

Oracle7 Server Getting Started *for Windows NT*

Release 7.3

Part No. A42396-1

ORACLE[®]

The Relational Database Management System

Oracle7 Server Getting Started for Windows NT , Release 7.3

Part No. A42396-1

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Preface

This User's Guide is your primary source of introductory, installation, and configuration information for Oracle7 Server for Windows NT. Included in this Guide:

- introduction to Oracle7 Server for Windows NT
- installation instructions
- Oracle WebServer 1.0
- Oracle Spatial Data Option
- using Oracle7 Server for Windows NT
- getting the most out of Integration with Windows NT
- database maintenance
- documentation roadmap
- directory structures
- initialization parameter files
- configuration file parameters and the Windows NT Registry
- messages and codes
- national language support

Audience

This Guide is necessary for anyone installing, configuring, or administering Oracle7 Server for Windows NT.

Prerequisites

This Guide assumes that you:

- are familiar with the concepts presented in the generic documentation for Oracle7 Server for Windows NT. (See *Documentation Roadmap* for information about documentation.)
- have installed and tested Windows NT and configured it for your PC and network hardware
- are familiar with Windows NT and your network transport protocol



Oracle7
Concepts

Additional Information: If you are not familiar with Oracle products and terminology, see *Oracle7 Server Concepts*.

How this Guide Is Organized

Chapter 1 Introducing Oracle7 Server for Windows NT

Describes the basic features of Oracle7 Server for Windows NT. It also describes new features of this release, and the contents of your Oracle7 Server for Windows NT package.

Chapter 2 Installing Oracle7 Server for Windows NT

Instructions for installing and configuring Oracle7 Server for Windows NT, and for migrating from earlier releases.

Chapter 3 Using Oracle7 Server for Windows NT

Instructions for performing the tasks necessary to set up and run the Oracle7 Server for Windows NT.

Additional Information: For information on using the graphical database tools, see the integrated online Help included with the Database Tools. It contains important information about the database tools you can install.

Chapter 4 Getting the Most out of Integration with Windows NT

Instructions for using the Windows NT operating system integration features.

Chapter 5 Database Maintenance

Instructions for performing ongoing database maintenance tasks using graphical and command-line procedures.

Appendix A Documentation Roadmap

Details the documentation included in your package, and how you can use it most effectively.

Appendix B Directory Structures

Directory structures for Windows NT and Windows/Windows95. Additionally, information about the types of possible Oracle WebServer installations is included.

Appendix C Initialization Parameter Files

Describes Oracle7 Server for Windows NT initialization parameters, how to edit them, and Windows NT-specific defaults (and ranges) for them.

Appendix D Configuration Parameters and the NT Registry

Describes the use of the Windows NT Registry for various Oracle products. Additionally, it lists the defaults and ranges for configuration parameters.

Appendix E Messages and Codes

Lists the error messages and codes specific to installing and using Oracle7 Server for Windows NT and supported network protocols.

Appendix F National Language Support

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

Using the Documentation

This Guide, contains installation and operating information specific to the Oracle7 Server for Windows NT environment. It includes frequent references to the location—in other Oracle7 Server documents—of additional sources of information on topics discussed in this Guide.

For New Users

Oracle7 Server Concepts describes the essential concepts behind an Oracle database server. Users new to Oracle products should refer to this document before installing Oracle7 Server for Windows NT.

Installation

See *Installing Oracle7 Server for Windows NT* of this Guide and the accompanying *Release Notes* to answer questions regarding Oracle7 Server for Windows NT installation.

Database Administration

This Guide contains information about database administration on Windows NT systems. *Oracle7 Server Administrator's Guide* contains information on Oracle7 Server database administration **not** specific to Windows NT.

Server Utilities

Oracle7 Server Utilities contains detailed generic information on the utilities included with your Oracle7 Server for Windows NT package and their use.

See the chapters on setting up and operating Oracle7 Server for Windows NT of this Guide for Windows NT-specific (32-bit) information on these utilities.

Database Tools

Detailed information on the GUI-based database tools is included as online Help. These tools can be used from a Windows platform, or through Windows on a Win32 (WOW) subsystem.

Troubleshooting

Oracle7 Server Messages contains a complete listing of Oracle7 Server error messages and codes. For Oracle7 Server messages and codes specific to Windows NT operation, see *Messages and Codes* in this Guide.

Release Notes

Release Notes contain information *not* available at the time the documentation was created. See *Release Notes* for information about specific features and procedures.

Conventions Used in this Guide

Note these typographical conventions when reading this Guide:

<code>Monospace text</code>	Type text exactly as shown. Text typed for a command statement is not case sensitive unless noted otherwise.
[]	Brackets enclose optional items or indicate a function key. Do not enter the brackets.
	A vertical bar represents an “or” option between several options. You must enter only one of the options. Do not enter the vertical bar.
Punctuation	Punctuation other than brackets and vertical bars must be entered in commands exactly as shown.
UPPERCASE	Uppercase characters within the text represent command names, SQL reserved words and keywords, and filenames.
<code>lowercase mono</code>	Lowercase characters within command lines represent variables. You should substitute an appropriate value for the variable. In examples, lowercase characters represent sample values for the variables.
<i>lowercase italics</i>	Lowercase italics in the text represent variables. You should substitute an appropriate value for the variable.
C:\>	C:\> represents the Windows NT command prompt of the current hard disk drive. Your prompt may differ and may, at times, reflect the subdirectory in which you are working.
\DIRECTORY	A backslash before a directory name indicates that the directory is a subdirectory.
SID	SID (system identifier) represents the unique name of an Oracle instance. The SID you assign to a particular instance becomes the value of the ORACLE_SID initialization parameter for the associated database.

Special icons are provided to alert you to particular information in this Guide:



Attention: Calls your attention to important information and suggestions.



Additional Information: Highlights text referring you to other parts of the other Oracle documentation.



Warning: Highlights text that warns you of actions that could be particularly damaging or fatal to your operations.

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Introducing Oracle7 Server for Windows NT

This chapter introduces you to Oracle7 Server for Windows NT. It includes:

- special terms
- Oracle7 Server for Windows NT overview
- Oracle7 Server for Windows NT integration with Windows NT
- Oracle7 Server for Windows NT product contents

Special Terms

Note the following special terms when using this Guide:

Client	A system that runs an Oracle-supported application and connects to the shared database(s) on an Oracle7 Server.
Instance	The combination of processes that begins each time a database is started.
Listener	An executable program that enables an Oracle7 Server to accept connections from client workstations.
Oracle7 Server	A host system that runs a multiuser Oracle7 Relational Database Management System (RDBMS) and maintains at least one database that can be shared by remote clients. The term <i>Oracle7 Server</i> refers to the RDBMS that is using SQL*Net and is capable of serving Oracle clients.
Oracle7 database	The software used to create and maintain the database system, as well as the actual data stored in the database.
Oracle7 RDBMS	The Oracle Relational Database Management System. Oracle7 Server for Windows NT is an Oracle RDBMS.
Oracle Protocol Adapter	The software component of the Oracle Transparent Network Substrate (TNS) architecture that translates TNS function calls into requests to the underlying network protocol.
Oracle tool	Any Oracle application tool (such as SQL*Plus), an Oracle end-user tool (such as Oracle Forms), or a third-party software program that interfaces with an Oracle7 Server.
SQL	Structured Query Language—the internationally accepted standard for defining and manipulating relational databases.
SQL*Net	The Oracle client/server communication software that offers transparent operation to Oracle tools or databases over any type of network protocol and operating system.
Oracle Database Tools	Oracle Database Tools are a suite of powerful, easy-to-use, graphical database management tools

that help you complete database tasks efficiently. Oracle Database Tools include: Database Manager, User Manager, Object Manager, Session Manager, Database Expander, Import, Export, and SQL*Loader.

Server Utilities

Oracle7 Server Utilities are included in the server software of your Oracle7 Server for Windows NT package. Oracle7 Server Utilities include: Backup Manager, Recovery Manager, Server Manager, Import, Export, and SQL*Loader (all Windows NT versions).

Additional Information: For information on using the graphical database tools, see the integrated online Help included with the Database Tools.

Oracle7 Server for Windows NT Overview

Oracle7 Server for Windows NT is a full-function Release 7.3 Oracle Relational Database Management System (RDBMS).

Oracle7 Server for Windows NT runs on a personal computer (PC) that is part of a local area network (LAN). The server machine must be running Windows NT Version 3.51. This customized Windows NT version of the Oracle RDBMS operates in essentially the same manner as the Oracle RDBMS on other platforms.

Note: This Guide describes only the features of the Oracle7 Server for Windows NT software that apply to the Windows NT operating system. For information about the Oracle7 RDBMS in general, see *Oracle7 Server Concepts*, and other documentation included in your package.

Feature Highlights

This release of Oracle7 Server for Windows NT includes the following features:

- **Distributed Option**—separately licensable feature. Distributed Option is a system for distributing data in your database(s) across multiple machines. Additionally, the processing of your data can be distributed among multiple machines.



Distributed
Option

Additional Information: For more information about the Distributed Option, see *Oracle7 Server Distributed Systems*,

Volume I: Distributed Data, Oracle7 Server Concepts, Oracle7 Server Administrator's Guide, and other appropriate documentation (included online with your product).

- **Spatial Data Option**—separately licensable feature. The Spatial Data Option enables you to store spatial data within the relational database model.



