system.

This table describes the two copy modes in which to use OCOPY80:

Copy Mode	OCOPY80 is used to...
Hard disk	Copy hot files to a new name and location on a hard disk where you can use an archive utility to back them up.
Multiple diskettes	Back up large hot files directly to multiple diskettes.

This table describes the syntax to use when backing up all file types to hard disk or multiple diskettes:

Copy Mode	File Type	Syntax
Hard disk	FAT or NTFS files	`C:\> OCOPY80 old_file new_file`
	Logical raw	`C:\> OCOPY80 \\.\C: new_file`
	Physical raw	`C:\> OCOPY80 \\.\physicaldriveN new_file`
Multiple diskettes	FAT or NTFS files	`C:\> OCOPY80 /B hot_file a:`
	Logical raw	`C:\> OCOPY80 /B \\.\C: a:`
	Physical raw	`C:\> OCOPY80 /B \\.\physicaldriveN a:`

Where...	Indicates the...
old_file	Name and location of the hot file you want to back up.
new_file	Name and location of the backup copy.
C:	Raw drive that holds a single RAW database file.
physical drive	Physical drive that holds a single RAW database file.
N	Number(s) representing each of the physical drives in the system.
hot_file	Path and filename of the hot file you want to back up.
a:	Diskette drive containing the diskette on which to save the backup copy. If the file is too large to fit on one diskette, OCOPY80 prompts you to insert new diskettes as needed. OCOPY80 catalogs the parts of the file automatically so that it can be reconstructed at a later time.
/B	Large files must be split over multiple diskettes.

Note: Always use a fresh diskette for each OCOPY80 procedure; do not use OCOPY80 to back up a file onto a diskette that contains part or all of another file backed up using OCOPY80.

Recovering Files with OCOPY80

The table below describes the syntax to use when recovering all file types from hard disk or multiple diskettes.

Restore From...	File Type to Restore	Syntax
Hard Disk[1]	FAT or NTFS files	Use the Windows NT COPY command.
	Logical raw	`C:\> OCOPY80 new_file \\.\c:`
	Physical raw	`C:\> OCOPY80 new_file \\.\physicaldriveN`
Multiple diskettes[2]	FAT or NTFS files	`C:\> OCOPY80 /R a: restore_dir` **Note:** First insert the diskette containing the initial part of the backed up file.
	Logical raw	`C:\> OCOPY80 /R a: \\.\c:`
	Physical raw	`C:\> OCOPY80 /R a: \\.\physicaldriveN`

[1] These are files originally backed up without the /B option.

[2] These are files originally backed up with the /B option.

Where...	Indicates the...
C:	Raw drive, which holds a single RAW database file. If you use a different drive as your raw drive, substitute it for C:. OCOPY80 prompts you to insert diskettes as needed.
new_file	File name to which to restore the file.
physicaldrive	Physical drive that holds a single RAW database file.
N	Number(s) representing each of the physical drives in the system.
/R	Restore option.
a:	Drive containing the diskette with the backed up file.
restore_dir	Directory on the server in which to place the file. (The restored file has the same name as the original file.)

Using Legato Storage Manager to Back Up Tapes

When running backups to tape drivers using Legato Storage Manager (LSM), LSM's BIN directory must be added to the PATH. The default location of the directory is C:\WIN32APP\NSR\BIN.

To add this directory to the PATH:

1. Select System from the Control Panel.

   The *System Properties* dialog box appears.

2. Select the Environment tab.

   The Environment view appears.

3. Select Path from the System Variables box.

4. Add the value, and click Set.

5. Click OK to close the *System Properties* dialog box.

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Distributing and Managing Oracle Software

This chapter describes how to distribute and manage Oracle8 Enterprise Edition products across a network.

Specific topics discussed are:

- Overview
- Systems Management Server

Overview

Microsoft Systems Management Server (SMS) enables you to distribute and manage Oracle software across a network. This chapter provides a brief overview of SMS features, including installation, configuration, and usage instructions (where necessary).

Systems Management Server

SMS manages networked PCs running Windows operating systems. Specifically, SMS provides:

- PC hardware and software inventory
- Software distribution
- PC troubleshooting

SMS is a component of Microsoft Backoffice, and is sometimes used in companies running their businesses on Windows NT.

Oracle8 Enterprise Edition SMS Support

Oracle products for Windows 95, Windows 98, and Windows NT support remote installation and software inventory and auditing capabilities through SMS release 1.2. SMS integration with Windows 3.1 and Windows for Workgroups is not currently supported. Oracle Corporation provides customizable package definition files (.PDFs) that SMS administrators can use to distribute and maintain Oracle products in Windows NT, Windows 95, and Windows 98 networks. These packages contain the same products as the corresponding packages in a traditional installation.

Installation Dialog

Two of the packages that can be installed using SMS (Programmer/2000 and SQL*Plus) do not appear in the SMS dialog box. To install these packages, run the batch files (located in the SMS directory) for them directly from the CD-ROM.

- For Programmer/2000, run CLTP2KNT.BAT (on Windows NT), or CLTP2KP95.BAT (on Windows 95).
- For SQL*Plus, run CLTSQL95.BAT (on Windows NT), or CLTSQL95.BAT (on Windows 95).

Attention: SMS .PDF files are *not* the same as Adobe Acrobat .PDF files. Adobe Acrobat .PDF files contain only documentation, do *not* contain products, and *cannot* be used to distribute and maintain Oracle products.

Distributing Oracle Software with SMS

To distribute Oracle software with SMS:

Note: You must be an SMS administrator to perform these procedures.

1. Open the *Packages* window from the SMS Administrator's console.
2. Select New from the File menu.
3. Select Import in the dialog box that appears in order to specify the .PDF package that describes the Oracle software package to SMS.
4. Navigate to the SMS directory at the root of the Oracle8 Enterprise Edition for Windows NT CD-ROM.
5. Select the appropriate PDF package:

Package	Enables You to...
ServerNT.PDF	Install and de-install Oracle8 server software. This package includes Recovery Manager, which requires Legato Storage Manager (LSM) for Oracle to be installed. LSM is not automatically installed by SMS. You must manually install LSM by executing SETUP.EXE from the Legato directory at the root of the Oracle8 Enterprise Edition for Windows NT CD-ROM.
Client32.PDF	Install and de-install Oracle8 client software.
Deinstal.PDF	De-install any Oracle8 software package. You can use this option if you have the software installed but have not already created an install/de-install package with SMS, or if you have deleted the install/de-install package. Job sending time is greatly reduced.

6. Select Workstations to see more properties of the package.

7. Select the source directory for the package as follows:

For...	Set the Source Directory...
ServerNT.PDF or Client32.PDF (the two install / de-install packages)	To the root directory of the Oracle8 Enterprise Edition for Windows NT CD-ROM
Deinstal.PDF (the de-install only package)	To the SMS directory located at the root of the Oracle8 Enterprise Edition for Windows NT CD-ROM

> **Attention:** Setting the source directory is important, as installation command lines specified in the .PDF file are interpreted relative to the source directory.

One or more command line options listed for the package appear. They are defined in the .PDF file and must not be modified.

8. Click Close to exit the window.
9. Click OK to exit the *Package Properties* window.

   SMS creates the package.
10. Create a Run Command on Workstation job to distribute the new Oracle8 Enterprise Edition product package. You can choose the appropriate command line option for the package during job creation (for example, Oracle8 Client / DBA for Win95 or Oracle8 Client / AppUser for Win95). Consult your SMS documentation for more information about creating jobs.
11. Restart all client and server machines after installing Oracle software with SMS.

> **Note:** When you schedule an SMS job to distribute software, the source directory that was specified during package creation must be accessible to SMS. If you specified the Oracle8 Enterprise Edition for Windows NT CD-ROM as the source, be sure the CD-ROM is loaded into your CD-ROM drive during job creation.

Note: Oracle documentation distributed in an SMS package points to the initial installation location in order to save client disk space. This location is the SMS_PKGD directory of the SMS distribution server. As a result, the client machine requires a drive mapping to the initial installation location for access to documentation files. On Windows 95, Windows 98, and Windows NT 4.0, this drive mapping occurs automatically when the documentation icon is selected.

De-installation Issues

- Before running an Oracle de-installation job on an SMS client machine, be sure that all Oracle applications and services are stopped. De-installation will fail if services are running.
- The Microsoft Systems Management Server (SMS) de-installation package DEINSTAL.PDF is not available with releases 8.0.4 , 8.0.5, or 8.0.6. In addition, the O8PERDBMS.PDF package does not have any de-installation options.

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Developing Applications

This chapter describes Windows NT-specific issues for application developers.

Specific topics discussed are:

- Building External Procedures
- Compiling and Linking the Oracle XA Library
- Accessing Web Data with Intercartridge Exchange

Building External Procedures

This section describes how to create and use external procedures on Windows NT.

External Procedures Overview

External procedures are functions written in a third-generation language (3GL), such as C, and callable from within PL/SQL or SQL as if they were a PL/SQL procedure or function. External procedures enable you to take advantage of the strengths and capabilities of a 3GL programming language in a PL/SQL environment.

The main advantages of external procedures are:

- Performance, as some tasks are more efficiently performed in a 3GL language than in PL/SQL, which is better suited for SQL transaction processing
- Code re-usability, as dynamic link libraries (DLLs) can be called directly from PL/SQL programs on the server or in client tools such as SQL*Forms

You can use external procedures to perform specific processes, such as:

- Solving scientific and engineering problems
- Analyzing data
- Controlling real-time devices and processes

Follow these instructions to create and use an external procedure:

- Step 1: Installing and Configuring
- Step 2: Writing an External Procedure
- Step 3: Building a DLL
- Step 4: Registering an External Procedure
- Step 5: Executing an External Procedure
- Step 6: Enabling Multi-threaded Callout Support

Attention: You can combine the instructions described in Steps 4 and 5 into one SQL script that automates the process of registering and executing your external procedure. For an example of a SQL script that combines these steps, see *ORACLE_HOME*\RDBMS80\EXTPROC\EXTERN.SQL.

Step 1: Installing and Configuring

This section describes:

- Installing Oracle8 Enterprise Edition
- Configuring Net8

Installing Oracle8 Enterprise Edition

Follow the procedures in *Oracle8 Enterprise Edition Installation for Windows NT* to install these products on your Windows NT server:

- Oracle8 Enterprise Edition

  Contains PL/SQL, from which external procedures are called, and the PL/SQL external procedure program (EXTPROC), which executes external procedures

- Net8 Client, Net8 Server, and Oracle Protocol Adapters

> **Note:** You must also have a C compiler and linker installed on your system to build DLLs.

Configuring Net8

If you install Net8 Server from your Oracle8 Enterprise Edition CD-ROM, your server network files are automatically configured to use external procedures.

When PL/SQL calls an external procedure, the Net8 listener launches a session-specific process called EXTPROC. Through Net8, PL/SQL passes the following information to EXTPROC:

- DLL name
- external procedure name
- parameters (if necessary)

EXTPROC then loads the DLL and invokes the external procedure.

If you copy your Oracle7 server network files into your Oracle8 network files directory, the following files must be manually configured for the external procedure behavior described above to occur:

- *ORACLE_HOME*\NET80\ADMIN\LISTENER.ORA file
- *ORACLE_HOME*\NET80\ADMIN\TNSNAMES.ORA file

See "Configuring External Procedure Calls" in Chapter 8 of *Net8 Getting Started for Windows NT and Windows 95*.

> **Note:** The SQLNET.ORA file requires no changes. By default, the values for the parameters NAMES.DEFAULT_DOMAIN and NAME.DEFAULT_ZONE are set to WORLD. These values match with the .WORLD extension on the end of EXTPROC_CONNECTION_DATA in the TNSNAMES.ORA file.

Step 2: Writing an External Procedure

Using a 3GL programming language, such as C, you can write functions to be built into DLLs and invoked by EXTPROC. The following is a simple Microsoft Visual C++ example of an external procedure:

> **Note:** Since external procedures are built into DLLs, they must be explicitly exported. In this example, the dllexport storage class modifier exports the function find_max from a dynamic link library.

```
#include <windows.h>
#define NullValue -1
/*
  This function simply returns the larger of x and y.
*/
long __declspec(dllexport) find_max(long x,
short x_indicator,
long y,
short y_indicator,
short *ret_indicator)
{
   /* It can be tricky to debug DLL's that are being called by a process
      that is spawned only when needed, as in this case.
      Therefore try using the DebugBreak(); command.
      This will start your debugger.  Uncomment the following line and
      you can step right into your code.
```

```
    */
    /* DebugBreak();  */

    /* first check to see if you have any nulls */
    /* Just return a null if either x or y is null */

    if ( x_indicator==NullValue || y_indicator==NullValue) {
       *ret_indicator = NullValue;
       return(0);
    } else {
       *ret_indicator = 0;        /* Signify that return value is not null */
       if (x >= y) return x;
       else return y;
    }
}
```

Step 3: Building a DLL

After you have written your external procedure(s) in a 3GL programming language, use the appropriate compiler and linker to build a DLL, making sure to export the external procedures, as noted above. See your compiler and linker documentation for instructions on building a DLL and exporting its functions.

After building the DLL, you can move it to any directory on your system. For the example above, you can build the external procedure find_max into a DLL called EXTERN.DLL. To build the above example, go to *ORACLE_HOME*\RDBMS80\EXTPROC and type MAKE.

Step 4: Registering an External Procedure

Once you have built a DLL containing your external procedure(s), you must register your external procedure(s) with the Oracle8 database. This involves two distinct steps:

1. Create a PL/SQL library to map to the DLL.

   a. Start Server Manager:

   ```
   C:\> SVRMGR30
   ```

   b. Create the PL/SQL library using the CREATE LIBRARY command:

   ```
   SVRMGR> CREATE LIBRARY externProcedures AS 'C:\ORANT\RDBMS80\
   EXTPROC\EXTERN.DLL';
   ```

Where...	Represents the...
`externProcedures`	Alias library (essentially a schema object in the database)
`C:\ORANT\RDBMS80\EXTPROC\EXTERN.DLL`	Path to the Windows NT operating system DLL EXTERN.DLL. This example uses C:\ORANT as your Oracle home.

Note: The DBA must grant EXECUTE privileges on the PL/SQL library to users that want to call the library's external procedures from PL/SQL or SQL.

2. Create a PL/SQL program unit specification.

   Do this by writing a PL/SQL subprogram that uses the EXTERNAL clause instead of declarations and a BEGIN...END block. The EXTERNAL clause is the interface between PL/SQL and the external procedure. The EXTERNAL clause identifies the following information about the external procedure:

   - name
   - DLL alias
   - programming language in which it was written
   - calling standard (defaults to C if omitted)

For example:

```
CREATE OR REPLACE FUNCTION PLS_MAX(
      x BINARY_INTEGER,
      y BINARY_INTEGER)
RETURN BINARY_INTEGER AS
      EXTERNAL LIBRARY externProcedures
     NAME "find_max"
     LANGUAGE C
     PARAMETERS (
        x long,             -- stores value of x
         x_INDICATOR short,  -- this is used to determine if x is a NULL value
        y long,             -- stores value of y
         y INDICATOR short,  -- this is used to determine if y is a NULL value
      RETURN INDICATOR short ); -- need to pass pointer to return value's
  -- indicator variable to
  determine if NULL.
     --This means that my function will be defined as:
     --long max(long x, short x_indicator,
     --         long y, short y_indicator, short * ret_indicator)
```

DLL alias. You need EXECUTE privileges on this library.

External procedure to call. If enclosed in double quotes, it becomes case sensitive.

Language in which the external procedure was written.

Step 5: Executing an External Procedure

To execute an external procedure, you must call the PL/SQL program unit (that is, the alias for the external function) that registered the external procedure. These calls can appear in:

- anonymous blocks
- stand-alone and packaged subprograms
- methods of an object type
- database triggers
- SQL statements (calls to packaged functions only)

In "Step 4: Registering an External Procedure" on page 15-6, the PL/SQL function PLS_MAX registered the external procedure find_max. Follow the procedures below to execute find_max:

1. Call the PL/SQL function PLS_MAX from a PL/SQL procedure named Useit:

```
CREATE OR REPLACE PROCEDURE UseIt AS
        a integer;
        b integer;
        c integer;
BEGIN
        a := 1;
        b := 2;
        c := PLS_MAX(a,b);
        dbms_output.put_line('The maximum of '||a||' and '||b||' is  '||c);
END;
```

2. Run the procedure:

```
SVRMGR> EXECUTE UseIt;
```

Step 6: Enabling Multi-threaded Callout Support

You can increase the speed of external procedure invocations when making calls to external programs from PL/SQL stored procedures or PL/SQL methods of object types in the database by taking advantage of multiple, light-weight threads instead of a single dedicated process per user session.

> **WARNING: Do not enable multi-threaded callout support if your C code is not thread-enabled. For example, do not use global variables in DLLs. Ensure also that there is synchronized access to variables in DLLs. See your Microsoft programming documentation for information on making your code thread-enabled.**

To enable multi-threaded callouts:

1. Open the Windows NT Control Panel.
2. Double-click Services.

   The *Services* window appears.
3. Select OracleExtprocAgent (or Oracle*HOME_NAME*ExtprocAgent, where *HOME_NAME* is the home name of the Oracle home directory you want to use).
4. Click Start.
5. Exit from the Windows NT Control Panel.
6. Set ORA_EXTPROC_THREADED to TRUE in the registry subkey of the Oracle home directory that you are using. The location of this parameter is determined by how many Oracle home directories are on your machine:

If You Have...	ORA_EXTPROC_THREADED is Located in...
One home directory	HKEY_LOCAL_MACHINE\SOFTWARE\ORACLE
Additional directories	HKEY_LOCAL_MACHINE\SOFTWARE\ORACLE\HOME*ID* where *ID* is incremented for each additional Oracle home directory on your computer.