SDO

Additional Information: For more information on the Spatial Data Option, see *Spatial Data Option Application Developer's Guide*, *Spatial Data Option Reference and Administrator's Guide*, and *Spatial Data Option Overview*.

- **Parallel Query Option**—separately licensable feature. With the parallel query option, multiple processes can work together simultaneously to process a single SQL statement. By dividing the work necessary to process a statement among multiple server processes, the Oracle Server can process the statement more quickly than if only a single server process processed it.



Oracle7 Server
Tuning

Additional Information: For more information on the Parallel Query Option, see *Oracle7 Server Tuning*.

- **Enterprise Manager**—system management tools that combine a single point-of-control management console, intelligent agents, and common services in an integrated, comprehensive systems management platform.



Oracle Enterprise
Manager

Additional Information: For more information on Enterprise Manager, see *Oracle Enterprise Manager Concepts Guide*, and other Enterprise Manager documents included in your package.

- **WebServer 1.0**—bundled as part of Oracle7 Server for Windows NT. Oracle WebServer 1.0 enables you to bring data stored on your Oracle7 Server to the World Wide Web.



WebServer
User's Guide

Additional Information: For more information on the WebServer 1.0, see *Oracle WebServer User's Guide*.

- **Advanced Replication Option**—separately licensable feature. Advanced Replication Option enables users to maintain and manipulate multiple copies of data at different sites in a distributed environment.



Advanced
Replication

Additional Information: There are many configuration and usage possibilities with Advanced Replication. For more information about *Advanced Replication*, in this Guide, *Oracle7 Server Distributed Systems, Volume II: Replicated Data*, *Oracle7 Server Concepts*, *Oracle7 Server Administrator's Guide*, and other appropriate documentation.

- **Instance Manager (GUI version)**—a GUI version of Instance Manager is included in this release. All of the functionality of the command line version of Instance Manager has been incorporated into a powerful, easy to use GUI tool.
- **Performance Monitor**—Oracle7 Server for Windows NT uses the Windows NT Performance Monitor to monitor Oracle7 activity. Using Performance Monitor, administrators can monitor the performance of local and remote databases.
- **Event Viewer**—Oracle7 Server for Windows NT uses the Windows NT Event Viewer to log Oracle7 events. The Event Viewer notifies you of errors and alert conditions that exist on the database. This list can be viewed online, saved to a file, or printed.
- **Easy Configure Utility**—Oracle7 Server for Windows NT includes this utility for easily configuring simpler networks. You can configure your network environment by answering questions on a few dialog boxes.
- **Oracle Objects for OLE**—object linking and embedding (OLE) application programming interface for use with Microsoft Visual Basic and VBA-enabled applications.
- **Oracle Database Tools**—Oracle has enhanced its database tools to help you administer your database more easily and efficiently than ever. Extensive integrated online Help is included with the Database Tools.
- **Security Features**—improved security features for remote database access. See *Security Features* in this chapter for more information on database security.
- **Multiple Version Installation**—Oracle7 Server for Windows NT can run along with earlier releases of Oracle7 Server for Windows NT. See *Installation* in this Guide for more information.
- **Oracle Names Support**—a tool that allows you to save (in a centralized database) full network locations in the form of easy-to-remember aliases.



Migration

Additional Information: For detailed information on the new features of Oracle7 Server *not* specific to Windows NT, see *Oracle7 Server Migration*.

Features Specific to Windows NT

This Guide describes a number of features unique to Oracle7 Server for Windows NT. This chapter describes those features briefly; more detailed discussions appear later in this Guide.

Windows NT Services

A service is an executable process installed in the Windows NT Registry database and administered by Windows NT. The Windows NT Registry automatically tracks and records security information for each service you create. Once you create and start a service on your Oracle7 Server for Windows NT machine, the service can run even while no user is logged on.

Windows NT Services and Workstation Security

Since Oracle7 Server for Windows NT runs each instance as a service, the instance can also run with no user logged on to the server machine. This feature allows you to maintain workstation security while running Oracle7 Server for Windows NT. A database administrator can start a particular instance of the database and log off the machine.

Windows NT Services Naming Conventions

For each instance created, Oracle defines an *Oracle service*—the Windows NT service related to the database executable. This Oracle database service is named *OracleServicesid*, where *sid* is the instance name. (The instance name is the same as the value of the ORACLE_SID configuration parameter, and can be any alphanumeric combination of 1 to 4 characters.)

In addition, for each network listener defined during network installation, Oracle creates a SQL*Net listener service—another Windows NT service related to the network listener. This service is named *OracleTNSListenerid*, where *id* is the name or abbreviated ID associated with the network listener.



Additional Information: Use the SQL*Net Easy Configuration Utility to configure simpler networks. Use Network Manager to configure more complex networks. *Oracle Network Manager for Windows Installation and User's Guide* includes information on configuring more complex networks.

Security Features

Oracle7 Server for Windows NT provides extra security features. Earlier releases allowed remote database access with the Server Manager

CONNECT INTERNAL command. With Release 7.3, the following two steps ensure database security:

- verify that the database connection is secure
- assign SYSOPER or SYSDBA privileges to users to whom you want to grant privileged access to the database

This procedure enables administrators to track who logs on as SYSOPER and SYSDBA. Rather than logging on as INTERNAL, users log on with their user ID plus the SYSOPER or SYSDBA privileges.



Server
Reference

Additional Information: See *Oracle7 Server Reference* for more information about database security.

Oracle7 Server for Windows NT Memory Structures

When you start a database, Oracle7 Server for Windows NT automatically starts a single instance by creating background threads and memory structures unique to the Windows NT environment.

Each instance of the Oracle7 Server for Windows NT has its own (separate) Oracle system process and Oracle database service. When you make a local or remote connection to an instance, Oracle starts one new thread in the process dedicated to the new connection.

Oracle7 Server for Windows NT Integration with Windows NT

The tight integration of Oracle7 Server for Windows NT with the Windows NT operating system gives you unprecedented opportunity to monitor and manipulate your server.

Information on Oracle7 Server for Windows NT and Performance Monitor, Event Viewer, OS Authentication, and Groups and Roles is presented later in this guide.

Oracle7 Server for Windows NT Product Contents

Oracle7 Server for Windows NT includes three types of software:

- **server software**—applications and utilities used on the server side to run, administer, and maintain database operations
- **client software**—applications and utilities used on the client side to access databases and make use of database functions

- **networking software**—software used to provide connectivity among database clients and servers

Server—Windows NT

Server software includes the RDBMS, utilities, and products that enable you to connect to clients.

Here are the major server product components included in this package:

Oracle7 Server for Windows NT

Release 7.3 multi-user Oracle7 Server for Windows NT (the basis of Oracle7 Server for Windows NT software)

PL/SQL

PL/SQL (the procedural language extension to SQL) PL/SQL supports the following features:

- database triggers
- database alerts
- stored procedures and packages

Oracle7 Utilities

Oracle7 Server for Windows NT includes a suite of server-based utilities, five of which are detailed below. These are 32-bit, Windows NT utilities for database administration.

Server Manager—aids database administration functions. Server Manager recognizes not only standard SQL commands, but additional commands pertaining to DBA activities.

Instance Manager—enables you to create, modify, start and stop instances/databases.

SQL*Loader—provides utilities for loading data from existing data files into your Oracle7 Server for Windows NT database.

Export—writes data from the Oracle7 Server for Windows NT to an operating system file. Use Export for data archiving and moving data to other Oracle databases. See Chapter 4 of this Guide and *Oracle7 Server Utilities* for instructions.

Import—reads data from export files into Oracle7 Server for Windows NT.

SQL*Net

SQL*Net is the network interface that enables client workstations to communicate with the Oracle7 Server for Windows NT. The SQL*Net suite of products for Oracle7 Server for Windows NT include the following: SQL*Net V2.3:

- TCP/IP Adapter V2.3
- Named Pipes Adapter V2.3
- SPX Adapter V2.3
- Oracle Names V1.1 (use with SQL*Net V2)

SQL*Plus

SQL*Plus for Windows NT is a command language interface enabling you to use the SQL and PL/SQL database languages in the Windows NT environment.

Secure Network Services

Secure Network Services enable you to protect your database from unauthorized access.

Required Support Files

The Oracle7 Server for Windows NT and the client utilities require various support files. The necessary files are installed automatically based on the components you choose to install.



PL/SQL
User's Guide

Additional Information: See *PL/SQL User's Guide and Reference* for more information about using the features of PL/SQL.



Server
Utilities

Additional Information: For more information on Oracle7 Server utilities, see *Oracle7 Server Utilities*.

Client Software

This section describes the major client software components included in this package.

The Oracle7 Server for Windows NT package contains a variety of Oracle7 Server for Windows NT products for clients. Among the products included are:

Database Tools

The database tools appear as icons in the Program Manager (Explorer for Windows 95). These tools allow you to perform basic database functions from your client machine. See the online Help for more information.

Oracle Objects for OLE

Oracle Objects for OLE is an object linking and embedding (OLE) application programming interface for use with Microsoft Visual Basic and VBA-enabled applications.

Adobe Acrobat Runtime

Installation of the Oracle7 Server for Windows NT software includes a runtime version of Adobe Acrobat. Adobe Acrobat enables you to view, search, and print any of the included documentation. Use Adobe Acrobat to read and search through Oracle documentation. All RDBMS, networking, and programming documentation you receive in your Oracle7 Server for Windows NT package is in Adobe Acrobat format. See the documentation catalog in this chapter for additional information on available titles and on using the online documents.