See Appendix C, "Configuration Parameters and the Registry" for instructions on accessing and modifying the registry.

This enables you to use multiple, light-weight threads when making calls to EXTPROC from PL/SQL programs.

Additional Documentation

See the following documents for additional information on external procedures:

- *Oracle8 Administrator's Guide*
- *PL/SQL User's Guide and Reference*
- The following files in *ORACLE_HOME*\RDBMS80\EXTPROC:
  - EXTERN.C (code example shown in "Step 2: Writing an External Procedure" on page 15-4)
  - MAKE.BAT (batch file that builds the dynamic link library)
  - EXTERN.SQL (automates the instructions described in "Step 4: Registering an External Procedure" on page 15-6 and "Step 5: Executing an External Procedure" on page 15-8)
  - README.DOC (explains how to run the sample and provides debugging advice)

Compiling and Linking the Oracle XA Library

The XA Application Program Interface (API) is typically used to enable an Oracle8 database to interact with a transaction processing (TP) monitor, such as:

- BEA Tuxedo
- IBM Transarc Encina
- IBM CICS

The Oracle XA Library is automatically installed as part of Oracle8 Enterprise Edition. The following components are created in your Oracle home directory:

Component	Location
XA80.DLL	*ORACLE_HOME*\BIN
XA80.LIB	*ORACLE_HOME*\RDBMS80\XA
XA.H	*ORACLE_HOME*\RDBMS80\XA

You can also use TP monitor statements in your client programs. The use of the XA API is also supported from both Pro*C/C++ and Oracle Call Interface (OCI). In either case, the XA80.DLL must be contained in the execution path of the calling program.

Compiling and Linking a Pro*C/C++ Program

To compile and link a Pro*C /C++ program:

1. Precompile PROGRAM.PC using Pro*C to generate PROGRAM.C.
2. Compile PROGRAM.C, making sure to include *ORACLE_HOME*\RDBMS80\XA in your path.
3. Link PROGRAM.OBJ with the following libraries:

Library	Located in...
XA80.LIB	*ORACLE_HOME*\RDBMS80\XA
OCI.LIB	*ORACLE_HOME*\OCI80\LIB\MSVC or *ORACLE_HOME*\OCI80\LIB\BORLAND
SQLLIB80.LIB	*ORACLE_HOME*\PRO80\LIB\MSVC or *ORACLE_HOME*\PRO80\LIB\BORLAND

4. Run PROGRAM.EXE. (XA80.LIB makes the function calls to XA80.DLL.)

Compiling and Linking an OCI Program

To compile and link an OCI program:

1. Compile PROGRAM.C by using Microsoft Visual C++ or Borland C, making sure to include *ORACLE_HOME*\RDBMS80\XA in your path.
2. Link PROGRAM.OBJ with the following libraries:

Library	Located in...
XA80.LIB	*ORACLE_HOME*\RDBMS80\XA
OCI.LIB	*ORACLE_HOME*\OCI80\LIB\MSVC or *ORACLE_HOME*\OCI80\LIB\BORLAND

3. Run PROGRAM.EXE.

XA Dynamic Registration

The Oracle8 database supports the use of XA dynamic registration. XA dynamic registration improves the performance of applications interfacing with XA-compliant TP monitors. For TP Monitors to use XA dynamic registration with an Oracle8 database on Windows NT, you must add either an environmental variable or a registry variable to the Windows NT computer on which your TP monitor is running. See either of the following sections for instructions:

- Adding an Environmental Variable for the Current Session
- Adding a Registry Variable for All Sessions

After adding this variable, see the *Oracle8 Server Application Developer's Guide* for information on using XA dynamic registration.

Adding an Environmental Variable for the Current Session

Adding an environmental variable at the command prompt affects only the current MS-DOS session.

To add an environmental variable:

1. Go to the computer where your TP monitor is installed.
2. Enter the following at the MS-DOS command prompt:

   ```
   C:\> SET ORA_XA_REG_DLL = VENDOR.DLL
   ```

   where *VENDOR*.DLL is the TP monitor DLL provided by your vendor.

Adding a Registry Variable for All Sessions

Adding a registry variable affects all sessions on your Windows NT computer. This is useful for computers where only one TP monitor is running.

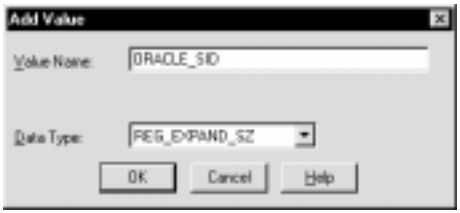
To add a registry variable:

1. Go to the computer where your TP monitor is installed.
2. Enter the following at the MS-DOS command prompt:

   ```
   C:\> REGEDT32
   ```

   The *Registry Editor* window appears.
3. Go to HKEY_LOCAL_MACHINE\SOFTWARE\ORACLE.
4. Choose the Add Value option in the Edit menu.

The *Add Value* dialog box appears:



5. Enter ORA_XA_REG_DLL in the Value Name field.
6. Select REG_EXPAND_SZ from the Data Type drop-down list box.
7. Click OK.

   The *String Editor* dialog box appears:

8. Enter *VENDOR*.DLL in the String field.

   where *VENDOR*.DLL is the TP monitor DLL provided by your vendor.
9. Click OK.

   The Registry Editor adds the parameter.
10. Choose Exit from the Registry menu.

    The registry exits.

XA and TP Monitor Information

See the following general information about XA and TP monitors:

- Distributed Transaction Processing: The *XA Specification* published by X/Open, (now part of OpenGroup). Visit: `http://www.rdg.opengroup.org/public/pubs/catalog/full_lst.htm`
- *Transaction Processing XPG4 X/Open CAE Specification XO/CAE/91/300* or *C193 2/92*
- Your specific TP monitor documentation

For more information about the Oracle XA Library, see the chapter "Oracle XA" of the *Oracle8 Server Application Developer's Guide*.

Accessing Web Data with Intercartridge Exchange

This section discusses the following topics:

- Configuring Intercartridge Exchange
- Using Intercartridge Exchange
- UTL_HTTP Exception Conditions
- Exceptional Conditions and Error Messages
- Troubleshooting

Configuring Intercartridge Exchange

You must add a parameter to the registry before using ICX.

To configure ICX:

1. Start the registry editor from the MS-DOS command prompt:

   ```
   C:\> REGEDT32
   ```

   The *Registry Editor* window appears.

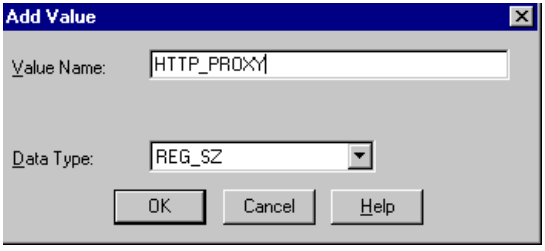
2. Add HTTP_PROXY to the registry subkey of the Oracle home directory that you are using. The location in which to add this parameter is determined by how many Oracle home directories are on your machine:

If You Have...	Add HTTP_PROXY to...
One home directory	HKEY_LOCAL_MACHINE\SOFTWARE\ORACLE
Additional directories	HKEY_LOCAL_MACHINE\SOFTWARE\ORACLE\HOME*ID* where *ID* is incremented for each additional Oracle home directory on your computer.

   a. Choose Add Value from the Edit menu.

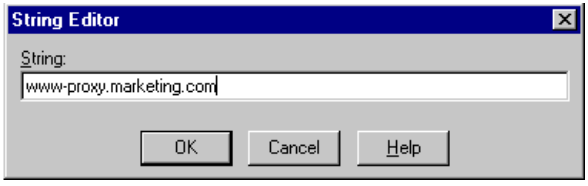
      The *Add Value* dialog box appears.

   b. Enter HTTP_PROXY in the Value Name field and REG_SZ in the Data Type field:



   c. Click OK.

   d. Enter *www-proxy.your-site* in the String field:



      where *marketing.com* is only an example of a Web site. Enter your real Web site.

Using Intercartridge Exchange

ICX enables you to use a stored package called UTL_HTTP to make hypertext transfer protocol (HTTP) calls from PL/SQL, SQL, and Server Manager statements. UTL_HTTP can:

- access data on the Internet
- call Oracle Web Application Server Cartridges

UTL_HTTP contains two similar entry points, known as packaged functions, that make HTTP callouts from PL/SQL and SQL statements:

- UTL_HTTP.REQUEST
- UTL_HTTP.REQUEST_PIECES

Both packaged functions:

- take a string universal resource locator (URL) of a site
- contact that site
- return the data (typically HTML) obtained from that site

The declarations to use with both packaged functions are described in the following sections.

Packaged Function UTL_HTTP.REQUEST

UTL_HTTP.REQUEST takes a URL as its argument and returns up to the first 2000 bytes of data retrieved from the given URL.

UTL_HTTP.REQUEST is specified as:

```
FUNCTION REQUEST (URL IN VARCHAR2) RETURN VARCHAR2;
```

To use UTL_HTTP.REQUEST from Server Manager, enter:

```
SVRMGR> SELECT UTL_HTTP.REQUEST('HTTP://WWW.ORACLE.COM/') FROM DUAL;
```

which outputs:

```
UTL_HTTP.REQUEST('HTTP://WWW.ORACLE.COM/')
------------------------------------------------------------
<html>
<head><title>Oracle Corporation Home Page</title>
<!--changed Jan. 16, 19
1 row selected.
```

Packaged Function UTL_HTTP.REQUEST_PIECES

UTL_HTTP.REQUEST_PIECES takes a URL as its argument and returns a PL/SQL table of 2000 bytes of data retrieved from the given URL. The final element may be shorter than 2000 characters. The UTL_HTTP.REQUEST_PIECES return type is a PL/SQL table of type UTL_HTTP.HTML_PIECES.

UTL_HTTP.REQUEST_PIECES, which uses type UTL_HTTP.HTML_PIECES, is specified as:

```
type html_pieces is table of varchar2(2000) index by binary_integer;
function request_pieces (url in varchar2,
   max_pieces natural default 32767)
return html_pieces;
```

A call to REQUEST_PIECES can look like the example below. Note the use of the PL/SQL table method COUNT to discover the number of pieces returned, which may be zero or more:

```
declare pieces utl_http.html_pieces;
begin
  pieces := utl_http.request_pieces('http://www.oracle.com/');
   for i in 1 .. pieces.count loop
     .... -- process each piece
   end loop;
end;
```

The second argument to UTL_HTTP.REQUEST_PIECES, (MAX_PIECES) is optional. MAX_PIECES is the maximum number of pieces (each 2000 characters in

length, except for the last, which may be shorter) that UTL_HTTP.REQUEST_PIECES returns. If provided, that argument is likely a positive integer.

For example, the following block retrieves up to 100 pieces of data (each 2000 bytes, except perhaps the last) from the URL. The block prints the number of pieces retrieved and the total length, in bytes, of the data retrieved.

```
set serveroutput on
/
declare
  x utl_http.html_pieces;
begin
  x := utl_http.request_pieces('http://www.oracle.com/', 100);
  dbms_output.put_line(x.count || ' pieces were retrieved.');
  dbms_output.put_line('with total length ');
  if x.count < 1
  then dbms_output.put_line('0');
  else dbms_output.put_line
((2000 * (x.count - 1)) + length(x(x.count)));
  end if;
end;
/
```

which outputs:

```
Statement processed.
4 pieces were retrieved.
with total length
7687
```

The elements of the PL/SQL table returned by UTL_HTTP.REQUEST_PIECES are successive pieces of data obtained from the HTTP request to that URL.

UTL_HTTP Exception Conditions

This section describes the exceptions that can be raised by packaged functions UTL_HTTP.REQUEST and UTL_HTTP.REQUEST_PIECES.

UTL_HTTP.REQUEST

The PRAGMA RESTRICT_REFERENCES enables exceptions (errors) to be displayed:

```
create or replace package utl_http is

function request (url in varchar2) return varchar2;

pragma restrict_references (request, wnds, rnds, wnps, rnps);
```

UTL_HTTP.REQUEST_PIECES

The PRAGMA RESTRICT_REFERENCES enables exceptions (errors) to be displayed:

```
create or replace package utl_http is

type html_pieces is table of varchar2(2000) index by binary_integer;

function request_pieces (url in varchar2,

      max_pieces natural default 32767)

return html_pieces;

pragma restrict_references (request_pieces, wnds, rnds, wnps, rnps);
```

Exceptional Conditions and Error Messages

This table describes possible error messages that can display:

If...	Then...
Initialization of the HTTP callout subsystem fails for environmental reasons such as lack of available memory	Exception UTL_HTTP.INIT_FAILED is raised: `init_failed exception;`
The HTTP call fails because of failure of the HTTP daemon or because the argument to REQUEST or REQUEST_PIECES cannot be interpreted as a URL because it is NULL or has non-HTTP syntax	Exception `UTL_HTTP.REQUEST_FAILED` is raised: `request_failed exception;`

If...	Then...

No response is received from a request to the given URL because no site corresponding to that URL was contacted	A formatted HTML error message may be returned:
	`<HTML>`
	`<HEAD>`
	`<TITLE>Error Message</TITLE>`
	`</HEAD>`
	`<BODY>`
	`<H1>Fatal Error 500</H1>`
	`Can't Access Document: http://home.nothing.comm.`
	`<P>`
	`<B>Reason:</B> Can't locate remote host: home.nothing.comm.`
	`<P>`
	`<P><HR>`
	`<ADDRESS><A HREF="http://www.w3.org">`
	`CERN-HTTPD3.0A</A></ADDRESS>`
	`</BODY>`
	`</HTML>`

Note: The first two exceptions in the table above, unless explicitly caught by an exception handler, are reported by this generic message:

```
ORA-06510: PL/SQL: unhandled user-defined exception
```

that shows them as "user-defined" exceptions, although they are defined in this system package.

If any other exception is raised during the processing of the HTTP request (for example, an out-of-memory error), then function UTL_HTTP.REQUEST or UTL_HTTP.REQUEST_PIECES reraises that exception.

Troubleshooting

Do not expect UTL_HTTP.REQUEST or UTL_HTTP.REQUEST_PIECES to succeed in contacting a URL unless you can contact that URL by using a browser on the same computer (and with the same privileges, environment variables, etc.). If UTL_HTTP.REQUEST or UTL_HTTP.REQUEST_PIECES fails (that is, if it raises an exception or returns an HTML-formatted error message, yet you believe that the URL argument is correct), try contacting that same URL with a browser to verify network availability from your computer.

16

Using Oracle8 ConText Cartridge

This chapter describes Windows NT-specific issues for using Oracle8 ConText Cartridge.

Specific topics discussed are:

- Starting Oracle8 ConText Cartridge
- Using Oracle8 ConText Cartridge Supplied External Filters
- Creating User-Defined External Filters

Starting Oracle8 ConText Cartridge

Oracle8 ConText Cartridge servers can be started using one of two methods:

- Oracle8 ConText Cartridge Control Utility
- MS-DOS Command Prompt

Oracle8 ConText Cartridge Control Utility

To help Oracle8 ConText Cartridge servers survive Windows NT console log off, use the Oracle8 ConText Cartridge control utility CTXCTL80.EXE to start, stop, and view the Oracle8 ConText Cartridge servers running on the Windows NT server / workstation.

The Oracle8 ConText Cartridge control utility interacts with a Windows NT service. This service manages the various Oracle8 ConText Cartridge server processes on that Windows NT server / workstation. The service is called Oracle*HOME_NAME*ConTextService80 and must be started prior to using the Oracle8 ConText Cartridge control utility.

The Oracle8 ConText Cartridge control utility cannot list or stop Oracle8 ConText Cartridge servers started directly by executing CTXSRV80.EXE. It can only manage Oracle8 ConText Cartridge servers through the Oracle*HOME_NAME*ConTextService80 Windows NT service.

To start Oracle8 ConText Cartridge servers using the control utility:

1. Enter at the MS-DOS command prompt:

   ```
   C:\> CTXCTL80
   ```

2. Enter at the control utility prompt:

   ```
   COMMAND> START 1 [DML | DDL | LOAD | LING | QUERY]
   ```

MS-DOS Command Prompt

To start Oracle8 ConText Cartridge servers from the MS-DOS command prompt:

1. Enter at the MS-DOS command prompt:

   ```
   C:\> START CTXSRV80 -USER CTXSYS/PASSWORD@CONNECT_STRING -PERSONALITY LIST
   ```

   where:

   - *PASSWORD* is the password for the CTXSYS user
   - *CONNECT_STRING* is the alias for the database you want to connect to
   - *LIST* is the list of personalities you want to start the ConText server with

   IMPORTANT: Oracle8 ConText Cartridge server processes started from the MS-DOS command prompt are stopped by Windows NT when a console user logs off the Windows NT console.

Using Oracle8 ConText Cartridge Supplied External Filters

External filters extend the filtering capabilities of Oracle8 ConText Cartridge. Oracle8 ConText Cartridge Supplied External Filters are provided as a part of Oracle8 ConText Cartridge. These supplied external filters are installed and used on the server.

The steps to using Oracle8 ConText Cartridge Supplied External Filters are:

- Step 1: Identify Supplied External Filters and Wrappers
- Step 2: Modify Release 2.0 Supplied External Filters and Wrappers (Optional)
- Step 3: Specify Wrappers for Supplied External Filters

You can use the supplied external filters to filter documents manually. See "Using Oracle8 ConText Cartridge Supplied External Filters for Manual Filtering" on page 16-9 for more information.

You can also define your own external filters. See "Creating User-Defined External Filters" on page 16-10 for more information.

Step 1: Identify Supplied External Filters and Wrappers

The following Oracle8 ConText Cartridge Supplied External Filters are provided with Oracle8 ConText Cartridge for Windows NT. These filters can be used for filtering documents in many of the popular desktop publishing and word processing formats. The executables for the filters do not provide ConText with the required arguments, so ConText also provides scripts that act as wrappers for the executables.

The supplied external filters and their wrappers are installed automatically when you install Oracle8 ConText Cartridge. If your text file format is not listed in this table, then you need to provide your own external filter and wrapper.

Note: If you have upgraded from a release prior to release 2.3 of ConText, you may have existing external filters supplied by ConText. These external filters are no longer current and need to be replaced by the external filters supplied in this release.

You may also need to change your existing wrappers accordingly or use the wrappers provided by ConText in this release. See "Step 2: Modify Release 2.0 Supplied External Filters and Wrappers (Optional)" on page 16-6.

Document Format	Version	Format ID	Wrapper Name	Windows NT Executable
AmiPro for Windows	1, 2, 3	19	AMIPRO	W033B16D.EXE
Lotus Freelance for Windows	2	85	LOTUSFRE	W114B16D.EXE
Lotus 123	2, 3, 4	20	LOTUS123	W020B16D.EXE
Lotus 123	5	N / A	LOTUS123	W020B16D.EXE
MS Excel	5	21	MSEXCEL	W021B16D.EXE
MS Excel	7	N / A	MSEXCEL	W021B16D.EXE
MS PowerPoint for Windows	2, 3, 4	84	POWER234	W109B16D.EXE
MS PowerPoint for Windows	7	N / A	POWER7	W116B16D.EXE
MS Word for DOS	5.0, 5.5	8	WORDDOS	W005B16D.EXE

Document Format	Version	Format ID	Wrapper Name	Windows NT Executable
MS Word for Macintosh	3, 4, 5	28	WORDMAC	W054B16D.EXE
MS Word for Windows	2	18	WORDWN2	W044B16D.EXE
MS Word for Windows	6	68	WORDWN67	W049B16D.EXE
MS Word for Windows	7	N / A	WORDWN67	W049B16D.EXE
PDF / Adobe Acrobat	N / A	57	ACROPDF	ACRONT.EXE
WordPerfect for DOS WordPerfect for Windows	5.0, 5.1 5.*x*	3	WP5	W007B16D.EXE
WordPerfect for DOS WordPerfect for Windows	6.0 6.*x*	1	WP67	W048B16D.EXE
WordPerfect for Windows	7.0	N / A	WP67	W048B16D.EXE
Xerox XIF	5, 6	43	XEROXXIF	W103B16D.EXE

The numbers in the Format ID column are used to create filter preferences for mixed-format columns that require external filters. A format ID is not provided for the following formats, because Oracle8 ConText Cartridge does not support mixed-format columns for these document formats:

- MS Excel version 7
- MS PowerPoint for Windows version 7
- MS Word for Windows version 7
- WordPerfect for Windows version 7.0

However, the Oracle8 ConText Cartridge Supplied External Filters for these formats can be used for single-format columns that contain any one of these formats.

Step 2: Modify Release 2.0 Supplied External Filters and Wrappers (Optional)

If you have upgraded from release 2.0 of Oracle8 ConText Cartridge, already have wrappers for the supplied external filters provided in release 2.0, already have preferences that call the wrappers, and want to use the new wrappers provided in this release, then do one of the following tasks:

- modify the names of the new wrappers to match the names of your existing wrappers
- modify your existing wrappers to call the new external filter executables
- modify the names of the new external filters to match the names of the previous external filters

If you do not perform one of these tasks, then you must drop your indexes, policies, and preferences and create new preferences, policies, and indexes.

Note: If you modify your existing wrappers, the only information that needs to change is the name of the filter executable.

If you are using the beta PDF filter that was provided for Windows NT in ConText release 2.0 and want to use the new production PDF filter, drop any ConText indexes that you created with the beta PDF filter, as well as the policies and preferences that called the filter. Create new policies and preferences that use the new filter, and create new ConText indexes using those policies.

Step 3: Specify Wrappers for Supplied External Filters

To specify one or more of the supplied external filters for a column, you first create a Filter preference in which you specify the wrapper for each of the filters to be used, then you create a policy that calls the Filter preference.

You can create filter preferences for:

- Single Format Columns
- Mixed Format Columns

Single Format Columns

For single format columns, create a Filter preference that uses the COMMAND attribute (USER FILTER Tile) to specify the wrapper that invokes the filter executable for the format used in your column. The following example illustrates a script which calls PL/SQL packages that create a Filter preference for a column that contains documents only in AmiPro format:

```
BEGIN
CTX_DDL.SET_ATTRIBUTE('COMMAND','AMIPRO.BAT');
CTX_DDL.CREATE_PREFERENCE('AMIPRO_FILT',
                          'AMIPRO FILTER',
                          'USER FILTER');
END;
```

Mixed Format Columns

For mixed-format columns, create a Filter preference that sets the EXECUTABLE attribute (BLASTER Tile) once for each of the wrappers that invoke the formats you want to use in your column. The following example illustrates a script which calls PL/SQL packages that create a Filter preference for a column that contains documents in AmiPro, Adobe Acrobat, and WordPerfect 6.0 formats:

```
BEGIN

CTX_DDL.SET_ATTRIBUTE('EXECUTABLE',19,'AMIPRO.BAT', 1);

CTX_DDL.SET_ATTRIBUTE('EXECUTABLE',57,'ACROBAT.BAT', 2);

CTX_DDL.CREATE_PREFERENCE('MULT_FILT',
                          'MULTIPLE FILTERS',
                          'BLASTER');

END;
```

In this example, you do not have to specify the filter executable for WordPerfect 6.0, because Oracle8 ConText Cartridge provides an internal filter for WordPerfect 6.0. By default, when the Filter preference for a column uses the EXECUTABLE attribute (BLASTER Tile), Oracle8 ConText Cartridge uses internal filters for all supported formats for which an external filter is not explicitly specified.

> **Additional Information:** See Chapter 6 of the *Oracle8 ConText Cartridge Administrator's Guide* for more information about Oracle8 ConText Cartridge Supplied External Filters.

Using Oracle8 ConText Cartridge Supplied External Filters for Manual Filtering

You can use the supplied external filters to manually filter your documents (files) before storing them in the database.

To use the manual filtering method:

1. Call the appropriate external filter executable from the MS-DOS command prompt for each document to be filtered, and specify two arguments:
   - the name of the document to be filtered
   - the name of the output file used to store the filtered text

   ```
   C:\ORACLE_HOME\BIN> W049B16D TEST.DOC /N /T=OUTPUT.TXT
   ```

   In the preceding example, a Microsoft Word 6 or 7 document named TEST.DOC is filtered using the W049B16D.EXE filter executable. The filtered output is stored in OUTPUT.TXT.

   For a Portable Document Format (PDF) file, the syntax is different. For example:

   ```
   C:\ORACLE_HOME\BIN> ACRONT TEST.PDF OUTPUT.TXT
   ```

2. Load the filtered, plain (ASCII) text from the output file into a database column.
3. Create a policy for the column.

   Be sure to specify a Filter preference that uses either the ASCII internal filter or no filter.

4. Index the column.

> **Additional Information:** See Chapter 7 and Chapter 9 of the *Oracle8 ConText Cartridge Administrator's Guide* for more information on policies.

Creating User-Defined External Filters

If you define your own external filters:

- On UNIX operating systems, Perl scripts and UNIX shell scripts can be executed as user-defined external filters. On Windows NT, only .EXE, .CMD, and .BAT files are executed as user-defined external filters by default.
- To implement a filter as a shell script or Perl script on Windows NT (for example, to run a Perl script TEST.PL), associate files with a .PL extension with a script processor such as CCPERL.EXE. When the Oracle8 ConText Cartridge server process executes your TEST.PL user-defined filter, it calls CCPERL.EXE TEST.PL *input file output file*.

A

Directory Structures

This appendix describes the default directory structures created when the Oracle8 database is installed on a Windows NT server and or client computer.

Specific topics discussed are:

- Windows NT Server Directory Structure
- Client Directory Structure

Windows NT Server Directory Structure

Oracle Installer places all Oracle8 database products for the Windows NT Server by default into subdirectories of ORANT. This will be a different location if you changed the default Oracle home during installation.

The subdirectories of a basic Oracle8 Enterprise Edition installation are shown below. If you installed additional products, other subdirectories are created.

For Oracle8 Enterprise Edition, all .DLL and .EXE files and configuration variables have their version numbers appended. This convention allows you to maintain multiple releases of these items for backward compatibility. For example, the executable for the Oracle Names Control Utility version 8.0 is NAMESCTL80.EXE.

Directory Name	Contents
\A2OWIZ80	Oracle Migration Assistant for Microsoft Access files
\AGENTBIN	Oracle Intelligent Agent files and subdirectories
\BIN	Executables (for example, products like Server Manager and DBVERF80), help files, and library files
\CORE40	Oracle8 database message files
\CTX80	Oracle8 ConText Cartridge files. \CTX80 contains the following subdirectories:
\ADMIN	Upgrading scripts
\DATA	Data files
\DEMO	Demos
\DOC	Release notes
\CTXW	Oracle8 ConText Cartridge Workbench files. \CTXW contains the following subdirectories:
\DEMO	CTXQUERY demo
\IO	I/O Utility files
\MIDDLE	Configuration Manager and Viewer Cartridge
\MIGRATE	TextServer3 migration tool and documentation
\VIEWER	Viewer Control files

Directory Name	Contents
\DATABASE	Oracle8 Enterprise Edition starter database, password, and initialization files. \DATABASE contains the following subdirectory:
\ARCHIVE	Archive files
\DBS	Oracle Toolkit II message files, SQL scripts, and other utility files
\EERN805	Oracle8 Enterprise Edition Release Notes
\JDBC	Oracle JDBC Drivers
\LIB	Library files
\SAMPLES	Sample files
\JRE11	Files and subdirectories that allow Java applications to run. It is required by many of the Oracle Assistants. \JRE11 contains the following subdirectories:
\BIN	Java executable files.
\CLASSES	Oracle Assistants executable files
\LIB	Library files
\MD80	Oracle8 Spatial Cartridge files. \MD80 contains the following subdirectories:
\ADMIN	Scripts and files
\DOC	Documentation
\MSHELP	Windows help files
\NET80	Message files and subdirectories for Net8 products. \NET80 contains the following subdirectories: **Additional Information:** See *Net8 Getting Started for Windows NT and Windows 95/98* for additional information on the \NET80 directory and its subdirectories.
\ADMIN	Configuration files used by Net8 for Windows NT
\AGENT	Oracle Enterprise Manager intelligent agent
\DOCS	Readme files
\ERROR	Error files placed here by default

Directory Name	Contents
\LOG	Log files placed here by default
\MESG	Message files
\NAMES	SQL scripts used to set up Oracle Names
\NET8ASST	Oracle Net8 Assistant files
\TNSAPI	TNS API library file
\TRACE	Trace files placed here by default
\NLSRTL33	NLS message files. \NLSRTL33 contains the following subdirectory:
\DATA	Loadable NLS files
\DEMO	Demo files
\OCI80	Oracle Call Interface (OCI) files. \OCI80 contains the following subdirectories:
\INCLUDE	Header files
\LIB	Borland C++ and Microsoft Visual C++ files
\SAMPLES	Sample files
\ODBORA32	Oracle8 ODBC files
\CPP	Subdirectories for precompilation and compilation files
\EXCEL	Excel sample files
\VP	Visual Basic files
\OISFP10	Oracle File Packager files
\OPS	Oracle Parallel Server Option files
\ORAINST	Files used by Oracle Installer. \ORAINST contains the following subdirectory:
\NLB	.NLB files
\ORD80	Object Data Cartridges: \ORD80 contains the following subdirectories:
\IMG	Oracle8 Image Cartridge files
\TS	Oracle8 Time Series Cartridge files
\VIR	Oracle8 Visual Information Retrieval Cartridge files

Directory Name	Contents
\OSP	Oracle Software Packager
\OTRACE80	Oracle Trace files. \OTRACE80 contains the following subdirectories:
\ADMIN	Oracle Trace administration files, including SQL scripts
\INCLUDE	Oracle Trace header files
\LIB	Oracle Trace library file
\OTT80	Object Type Translator (OTT) message and configuration files
\OWAST	Oracle Web Publishing Assistant files
\SAMPLES	Sample files
\PLSQL80	Message files, SQL scripts, and demonstration files for PL/SQL
\PLUS80	SQL*Plus SQL and message files. \PLUS80 contains the following subdirectory:
\HELP	SQL*Plus help files
\PRO80	Oracle8 database message files for Pro*C/C++
\RDBMS80	Oracle8 Enterprise Edition message, resource, and README files. \RDBMS80 contains the following subdirectories:
\ADMIN	Oracle8 database SQL scripts. Use SQL scripts to create data dictionary tables/views, and other views used by Oracle software. For more information on these scripts, see the chapter "SQL Scripts" in *Oracle8 Reference*.
\AQ	Advanced Queuing demos
\EXTPROC	External procedures demos
\LOADER	Sample files for SQL*Loader
\RMAN	Recovery Manager files
\TRACE	Informational trace and alert files generated by Oracle8 Enterprise Edition
\XA	Oracle XA Library files

Directory Name	Contents
\SYSMAN	Oracle Enterprise Manager files. \SYSMAN contains the following subdirectories:
\ADMIN	Files and tools
\BMP	Bitmap image files
\DOC	Documentation
\OLE2	Oracle Objects for OLE (OLE) files
\OSM10	Oracle Software Manager
\OUTPUT	Output files
\QTOUR	Quick Tour files
\SCRIPTS	Scripts
\SDK	SDK files
\TEMP	Temporary files placed here
\VS10	NT Backup Manager and NT Recovery Manager files

Client Directory Structure

Oracle Installer places all client products by default into subdirectories of *ORACLE_HOME*.

The subdirectories of a basic Oracle8 Enterprise Edition client installation are shown below. If you installed additional products, other subdirectories are created:

Directory Name	Contents
\BIN	Executables, help files, and library files
\CLRN80	Oracle8 Client Release Notes
\CORE40	Oracle8 database message files
\DBS	Oracle Toolkit II message files, SQL scripts, and other utility files
\JDBC	JDBC Drivers
\JRE11	Files and subdirectories that allow Java applications to run. It is required by many of the Oracle Assistants. \JRE11 contains the following subdirectories:
\BIN	Java executable files.
\CLASSES	Oracle Assistants executable files
\LIB	Library files
\MSHELP	Windows help files
\NET80	Message files and subdirectories for Net8 products. \NET80 contains the following subdirectories: **Additional Information:** See *Net8 Getting Started for Windows NT and Windows 95/98* for additional information on the \NET80 directory and its subdirectories.
\ADMIN	Configuration files used by Net8 for Windows NT
\AGENT	Oracle Enterprise Manager intelligent agent
\DOCS	Readme files
\ERROR	Error files placed here by default
\LOG	Log files placed here by default

Directory Name	Contents
\MESG	Message files
\NAMES	SQL scripts used to set up Oracle Names
\NET8ASST	Oracle Net8 Assistant files
\TNSAPI	TNS API library file
\TRACE	Trace files placed here by default
\NLSRTL33	NLS message files. \NLSRTL33 contains the following subdirectory:
\DATA	Loadable NLS files
\OCI80	Oracle Call Interface (OCI) files. \OCI80 contains the following subdirectories:
\INCLUDE	Header files
\LIB	Borland C++ and Microsoft Visual C++ files
\SAMPLES	Sample files
\ORAINST	Files used by Oracle Installer. \ORAINST contains the following subdirectory:
\NLB	.NLB files
\OTRACE80	Oracle Trace files. \OTRACE80 contains the following subdirectories:
\ADMIN	Oracle Trace administration files, including SQL scripts
\INCLUDE	Oracle Trace header files
\LIB	Oracle Trace library file
\OWAST	Oracle Web Publishing Assistant files
\PLSQL80	Message files, SQL scripts, and demonstration files for PL/SQL
\PLUS80	SQL*Plus SQL and message files. \PLUS80 contains the following subdirectory:
\HELP	SQL*Plus help files
\PRO80	Oracle8 database message files for Pro*C/C++
\RDBMS80	Oracle8 Enterprise Edition message, resource, and README files. \RDBMS80 contains the following subdirectories:

Directory Name	Contents
\ADMIN	Oracle8 database SQL scripts. Use SQL scripts to create data dictionary tables/views, and other views used by Oracle software. For more information on these scripts, see the chapter "SQL Scripts" in *Oracle8 Reference*.
\AQ	Advanced Queuing demos
\EXTPROC	External procedures demos
\LOADER	Sample files for SQL*Loader
\RMAN	Recovery Manager files
\TRACE	Informational trace and alert files generated by Oracle8 Enterprise Edition
\XA	Oracle XA Library files
\SYSMAN	Oracle Enterprise Manager files. \SYSMAN contains the following subdirectories:
\ADMIN	Files and tools
\BMP	Bitmap image files
\DOC	Documentation
\OLE2	Objects for OLE files
\QTOUR	Quick Tour files
\SCRIPTS	Scripts
\SDK	SDK files
\TEMP	Temporary files placed here

B

Oracle8 Database Specifications for Windows NT

Oracle8 Enterprise Edition uses initialization parameters to enable various features of the database every time an instance is started.