Network Manager

Use Network Manager to create configuration files for Oracle networking products. For more information on Network Manager, see *Oracle Network Manager for Windows Installation and User's Guide*, and *Oracle Network Manager Administrator's Guide*.

Server Manager

Complete advanced database administration tasks from client workstations using Server Manager.

Enterprise Manager

Oracle Enterprise Manager is Oracle Corporation's newest generation of system management tools. Enterprise Manager combines a single point-of-control management console, intelligent agents, and common services in an integrated, comprehensive systems management platform.

Oracle Networking Software

SQL*Net is the Oracle network interface that enables front-end application software on client workstations to:

- access data,
- modify data,
- share data, and
- store data

on Oracle7 database servers.

SQL*Net uses communication protocols and application programming interfaces (APIs) supported by a wide range of networks providing distributed database capabilities for the Oracle7 RDBMS.

SQL*Net Version 2

This release of Oracle7 Server for Windows NT includes SQL*Net Version 2 only.

The specific networking components you install with your Oracle7 Server for Windows NT depend upon the version(s) of SQL*Net you are using on your network.

Use the new Easy Configure feature to quickly configure simpler network environments. For complex network environments, or for more detailed control of your network, use Network Manager to configure your network.

Network Manager

SQL*Net V2 and the other TNS-based networking products (MultiProtocol Interchange and Oracle Names) require a number of configuration files with precise syntax. These configuration files must be created using Oracle Network Manager (a graphical user interface tool for creating configuration files quickly and accurately).



Additional Information: For more information on Network Manager, see *Oracle Network Manager for Windows Installation and User's Guide*, and *Oracle Network Manager Administrator's Guide*.

SQL*Net V2 supports the Oracle MultiProtocol Interchange, providing a bridge between transport protocols. The MultiProtocol Interchange is not currently supported under Windows NT.

If your network includes machines running another operating system(s), the MultiProtocol Interchange could run on these machines. In such a

case, a server could connect to a client running a protocol different from those available on the server.

SQL*Net V2 also supports Oracle Names, which establishes a centrally located database of short aliases representing the full network locations of all databases on the network.

Appropriately configured users can access this database at every node on the network over any network protocol supported by SQL*Net. Oracle Names enables such users to access or refer to databases anywhere else on the network by short mnemonic names.



Oracle
Names

Additional Information: A complete description of this product and its configuration appears in the *Oracle Names Administrator's Guide*.

Installing Oracle7 Server for Windows NT

This chapter covers the following installation topics:

- system requirements—server
- Windows on Win32 (WOW)
- before you install
- co-existence of Oracle7 Server for Windows NT and Oracle7 Workgroup Server
- installation types
- using Oracle Installer
- server/client installations
- Windows client installations
- configuring SQL*Net
- separately installing Oracle7 Options
- removing Oracle7 products
- migrating from earlier releases



Attention: The instructions in this chapter cover installation of Oracle7 Server for Windows NT *from a CD-ROM only*.

A Note on Directories

This Guide assumes that all directory names are the default names created during the Oracle7 Server for Windows NT installation process. For example, the Oracle home directory for Windows NT products is assumed to be \ORANT. If your system is set up using different directory names, substitute these names for the default names found in this Guide.

System Requirements—Server



Attention: To install Oracle7 Server for Windows NT, you must log on to the server machine as a member of the Windows NT Administrators Group.

To install and run Oracle7 Server for Windows NT, you must have the required hardware and software.

Oracle7 Server for Windows NT Hardware

Oracle7 Server for Windows NT requires an IBM, Compaq, or 100%-compatible PC-based on an 80486 (or higher), or Pentium processor. Multiprocessor machines are also supported. The following components must be part of the system:

- RAM—32 MB recommended
- Available disk space—65 MB of free hard disk space (100MB if you want to install all of the online documentation onto your hard drive)
- a compatible network interface card (NIC), for networked operation
- a connected CD-ROM drive, functioning as a logical drive

Advanced Replication Option Hardware

Oracle7 Server for Windows NT with the Advanced Replication Option requires an IBM, Compaq, or 100%-compatible PC-based on an 80486 (or higher) or Pentium processor. Multiprocessor machines are also supported. The following components must be part of the system:

- RAM—a *minimum* of 32 MB

- Available disk space—90 MB of free hard disk space (125 MB if you want to install all of the online documentation onto your hard drive)
- a compatible network interface card (NIC), for networked operation
- a connected CD-ROM drive, functioning as a logical drive

Software

Oracle7 Server for Windows NT requires the following software:

- Microsoft Windows NT Workstation Version 3.51 OR
- Microsoft Windows NT Server Version 3.51
- CD-ROM device driver
- appropriate network transport protocol software
 - Named Pipes—the necessary Named Pipes software is installed as part of the Windows NT Complete/New Installation.
 - TCP/IP—Microsoft TCP/IP for Windows NT is not automatically installed during Windows NT installation. See your Windows NT documentation for installation information.
 - SPX—NWLink (Microsoft's implementation of the IPX/SPX protocol) is available as part of Windows NT but is not automatically installed during Windows NT installation. See your Windows NT documentation for installation information.

Note: The preceding list describes only the requirements for the Oracle7 Server for Windows NT software, which includes the Oracle RDBMS, Oracle7 utilities, and SQL*Net server software.

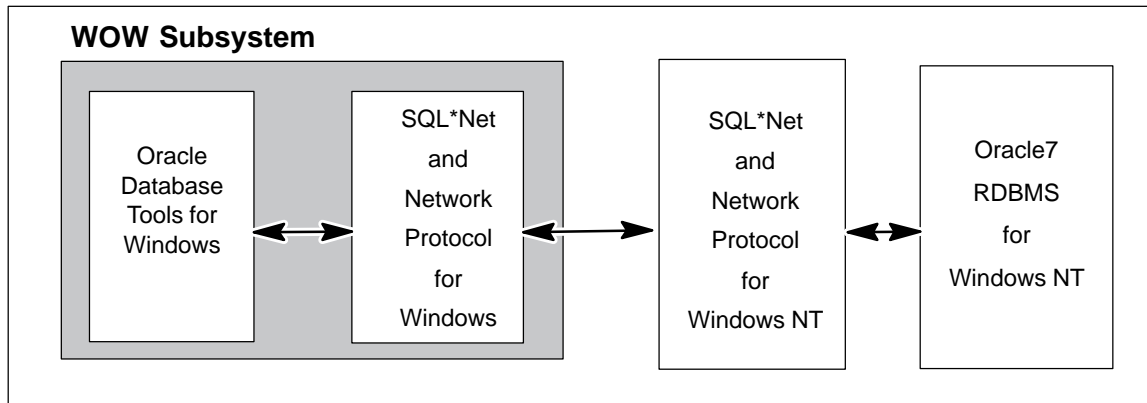
Note: Client machines connected to the Oracle7 Server for Windows NT must use the client component of the same version of SQL*Net installed on the server.

Windows on Win32 (WOW)

Most products running on Windows NT machines (including Oracle7 Server for Windows NT and the SQL*Net Listener) are 32-bit Windows NT applications.

However, you can also use the Windows NT subsystem—Windows on Win32 (WOW)—to use 16-bit Oracle Windows products. (Windows on Win32 is installed automatically when you install the Windows NT operating system.)

Windows NT



The interaction between Oracle products for Windows running on WOW and your local Oracle7 database for Windows NT is called *loopback*. You must install the same version of SQL*Net—along with the appropriate protocol adapter software—for both Windows NT and Windows in order for loopback to occur.



Attention: You can *always* achieve loopback by using SQL*Net V2 along with the Oracle Named Pipes Protocol Adapter or the Oracle TCP/IP Protocol Adapter for Windows NT and Windows. Remember that you need a network card if you use SQL*Net V2 with the TCP/IP protocol adapter.



Attention: If you are using your Windows NT machine as a client, you can install SQL*Net V2 Client for Windows NT plus the appropriate Windows NT protocol adapter (Named Pipes, TCP/IP, or SPX).

Before You Install

Before you install Oracle7 Server for Windows NT software on your Windows NT server, perform the following tasks appropriate to your installation.

First Time Installation

For the first time installation of Oracle7 Server for Windows NT on a server containing no previous version of an Oracle Server, verify that the volume on which you plan to install the Oracle7 Server for Windows NT exists and has enough disk space (see *System Requirements* in this Chapter). Choose a volume with a dedicated disk drive (if possible).

Re-installation of Oracle7 Server for Windows NT

If you are re-installing Oracle7 Server for Windows NT over a previous release of Oracle7 Server, shut down the database and back-up all database files.

Note: Oracle7 Server for Windows NT cannot run simultaneously with previous releases. Ensure that earlier versions are not running before you install or run Oracle7 Server for Windows NT.

Oracle Installer detects previous Oracle7 Server installations. Oracle Installer attempts to use the same volumes, company name, and language when installing Oracle7 Server for Windows NT. You can accept the default information provided by Oracle Installer or provide new information.

Note: You will receive an error message during installation if your Windows NT server previously contained Oracle products and the volume containing those products no longer exists. To complete the installation, delete the ORACLE_HOME line from the Windows NT Registry, and rerun Oracle Installer.