Specific topics discussed are:

- Initialization Parameter File Overview
- Initialization Parameters
- Calculating Database Limits
- Calculating Index Size
- Setting Resource Costs

Initialization Parameter File Overview

An initialization parameter file is an ASCII text file containing parameters. By changing the parameters and values in an initialization file, you can specify, for example:

- the amount of memory the database uses
- whether to archive filled online redo logs
- which control files currently exist for the database

Every database instance has a corresponding initialization parameter file and ORACLE_SID registry parameter that points to the system identifier (SID) for the instance.

The initialization parameter file name takes the form INIT*SID*.ORA, where *SID* is the name of the database instance. For example, the initialization parameter file for the first starter database on your computer is named INITORCL.ORA. For each subsequent starter database installed on the same computer, the last letter of ORCL is replaced by a number and automatically incremented (that is for an initialization parameter file for a second starter database, the SID is ORC1, for a third starter database, the SID is ORC2, and so on).

A single instance might also have several initialization parameter files, each having some differences that affect system performance.

> **Additional Information:** See *Oracle8 Reference* for a complete list and descriptions of *all* initialization parameters.

Location of the Initialization Parameter File

By default, Oracle8 Enterprise Edition uses the initialization parameter files located in *ORACLE_HOME*\DATABASE, unless you specify a different initialization file with the PFILE option at database startup.

Editing the Initialization Parameter File

To customize Oracle8 database functions, you may need to edit the initialization parameter files. Use any ASCII text editor to modify the file.

Sample File

A sample file called INITSEED.ORA is located in the *ORACLE_HOME*\DATABASE directory. If you want to use this file as part of database creation:

1. Rename the file INIT*SID*.ORA where *SID* is the system identifier of the database instance you want to create.
2. Edit this file to reflect the correct location of your database files and the name of your database.

If you installed a starter database, the initialization parameter file INIT*SID*.ORA used by the starter database is also located in *ORACLE_HOME*\DATABASE. You can use either INITSEED.ORA or INIT*SID*.ORA as a model for creating a new Oracle8 database initialization parameter file.

The annotated, sample initialization parameter file contains alternative values for the initialization parameters. These values and the annotations are preceded by comment signs (#), which prevent them from being processed. To activate a particular parameter, remove the preceding # sign. When you no longer want to use a particular parameter, edit the initialization parameter file to add a comment sign.

For example, several initialization parameters are specified with three different values to create small, medium, or large System Global Areas (SGAs), respectively. The parameter that creates a small SGA is active in the following example:

```
  db_block_buffers = 200 # SMALL
# db_block_buffers = 550 # MEDIUM
# db_block_buffers = 3200 # LARGE
```

To create a medium-sized SGA, comment out the small parameter definition and activate the medium parameter definition. Edit the initialization parameter file as follows:

```
# db_block_buffers = 200 # SMALL
  db_block_buffers = 550 # MEDIUM
# db_block_buffers = 3200 # LARGE
```

Initialization Parameters

Oracle8 Reference includes descriptions of all initialization parameters and instructions for setting and displaying their values. The following table describes initialization parameters and default values for Oracle8 Enterprise Edition for Windows NT.

Initialization Parameter Name	Default Value	Range of Values
AUDIT_TRAIL	NONE	NONE (FALSE), DB (TRUE), OS
BACKGROUND_DUMP_DEST	%RDBMS*nn*%\TRACE\	Any valid directory
COMPATIBLE	8.0.0.0.0	Default release to current release
COMMIT_POINT_STRENGTH	1	0 - 255
CONTROL_FILES	%ORACLE_HOME%\DATABASE\ CTL1%ORACLE_SID%.ORA	Any valid path and filename
DB_BLOCK_BUFFERS	200	200 to 3200
DB_BLOCK_SIZE	2048	512 - 16384[1]
DB_FILES	1024	65,536 files[2]
DB_FILE_MULTIBLOCK_ READ_ COUNT[3]	8	1 - 31[4]
DB_FILE_SIMULTANEOUS_ WRITES	4	1 - 24
DB_NAME	ORC*x*	Any valid database name limited to a maximum of eight characters.
DISTRIBUTED_TRANSACTIONS	5 * TRANSACTIONS	0 - TRANSACTIONS
DML_LOCKS	300	20 to unlimited
LOG_ARCHIVE_BUFFER_ SIZE	127	1 - 127
LOG_ARCHIVE_BUFFERS	4	1 - 8
LOG_ARCHIVE_DEST	%ORACLE_HOME%\DATABASE\ARCHIVE	Any valid directory
LOG_ARCHIVE_FORMAT	"%%ORACLE_SID%%T%TS%S.ARC"	A valid filename format
LOG_ARCHIVE_START	None	TRUE or FALSE
LOG_CHECKPOINT_ INTERVAL	10,000	2 - Unlimited
LOG_FILES	255	2 - 255
LOG_SMALL_ENTRY_MAX_ SIZE	80	0 - Unlimited
MAX_DUMP_FILE_SIZE	10240	0 to 4,000,000

Initialization Parameter Name	Default Value	Range of Values
MTS_DISPATCHERS	Unspecified[5]	User specific
MTS_MAX_DISPATCHERS	5	User specific
MTS_MAX_SERVERS	20	User specific
MTS_SERVERS	0	User specific
MTS_SERVICE	*SID*	*SID*
NLS_LANGUAGE	AMERICAN	Any valid language
NLS_SORT	(Language dependent)	(Language dependent)
NLS_TERRITORY	AMERICA	Any valid territory
OPEN_CURSORS	50	1 - Unlimited
OS_AUTHENT_PREFIX	OPS$	Any character string
PROCESSES	59	3 - Unlimited
REMOTE_LOGIN_ PASSWORDFILE	SHARED	SHARED, EXCLUSIVE, NONE
SNAPSHOT_REFRESH_PROCESSES	0	0 to 10
SEQUENCE_CACHE_ENTRIES	10	10 to 32000
SHARED_POOL_SIZE	11,534,336	300 KB - Unlimited
SORT_AREA_SIZE	65536	0 - Unlimited
SORT_READ_FAC	20	0 - Unlimited
SORT_SPACEMAP_SIZES	512	0 - Unlimited
TEXT_ENABLE	TRUE	TRUE or FALSE
TEMPORARY_TABLE_LOCKS	69	0 - Unlimited
TIMED_STATISTICS	FALSE	TRUE or FALSE
TRANSACTIONS_PER_ROLLBACK_SEGMENT	11	1 - 255
USER_DUMP_DEST	%RDBMS*nn*%\TRACE	Any valid directory

[1] The Range of Values for DB_BLOCK_SIZE on a 7.3.*x* database is 512 to 8192.

[2] See "Calculating Database Limits" on page B,-7 for more information.

[3] DB_FILE_MULTIBLOCK_READ_COUNT is used to determine the number of blocks that are read in one batch. For example, if DB_BLOCK_SIZE is equal to 8 KB and DB_FILE_MULTIBLOCK_READ_COUNT is equal to 16, then the amount of I/O data that is read at once is (8 * 16) 128 KB. Ensure that the I/O data size you define does not exceed the MAX_IO_SIZE limit of 1 MB for release 8.0.6. MAX_IO_SIZE is not a configurable parameter. Note that if the values you set for DB_BLOCK_SIZE and DB_FILE_MULTIBLOCK_READ_COUNT exceed 1 MB, you do not receive an error message, but the I/O data size value defaults to 1 MB. See the chapter "Initialization Parameters" in *Oracle8 Reference* for more information on DB_FILE_MULTIBLOCK_READ_COUNT and MAX_IO_SIZE.

[4] Depends on value for DB_BLOCK_SIZE parameter.

[5] To use MTS, manually set this parameter to the following value: "(PRO=TCP)".

Initialization Parameters Without Windows NT-Specific Values

Oracle8 Reference describes the default values for many initialization parameters as being *operating system-specific*. Parameters with Windows NT-operating system specific settings are described in the previous section. However, not all the parameters that *Oracle8 Reference* describes as having operating system-specific values affect Windows NT. In these cases, Windows NT uses either the default value set in the Oracle8 kernel or does not use the parameter. This table describes these initialization parameters:

Parameter	Description
COMPATIBLE_NO_RECOVERY	Uses default value set in Oracle8 kernel (no Windows NT-specific value).
CPU_COUNT	Oracle8 automatically sets value to number of CPUs available for your Oracle instance.
HI_SHARED_MEMORY_ADDRESS	Not applicable to Windows NT.
SHARED_MEMORY_ADDRESS	Not applicable to Windows NT.
LARGE_POOL_SIZE	Uses maximum value of at least 2 GB.
LOG_BUFFER	Starter database uses value set in Oracle8 kernel (no Windows NT-specific value). The Custom option of the Oracle Database Assistant enables you to customize the value for this parameter.
ORACLE_TRACE_COLLECTION_PATH	Uses default value set in Oracle8 kernel (no Windows NT-specific value)
ORACLE_TRACE_FACILITY_NAME	Uses default value set in Oracle8 kernel (no Windows NT-specific value)
ORACLE_TRACE_FACILITY_PATH	Uses default value set in Oracle8 kernel (no Windows NT-specific value)
SPIN_COUNT	Uses default value set in Oracle8 kernel (no Windows NT-specific value)

Displaying Initialization Parameter Values

Windows NT-specific parameter values can be viewed by using an ASCII editor to open the *ORACLE_HOME*\DATABASE\INIT*SID*.ORA file. To display *all* parameter values (whether set in the INIT*SID*.ORA file or the Oracle8 kernel), enter the following command at the Server Manager command prompt:

```
SVRMGR> SHOW PARAMETER PARAMETER_NAME
```

where *PARAMETER_NAME* is the name of a specific initialization parameter.

The value for this parameter, whether defined in the *ORACLE_HOME*\DATABASE\INIT*SID*.ORA file or the Oracle8 kernel, displays on-screen.

Database Initialization Parameters

Check the following initialization parameters when creating a new database. They *cannot* be modified after you have created the database. See Chapter 9, "Creating a Database" for details on creating a new database, including the part of the procedure when you modify these parameters.

Parameter	Description
CHARACTER SET[1]	Specifies the database National Language Support (NLS) character set to use. This parameter can be set only when you create the database.
DB_BLOCK_SIZE	Specifies the size in bytes of Oracle database blocks.
DB_NAME	Specifies the name of the database to be created. The database name is a string of eight characters or less. You cannot change the name of a database.

[1] Not an initialization parameter, but rather a clause in the CREATE DATABASE statement. See Chapter 9, "Creating a Database" for an example of using this clause.

Calculating Database Limits

Use the size guidelines in the following table to calculate Oracle8 database limits using the equations given in *Oracle8 Administrator's Guide*.

Type	Size
Maximum block size	16,384 bytes (K)
Maximum blocks per file	4,194,304 million blocks
Maximum possible file size with 16 K blocks	64 Gigabytes (GB) (4,194,304 * 16 K) / 1024 / 1024 = 64 GB
Maximum number of files per database (depends on block size):	
2 K blocks	20,000 files
4 K blocks	40,000 files
8 K blocks	65,536 files
Maximum file size for a FAT file	4 GB
Maximum file size in NTFS	16 Exabytes (EB)

Type	Size
Maximum database size	65,536 * 64 GB equals approximately 4 Petabytes (PB)
Shadow Process Memory:	
Release 8.0.6	233 KB
Release 8.0.4	254 KB

Calculating Index Size

Use the size guidelines in the following table to calculate the space required by an index using the equations given in *Oracle8 Administrator's Guide*.

Type	Size
Fixed header size	113 bytes
Variable transaction header	24**INITRANS* value for the index
Entry header	5 bytes

Setting Resource Costs

You can limit user access to database resources by assigning costs to each resource. Define resource costs through user profiles. Oracle limits database usage and instance resources to whatever is defined in the user's profile. Follow the information and recommendations in the chapter "Managing Users and Resources" of *Oracle8 Administrator's Guide* to set resource costs on Windows NT.

C

Configuration Parameters and the Registry

The registry stores Oracle configuration parameters. This appendix describes only the configuration parameters that apply to Oracle8 Enterprise Edition.

Specific topics discussed are:

- About Configuration Parameters
- Registry Overview
- Registry Parameters
- Modifying a Registry Value with REGEDT32
- Adding a Registry Parameter with REGEDT32
- Modifying Oracle for Windows NT Performance Monitor Parameters

About Configuration Parameters

Oracle8 Enterprise Edition uses configuration parameters to locate files and specify runtime parameters common to all Oracle products.

When an Oracle program or application requires a translation for a particular configuration variable, Oracle8 Enterprise Edition consults the associated parameter.

All Oracle parameters are stored in the registry.

Registry Overview

Oracle8 Enterprise Edition stores its configuration information in a database (the registry) that is organized in a tree format. The tree format consists of keys in the registry and parameter values for the keys. Keys and parameter values can be viewed and modified in the Registry Editor.

Keys are folders that appear in the left pane of a *Registry Editor* window. A key contains subkeys or parameters.

> **Warning: The Registry Editor allows you to view and modify registry keys and parameter values. Normally, you do not need to do so, and in fact, are liable to break your system if you make incorrect changes. Only advanced users should use the registry!**

Parameters in the Registry Editor appear as a string that consists of three components:

- name of the parameter
- value class or type of entry
- value itself

For example, parameter ORACLE_SID can have the following entry in the registry:

```
ORACLE_SID:REG_EXPAND_SZ:ORCL
```

Value classes for Oracle8 Enterprise Edition parameters are:

- string value with a REG_SZ, REG_EXPAND_SZ (for an expandable string), or REG_MULTI_SZ (for multiple strings) prefix to identify a parameter value entry as a data string
- binary value with a REG_DWORD prefix to identify a value entry as a DWORD (hexadecimal data) entry

Registry Parameters

This section describes the following Oracle8 database registry parameters. Other products, such as Oracle Enterprise Manager, have additional keys and parameters not described in this appendix.

- Parameters for Most Oracle Products
- Parameters Describing Each Oracle Home Directory on a Computer
- Parameters for Oracle8 Performance Monitor
- Parameters for Oracle Services

To modify the registry values described below, see "Modifying a Registry Value with REGEDT32" on page C-14.

Parameters for Most Oracle Products

This section describes the following parameter types:

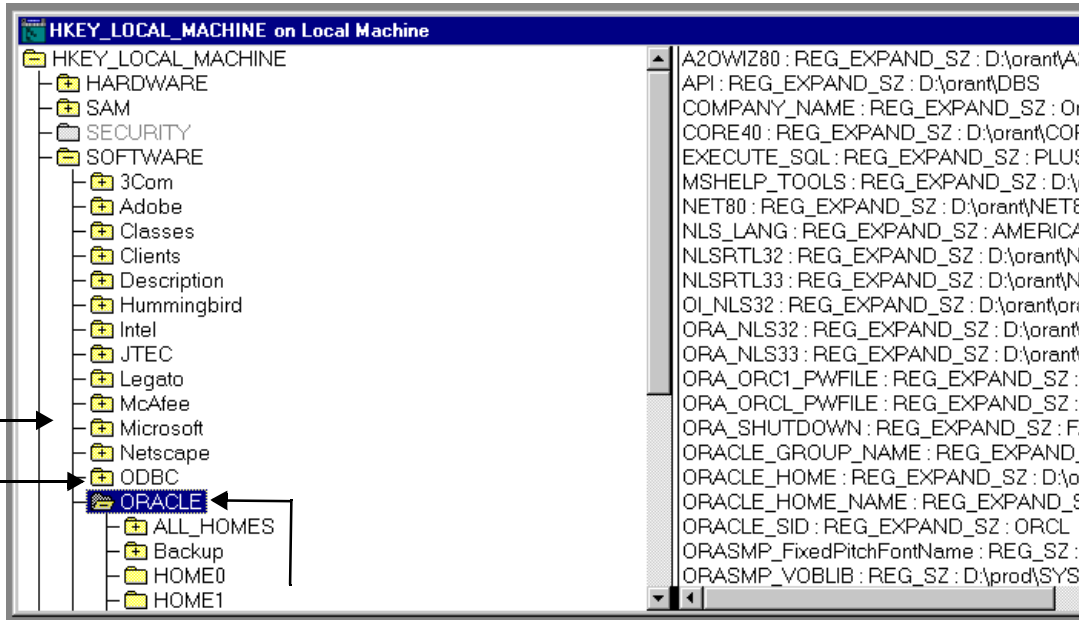
- Product and Installation Parameters
- Installation Parameters for Computers with One Oracle Home

Parameters for most Oracle products are contained within the HKEY_LOCAL_MACHINE\SOFTWARE\ORACLE subkey. The exact location of parameters within this key depends on the number of Oracle home directories created on your computer. For the first installation, two registry subkeys are created for storing product and installation parameters. For all additional installations, only one registry subkey is created for storing product and installation parameters.

The following table describes this process:

For...	Parameters are Created in Subkey...	This Subkey Contains...
The first Oracle home installation	HKEY_LOCAL_MACHINE\SOFTWARE\ORACLE	Product and installation parameters. See "Product and Installation Parameters" on page C-5 for parameter descriptions.
	HKEY_LOCAL_MACHINE\SOFTWARE\ORACLE\HOME0	Several parameters specific to Oracle Installer. See "Installation Parameters for Computers with One Oracle Home" on page C-10 for parameter descriptions.
The second Oracle home installation	HKEY_LOCAL_MACHINE\SOFTWARE\ORACLE\HOME1	Product and installation parameters. See "Product and Installation Parameters" on page C-5 for parameter descriptions
The third Oracle home installation	HKEY_LOCAL_MACHINE\SOFTWARE\ORACLE\HOME2	Product and installation parameters. See "Product and Installation Parameters" on page C-5 for parameter descriptions
All additional Oracle home installations	HKEY_LOCAL_MACHINE\SOFTWARE\ORACLE\HOME*ID* where *ID* is incremented for each additional Oracle home installation.	Product and installation parameters. See "Product and Installation Parameters" on page C-5 for parameter descriptions

This figure shows the parameter subkeys created with two Oracle home directories on the same computer:



The first Oracle installation on a computer creates parameter subkeys

The second Oracle installation on a computer creates parameter subkey

Product and Installation Parameters

This section lists the product and installation parameters for most Oracle products. See the table in "Parameters for Most Oracle Products" on page C-3 to identify the subkey under which these parameters appear.

Parameter	Description	Default Value Entry
A2OWIZ80	Specifies the location of Oracle Migration Assistant for Microsoft Access files.	*ORACLE_HOME*\A2OWIZ80
API	Specifies the location of files for Oracle Installer.	*ORACLE_HOME*\DBS
COMPANY_ NAME	Specifies the name of the company entered during the installation process.	company name entered during installation
CORE40	Specifies the location of the database message files.	*ORACLE_HOME*\CORE40
EXECUTE_SQL	Specifies the executable to spawn SQL*Plus for the Oracle Installer.	PLUS80
ID	Specifies the HOME*ID* of the Oracle home directory. The first Oracle home is always specified as zero.	0
MSHELP	Specifies the location from where Windows help is invoked.	*ORACLE_HOME*\MSHELP
MSHELP_TOOLS	Specifies the location of the Windows help files.	*ORACLE_HOME*\MSHELP
NET80	Specifies the location of the Net8 directory.	*ORACLE_HOME*\NET80
NLS_LANG	Specifies the supported language, territory, and character set. This parameter specifies the language in which the messages are displayed, the territory and its conventions for calculating week and day numbers, and the character set displayed. The default value causes all messages to be displayed in American English.	AMERICAN_AMERICA. WE8ISO885981
NLSRTL32	Specifies the location of the Oracle7 NLS message files.	*ORACLE_HOME*\NLSRTL32
NLSRTL33	Specifies the location of the Oracle8 database NLS message files.	*ORACLE_HOME*\ORAINST\NLB
OI_NLS32	Specifies the value of ORA_NLS32 used by Oracle Installer during the installation process.	*ORACLE_HOME*\ORAINST\NLB
ORA_EXTPROC_ THREADED	Specifies to use multiple, lightweight threads instead of a single dedicated user process when using external procedures.	FALSE
ORA_NLS32	Specifies the location of the system boot file and NLS loadable data files used by the Oracle7 NLSRTL.	*ORACLE_HOME*\NLSRTL32 \DATA
ORA_NLS33	Specifies the location of the system boot file and NLS loadable data files used by Oracle8 Enterprise Edition NLSRTL.	*ORACLE_HOME*\NLSRTL33 \DATA

Parameter	Description	Default Value Entry
ORA_*SID*_ PWFILE	Specifies the name of the password file containing the password for the database instance designated by the system identifier (SID).	*ORACLE_HOME*\DATABASE\ PWD*SID*.ORA
ORA_*SID*_ SHUTDOWN	When set to TRUE, shuts down the Oracle8 database identified by the *SID* value when OracleService*SID* is stopped. **Note:** This registry entry must be manually added.	Not applicable
ORA_*SID*_ SHUTDOWN_ TIMEOUT	Sets the maximum time to wait for the shutdown to complete before the service for a particular SID stops. **Note:** This registry entry must be manually added.	Not applicable
ORA_SHUTDOWN	When set to TRUE, enables the selected Oracle8 database to be shut down when OracleService*SID* is stopped.	FALSE
ORA_ SHUTDOWN_ TIMEOUT	Sets the maximum time to wait for the service to stop. You may set ORA_SHUTDOWN_TIMEOUT to any value greater than 30 seconds; values less than 30 are ignored. **Note:** This registry entry must be manually added.	Not applicable
ORACLE_GROUP_ NAME	Specifies the name of the group containing icons of the Oracle products installed. The parameter is added to your registry when you first install Oracle products, even if Oracle Installer does not create a program group for the Oracle products you have installed. (For example, if you have installed only Net8 software.)	Oracle for Windows NT
ORACLE_HOME	Specifies the Oracle home directory in which Oracle products are installed. This directory is the top directory in the Oracle directory hierarchy.	C:\ORANT
ORACLE_HOME_ NAME	Specifies the home name of the Oracle home directory in which Oracle products are installed.	DEFAULT_HOME
ORACLE_HOME_ SERVICE	Specifies the home name of the Oracle home directory. This value appears in Oracle service names. Since no home name is required for the first Oracle installation, this parameter is *not* available for the first Oracle home installation; only subsequent Oracle home installations (for example, HOME1, HOME2, and so on) use this parameter.	The name that you specify during installation.

Parameter	Description	Default Value Entry
ORACLE_ PRIORITY	Determines the Windows NT scheduling priorities of the threads within the Oracle ORDBMS or DBMS process. The format is: `name1:priority1;name2:priority2 . . .`	CLASS:normal; DEF:normal The name CLASS sets the priority class of the Oracle process. Threads can be assigned priority either collectively or individually. The collective name USER designates non-background (shadow) threads; the collective name DEF designates any thread type not handled specifically. Valid individual background thread names are DBWR, LGWR, PMON, SMON, ARCH, RECO, CKPT, TRWR, and SNP0 through SNP9. **Note:** ORACLE_PRIORITY is not automatically created for you in the registry. When it is not defined in the registry, the Windows NT default values are used for the priorities of the thread.
ORACLE_SID	Specifies the name of the Oracle8 database instance on the host machine. The value of this parameter is the SID for the instance.	ORCL for the first Oracle product installation on a computer. For additional Oracle home installations, ORCL is incremented (for example, ORC1 for a second installation, ORC2 for a third installation, and so on)
OTRACE73	Specifies the location of the Oracle7 trace files.	*ORACLE_HOME*\OTRACE73
OTRACE80	Specifies the location of the Oracle8 Enterprise Edition trace files.	*ORACLE_HOME*\OTRACE80
OTT_DFLT	Specifies the executable used when OTT80.EXE is called.	OTT80
OTT80	Specifies the location of the Object Type Translator (OTT) files.	*ORACLE_HOME*\OTT80
OWAST	Specifies the location of the Oracle Web Publishing Assistant files.	*ORACLE_HOME*\OWAST
PLSQL23	Specifies the directory in which Oracle7 looks for PL/SQL message files.	*ORACLE_HOME*\PLSQL23

Parameter	Description	Default Value Entry
PLSQL80	Specifies the directory in which Oracle8 Enterprise Edition looks for PL/SQL message files.	*ORACLE_HOME*\PLSQL80
PLUS_DFLT	Specifies the executable used when SQLPLUS.EXE is called.	PLUS80
PLUS80	Specifies the location in which to find the files needed to run SQL*Plus.	*ORACLE_HOME*\PLUS80
PRO18	Specifies the location of Oracle7 Pro*C/C++ files.	*ORACLE_HOME*\PRO18
PRO80	Specifies the location of Oracle8 Enterprise Edition Pro*C/C++ files.	*ORACLE_HOME*\PRO80
RDBMS73	Specifies the directory Oracle7 Server and the Oracle7 Utilities use to locate messages, resource files, and SQL scripts.	*ORACLE_HOME*\RDBMS73
RDBMS80	Specifies the directory the Oracle8 database and the Oracle8 Utilities use to locate messages, resource files, and SQL scripts.	*ORACLE_HOME*\RDBMS80
RDBMS80_ ARCHIVE	Specifies the location of the backup database files.	*ORACLE_HOME*\DATABASE \ARCHIVE
RDBMS80_ CONTROL	Specifies the location of the database control files.	*ORACLE_HOME*\DATABASE
SHARED_ ORACLE_HOME	Specifies the Oracle home directory used by Oracle Installer.	*ORACLE_HOME*
SQLPATH	Specifies the location of the SQL scripts that SQL*Plus uses for searching SQL scripts.	*ORACLE_HOME*\DBS
SVRMGR	Specifies the location of Server Manager support files.	*ORACLE_HOME*\DBS

Installation Parameters for Computers with One Oracle Home

The HKEY_LOCAL_MACHINE\SOFTWARE\ORACLE\HOME0 subkey *only* contains the following parameters for the first Oracle home directory on a computer. This information is largely duplicated in HKEY_LOCAL_MACHINE\SOFTWARE \ORACLE.

Parameter	Description	Default Value Entry
API	Specifies the location of files for Oracle Installer.	*ORACLE_HOME*\DBS
COMPANY_NAME	Specifies the name of the company entered during the installation process.	company name entered during installation
ID	Specifies the HOME*ID* of the Oracle home. The first Oracle home is always specified as zero.	0
NLS_LANG	Specifies the language in which the messages are displayed, the territory and its conventions for calculating week and day numbers, and the character set displayed. The default value causes all messages to be displayed in American English.	AMERICAN_AMERICA.WE8ISO885981
ORACLE_GROUP_NAME	Specifies the name of the group containing icons of the Oracle products installed. The parameter is added to your registry when you first install Oracle products, even if Oracle Installer does not create a program group for the Oracle products you have installed. (For example, if you have installed only Net8 software.)	Oracle for Windows NT
ORACLE_HOME	Specifies the Oracle home directory in which Oracle products are installed. This directory is the top directory in the Oracle directory hierarchy.	*ORACLE_HOME*
ORACLE_HOME_NAME	Specifies the home name of the Oracle home directory in which Oracle products are installed.	DEFAULT_HOME
SHARED_ORACLE_HOME	Specifies the Oracle home directory used by Oracle Installer.	*ORACLE_HOME*\DATABASE

Parameters Describing Each Oracle Home Directory on a Computer

The HKEY_LOCAL_MACHINE\SOFTWARE\ORACLE\ALL_HOMES subkey provides general information on each Oracle home directory on a computer. This subkey contains the following parameters:

- ID*x* subkey(s)
- the following parameters:

Parameter	Description	Default Value Entry
DEFAULT_HOME	Specifies the default Oracle home name (that is, the first Oracle home installed on your machine).	DEFAULT_HOME
HOME_COUNTER	Specifies the number of installed Oracle homes.	1
LAST_HOME	Displays the ID number of the most recently installed Oracle home. For example, if HOME1 was the most recently installed, the number 1 appears.	1

ID*x*

This subkey corresponds to the HOME*ID* of the same number (for example, HOME0 for the first installation, HOME1 for the second installation, and so on). ID*x* contains the following parameters. The values that display are determined by what you select during installation in the *Oracle Installation Settings* dialog box.

Parameter	Description	Default Value Entry
NAME	Specifies the home name of the Oracle home for ID*x*. This is the value you specify when prompted for an Oracle home name.	DEFAULT_HOME for the first Oracle home
NLS_LANG	Specifies the supported language, territory, and character set for ID*x*.	AMERICAN_AMERICA. WE8ISO885981
PATH	Specifies the Oracle home directory for ID*x*.	*ORACLE_HOME*

Parameters for Oracle8 Performance Monitor

Depending on the number of Oracle home directories on your computer, Oracle8 Performance Monitor parameters appear in the following subkey:

HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\Oracle80\Performance

Note: Modify only the Hostname, Password, and Username values to point to any database.

For Oracle8 Performance Monitor to display information for Oracle8 performance objects, it must log onto the database. Modify the following parameters if the default information is not applicable or you want to access another database:

Parameter	Description	Default Value Entry
Password	Displays the password for the user name to access the database.	MANAGER
Username	Displays the user name to access the database.	SYSTEM

Hostname	Displays a Net8 connect string that allows you to edit the SID (two entries labeled *SID* in this example):[1]
	`DESCRIPTION=`
	`(ADDRESS_LIST=`
	`(ADDRESS=`
	`(PROTOCOL=BEQ)`
	`(PROGRAM=oracle80)`
	`(ARGV0=oracle80`*SID*`)`
	`(ARGS='(DESCRIPTION=(LOCAL=YES)(ADDRESS=(PROTOCOL=beq)))')`
	`)`
	`)`
	`(CONNECT_DATA=(SID=`*SID*`))`
	`)`
		Not applicable

[1] The 2:, 2:orcl, and 2:*sid* connect strings for local connections to Oracle8 Enterprise Edition are not supported. Instead, the new default connect string for a local connection uses the Bequeath Protocol Adapter.

The following parameters are needed by the Oracle8 Performance Monitor as entry points:

Parameter	Description	Default Value Entry
Close	Specifies the close entry point for the DLL.	CloseOracle8PerformanceData
Collect	Specifies the collect entry point for the DLL.	CollectOracle8PerformanceData
Open	Specifies the open entry point for the DLL.	OpenOracle8PerformanceData
Library	Specifies the name of the Oracle8 Performance Monitor DLL.	OPERF80.DLL

The following parameters specify the Oracle8 Performance Monitor log file and object configuration files:

Parameter	Description	Default Value Entry
LOGFILE	Specifies the name of the Oracle8 Performance Monitor log file. This log file reports any errors, such as Oracle8 objects not displaying or database access problems.	*ORACLE_HOME*\DBS\OPERF80.LOG
PERF__FILE_NAME	Specifies the location of PERF80.ORA. PERF80.ORA contains all the performance objects displayed by the Oracle8 Performance Monitor.	*ORACLE_HOME*\DBS\PERF80.ORA

Parameters for Oracle Services

The HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services subkey contains subkeys that correspond to each Oracle service.

Each service subkey contains the following parameters:

Parameter	Description	Default Value Entry
DisplayName	Specifies the service name of the instances whose SID is *SID*.	Name of the service. For example, OracleServiceORCL, where ORCL is the SID.
ImagePath	Specifies the fully-qualified path name of the executable invoked by the service and any command-line arguments passed into the executable at runtime.	Path to the executable file of the product. For example, *ORACLE_HOME*\BIN\ORACLE80.EXE, if OracleNames80 is selected.
ObjectName	Specifies the logon user account and machine to which the service should log on.	LocalSystem

Modifying a Registry Value with REGEDT32

CAUTION: Do not edit your registry unless it is absolutely necessary. If there is an error in your registry, Oracle8 Enterprise Edition may become nonfunctional. In fact, the registry itself can become unstable.

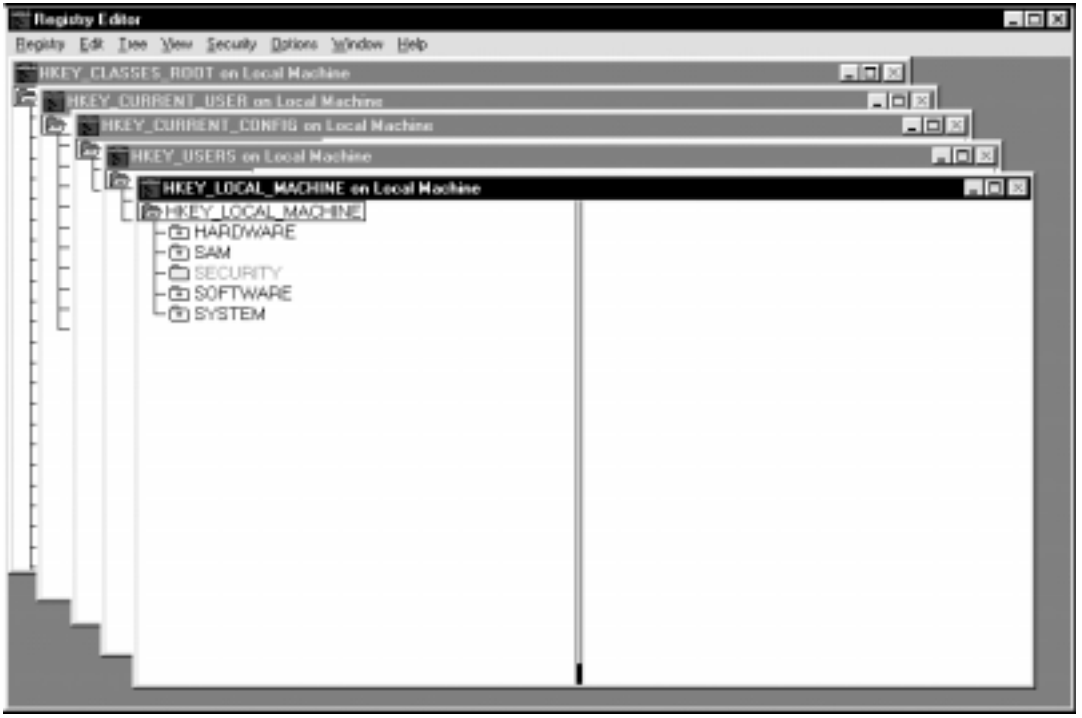
To edit the Oracle-related settings:

1. Start the registry in either of two ways:
   - From the command prompt, enter:

     ```
     C:\> REGEDT32
     ```

   - Choose Start > Run, enter REGEDT32 in the Open field, and click OK.

   The *Registry Editor* window appears:



2. Navigate to the values you want to view or modify by double-clicking keys.

   The left-hand side of the window shows the hierarchy of registry keys, and the right-hand side of the window shows various values associated with a key.

3. Double-click the parameter to edit.

   An editor dialog box appears:

4. Make any necessary edits.
5. Click OK.
6. Choose Exit from the registry menu.

Adding a Registry Parameter with REGEDT32

To add a parameter to the registry:

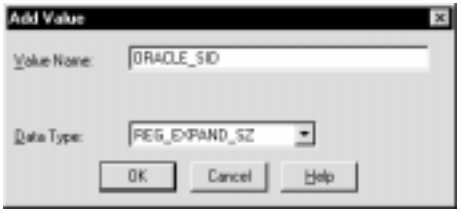
1. Start the registry in either of two ways:
   - From the MS-DOS command prompt, enter:

     ```
     C:\> REGEDT32
     ```

   - Choose Start > Run, enter REGEDT32 in the Open field, and click OK.