Additional Information: For information on migrating data, see *Migrating from Earlier Releases* later in this chapter.

Co-existence of Oracle7 Server for Windows NT and Oracle7 Workgroup Server

Oracle7 Server for Windows NT and Oracle7 Workgroup Server for Windows NT cannot co-exist.

Installation Types—Windows NT

The ways in which Oracle7 Server for Windows NT installation for Windows NT server and clients can be performed are described in the following sections.

This release of Oracle7 Server for Windows NT offers seven types of Windows NT installations, listed below.

Networking Products

Install your choice of:

- Oracle Intelligent Agent
- Oracle Names Server
- SQL*Net Client
- SQL*Net Protocol Adapters (Named Pipes, SPX, TCP/IP)
- SQL*Net Server

Oracle Documentation

Install:

- Oracle Documentation

Oracle7 Client

Install your choice of:

- Application User
 - SQL*Plus
 - SQL*Net Client
 - SQL*Net Protocol Adapters
 - Oracle Call Interface
 - Oracle Installer
- Database Administrator
 - Oracle7 Utilities
 - SQL*Plus
 - SQL*Net Client

- SQL*Net Protocol Adapters
- Oracle Call Interface
- Oracle Enterprise Manager
- Oracle Installer

Oracle7 Server

Install your choice of:

- Oracle7 Server
- Oracle7 Server Options
- Oracle WebServer
- Oracle7 Utilities
- Oracle7 Performance Utility
- Oracle Call Interface
- Oracle Intelligent Agent
- Oracle Enterprise Manager
- SQL*Plus
- SQL*Net Server
- SQL*Net Protocol Adapters (Named Pipes, SPX, TCP/IP)
- Oracle Installer

Programmer/2000

Install your choice of:

- Pro C
- Oracle Call Interface

SQL*Plus

Install:

- SQL*Plus

Selective

Install your choice of:

- Oracle Call Interface
- Oracle Documentation
- Oracle Enterprise Manager
- Oracle Installer
- Oracle Pro*C
- Oracle WebServer
- Oracle7 Database Administration Tools
- Oracle7 Performance Utility
- Oracle7 Server
- Oracle7 Server Options
 - Oracle7 Advanced Replication Option
 - Oracle7 Distributed Option
 - Oracle7 Parallel Query Option
 - Oracle7 Spatial Data Option
- Oracle7 Spatial Data Utilities
- Oracle7 Utilities
- Required Support Files
- SQL*Net
 - Oracle Intelligent Agent
 - Oracle Names Server
 - SQL*Net Client
 - SQL*Net Protocol Adapters (Named Pipes, SPX, TCP/IP)
 - SQL*Net Server
- SQL*Plus

Options—Windows NT Server

This release of Oracle7 Server for Windows NT offers the following options:

- Distributed Option
- Parallel Query Option
- Spatial Data Option
- Advanced Replication Option



Additional Information: For more information on these options, see *Introducing Oracle7 Server for Windows NT* in this Guide.

Using Oracle Installer

These versions of Oracle Installer are available on your product CD:

- Oracle Installer for Windows NT (for installing Windows NT products)
- Oracle Installer for Windows (for installing Windows products on the Windows on Win 32 subsystem of Windows NT or on client workstations running Windows)
- Oracle Installer for Windows95 (for Windows 95 systems)



Attention: Get help during installation by choosing *Using Oracle Installer . . .* from the Help menu.

Windows NT Installations

If you have both DOS and Windows NT installed on your Windows NT server machine, start your machine and select Windows NT from the OS Loader option.

Log on to your Windows NT Server machine as a member of the Administrators group.



Attention: If you previously installed another Oracle Windows NT product, such as an earlier version of Oracle7 Server, Oracle Installer should already be set up in the Windows NT Program Manager.

However, you should complete Step 2 below to ensure that you use the current release of Oracle Installer to install your Oracle7 Server for Windows NT.

1. Set Up the CD-ROM Drive

- a. Verify that your CD-ROM drive is properly installed.

You can use any CD-ROM drive that can be attached to the Windows NT server (either locally or as a shared resource) as a logical drive to install the Oracle7 Server for Windows NT software. If the connected CD-ROM drive cannot copy files to your hard disk, refer to your CD-ROM documentation.

- b. Load the Oracle7 Server for Windows NT CD-ROM.

- Insert the Oracle7 Server for Windows NT CD-ROM into your CD-ROM drive.
- Verify that the drive is mapped to the logical drive you selected and that you can access files on the CD-ROM.

The installation steps below assume that the CD-ROM is mapped to the G:\> drive.



Warning: If you have already installed a version of the Oracle database, shut down any instances and stop any Oracle services currently running before you attempt to install the new database software.

2. Install Oracle7 Server for Windows NT Products

- a. To start Oracle Installer for Windows NT, run Oracle Installer executable, ORAINST. You can run ORAINST for Windows NT one of the two ways described below.

From the Program Manager

- From the Windows NT Program Manager, select Run from the File menu.
- Enter the path and executable file name, for example,
G:\NT_X86\INSTALL\ORAINST.EXE
- Click Enter.

From the File Manager

- From the Windows NT Program Manager, choose the File Manager icon.
- Select the drive to which the CD-ROM is connected.
- Choose the NT_X86 icon.

- Choose the INSTALL directory icon.
- Choose the ORAINST.EXE file icon.

If you are using Oracle Installer for the first time, it prompts you to select a language.

- b. Select a language, or choose OK to accept the default language.

When you select a language, Oracle Installer sets the NLS_LANG configuration parameter. National Language Support (NLS) can be changed after installation by changing the values for the NLS_LANG configuration parameter and by using Oracle Installer to install the message files for the additional language. See *Migrating from Earlier Releases*, and *National Language Support* for details on installing additional languages.

You can also set NLS for an individual instance using several parameters in the initialization parameter file. *NLS Language Support* in this Guide contains information about installing additional languages.

Note: The default language, English, is installed with every Oracle7 Server for Windows NT, *in addition to* any other language you select.

- c. Specify a company name and Oracle Home location, then choose OK. The Software Asset Manager window appears.

Notice that the Software Asset Manager dialog box contains the following buttons:

Exit	Closes the Software Asset Manager, and exits Oracle Installer.
Options . . .	Allows you to do the following: <ul style="list-style-type: none"> - request for confirmations before removing or installing products - receive detailed messages and prompts during various phases of Oracle Installer's function - record the actions being performed by the Oracle Installer in a log file
View Log . . .	Allows you to view the Event Log. The Event Log displays installation and configuration events in the Description Level you choose: Summary, Brief, and Detail. You can store and retrieve logs, and save them to files. By default, log files are stored in %ORACLE_HOME%\ORAINST\ORAINST.LOG. If a log file from a previous logging exists, it is renamed to ORAINST.OLG. If you want to keep more than two log files (.LOG and .OLG), you must rename the .OLG file so that it is not overwritten.
Restore Icons	Allows you to restore Oracle product icons that have been accidentally deleted.
Help	Accesses the online Help system.

When you run Oracle Installer from the Oracle7 Server for Windows NT CD, Oracle Installer prompts you to enter the company name. (If you install Oracle Installer on your computer's hard drive, you will not receive this prompt during subsequent uses.)

The default location of Oracle Home is C:\ORANT, where C:\ is the designator of your local hard drive. Oracle recommends that you use this default setting.

Note: During installation, Oracle Installer detects previous versions of Oracle7 Server software on your server. When a previous version is detected, a dialog box appears displaying migration information.

Choosing OK in this dialog box installs Oracle7 Server for Windows NT software *in addition to* the old version. Choosing Cancel quits the installation so that you can migrate your database as outlined in the steps in *Migrating from Earlier Releases*. After migration, you can restart the installation.

3. Installation Options

If you choose *Networking Products*:

- a. Select Networking Products in the Software Asset Manager to install and configure SQL*Net V2.3.
- b. Click the Install button. The SQL*Net V2.3 Products dialog box appears.
- c. Choose the networking product(s) you want to install. If you choose SQL*Net Protocol Adapters, the SQL*Net Protocol Adapters dialog box appears.
- d. Select the protocol adapters you want to install.
- e. Click OK. The Adapter dialog box appears giving you the choice of installing SQL*Net Client and/or SQL*Net Server.
- f. Make your selection, then click OK. Oracle Installer installs the selected products. After the product(s) are installed, you will be prompted to read the Release Notes for the latest information.
- g. Click OK to dismiss the notification. The Software Asset Manager window reappears.
- h. Exit Oracle Installer by clicking on the Exit button, and confirm your exit when prompted.

If you choose *Oracle Documentation*:

- a. Select Oracle Documentation in the Software Asset Manager to install Oracle Documentation.
- b. Click the Install button. The Oracle Documentation dialog box appears.
- c. Choose CD ROM or Hard Drive installation.
- d. Click OK. Oracle Installer installs the selected products. After the product(s) are installed, you will be prompted to read the Release Notes for the latest information.
- e. Click OK to dismiss the notification. The Software Asset Manager window reappears.
- f. Exit Oracle Installer by clicking on the Exit button, and confirm your exit when prompted.