   The *Registry Editor* window appears.
2. Navigate to the key where you want to add the new value.
3. Choose the Add Value option in the Edit menu.

The *Add Value* dialog box appears:



4. In the Value Name field, enter the name that you want to assign to the currently selected key.
5. In the Data Type box, select the value class that you want to assign to the added value:
   - REG_SZ, REG_EXPAND_SZ (for an expandable string), or REG_MULTI_SZ (for multiple strings) for a data string
   - binary value with a REG_DWORD prefix to identify a value entry as a DWORD (hexadecimal data) entry
6. Click OK.

   An editor dialog box appropriate for the data type appears:

7. Enter the value itself for the parameter.

   The Registry Editor adds the parameter.
8. Choose Exit from the Registry menu.

   The registry exits.

Modifying Oracle for Windows NT Performance Monitor Parameters

Instead of using REGEDT32 to modify Oracle for Windows NT Performance Monitor's Hostname, Password, and Username parameters, you can use either of the tools described in this section.

See "Parameters for Oracle8 Performance Monitor" on page C-12 for more information about the Hostname, Password, and Username parameters.

Using OPERFCFG

OPERFCFG is an Oracle tool that you run from the MS-DOS command prompt.

This table describes OPERFCFG command line syntax and provides examples of its use.

The -U, -P, and -D commands are all optional.

Use this syntax:	`OPERFCFG [-U USERNAME] [-P PASSWORD] [-D DATABASE_NAME]`	
Syntax description:	▪ `-U USERNAME`	Username registry parameter value that Oracle for Windows NT Performance Monitor uses to log into the database. You must have DBA privileges on this database.
	▪ `-P PASSWORD`	Password registry parameter value for the user name.
	▪ `-D DATABASE_NAME`	Net service name that Oracle for Windows NT Performance Monitor uses to connect to the database. Affects the Hostname registry parameter. The net service name corresponds to the SID of the database that you want to monitor. The -D command can be specified without providing a database name value.
Example 1	`C:\> OPERFCFG -U DBA_ADMIN -P FRANK`	
Changing the Username and Password	This changes the user name to DBA_ADMIN and the password to FRANK and leaves the database name at its current value.	
Example 2	`C:\> OPERFCFG -U DBA_ADMIN -P FRANK -D PROD`	
Changing the Username, Password, and Database Name	This changes the username to DBA_ADMIN, the password to FRANK, and the database name to PROD.	
Example 3	`C:\> OPERFCFG -P FRANK`	
Changing the Password	This changes the password to FRANK for the current user name and database name.	

Example 4	`C:\> OPERFCFG -D`
Changing the Database Name to an Empty Value	Changes the Hostname parameter to a blank value. This causes the Oracle for Windows NT Performance Monitor to connect to the default database on the computer. The current user name and password must be valid user accounts on this database.

Using the Oracle Performance Monitoring Snap-In

The Oracle Performance Monitoring snap-in is included as part of Oracle Administration Assistant for Windows NT. You must have Microsoft Management Console on your computer in order to use this product.

To use the Oracle Performance Monitoring snap-in:

1. Choose Start > Programs > Oracle - *HOME_NAME* > Oracle Enterprise Management > Database Administration Applications > Oracle Administration Assistant for Windows NT.

   Oracle Administration Assistant for Windows NT starts.

2. Right-click Performance Monitor.

3. Click Properties.

   The *Performance Monitor Properties* dialog box appears.

4. Modify the text in the Username, Password, or Database text boxes and click Apply.

D

Messages and Codes

This appendix lists the error messages, causes, and corrective actions that are specific to the installation and operation of Oracle8 Enterprise Edition for Windows NT.

Specific topics discussed are:

- Logging Error Messages
- Oracle Installer Error Messages
- Codes 09200-09499: Oracle8 Database Messages
- Codes 04000-04999: Windows NT-Specific Oracle Messages

Logging Error Messages

Keep a log of error messages you receive from the Oracle8 Utilities by redirecting the messages to a file. You can record the contents of normal utility messages by using the LOGFILE parameter discussed in *Oracle8 Utilities*. You can separately record the error message portion by using standard Windows NT file redirection. For example, use the following syntax to redirect the output from the Export utility:

```
C:\> EXP80 USERNAME/PASSWORD PARFILE=FILENAME >FILE1.LOG 2>FILE2.ERR
```

In this command line, FILE1.LOG receives the standard output from Export, while FILE2.ERR receives the standard error messages.

Oracle Installer Error Messages

This section lists error messages that can occur while using Oracle Installer. Most Oracle Installer error messages are accompanied with corrective information on the screen; therefore, they are not listed in this appendix. This appendix lists error messages in alphabetical order and provides the probable cause and corrective action.

Error	Cause	Action
DISK_FULL	There is not enough disk space on the destination volume to copy the selected program.	Create space on the destination volume.
DRIVE_LOCKED	The device specified in the full error message is in use or locked by another process.	Terminate or release the other process, or wait for it to complete.
FILE_CORRUPTED	The file or directory specified in the full error message is damaged or not readable.	Try to repair or replace the file or repair the directory specified.
FILE_NOT_FOUND	It was not possible to locate a file on the source or destination media.	Run a utility program to locate any problems with the source or destination media; the media could be the CD-ROM drive, a network drive, or a floppy drive.
INVALID_FILE_NAME	The file or directory name or volume label specified in the full message is syntactically incorrect.	Specify the file, directory, or volume using the correct syntax.
LEXICAL_ERROR	An error has been detected in the installation scripts.	Call Oracle Support Services.

Error	Cause	Action
LOCKING_VIOLATION	A portion of the file specified in the full message has been locked by another process.	Release or terminate the other process, or wait for it to complete.
OS_ERROR	There is an unexpected operating system error.	Run a utility program to locate any problems with the source or destination media; the media could be the CD-ROM drive, a network drive, or a floppy drive.
PERMISSION_DENIED	The network has denied permission to perform the selected action.	Check with the network administrator; make sure you have Administrator privileges and can perform the selected action.
READ_ERROR	A problem has been detected on the source or destination media while executing an I/O operation.	**1.** If in a networking environment, verify that you have read permission for the networking file. **2.** Run a utility program to locate any problems with the source or destination media; the media could be the CD-ROM drive, a network drive, or a floppy drive.
RECALIBRATION_FAILURE	A hardware problem has been detected on the hard drive to which you are installing.	Run a utility program to diagnose the hard drive.
SHARING_VIOLATION	The file specified in the full message has been locked by another process. (This error is similar to the LOCKING_ VIOLATION message, which relates to a portion of a file.)	Release or terminate the other process, or wait until it completes.
TOO_MANY_OPEN_FILES	Too many files are open on Windows NT.	Close some of the open files.
WRITE_ERROR	A problem has been detected on the destination media while executing an input/output (I/O) operation.	**1.** If you are in a network environment and installing onto the network, verify that you have permission to write to a network directory. **2.** Run a utility program to locate any problems with the source or destination media; the media could be the CD-ROM drive, a network drive, or a floppy drive.
WRITE_PROTECTED	The file or directory specified in the full message (in which Oracle software is to be installed) is write-protected.	Remove the write-protection from the specified file or directory.

Codes 09200-09499: Oracle8 Database Messages

This section lists error messages issued by the Oracle8 database. Each one is triggered by an operating system-dependent (OSD) message specific to Windows NT that specifies the error condition signalled. The OSD messages appear in the next section. When you receive one of these messages, look up the accompanying OSD message number listed "Codes 04000-04999: Windows NT-Specific Oracle Messages" on page D-7 for an explanation of the error.

Message	Signal
ORA-09200	sfccf: error creating file
ORA-09201	sfcopy: error copying file
ORA-09202	sfifi: error identifying file
ORA-09203	sfofi: error opening file
ORA-09204	sfotf: error opening temporary file
ORA-09205	sfqio: error reading or writing to disk
ORA-09206	sfrfb: error reading from file
ORA-09207	sfsrd: error reading from file
ORA-09208	sftcls: error closing file
ORA-09209	sftget: error reading from file
ORA-09210	sftopn: error opening file
ORA-09211	sfwfb: error writing to file
ORA-09212	sfwfbmt: error writing to file
ORA-09213	slgfn: error fabricating file name
ORA-09214	sfdone: I/O error detected
ORA-09215	sfqio: error detected in I/O completion routine
ORA-09216	sdnfy: bad value '%s' for parameter %s
ORA-09217	sfsfs: failed to resize file
ORA-09218	sfrfs: failed to refresh file size
ORA-09240	smpalo: error allocating PGA memory
ORA-09241	smsalo: error allocating SGA memory
ORA-09242	smscre: error creating SGA
ORA-09243	smsget: error attaching to SGA
ORA-09244	smprset: error setting memory protections

Message	Signal
ORA-09245	smcstk: error switching stacks
ORA-09246	sfsmap: unable to map SGA
ORA-09247	smsdes: error destroying the SGA
ORA-09260	sigpidu: error obtaining process id
ORA-09261	spdcr: error creating detached (background) process
ORA-09262	spdde: error terminating detached (background) process
ORA-09263	spini: error initializing process
ORA-09264	sptpa: error flagging process
ORA-09265	spwat: error temporarily suspending process
ORA-09266	spawn: error starting an Oracle process
ORA-09270	szalloc: error allocating memory for security
ORA-09271	szlon: error verifying user name
ORA-09272	remote OS log on is not allowed
ORA-09273	szrfc: error verifying role name
ORA-09274	szrfc: insufficient role name buffer space
ORA-09280	sllfcf: error closing file
ORA-09281	sllfop: error opening file
ORA-09282	sllfrb: error reading records
ORA-09283	sllfsk: error skipping records
ORA-09290	sksaalo: error allocating memory for archival
ORA-09291	sksachk: invalid device specification for LOG_ARCHIVE_DEST
ORA-09292	sksabln: unable to build file name
ORA-09293	sksasmo: unable to send message to console
ORA-09300	osncon: unable to connect, DPMI not available
ORA-09301	osncon: local kernel only supported in standard mode
ORA-09310	sclgt: error freeing latch
ORA-09311	slsleep: error temporarily suspending process
ORA-09312	slspool: error spooling file to printer
ORA-09313	slsprom: error prompting user
ORA-09314	sltln: error translating logical name
ORA-09315	sql2tt: two-task error translating ORACLE_EXECUTABLE
ORA-09316	szrpc: unable to verify password for role

Message	Signal
ORA-09317	szprv: insufficient privileges
ORA-09318	slkhst: error hosting out to operating system
ORA-09319	slgtd: unable to obtain the current date and time
ORA-09320	szrfc: unable to obtain the list of valid OS roles
ORA-09321	slzdtb: unable to convert zoned decimal to binary
ORA-09322	slpdtb: unable to convert packed decimal to binary
ORA-09330	session terminated internally by Oracle or by an Oracle DBA
ORA-09331	scgcan: unable to process lk_sync_cancel return code
ORA-09332	scgcc: unable to process lk_close return code
ORA-09333	scggc: unable to process lk_open_convert return code
ORA-09334	scggc: unable to process lk_convert return code
ORA-09335	scgcm: unable to process return code in completion procedure
ORA-09340	specified ORACLE_SID is either invalid or too long
ORA-09341	scumnt: unable to mount database
ORA-09342	Detached process terminated by Oracle during SHUTDOWN ABORT

Codes 04000-04999: Windows NT-Specific Oracle Messages

The error messages in this section are Oracle operating system-dependent (OSD) messages issued in response to an error condition in Windows NT. Each message in this section triggers an Oracle8 database error message, listed in the previous "Codes 09200-09499: Oracle8 Database Messages" on page D-4.

- File I/O Errors: OSD-04000 to OSD-04099
- Memory Errors: OSD-04100 to OSD-04199
- Process Errors: OSD-04200 to OSD-04299
- ORADEBUG Errors: OSD-04221 to OSD-04225
- Loader Errors: OSD-04300 to OSD-04399
- Semaphore Errors: OSD-04400 to OSD-04499
- Miscellaneous Errors: OSD-04500 to OSD-04599

File I/O Errors: OSD-04000 to OSD-04099

OSD-04000

Logical block size mismatch

Cause: The database block size specified in the initialization parameter file does not match the block size of the actual database files.

Action: Use matching logical block sizes.

OSD-04001

Invalid logical block size

Cause: The logical block size is not a multiple of 512 bytes, or it is too large.

Action: Change the value of DB_BLOCK_SIZE in the initialization parameter file.

OSD-04002

Unable to open file

Cause: The specified path or file name is invalid, or the destination device is full. This error can also be caused by insufficient Windows NT file handles.

Action: Make sure the path and file exist, and the device has free space. If this fails, increase the number of Windows NT file handles.

OSD-04003

Unable to read file header block

Cause: The media has been damaged.

Action: Recover the file if necessary, and verify that Windows NT is functioning correctly.

OSD-04004

Invalid file header

Cause: The file is corrupted.

Action: Recover the file.

OSD-04005

SetFilePointer() failure, unable to read from file

Cause: There was an unexpected return from the Windows NT system service, SetFilePointer().

Action: Check the operating system error code and consult the Windows NT documentation.

OSD-04006

ReadFile() failure, unable to read from file

Cause: There was an unexpected return from the Windows NT system service, ReadFile().

Action: Check the operating system error code and consult the Windows NT documentation.

OSD-04007

Truncated read

Cause: The system encountered an unexpected end-of-file, which is due to damaged media.

Action: Verify that the file is not damaged.

OSD-04008

WriteFile() failure, unable to write to file

Cause: There was an unexpected return from the Windows NT system service, WriteFile().

Action: Check the operating system error code and consult the Windows NT documentation.

OSD-04009

Truncated write

Cause: The destination device is full or the media is damaged.

Action: Verify that the device has free space and the file is not damaged.

OSD-04010

<create> option specified, file already exists

Cause: The file you attempted to create already exists.

Action: Delete the existing file or use the REUSE option in the SQL statement.

OSD-04011

GetFileInformationByHandle() failure, unable to obtain file info

Cause: There was an unexpected return from the Windows NT system service, GetFileInformationByHandle().

Action: Check the operating system error code and consult the Windows NT documentation.

OSD-04012

File size mismatch

Cause: The file to be re-used is either too large or too small.

Action: Specify the correct file size or delete the existing file.

OSD-04013

Unable to read line from file

Cause: This error is caused by an operating system error or by damaged media.

Action: Check the operating system error code (if available) and consult the Windows NT documentation. If no operating system error code is presented, verify that the media is not damaged.

OSD-04014

Unable to close file

Cause: The media has been damaged.

Action: Recover the file, if necessary, and verify that Windows NT is functioning correctly.

OSD-04015

Asynchronous I/O request returned an error

Cause: There was an unexpected return from the Windows NT system service.

Action: Check the operating system error code and consult the Windows NT documentation.

OSD-04016

Error queuing an asynchronous I/O request

Cause: There was an unexpected return from the Windows NT system service.

Action: Check the operating system error code and consult the Windows NT documentation.

OSD-04017

Unable to open the specified RAW device

Cause: An invalid path or file name was specified or the device is full.

Action: Make sure the file exists and / or device is not full; verify that the operating system is functioning correctly.

OSD-04018

Unable to access the specified directory or device

Cause: An invalid path name was specified.

Action: Make sure the directory or device exists and is accessible.

OSD-04019

Unable to set file pointer

Cause: This error is caused by an operating system error or by damaged media.

Action: Check the operating system error code (if available) and consult the Windows NT documentation. If no operating system error code is presented, verify that the media is not damaged.

OSD-04020

Unable to set eof file marker

Cause: This error is caused by an operating system error or by damaged media.

Action: Check the operating system error code (if available) and consult the Windows NT documentation. If no operating system error code is presented, verify that the media is not damaged.

OSD-04021

Unable to read file

Cause: This error is caused by an operating system error or by damaged media.

Action: Check the operating system error code (if available) and consult the Windows NT documentation. If no operating system error code is presented, verify that the media is not damaged.

OSD-04022

Unable to write file

Cause: This error is caused by an operating system error or by damaged media.

Action: Check the operating system error code (if available) and consult the Windows NT documentation. If no operating system error code is presented, verify that the media is not damaged.

OSD-04023

SleepEx() failure, unable to Sleep

Cause: There was an unexpected return from the Windows NT system service.

Action: Check the operating system error code and consult the Windows NT documentation.

OSD-04024

Unable to delete file

Cause: This error is caused by an operating system error or by damaged media.

Action: Check the operating system error code (if available) and consult the Windows NT documentation. If no operating system error code is presented, verify that the media is not damaged.

OSD-04025

Invalid question asked

Cause: This is an internal error, not normally expected to occur.

Action: Contact Oracle Support Services.

OSD-04026

Invalid parameter passed

Cause: This is an internal error, not normally expected to occur.

Action: Contact Oracle Support Services.

Memory Errors: OSD-04100 to OSD-04199

OSD-04100

Malloc() failure, unable to allocate memory

Cause: The program is out of memory.

Action: Shut down all unnecessary processes or install more memory in the computer.

OSD-04101

Invalid SGA: SGA not initialized

Cause: The System Global Area (SGA) has been allocated but not initialized.

Action: Wait until the STARTUP has completed before attempting to connect.

OSD-04102

Unable to open/create file for shared memory object

Cause: There was an unexpected return from the Windows NT system service, CreateFile().

Action: Check the operating system error code and consult the Windows NT documentation.

OSD-04103

Unable to attach to SGA: SGA does not exist

Cause: The SGA does not exist.

Action: Start up an Oracle instance.

OSD-04104

Unable to map shared memory (SGA) into the address space

Cause: There was an unexpected return from the Windows NT system service, MapViewOfFileEx().

Action: Check the operating system error code and consult the Windows NT documentation.

OSD-04105

Shared memory (SGA) mapped to wrong address

Cause: There was an unexpected return from the Windows NT system service, MapViewOfFileEx().

Action: Check the operating system error code and consult the Windows NT documentation.

OSD-04106

Unable to allocate memory with VirtualAlloc

Cause: The program is out of memory.

Action: Shut down all unnecessary processes or install more memory in the computer.

OSD-04107

Unable to deallocate memory with VirtualFree

Cause: There was an unexpected return from the Windows NT system service, VirtualFree().

Action: Check the operating system error code and consult the Windows NT documentation.

OSD-04108

Unable to protect memory with VirtualProtect

Cause: There was an unexpected return from the Windows NT system service, VirtualProtect().

Action: Check the operating system error code and consult the Windows NT documentation.

Process Errors: OSD-04200 to OSD-04299

OSD-04200

Unable to begin another thread

Cause: The program has run out of system resources.

Action: Shut down all unnecessary processes; install more memory in the computer.

OSD-04201

No pid structure supplied to spdcr()

Cause: This is an internal error, not normally expected to occur.

Action: Contact Oracle Support Services.

OSD-04202

DosSetPriority() failure, unable to set process priority

Cause: There was an unexpected return from the Windows NT system service, DosSetPriority().

Action: Check the operating system error code and consult the Windows NT documentation.

OSD-04203

DosKillProcess() failure, unable to kill process

Cause: There was an unexpected return from the Windows NT system service, DosKillProcess().

Action: Check the operating system error code and consult the Windows NT documentation.

OSD-04204

Invalid pid

Cause: Process ID not recognized by system, process previously terminated.

Action: Verify that process ID is correct and that process is active.

OSD-04205

CreateProcess() failure, unable to spawn process

Cause: There was an unexpected return from the Windows NT system service, CreateProcess().

Action: Check the operating system error code and consult the Windows NT documentation.

OSD-04207

Invalid priority specified in CONFIG parameter ORACLE_PRIORITY

Cause: The priority specified is invalid or out of range.

Action: Specify a valid setting for ORACLE_PRIORITY.

OSD-04208

OpenProcess() failure, unable to open process handle

Cause: There was an unexpected return from the Windows NT system service, OpenProcess().

Action: Check the operating system error code and consult the Windows NT documentation.

OSD-04209

Incorrect or unknown background image name given to spdcr()

Cause: There was an unexpected background name given to spdcr().

Action: Contact Oracle Support Services.

OSD-04210

Timeout waiting for thread semaphore

Cause: An Oracle8 database thread died holding the semaphore.

Action: Restart Oracle8 database instance.

OSD-04211

Thread information not found

Cause: An Oracle8 database thread died without deleting its information.

Action: Restart Oracle8 database instance.

OSD-04212

Maximum number of Oracle threads reached

Cause: The maximum number of Oracle8 database threads for the instance is reached.

Action: Wait until some connections exit before trying again.

OSD-04213

Oracle thread unable to DuplicateHandle()

Cause: This is an internal error, not normally expected to occur.

Action: Contact Oracle Support Services.

OSD-04214

Oracle thread unable to CreateEvent()

Cause: This is an internal error, not normally expected to occur.

Action: Contact Oracle Support Services.

OSD-04215

Bad function code supplied to ssthreadop

Cause: This is an internal error, not normally expected to occur.

Action: Contact Oracle Support Services.

OSD-04216

Unable to find file handle for that thread

Cause: This is an internal error, not normally expected to occur.

Action: Contact Oracle Support Services.

OSD-04217

Unable to retrieve system username for current user

Cause: This is an internal error, not normally expected to occur.

Action: Contact Oracle Support Services.

OSD-04218

Cannot post thread

Cause: This is an internal error, not normally expected to occur.

Action: Contact Oracle Support Services.

OSD-04219

Bad thread list semaphore

Cause: This is an internal error, not normally expected to occur.

Action: Contact Oracle Support Services.

ORADEBUG Errors: OSD-04221 to OSD-04225

OSD-04221

Target thread is currently busy

Cause: The target thread is processing an oradebug command.

Action: Wait and re-issue command.

OSD-04222

Unable to get the threads context

Cause: Check OS error code.

Action: Remedy OS error.

OSD-04223

Unable to set the threads context

Cause: Check OS error code.

Action: Remedy OS error.

OSD-04224

Unable to suspend the target thread

Cause: Check OS error code.

Action: Remedy OS error.

OSD-04225

Unable to resume the target thread

Cause: Check OS error code.

Action: Remedy OS error.

Loader Errors: OSD-04300 to OSD-04399

OSD-04300

Unable to read complete record from data file

Cause: The data file ended in the middle of a record. This error occurs when loading files with a fixed record length.

Action: Verify that the data file is of the correct length and contains complete records.

OSD-04301

Record size too large

Cause: The specified record size is too large to load.

Action: Reduce record size and reload the data.

OSD-04302

Invalid record type and/or load options

Cause: The control file's Windows NT file processing options string contains an invalid option or keyword.

Action: Set the Windows NT file processing options string to an acceptable value.

Semaphore Errors: OSD-04400 to OSD-04499

OSD-04400

Unable to acquire internal semaphore for process

Cause: Oracle8 database has exceeded the maximum number of connections.

Action: Delete any unused connections and try again.

OSD-04401

WaitForSingleObject() failure, unable to obtain semaphorex

Cause: There was an unexpected return from the Windows NT system service, WaitForSingleObject().

Action: Check the operating system error code and consult the Windows NT documentation.

Miscellaneous Errors: OSD-04500 to OSD-04599

OSD-04500

Illegal option specified

Cause: This is an internal error, not normally expected to occur.

Action: Contact Oracle Support Services.

OSD-04501

Internal buffer overflow

Cause: This is an internal error, not normally expected to occur.

Action: Contact Oracle Support Services.

OSD-04502

Translations nested too deep

Cause: The program encountered too many intermediate translations while attempting to translate a configuration variable.

Action: Simplify the values of configuration parameters to include fewer intermediate translations.

OSD-04503

Text contains no translatable elementsx

Cause: The program cannot recognize variables in the text to be translated.

Action: Check and, if necessary, correct the text to be translated.

OSD-04505

Stdin not responding

Cause: The system is unable to receive input from the standard input stream.

Action: Verify that the process has access to an input device.

OSD-04506

Unable to spawn process via system()

Cause: The system is out of memory or the executable is invalid.

Action: Shut down unnecessary processes; install more memory in the computer. Verify the name of the executable.

OSD-04507

Password for 'internal' is incorrect

Cause: An attempt was made to connect as 'internal' with an invalid password.

Action: Verify that the password is correct and try again.

OSD-04508

No password given

Cause: An attempt was made to connect as 'internal' without a password.

Action: Enter a valid password when connecting as internal.

OSD-04509

No password found

Cause: Oracle was unable to locate and retrieve the password for 'internal'.

Action: Verify that Oracle is installed and configured correctly.

OSD-04510

Operating system roles are not supported

Cause: An attempt was made to use an operating system role.

Action: Only use roles that were created 'IDENTIFIED BY *PASSWORD*' as opposed to 'IDENTIFIED EXTERNALLY'.

OSD-04511

Unable to get date and time from the operating system

Cause: There was an unexpected return from GetLocalTime() call.

Action: Verify that the system time is correct on the computer.

OSD-04512

Unable to translate the 'USERNAME' configuration variable on server

Cause: The 'USERNAME' configuration parameter variable on the host is not properly set.

Action: Verify the 'USERNAME' variable is set.

OSD-04513

'REMOTE_OS_AUTHENT' variable not set to TRUE'

Cause: For remote operating system log on to function, the 'REMOTE_OS_ AUTHENT' parameter must be set to TRUE.

Action: Shut down and start up the instance with 'REMOTE_OS_AUTHENT = TRUE' in the initialization parameter file.

OSD-04514

The Windows NT Group name is too long for internal buffer

Cause: The Windows NT Group name is too long.

Action: Use a shorter Windows NT group name.

E

National Language Support

This appendix describes National Language Support (NLS).

Specific topics discussed are:

- NLS_LANG Parameters and Components
- Default Values for NLS_LANG
- NLS_LANG Settings in MS-DOS Mode and Batch Mode
- Installing Additional Languages

NLS_LANG Parameters and Components

Oracle8 Enterprise Edition provides NLS that enables users to interact with the database in their selected language. When you install Oracle8 Enterprise Edition, you select a language for database messages. Oracle Installer supplies a value for the NLS_LANG parameter based on the language selected.

The NLS_LANG parameter uses the following format:

```
NLS_LANG = LANGUAGE_TERRITORY.CHARACTER_SET
```

where:

LANGUAGE	Specifies the language and conventions for displaying messages, day name, and month name.
TERRITORY	Specifies the territory and conventions for calculating week and day numbers.
CHARACTER_SET	Controls the character set used for displaying messages.

The default language at installation is either the operating system language or the NLS_LANG setting of the currently selected Oracle home.

The NLS_LANG parameter is stored in the registry under the HKEY_LOCAL_MACHINE\SOFTWARE\ORACLE\NLS_LANG subkey for the first Oracle home on your computer. For subsequent installations to different Oracle homes on the same computer, the path is HKEY_LOCAL_MACHINE\SOFTWARE\ORACLE\HOME*ID*\NLS_LANG, where *ID* is the unique number identifying the Oracle home. See Appendix C, "Configuration Parameters and the Registry" for more information on the subkey locations for multiple Oracle homes.

> **Additional Information:** See *Oracle8 Reference* for information on the NLS_LANG parameter and NLS initialization parameters.

Default Values for NLS_LANG

The following table lists the default NLS_LANG values if you select any of these languages during installation of Oracle8 Enterprise Edition.

If You Select...	Then the NLS_LANG Value is...
Arabic	ARABIC_UNITED ARAB EMIRATES.AR8MSWIN1256
Brazilian Portuguese	BRAZILIAN PORTUGUESE_BRAZIL.WE8ISO8859P1
Catalan	CATALAN_CATALONIA.WE8ISO8859P1
Croatian	CROATIAN_CROATIA.EE8MSWIN1250
Czech	CZECH_CZECH REPUBLIC.EE8MSWIN1250
Danish	DANISH_DENMARK.WE8ISO8859P1
Dutch	DUTCH_THE NETHERLANDS.WE8ISO8859P1
English	AMERICAN_AMERICA.WE8ISO8859P1
Finnish	FINNISH_FINLAND.WE8ISO8859P1
French	FRENCH_FRANCE.WE8ISO8859P1
German	GERMAN_GERMANY.WE8ISO8859P1
Greek	GREEK_GREECE.EL8MSWIN1253
Hebrew	HEBREW_ISRAEL.IW8MSWIN1255
Hungarian	HUNGARIAN_HUNGARY.EE8MSWIN1250
Italian	ITALIAN_ITALY.WE8ISO8859P1
Japanese	JAPANESE_JAPAN.JA16SJIS
Korean	KOREAN_KOREA.KO16KSC5601
Latin American Spanish	LATIN AMERICAN SPANISH_AMERICA.WE8ISO8859P1
Norwegian	NORWEGIAN_NORWAY.WE8ISO8859P1
Polish	POLISH_POLAND.EE8MSWIN1250
Portuguese	PORTUGUESE_PORTUGAL.WE8ISO8859P1
Romanian	ROMANIAN_ROMANIA.EE8MSWIN1250
Russian	RUSSIAN_CIS.CL8MSWIN1251
Simplified Chinese	SIMPLIFIED CHINESE_CHINA.ZHS16GBK

If You Select...	Then the NLS_LANG Value is...
Slovak	SLOVAK_SLOVAKIA.EE8MSWIN1250
Slovenian	SLOVENIAN_SLOVENIA.EE8MSWIN1250
Spanish	SPANISH_SPAIN.WE8ISO8859P1
Swedish	SWEDISH_SWEDEN.WE8ISO8859P1
Traditional Chinese	TRADITIONAL CHINESE_TAIWAN.ZHT16BIG5
Turkish	TURKISH_TURKEY.WE8ISO8859P9

NLS_LANG Settings in MS-DOS Mode and Batch Mode

When using Oracle utilities such as Server Manager, SQL Loader, SQL*Plus, Import, and Export in MS-DOS mode, the character set field of the NLS_LANG parameter for the session must first be set to the correct value. This is required because MS-DOS mode uses, with a few exceptions, a different code page (OEM Code-page) from Windows (ANSI Code-page), and the default Oracle Home NLS_LANG parameter in the registry is always set to the appropriate Windows code-page. If the NLS_LANG parameter for the MS-DOS mode session is not set appropriately, error messages and data can be corrupted due to incorrect character set conversion. The following table lists the Oracle character sets that correspond to the OEM Primary Code-page in MS-DOS mode for each of the supported languages.

Language	Character Set
Arabic	AR8ASMO8X
Brazilian Portuguese	WE8PC850
Catalan	WE8PC850
Czech	EE8PC852
Danish	WE8PC850
Dutch	WE8PC850
English	US8PC437
Finnish	WE8PC850
French	WE8PC850
German	WE8PC850
Greek	EL8PC737

Language	Character Set
Hungarian	EE8PC852
Italian	WE8PC850
Japanese	JA16SJIS
Korean	KO16KSC5601
Latin American Spanish	WE8PC850
Norwegian	WE8PC850
Polish	EE8PC852
Portuguese	WE8PC850
Romanian	EE8PC852
Russian	RU8PC866
Simplified Chinese	ZHS16GBK
Slovak	EE8PC852
Slovenian	EE8PC852
Spanish	WE8PC850
Swedish	WE8PC850
Traditional Chinese	ZHT16BIG5
Turkish	TR8PC857

For Japanese, Korean, Simplified Chinese, and Traditional Chinese, the OEM Code-page is identical to the ANSI Code-page. In this case, there is no need to set the NLS_LANG in MS-DOS mode.

Similarly, in Batch mode, set the correct character set value of the NLS_LANG by inserting a SET NLS_LANG command at the start of the batch procedure, according to the character set of the files to be processed in the procedure.

Installing Additional Languages

To install an additional language:

1. Run Oracle Installer.
2. Enter the language you want to install in the *Oracle Installation Settings* dialog box.
3. Install the Oracle products again.

This method keeps any language support that was previously installed and adds the new language.

F

Troubleshooting

This appendix describes how to troubleshoot problems with Oracle8 Enterprise Edition.

Specific topics discussed are:

- Database Connection Issues
- Oracle8 Performance Monitor Issues
- Migration Issues
- Operating System Permission Issues
- DOS Compatibility Mode on Windows 95 or Windows 98 Computers
- Replication Manager and Snapshot Replication Sites
- Oracle Web Publishing Assistant
- Oracle Assistants
- Oracle8 ConText Cartridge Workbench

Database Connection Issues

This table lists and provides answers to common Oracle8 database connection issues:

If You Receive This Error...	Ensure Your...
`TNS-12203 TNS: unable to connect to destination`	OracleService*SID* and OracleTNSListener80[1] services are started. See "Managing Oracle Services" on page 10-2 and Chapter 10 "Troubleshooting Net8" in *Net8 Administrator's Guide*.
`ORA-12547 TNS: lost contact`	OracleService*SID*, OracleStart*SID*, and OracleTNSListener80[1] services are started. You receive this error if you attempt to use any of the Oracle8 Utilities, such as Server Manager. See "Managing Oracle Services" on page 10-2 for instructions. **Note:** This error is analogous to the following Oracle7 error: `ORA-09352: Windows 32-bit Two-Task driver unable to spawn new ORACLE task`

`ORA-28575: unable to open RPC connection to external procedure agent`
`ORA-06512: at "APPLICATIONS.OSEXEC", line 0`
`ORA-06512: at "APPLICATIONS.TEST", line 4`
`ORA-06512: at line 2`
	TNSNAMES.ORA and LISTENER.ORA files have been correctly configured to use external procedures. See "Configuring External Procedure Calls" in Chapter 8 of *Net8 Getting Started for Windows NT and Windows 95/98*.

[1] Ensure that Oracle*HOME_NAME*TNSListener is started if you are using an Oracle8 database that has a home name.

Oracle8 Performance Monitor Issues

See "Oracle8 Performance Monitor Troubleshooting Information" on page 12-9 for information on Oracle8 Performance Monitor troubleshooting issues.