If you choose *Oracle7 Client*:

- a. Select Oracle7 Client in the Software Asset Manager to install the products included in this package.
- b. Click the Install button. The Oracle7 Client Option dialog box appears, displaying the types of user you may install. If you choose Database Administrator, the Database Administrator dialog box appears; if you choose Application User, the Application User dialog box appears.
- c. Choose the products you want to install.
- d. Click OK to begin the installation. The SQL*Net Protocol Adapters dialog box appears.
- e. Choose the SQL*Net Protocol Adapters you want to install, then click OK. An Oracle dialog box appears displaying the progress of the installation. When the installation is complete, a notification dialog box appears prompting you to read the Release Notes for the latest information.
- f. Click OK to dismiss the notification. The Software Asset Manager window reappears.
- g. Exit Oracle Installer by clicking on the Exit button, and confirm your exit when prompted.

If you choose *Oracle7 Server*:

- a. Select Oracle7 Server in the Software Asset Manager to install the products included in this package.
- b. Click the Install button. The Oracle7 Server dialog box appears, displaying the products that will be installed. You can de-select products from this list.
- c. Click OK to begin the installation. The Oracle7 Server for Windows NT Options dialog box appears.
- d. Select the options for which you are licensed, then click OK. The Install Starter Database dialog box appears, asking if you want to install the starter database in the ORANT\DATABASE directory.
- e. Choose Yes (unless you want to create a new database of your own [Oracle recommends you use the starter database]). The Starter Database Install Options dialog box appears giving you the choice of Standard or Replication.
- f. Choose Replication if you chose the Advanced Replication Option. Otherwise, accept Standard, then click OK. The Internal Password dialog box appears, asking you to enter and verify a password for the starter database.
- g. Enter and verify your password, then choose OK. The Starter Database Summary dialog box appears, displaying the language and character set used for the starter database.
- h. Select Yes to accept the settings, otherwise select No to choose another language/character set for the starter database. The Oracle WebServer Settings dialog box appears with default Host Name and Port Number settings.
Note: You must manually enter the Host Name and Port Number of your computer. For Oracle7 Server for Windows NT the Host Name is *hostname.domainname*. Verify this information (and Port Number) with your system administrator. The Host Name may be different than the machine name. This Host Name must map to your IP address.
- i. Choose OK to accept the settings, or change them and click OK. The Oracle WebServer Security Settings dialog box appears.
- j. Enter (or accept) the username and password, then confirm the password.

- k. Click OK. The Oracle WebServer Post-Installation dialog box appears displaying the URL you must open to use Oracle7 Server for Windows NT.
- l. Click OK. The SQL*Net Protocol Adapters dialog box appears.
- m. Choose the SQL*Net Protocol Adapters you want to install, then click OK. An Oracle dialog box appears displaying the progress of the installation. After the product(s) are installed, you will be prompted to read the Release Notes for the latest information.
- n. Click OK to dismiss the notification. The Software Asset Manager window reappears.
- o. Exit Oracle Installer by clicking on the Exit button, and confirm your exit when prompted.

If you choose *Programmer/2000*:

- a. Select Programmer/2000 in the Software Asset Manager to install the products included in this package.
- b. Click the Install button. The Programmer/2000 dialog box appears giving you the choice of installing Pro*C and/or Oracle Call Interface.
- c. Choose the product(s) you want to install, then click OK. An Oracle dialog box appears displaying the progress of the installation. After the product(s) are installed, you will be prompted to read the Release Notes for the latest information.
- d. Click OK to dismiss the notification. The Software Asset Manager window reappears.
- e. Exit Oracle Installer by clicking the Exit button, and confirm your exit when prompted.

If you choose *SQL*Plus*:

- a. Select SQL*Plus in the Software Asset Manager to install the product included in this package.
- b. Click the Install button. The product is installed. A dialog box appears reminding you to read the Release Notes.
- c. Click OK to dismiss the notification. The Software Asset Manager window reappears.
- d. Exit Oracle Installer by clicking on the Exit button, and confirm your exit when prompted.

If you choose *Selective*:

- a. Choose {Selective Product Install} in the Software Asset Manager. You can view the products in this package by double-clicking on the product(s) displaying a plus sign (+) to their left.
- b. Click the Install button. The Selective Product Install dialog box appears.
- c. Select the products you want to install.
- d. Click the OK button.
- e. Answer questions and make choices in the dialog boxes that appear. An Oracle dialog box appears displaying the progress of the installation. After the product(s) are installed, you will be prompted to read the Release Notes for the latest information.
Note: The questions/dialog boxes that appear will vary depending upon the product choices you make.
- f. Click OK to dismiss the notification. The Software Asset Manager window reappears.
- g. Exit Oracle Installer by clicking the Exit button, and confirm your exit when prompted.

Installation Types—Windows/Windows 95 Clients

This section describes Oracle7 Client, Oracle Documentation, and Selective installation procedures for clients. This release of Oracle7 Server for Windows NT offers three types of Windows/Windows 95 client installations, listed below.

Oracle7 Client

Install your choice of:

- Application User
 - SQL*Plus
 - SQL*Net
 - Oracle Call Interface
 - Oracle Objects for OLE
 - Oracle7 ODBC Driver

- Oracle Installer
- Database Administrator
 - Oracle7 Utilities
 - Database Administration Tools
 - SQL*Plus
 - SQL*Net
 - Oracle Objects for OLE
 - Oracle7 ODBC Driver
 - Oracle Call Interface
 - Oracle Network Manager (Windows only)
 - Oracle Installer

Oracle Documentation

Install:

- Oracle Documentation
- Oracle Installer

Selective

Install your choice of:

- Database Administration Tools
- Oracle Call Interface
- Oracle Documentation
- Oracle Objects for OLE
- Oracle7 ODBC Driver
- Oracle7 Utilities
- SQL*Net
- SQL*Plus
- Oracle Network Manager (Windows only)
- Oracle Client Software Agent (Windows only)

Client System Requirements

The following sections specify the hardware and software requirements for installing the client software components of the Oracle7 Server for Windows NT from your client workstation. You may need to install additional hardware and software, depending on your network.

Hardware Requirements

- IBM, Compaq, or 100%-compatible with an 80386 processor or higher
- at least 8 MB of memory
- hard disk space for the client software and related files.

Note: Installing all of the items (including online documentation) requires 85MB of free hard disk space.

- a connected CD-ROM drive, functioning as a logical drive (if you are completing the installation from a client workstation).
- a network interface card (NIC) and accompanying software. The NIC must be supported by Microsoft for use with LAN Manager Enhanced or Windows for Workgroups.



Warning: Before installing software for the Oracle7 Server for Windows NT, and for client workstations, be sure you have completely installed your networking software and verified that it is functioning properly.

Software Requirements

Client installations require the following software:

- Microsoft Windows Version 3.1 or higher, running in Enhanced Mode, Microsoft Windows for Workgroups 3.11, or Microsoft Windows 95
- appropriate network transport protocol software

1. Set Up the CD-ROM Drive

- a. Verify that your CD-ROM drive is properly installed.

You can use any CD-ROM drive that can be attached to the Windows NT server (either locally or as a shared resource) as a logical drive to install the Oracle7 Server for Windows NT software. If the connected CD-ROM drive cannot copy files to your hard disk, refer to your CD-ROM documentation.

- b. Load the Oracle7 Server for Windows NT CD-ROM.

Insert the Oracle7 Server for Windows NT CD-ROM into your CD-ROM drive. Verify that the drive is mapped to the logical drive you selected and that you can access files on the CD-ROM. The following installation steps assume that the CD-ROM is mapped to the G:\> drive.

2. Install Oracle7 Server for Windows NT Client Products

- a. To start Oracle Installer for Windows, run Oracle Installer executable, ORAINST. You can run ORAINST for Windows in one of the following ways:

From the Program Manager

From the Windows Program Manager do the following:

- select Run from the File menu
- enter the path and executable file name, for example,
G:\WINDOWS\INSTALL\ORAINST.EXE.
- click Enter

From the File Manager

From the Windows Program Manager do the following:

- choose the File Manager icon
- select the drive to which the CD-ROM is connected
- choose the WINDOWS directory icon, and the INSTALL directory icon
- double-click the ORAINST.EXE file icon.

From the Windows 95 Start Button

From the Windows 95 Start button do the following:

- select Start
- select Run. The Run dialog box appears.
- enter the path and executable file name (or browse to find it), for example, G:\WINDOWS\INSTALL\ORAINST.EXE.
- click Enter

If you are using Oracle Installer for the first time, you must select a language at the language prompt.

- b. Select a language, and choose OK to accept the default language.

When you select the language, Oracle Installer sets the NLS_LANG configuration parameter. National Language Support (NLS) can be changed after installation by changing the values for the NLS_LANG configuration parameter and using Oracle Installer to install the message files for the additional language.

See *National Language Support* in this Guide for details on installing additional languages.

You can also set NLS for an individual instance using several parameters in the initialization parameter file. *National Language Support* in this Guide contains information about installing additional languages.

Note: The default language, English, is installed with every Oracle7 Server for Windows NT, in addition to any other language you select.

- c. Specify a company name and Oracle Home location, then choose OK.

When you run Oracle Installer from the Oracle7 Server for Windows NT CD, it prompts you to enter the company name. (If you install Oracle Installer on your computer's hard drive, you will not receive this prompt in subsequent installations.) Type in the company name and Oracle Home location, then choose OK. The default location of Oracle Home is C:\ORAWIN (C:\ORAWIN95 for Windows 95), where C:\> is the designator of your local hard drive. Oracle recommends that you use this default setting.

The Installation Options dialog box appears giving you the choice of Application User, Database Administrator, Developer, and Selective Install.