Migration Issues

This section includes the following topics:

- Migration Error ORA-54 with Batch Migration Scripts
- Rollback Segments Error During Migration
- System Tablespace Extend Error
- OCIW32.DLL Error Message
- Oracle Data Migration Assistant

Migration Error ORA-54 with Batch Migration Scripts

If you are migrating from Oracle7 to Oracle8 Enterprise Edition with your own customized batch migration script, and the system seems to be taking unusually long to complete the migration, you may be experiencing an ORA-54 error. Follow these steps to complete migration:

1. Start Server Manager at the MS-DOS command prompt:

   ```
   C:\> SVRMGR30
   ```

2. Connect to the Oracle8 database using your user name:

   ```
   SVRMGR> CONNECT INTERNAL/PASSWORD
   ```

3. Start up the database by entering one of the following commands:

Command	Description
SVRMGR> STARTUP	Uses the default INIT*SID*.ORA file located in your *ORACLE_HOME*\DATABASE directory to start the Oracle8 database.
SVRMGR> STARTUP PFILE=*PATH**FILENAME*	Uses an initialization file other than the default to start your database. *PATH**FILENAME* specifies an initialization parameter file other than the default, INIT*SID*.ORA. The following example starts the database using a file named INIT2.ORA.
	SVRMGR> STARTUP PFILE=%ORACLE_ HOME%\RDBMS80\INIT2.ORA

4. Run the following scripts in order using Server Manager:
   - CAT8000.SQL
   - CAT8004.SQL
   - CAT8005.SQL
5. Exit Server Manager:

```
SVRMGR> EXIT
```

Rollback Segments Error During Migration

You must add additional space in order to extend rollback segments if you receive the following errors when using either Oracle Data Migration Assistant or the Migration Utility (MIG80) to migrate your database to release 8.0.5:

- ORA-00604: error occurred at recursive SQL level 1
- ORA-01562: failed to extend rollback segment number 5
- ORA-01650: unable to extend rollback segment RB4 by 50 in tablespace ROLLBACK_DATA

To add space to the rollback segments:

1. Restore the pre-migrated database from backup media.
2. Enter the following command at the Server Manager prompt to add space to the rollback segments:

   ```
   SVRMGR> ALTER TABLESPACE ROLLBACK_DATA ADD DATAFILE 'ORACLE_
   HOME\RDBMS71\MIG.ORA' SIZE 20 M;
   ```

   The data file size you specify depends upon the size of the database you want to migrate. See *Oracle8 Administrator's Guide*, *Oracle8 SQL Reference*, and *Oracle8 Error Messages* for more information.
3. Restart the migration process by using Oracle Data Migration Assistant or the Migration Utility (MIG80).

System Tablespace Extend Error

You must add additional space to the SYSTEM tablespace if you receive the following errors:

- ORA-00604: error occurred at recursive SQL level 1
- ORA-01653 (01654) unable to extend table SYS by 20 in tablespace SYSTEM

To add space to the SYSTEM tablespace:

1. Restore the pre-migrated database from backup media.
2. Enter the following command at the Server Manager prompt to add a data file to the SYSTEM tablespace:

   ```
   SVRMGR> ALTER TABLESPACE SYSTEM ADD DATAFILE 'ORACLE_
   HOME\DATABASE\SYSSMIG.ORA' SIZE 20 M;
   ```

3. Restart the migration process by using Oracle Data Migration Assistant or the Migration Utility (MIG80).

OCIW32.DLL Error Message

Re-install Required Support Files release 8.0.5 if:

- programs indicate that they cannot load OCIW32.DLL
- applications have difficulties connecting to a database even though Net8 seems to be configured properly

These problems occur if after installing release 8.0 products, you subsequently install a product that installs Required Support Files release 7.3.2 or release 7.2. Oracle Web Server release 2.1 is an example of such a product.

To re-install Required Support Files release 8.0.5:

1. Run Oracle Installer from the CD-ROM.
2. Answer questions about language and Oracle home directory location.
3. Select the Custom Installation option.

   The *Software Asset Manager* window appears.
4. Select Required Support Files version 8.0.5 in the left-hand window.
5. Click Install.

   A window appears showing the progress of the installation. After installation is complete, a message appears confirming the installation.
6. Click Exit to exit Oracle Installer.

Oracle Data Migration Assistant

If you migrate an Oracle7 database that has a different database character set from the NLS_LANG environment variable, the text in the log file is written in English.

When trying to start your database with Server Manager after migrating from a 7.1.3.3.6 database, ensure that you use the PFILE option to identify the correct INIT*SID*.ORA file. For example:

```
SVRMGR> STARTUP PFILE=C:\ORANT\RDBMS71\INITSID.ORA
```

where *SID* is the system identifier (SID) for the database you want to start.

Operating System Permission Issues

The permission problem (OS 5 or 3) is typically caused by inadequate configuration of the NTFS permissions. By default, the Oracle8 database service runs using the SYSTEM account instead of a named Windows NT user such as Administrator. In File Manager or Windows NT Explorer, you must grant Full Control on the *ORACLE_HOME* directory and all of its subdirectories to the SYSTEM user. The SYSTEM user has the full name *The operating system* and has an icon of a computer chip. For this and other Windows NT problems, consult your Windows NT documentation or contact your Windows NT System Administrator.

After correcting the problem, you must delete any files created as a result of partial completion of the CREATE DATABASE command. The files to delete are the:

- Data files: SYS1*SID*.ORA, USR1*SID*.ORA, RBS1*SID*.ORA, TMP1*SID*.ORA
- Redo log files: LOG1*SID*.ORA, LOG2*SID*.ORA, LOG3*SID*.ORA, LOG4*SID*.ORA
- Control files: CTL1*SID*.ORA and CTL2*SID*.ORA

Then, run the BUILD_DB.SQL script again in Server Manager.

DOS Compatibility Mode on Windows 95 or Windows 98 Computers

If a Windows 95 or Windows 98 computer is in DOS COMPATIBILITY MODE, then it is unable to read the long file name of TRACESVR80 (and directory so named) from the CD-ROM. You can determine if a computer is running in compatible mode by right-clicking on MY COMPUTER, choosing PROPERTIES, and then selecting the PERFORMANCE tab. This will open a window that tells you which drives, if any, are running in compatible mode, or if your computer is running a complete 32-bit FILE System.

DOS compatible mode may be enabled by the operating system for several reasons:

- A boot sector virus exists on the computer
- A realmode device driver exists in the CONFIG.SYS and Windows NT has no protectmode driver that can take over for it
- Too many INT 13 hooks exist
- An old VxD exists for a controller in the SYSTEM.INI file that has no counterpart in Windows 95.

A list of all ProtectMode drivers, and some bad ones, exists on a Windows 95 computer in a file called IOS.INI. If a computer is running in compatible mode, then a log file should be created called IOS.LOG. This will list the devices that are running in compat/realmode and the reason why.

Additionally, if the Windows 95 or Windows 98 computer is on a LAN and can connect to a Windows NT computer (or a Windows 95 or Windows 98 computer whose CD-ROM drivers can deal with the long file name), place the CD-ROM in the Windows NT computer's CD-ROM drive and install the software on the Windows 95 or Windows 98 computer over the network.

Replication Manager and Snapshot Replication Sites

When using Replication Manager to configure a snapshot replication site, this error message may appear when trying to create a snapshot group:

```
ORA-23346: primary key is undefined for table or snapshot schema.table.
```

If this error does occur, remove the replication object, delete the snapshot group just created, and re-create the snapshot group. On the *Snapshot Group Wizard - Individual Snapshot Settings* dialog box, clear the check box for Minimum Communication. This error is logged as bug number 601075.

Oracle Web Publishing Assistant

Due to French government regulations on encryption, you cannot set your system default locale to French (Standard) in the Regional Settings Control Panel of Windows NT.

Oracle Assistants

This section includes known problems, restrictions, and workarounds to the Oracle Assistants:

- The Help button of some Assistants is sometimes enabled even though online help is not available.
- Oracle Net8 Assistant, Oracle Net8 Easy Config, and Oracle INTYPE File Assistant require monitors displaying at least 256 colors.
- Oracle Assistants have an online help facility that includes the feature to search for a text string in the help text. This feature is activated by the Search button. When you click the Search button, a dialog box appears. You can then enter a text string such as a word or phrase into a text box and press the Find button to search for the string in the help text.
- Currently, the Find feature cannot find a Japanese text string of more than one character. That is, if you enter one Japanese character to search, the search feature will work normally; it will find the character, provided it exists in the help text. If you enter more than one Japanese character, or one Japanese character mixed with other characters such as English characters, the search facility will fail to find the string even if it does exist in the help text. Searching for English and other European languages text strings does not have this limitation.

Oracle Database Assistant

- The Oracle Database Assistant in this release is certified against an Oracle8 database only. Version 7 databases are not supported.
- During installation, if you choose to install the starter database or use the Oracle Database Assistant, a dialog box appears asking if you want to view the documentation. If you choose Yes, a browser appears over the Assistant. To see the Assistant, dismiss the browser.
- In order to enable the Image Demo for an existing instance (in the Modify route of the assistant), the SCOTT/TIGER account must have been created in that instance and CONNECT and RESOURCE roles must have been granted; the Oracle Database Assistant assumes the account is already created.

Oracle8 ConText Cartridge Workbench

Registering CTXV236.OCX on Windows 95 Clients

When executing Start > Programs > ConText Cartridge Workbench > Viewer Example on a Windows 95 client, you can receive an error message stating that registration of CTXV236.OCX failed. If you receive this error message:

1. Register CTXV236.OCX at the MS-DOS command prompt:

   ```
   C:\> REGSVR32 CTXV236.OCX
   ```

2. Shut down and restart your Windows 95 client.

Glossary

alert file

A file that contains important information about error messages and exceptions that occur during database operations.

authenticate

To verify the identity of a user, device, or other entity in a computer system, often as a prerequisite for allowing access to resources in a system.

authorization

Permission given to a user, program, or process to access an Oracle database.

backup

A representative copy of data. This copy includes important parts of your database such as the control file, redo log files, and data files.

A backup is a safeguard against unexpected data loss; if you lose your original data, you can use the backup to make the data available again. A backup is also a safeguard against an application error; if an application makes incorrect changes, you can restore the backup.

connect string

See "net service name".

control file

A file that records the physical structure of a database and contains the database name, the names and locations of associated databases and online redo log files, the timestamp of the database creation, the current log sequence number, and checkpoint information.

Common Object Request Broker Architecture (CORBA)

A standard that enables distributed objects to communicate with each other, independent of programming language, operating system, and location.

data dictionary

A set of read-only tables that provide information about a database.

database alias

See "net service name".

downgrade

To transform an installed version of an Oracle database from a later release back into an earlier release.

Dynamic Link Library (DLL)

An executable file that a Windows application can load when needed.

external procedure

A function written in a third-generation language (3GL), such as C, and callable from within PL/SQL or SQL as if it were a PL/SQL function or procedure.

HOME_NAME

Represents the Oracle home name if you use multiple Oracle homes. *This convention is not applicable for a single Oracle home.*

HOME*ID*

Represents a unique registry subkey for each Oracle home directory in which you install products. A new HOME*ID* is created and incremented each time you install products to a different Oracle home directory on one computer. Each HOME*ID* contains its own configuration parameter settings for installed Oracle products.

initialization parameter file

An ASCII text file that contains information needed to initialize a database and instance.

instance

Every running Oracle database is associated with an Oracle instance. When a database is started on a database server (regardless of the type of computer), Oracle allocates a memory area called the System Global Area (SGA) and starts one or

more Oracle processes. This combination of the SGA and the Oracle processes is called an instance. The memory and processes of an instance manage the associated database's data efficiently and serve the one or more users of the database.

instantiate, instantiation

Producing a more defined version of some object by replacing variables with values (or other variables).

In object-oriented programming, producing a particular object from its class template. This involves allocation of a structure with the types specified by the template, and initialization of instance variables with either default values or those provided by the constructor function of the class.

Internet Inter-ORB Protocol (IIOP)

A standard that enables Object Request Brokers (ORBs) from different vendors to communicate with each other using TCP/IP.

listener

The server process that listens for and accepts incoming connection requests from client applications. Oracle listener processes start up Oracle database processes to handle subsequent communications with the client.

LISTENER.ORA

A configuration file that describes one or more Transparent Network Substrate (TNS) listeners on a server.

migrate

To transform an installed version of an Oracle database into a later version. The term is also used in this guide to refer to the transformation of a Microsoft Access database to an Oracle database. Compare with "upgrade".

mount

To associate an instance with a database that has been started.

multiple Oracle homes

The capability of having more than one Oracle home on a computer.

National Language Support (NLS)

The Oracle architecture that ensures that database utilities, error messages, sort order, date, time, monetary, numeric, and calendar conventions automatically adapt to the native language and locale.

net service name

The name used by clients to identify a Net8 server. A net service name is mapped to a port number and protocol. Also known as a connect string, database alias, or service name.

Net8

The Oracle network interface that enables Oracle tools running on network workstations and servers to access, modify, share, and store data on other servers.

network listener

A listener on a server that listens for connection requests for one or more databases on one or more protocols. See "listener".

network service

In an Oracle application network, a service performs tasks for its service consumers. For example, a Names Server provides name resolution services for clients.

NLS

See "National Language Support (NLS)".

Object Request Broker (ORB)

A software component that serves as the middleware between distributed objects. The distributed objects must comply with the Common Object Request Broker Architecture (CORBA) standard.

Oracle Call Interface (OCI)

An application programming interface that enables you to manipulate data and schemas in an Oracle database. You compile and link an Oracle Call Interface program in the same way that you compile and link a non-database application. There is no need for a separate preprocessing or precompilation step.

Oracle home

Corresponds to the environment in which Oracle products run. This environment includes the location of installed product files, the *PATH* variable pointing to the products' binary files, registry entries, net service names, and program groups.

Oracle Protocol Support

A product that maps the functions of a given network protocol into Oracle Transparent Network Substrate (TNS) architecture. This process translates TNS function calls into requests to the underlying network protocol. This allows TNS to act as an interface among all protocols. Net8 requires Oracle protocol support.

Oracle service

A service that is associated with an Oracle database.

ORANT

Default Oracle home directory where Oracle Installer installs the Oracle8 database on Windows NT.

ORAWIN95

Default Oracle home directory where Oracle Installer installs Oracle products on Windows 95.

ORAWIN98

Default Oracle home directory where Oracle Installer installs Oracle products on Windows 98.

PL/SQL

Oracle Corporation's procedural language extension to SQL.

PL/SQL enables you to mix SQL statements with procedural constructs. You can define and execute PL/SQL program units such as procedures, functions, and packages.

precompiler

A programming tool that enables you to embed SQL statements in a high-level source program.

privilege

A right to execute a particular type of SQL statement or to access another user's object.

process

A "thread of control" or a mechanism in an operating system that can execute a series of steps. (Some operating systems use the terms job or task.) A process normally has its own private memory area in which it runs.

quota

A limit on a resource, such as a limit on the amount of database storage used by a database user. A database administrator can set tablespace quotas for each Oracle user name.

raw partition

A portion of a physical disk that is accessed at the lowest possible level.

recovery

To *restore* a physical backup is to reconstruct it and make it available to the Oracle server. To *recover* a restored backup is to update it using redo records (that is, records of changes made to the database after the backup was taken). Recovering a backup involves two distinct operations: rolling forward the backup to a more current time by applying redo data, and rolling back all changes made in uncommitted transactions to their original state.

redo log file

A file that contains a record of all changes made to data in the database buffer cache. If an instance failure occurs, the redo log files are used to recover the modified data that was in memory.

redo log buffer

A circular buffer in the System Global Area (SGA) that contains information about changes made to the database.

registry

A Windows repository that stores configuration information for a computer.

remote computer

A computer on a network other than the local computer.

remote database

A database on a computer other than the local database. The computer is usually on the same network, but on a different node.

replication

The process of copying and maintaining database objects in multiple databases that make up a distributed database system.

role

A named group of related privileges. You can grant a role to users or other roles.

schema

A named collection of objects, such as tables, views, clusters, procedures, and packages, associated with a particular user.

service

An executable process installed in the Windows NT registry and administered by Windows NT. Once a service is created and started, it can run even when no user is logged on to the computer.

service name

See "net service name".

SID

See "system identifier (SID)".

snapshot

(1) Information stored in rollback segments to provide transaction recovery and read consistency. Rollback segment information can be used to recreate a snapshot of a row before an update.

(2) A read-only copy of a master table located on a remote node. Snapshots can be queried, but not updated; only the master table can be updated. Snapshots are periodically refreshed to reflect changes made to the master table.

starter database

A preconfigured, ready-to-use database that requires minimal user input to create.

synonym

An alias for a table, view, sequence, or program unit. A synonym is not actually an object itself; rather, it is a direct reference to its base object.

SYSDBA

A special database administration role that contains all system privileges with the ADMIN OPTION, and the SYSOPER system privilege. SYSDBA also permits CREATE DATABASE actions and time-based recovery.

SYSOPER

A special database administration role that permits a database administrator to perform STARTUP, SHUTDOWN, ALTER DATABASE OPEN/MOUNT, ALTER DATABASE BACKUP, ARCHIVE LOG, and RECOVER, and includes the RESTRICTED SESSION privilege.

System Global Area (SGA)

A group of shared memory structures that contain data and control information for an Oracle instance.

system identifier (SID)

A unique name for an Oracle instance. To switch between Oracle databases, users must specify the desired SID. The SID is included in the `CONNECT DATA` parts of the connect descriptors in a `TNSNAMES.ORA` file, and in the definition of the network listener in a `LISTENER.ORA` file.

SYSTEM user name

One of two standard DBA user names automatically created with each database. (The other user name is SYS.) SYSTEM is created with an initial password of MANAGER. The SYSTEM user name is the preferred user name for DBAs to use for database maintenance.

tablespace

A database is divided into one or more logical storage units called tablespaces. Tablespaces are divided into logical units of storage called segments, which are further divided into extents.

thread

A path of execution within a process.

TNSNAMES.ORA

A file that contains connect descriptors mapped to net service names. The file may be maintained centrally or locally, for use by all or individual clients.

trace file

Each server and background process can write to an associated trace file. When a process detects an internal error, it dumps information about the error to its trace file. Some of the information written to a trace file is intended for the database administrator, while other information is intended for Oracle Support Services. Trace file information is also used to tune applications and instances.

upgrade

To transform an installed version of an Oracle database release into another release of the same version. Compare with "migrate".

user name

A name that can connect to and access objects in a database.

view

A tailored presentation of the data in one or more tables (or other views).

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