- d. Select one of the installations, then choose OK.

3. Installation Types

If you choose *Oracle7 Client*:

- a. Select Oracle7 Client in the Software Asset Manager to install the products included in this package.
- b. Click the Install button. The Oracle7 Client Option dialog box appears, displaying the types of user you may install. If you choose Database Administrator, the Database Administrator dialog box appears; if you choose Application User, the Application User dialog box appears.
- c. Choose the products you want to install.

- d. Click OK to begin the installation. The SQL*Net Protocol Adapters dialog box appears.
- e. Choose the SQL*Net Protocol Adapters you want to install, then click OK. An Oracle dialog box appears displaying the progress of the installation. When the installation is complete, a notification dialog box appears prompting you to read the Release Notes for the latest information.
- f. Click OK to dismiss the notification. The Software Asset Manager window reappears.
- g. Exit Oracle Installer by clicking on the Exit button, and confirm your exit when prompted.

If you choose *Oracle Documentation*:

- a. Select Oracle Documentation in the Software Asset Manager to install Oracle Documentation.
- b. Click the Install button. The Oracle Documentation dialog box appears.
- c. Choose CD ROM or Hard Drive installation.
- d. Click OK. Oracle Installer installs the selected products. After the product(s) are installed, you will be prompted to read the Release Notes for the latest information.
- e. Click OK to dismiss the notification. The Software Asset Manager window reappears.
- f. Exit Oracle Installer by clicking on the Exit button, and confirm your exit when prompted.

If you choose *Selective*:

- a. Choose {Selective Product Install} in the Software Asset Manager. You can view the products in this package by double-clicking on the product(s) displaying a plus sign (+) to their left.
- b. Click the Install button. The Selective Product Install dialog box appears.
- c. Select the products you want to install.
- d. Click the OK button.
- e. Answer questions and make choices in the dialog boxes that appear. When the installation is complete, a notification dialog box appears.

Note: The questions/dialog boxes that appear will vary depending upon the product choices you make.

- f. Click OK to dismiss the notification. The Software Asset Manager reappears.
- g. Click Exit to exit Oracle Installer.

Configuring SQL*Net

Some of the installation packages allow you to selectively install and automatically configure SQL*Net release 2.3 server networking software.

To configure these products, use the Easy Configuration Utility that is automatically installed with your SQL*Net V2.3 products.

Note: For complex networks, use Network Manager for configuration.



Additional Information: For information on using Easy Configuration, see *Oracle Network Products User's Guide* for the appropriate operating system.

A single SQL*Net release 2.3 networking software connection is automatically configured with each of these packages. Configuration consists of creating and copying the information described below into two files:

File	Description	File Contents
LISTENER.ORA	A listener configuration file on the server. This file defines information used by the listener to connect to a server.	Listener ID Service_name Database SID Hostname (for TCP/IP)
TNSNAMES.ORA	A client configuration file on the server. This file allows a server to connect to additional servers.	Database alias Database SID



Additional Information: See *Understanding SQL*Net* for complete descriptions of LISTENER.ORA, TNSNAMES.ORA, and the contents of each file. See also *Oracle Network Products User's Guide* for your client(s) for more information about your networking products.

Additional SQL*Net release 2.3 connections must be manually configured with the Oracle Network Manager. See *Oracle Network Manager Administrator's Guide* for information.

Note: Oracle7 Server for Windows NT licensing lets you use one release of SQL*Net, and one protocol adapter. Use of more than one protocol and release of SQL*Net is available at an added cost.

Separately Installing Oracle7 Options

You may choose to install Oracle7 Options separately from other installation tasks, or you may need to install these options after obtaining licenses for them. In these cases, follow these steps:

1. Start Oracle Installer as noted earlier in this chapter. Oracle Installer starts.
2. Double-click on {Selective Product Install} in the *Products available on* field in the Software Asset Manager window. The items in Selective Product Install appear.
3. Double-click on Oracle7 Server Options. The items in Oracle7 Server for Windows NT Options appear.
4. Choose the option(s) you want to install.
5. Click the Install button. An Option License dialog box (for each selected option) appears asking if you are licensed for the selected options.
6. Click Yes if you are licensed. If you are not licensed, contact Oracle to purchase a license. The installation process begins. After installation is complete, the Software Asset Manager reappears.
7. Exit Oracle Installer by clicking the Exit button, and confirm your exit when prompted.

Removing Oracle7 Products/Options

To de-install Oracle7 products or Options, run Oracle Installer for Windows NT.

1. Select from the Installed Products window the product(s) you want to remove.

2. Choose Remove.

Oracle Installer warns you of any product dependencies that might cause problems if particular products are removed, and prompts you to confirm the de-installation.

Migrating from Earlier Releases

This section contains instructions for migrating databases created using earlier versions of Oracle7 Server for Windows NT. If you currently have data stored in one of the following:

- Oracle7 Server for Windows NT database, Versions 7.0, 7.1, or 7.2

OR

- Oracle7 Workgroup Server for Windows NT, Versions 7.0, 7.1, or 7.2,

you must migrate your database to make it work with Oracle7 Server for Windows NT. This section describes procedures for migrating your earlier Oracle7 Server version(s) to Release 7.3.

Overview

Use this procedure for migrating earlier Oracle7 Server versions to Release 7.3. It includes the following tasks and example:

- preparing for migration
- installing the Oracle7 Server for Windows NT
- moving database files

Prepare for the Migration

Before migrating to Release 7.3, make sure you have at least 8MB of free space in the system tablespace. You can verify the amount of free space in the SYSTEM tablespace using this SQL statement :

```
select sum(A.blocks * B.value) from sys.dba_free_space A,  
sys.V$parameter B where A.tablespace_name = 'SYSTEM' and  
B.value = 'db_block_size' ;
```

If 8MB of free space is not available in the SYSTEM tablespace, you can enlarge the SYSTEM tablespace by adding a datafile of the appropriate

size (for example, the following SQL statement adds an 8MB file to the SYSTEM tablespace:

```
alter tablespace SYSTEM add datafile '<directory for the
file>\<filename>' size 8M;
```

1. List files for the instance

For each instance you want to migrate, make a list of the control, data, and log files for the instance.

To get a list of these files for the instance:

- a. Run Server Manager in line mode.
- b. Enter the following at the Server Manager prompt:

```
SVRMGR> connect system/<account password for the instance>
SVRMGR> spool migrate.log;
SVRMGR> select member from v$logfile ;
SVRMGR> select name from v$datafile ;
SVRMGR> select value from v$parameter
        where name = 'control_files';
```

2. Shut down your Oracle7 database

At the SVRMGR prompt, enter the following:

```
SVRMGR> connect internal
SVRMGR> shutdown
SVRMGR> exit
```

3. Shut down and delete Oracle services

Shutdown and delete Oracle services belonging to the earlier database version using `orasrv.exe` (for Version 7.0), `oradim71.exe` (for Version 7.1), `oradim72.exe` (for Version 7.2).

Example:

```
oradim71 -delete -srv <Oracle Service Name>
```

Note: This stops and deletes the service.

4. Backup the 7.0/7.1/7.2 database

For more information on backing up your database, see your database documentation.

5. De-install the 7.0/7.1/7.2 server, RSFs and Utilities

Use `orainst.exe` to de-install 7.0/7.1/7.2 Server, Required Support Files and Utilities.

Refer to the documentation that shipped with your 7.0/7.1/7.2 database for more information about de-installation.



Warning: Do not remove the 7.0/7.1/7.2 database files when prompted!

Warning: After installing Release 7.3, do not de-install 7.1 (doing so will disrupt your Release 7.3 install).

- a. Run `orainst.exe` in line mode.
- b. From the products list, select:
 - 7.0/7.1/7.2 Server
 - Required Support Files
 - Utilities
- c. Choose Remove.

Install the Oracle7 Server

1. Install the Oracle7 Server for Windows NT

Install the Oracle7 Server for Windows NT. During installation, you will have the choice of installing the starter database. If you do not need another Release 7.3 database (in addition to the one that you are upgrading from 7.0/7.1/7.2), you do not need to install the starter database.



Additional Information: See *Installation* for installation steps and options.

2. Add an ORACLE_SID key to the NT registry
 - a. Create a SID for the to-be-migrated database instance.

For example, choose ABCD as the SID.

Note: If you have chosen to install the starter database during Release 7.3 installation, **Do not** use ORCL as the SID (the starter Release 7.3 database has ORCL as the default SID). Change the ORACLE_SID from ORCL to ABCD.

Note: SID is limited to four alphanumeric characters or less.

- b. Run `regedt32.exe` in line mode.
 - c. Go to `\HKEY_LOCAL_MACHINE\SOFTWARE\ORACLE`.

- d. Create the ORACLE_SID value with data type REG_EXPAND_SZ and the SID you chose earlier in the string field.
 - e. Close the Registry.
3. Create and start Oracle Release 7.3 services
Create and start an Oracle Release 7.3 instance (without creating a new database) using the command line version of Instance Manager.
If you need more information on using the command line version of Instance Manager, see *Using Instance Manager for the Command Line*.



Warning: If you use the GUI version of the Instance Manager, a new database is automatically created.

- a. From the command line, enter:

```
oradim73 -new -sid <sidname> -intpwd <pwd> -maxusers  
<users>
```

This creates the following:

 - OracleService<sidname> service
 - OracleNMPLListener<sidname> service(only if SQL*Net V1 Named Pipes [i.e. nmplsnr.exe] protocol is installed)
 - password file (pwd<sidname>.ora) in
%ORACLE_HOME%\DATABASE
- b. From the command line, enter:

```
oradim73 -startup -sid <sidname> -usrpwd <pwd> -starttype  
srvc
```

Note: This will start the services only.

Move Database Files

1. Move files

Move all 7.0/7.1/7.2 database files to the Release 7.3 directory.

Note: If you have your own database file structure, go to the *Merge and Edit the Initialization Files* step.

- a. Move ALL current control, data, and log files from the
%ORACLE_HOME%\rdbms70 (or 71) to the
%ORACLE_HOME%\database directory.

Using the above example (and if the current control file is in directory c:\orant\rdbms71):

Move	To
c:\orant\rdbms71\ctl1orcl.ora	c:\orant\database\ctl1labcd.ora

- b. Move all of the archive files from
 %ORACLE_HOME%\rdbms71\ARCHIVE
 to
 %ORACLE_HOME%\DATABASE\ARCHIVE

The original list of files are:

7.0	7.1	7.2
%rdbms70%\ctl1.ora	%rdbms71%\ctl1orcl.ora	%oracle_home%\database\ctl1orcl.ora
%rdbms70%\dbs1.ora	%rdbms71%\sysorcl.ora	%oracle_home%\database\sysorcl.ora
%rdbms70%\log1.ora	%rdbms71%\userorcl.ora	%oracle_home%\database\userorcl.ora
%rdbms70%\log2.ora	%rdbms71%\rbsorcl.ora	%oracle_home%\database\rbsorcl.ora
	%rdbms71%\temporcl.ora	%oracle_home%\database\temporcl.ora
	%rdbms71%\log1orcl.ora	%oracle_home%\database\log1orcl.ora
	%rdbms71%\log2orcl.ora	%oracle_home%\database\log2orcl.ora
	%rdbms71%\archive\ctl1orcl.ora	%oracle_home%\database\archive\ctl1orcl.ora
	%rdbms71%\archive\logorcl1.ora	%oracle_home%\database\archive\logorcl1.ora
	%rdbms71%\archive\logorcl2.ora	%oracle_home%\database\archive\logorcl2.ora

Note: This information is in the spool file you created earlier.

- c. If you have expanded the database, move the additional database files as well.

Note: You can combine the steps above into one operation with the move command. For example, move
c:\orant\rdbms70\dbs1.ora
c:\orant\database\dbs1labcd.ora.

2. Merge and edit initialization files

Edit the initialization files.

- a. Take the parameter files you have set up, rename them, and put them into the \DATABASE directory. For example:

- 7.0 \INIT.ORA, or
7.1 \INITsid.ORA, or
7.2 \INITsid.ORA

Into:

\DATABASE\INIT*sid*.ORA

- b. Edit the CONTROL_FILES parameter in the Release 7.3 initialization file for the instance (that is, %ORACLE_HOME%\DATABASE\INIT*sid*.ORA), to reflect the changes to the filename.

Note: The control file is now in the directory %ORACLE_HOME%\DATABASE.

Example:

Using the above example:

Change this . . .	To this . . .
CONTROL_FILES = (%RDBMS70%\ctl1.ora)	CONTROL_FILES = (%ORACLE_HOME%\DATABASE\ctl1abcd.ora)
CONTROL_FILES = (%RDBMS71_CONTROL%\ctl1.ora, %RDBMS71_ARCHIVE%\ctl1.ora	CONTROL_FILES = (%RDBMS73_CONTROL%\ctl1.ora, %RDBMS73_ARCHIVE%\ctl1.ora

Note: By default:

%RDBMS71_CONTROL%	=	%ORACLE_HOME%\RDBMS71
%RDBMS71_ARCHIVE%	=	%ORACLE_HOME%\RDBMS71\ARCHIVE
%RDBMS73_CONTROL%	=	%ORACLE_HOME%\DATABASE
%RDBMS73_ARCHIVE%	=	%ORACLE_HOME%\DATABASE\ARCHIVE

Note: If you have your own database file structure, edit the control files parameter to point to your control files.

- c. Change any occurrence of %rdbms70%, %rdbms71%, or %rdbms72% in the initialization file to %rdbms73%.
3. Alter the database to reflect new names
- Alter the database to reflect the new directory and filenames; then exit Server Manager.
- Start the Oracle 7.0/7.1/7.2 database using Server Manager Release 7.3.
- a. Run SVRMGR73 .exe in line mode.
 - b. When prompted for a password, enter the password you used to create Oracle services. Then enter the following:

```
SVRMGR> connect internal/<password for the instance>
SVRMGR> startup exclusive mount
```

Note: If you have your own database file structure, go to Step 4 (you have neither moved nor renamed your files).

- c. Enter the altered database statement at the Server Manager prompt to change the full pathnames of the data and log files. Following are 7.0 and 7.1 examples for migrating the default SID. Your statement should match your actual files.

7.0	7.1
SVRMGR> alter database rename file	SVRMGR> alter database rename file
SVRMGR> 'C:\ORANT\RDBMS70\dbf1.ora',	SVRMGR> 'C:\ORANT\RDBMS71\log1orcl.ora',
SVRMGR> 'C:\ORANT\RDBMS70\log1.ora',	SVRMGR> 'C:\ORANT\RDBMS71\ARCHIVE\log1orcl.ora',
SVRMGR> 'C:\ORANT\RDBMS70\log2.ora' to	SVRMGR> 'C:\ORANT\RDBMS71\log2orcl.ora',
SVRMGR> 'C:\ORANT\DATABASE\dbf1orcl.ora',	SVRMGR> 'C:\ORANT\RDBMS71\ARCHIVE\log2orcl.ora',,
SVRMGR> 'C:\ORANT\DATABASE\log1orcl.ora',	SVRMGR> 'C:\ORANT\RDBMS71\sysorcl.ora',
SVRMGR> 'C:\ORANT\DATABASE\log2orcl.ora';	SVRMGR> 'C:\ORANT\RDBMS71\userorcl.ora',
	SVRMGR> 'C:\ORANT\RDBMS71\rbsorcl.ora',
	SVRMGR> 'C:\ORANT\RDBMS71\temporcl.ora' to
	SVRMGR> 'C:\ORANT\DATABASE\log1orcl.ora',
	SVRMGR> 'C:\ORANT\DATABASE\ARCHIVE\log1orcl.ora',
	SVRMGR> 'C:\ORANT\DATABASE\log2orcl.ora',
	SVRMGR> 'C:\ORANT\DATABASE\ARCHIVE\log2orcl.ora',
	SVRMGR> 'C:\ORANT\DATABASE\sysorcl.ora',
	SVRMGR> 'C:\ORANT\DATABASE\userorcl.ora',
	SVRMGR> 'C:\ORANT\DATABASE\rbsorcl.ora',
	SVRMGR> 'C:\ORANT\DATABASE\temporcl.ora';

Note: If your Oracle home directory is not c:\orant, replace it with the actual directory name.

Note: If you have expanded the database, include the additional database files in the above statement.

4. Run SQL scripts to migrate the database

Run SQL scripts to migrate the database.

- a. Enter the following commands at the Server Manager prompt.

7.0.15 to 7.3	7.1.3 to 7.3	7.2.2 to 7.3
SVRMGR> alter database open; SVRMGR> @%RDBMS73%\ADMIN\cat70101 SVRMGR> @%RDBMS73%\ADMIN\cat70102 SVRMGR> @%RDBMS73%\ADMIN\cat7103 SVRMGR> @%RDBMS73%\ADMIN\cat7201.sql SVRMGR> @%RDBMS73%\ADMIN\cat7301 SVRMGR> @%RDBMS73%\ADMIN\cat7302.sql SVRMGR> @%RDBMS73%\ADMIN\catalog	SVRMGR> alter database open; SVRMGR> @%RDBMS73%\ADMIN\cat7201.sql SVRMGR> @%RDBMS73%\ADMIN\cat7301 SVRMGR> @%RDBMS73%\ADMIN\cat7302.sql SVRMGR> @%RDBMS73%\ADMIN\catalog	SVRMGR> alter database open; SVRMGR> @%RDBMS73%\ADMIN\cat7203.sql SVRMGR> @%RDBMS73%\ADMIN\cat7301 SVRMGR> @%RDBMS73%\ADMIN\cat7302.sql SVRMGR> @%RDBMS73%\ADMIN\cat7302.sql

Note: The statements in the table below are for special purposes. catproc.sql is for PL/SQL functionality. catrep.sql is for the Advanced Replication Option. Run catrep only if you have the Advanced Replication Option and want to use it. Refer to Appendix A for a detailed discussion of Advanced Replication before proceeding.

Note: Ensure that you spool all of the output from the .sql scripts to a file. Then, check the file for errors.

Note: catrep may take an hour or more to run!

7.0.15 to 7.3	7.1.3 to 7.3	7.2.2 to 7.3
SVRMGR> @%RDBMS73%\ADMIN\catproc SVRMGR> @%RDBMS73%\ADMIN\catrep	SVRMGR> @%RDBMS73%\ADMIN\catproc SVRMGR> @%RDBMS73%\ADMIN\catrep	SVRMGR> @%RDBMS73%\ADMIN\catproc SVRMGR> @%RDBMS73%\ADMIN\catrep

b. Rerun utlxplan.sql in any schema in which you want to use EXPLAIN PLAN.

5. Shut down and restart the database

Your Oracle database is now migrated to Release 7.3. Shutdown and restart by entering the following commands at the Server Manager prompt:

SVRMGR> shutdown
SVRMGR> startup

Using Oracle7 Server for Windows NT

This chapter describes how to set up and use the Oracle7 Server for Windows NT. Among the topics discussed in this chapter are:

- overview of database administration tasks
- Oracle services
- Instance Manager
- starting a database
- Instance Manager command line commands
- creating an instance
- starting an instance
- running multiple instances
- creating a new database
- creating database objects
- setting resource costs
- using the Oracle7 Server Utilities

Overview of Database Administration Tasks

This section introduces you to the starter database installed during the Oracle7 Server for Windows NT installation. It shows you how to modify the starter database or create a new database of your own.

Note: Database creation is an advanced function; Oracle recommends that you use the starter database and modify it to suit your needs.

What is an Instance?

An Oracle instance is a logical term that refers to an Oracle service and a database server.

Oracle services are similar to Windows NT services. In order to connect to and use an Oracle server, an Oracle service must be created and associated with the Oracle database. Each Oracle instance must have a unique SID. With Oracle7 Server for Windows NT, you can run multiple Oracle instances simultaneously on one machine.

During the installation, a default instance is installed. This instance is identified by the *sid* ORCL. This Guide refers to the database of this default instance as the starter database. You can expand the starter database if necessary to better suit your needs.

The installation process creates an Oracle service and a listener service for the default instance. Both services are created as automatic Windows NT services. This means that they start automatically when the machine powers up. To use the starter database, start the database with Server Manager or Database Manager.

The Starter Database

The starter database *ORACLE* is the core of the Oracle7 Server for Windows NT database system. The starter database contains:

- four tablespaces
- four database files
- two log files
- a preloaded data dictionary
- usernames

The data dictionary (SYSTEM tablespace) contains tables and views commonly used by many Oracle tools and sample programs.

Note: The starter database is installed to operate in NOARCHIVELOG mode. If you wish to archive redo log files, see *Setting the Archivelog Mode and Recovering the Database* later in this Guide.



Admin.
Guide

Additional Information: You can protect your database from a disk drive malfunction by keeping (on separate physical drives) multiple control files for each database and setting the CONTROL_FILES initialization parameter to list each control file. See *Oracle7 Server Administrator's Guide* for information on setting this initialization parameter value.

Starter Database Tablespace Structure

The four tablespaces in the Oracle7 Server for Windows NT starter database hold various types of data, as follows:

SYSTEM tablespace	contents of the data dictionary including definitions of tables, views, and stored procedures needed by the RDBMS. Information in this area is maintained automatically. Your application data goes in the USER_DATA tablespace.
USER_DATA tablespace	empty when the server is initially installed. As you create tables and enter data into them, you fill this space with your data. When you add users to the system using the User Manager tool (described later in this chapter), the default tablespace of the users is automatically set to USER_DATA.
TEMPORARY_DATA tablespace	used for 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.

Starter Database Files

The starter database contains the following database files:

SYS1ORCL.ORA	database files of the SYSTEM, USER_DATA, TEMPORARY_DATA, and ROLLBACK_DATA tablespaces.
USR1ORCL.ORA	
RBS1ORCL.ORA	
TMP1ORCL.ORA	
IN1TORCL.ORA	redo log files for the database.
LOG1ORCL.ORA	
LOG2ORCL.ORA	
CTL1ORCL.ORA	the database control file, containing the database name, the names and locations of the data files and redo log files, and the time stamp of database creation. This file is required to start and run a database system.

Server Alert Files

An alert file contains important information about error messages and exceptions that can arise during database operation. The alert file is the first place you should check if something goes wrong with the database and the cause is not immediately obvious.

Information is appended to the file each time the database is started. For example, if automatic archiving of redo logs halts because no disk space is available, Oracle7 Server for Windows NT automatically places a message in the alert file.

The Oracle7 Server for Windows NT alert file is named *sidALRT.LOG* and is located in the `\ORANT\RDBMS73\TRACE` directory.

User Accounts

Three user accounts are automatically created for the starter database:

SYS and SYSTEM	administrator usernames with CONNECT, RESOURCE, and DBA roles for the database. The password for the SYS username is CHANGE_ON_INSTALL. The SYSTEM password is MANAGER.
SCOTT	username with CONNECT and RESOURCE roles for the database. The SCOTT username has the password TIGER.

Oracle Services

When you start or reboot the server machine, Oracle services are started. Depending on the networking protocol used, these services are:

- OracleServiceORCL
- OracleTNSListener <id>
- OracleStartORCL

If any of these services does not start correctly and you attempt to use any of the Oracle Database Tools, the following message appears:

```
DBA-00314: unable to attach to default host
```

```
ORA-09352: Windows 32-bit Two-Task driver unable to spawn  
new ORACLE task
```

Start the services following these steps:

1. Open the Windows NT Control Panel.
2. Choose Services.
3. Find OracleServiceORCL in the list, and verify that its status is *Started*. If OracleServiceORCL is not *started*, select it and choose Start.
4. Find OracleTNSListenerORCL and verify that its status is *Started*.

Note: You must complete steps 3 and 4 in order.

Note: To start Oracle services whenever the server starts, choose the Startup button, and choose Manual Startup Type.

If you cannot find these service names in the list, use Instance Manager.



Attention: For information on the GUI version (32-bit) Instance Manager, see the following section. For information on the command line version of Instance Manager, see the appendix, *Using the Instance Manager from the Command Line* in this Guide.


On occasion (for example, if you want to re-install the server software), you must stop the Oracle Services. To do this, open the Windows NT Control Panel, select Services and choose Stop.


Instance Manager

Instance Manager is a graphical tool used to create and modify instances. This section describes how to create and modify Oracle instances using Instance Manager.

Creating an Instance (and Database) with Instance Manager

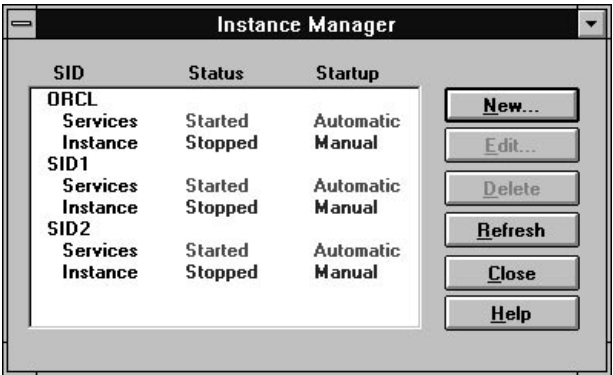
Creating Oracle instances includes creating an Oracle service(s) and a database. Follow these steps:

 **Warning:** When you create an instance using Instance Manager, a new database is automatically created. If you want to create an instance without creating a new database, use the command line version of Instance Manager (ORADIM73.EXE).

 **Attention:** For information on the GUI version (32-bit) Instance Manager, see the following section. For information on the command line version of Instance Manager, see the appendix, *Using the Instance Manager from the Command Line* in this Guide.

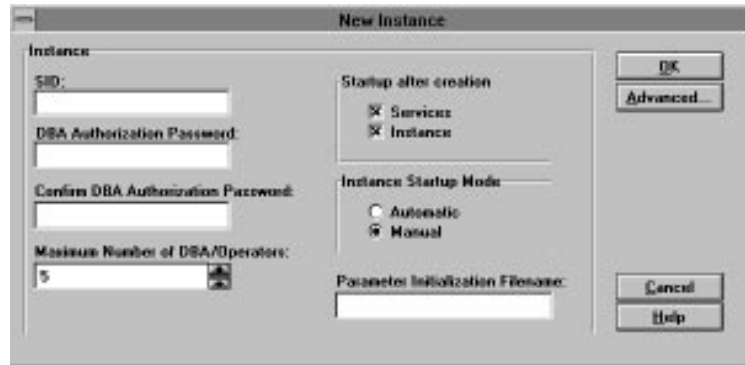
1. Double-click the Oracle Instance Manager icon in the Oracle7 Server for Windows NT Program Group.

Instance Manager starts, and the Instance Manager dialog box appears.



2. Click the New button in the Instance Manager dialog box.

The New Instance dialog box appears.



3. Type a SID (up to four characters; remember that each SID must be unique).
4. Type the DBA Authorization Password.
5. Confirm the DBA Authorization Password.
6. Type the Maximum Number of DBA/Operators.
7. Choose whether to start the Services and/or Instance after creation.

These selections are for specifying starting the Services and/or Instance immediately after creation. By default, both are selected.

8. Choose Automatic or Manual Instance Startup Mode.

Selecting Automatic will start the database automatically when the machine is booted.

Setting Startup Mode to Automatic will cause the following:

- a new service is created (OracleStart<sid>). This service points to the executable STRTDB73.EXE.
- a command file (STRT<sid>.CMD) is created in \ORACLE_HOME\DATABASE. This file contains the command line version of Instance Manager to start the database. Please note that the command file contains the password to the INTERNAL account. If you change the INTERNAL password later, be sure to change the password in the command file also.

9. Choose OK to complete instance creation.

Note: After creating the instance/database, a dialog box appears giving you the option to run two scripts: `catalog.sql` (to create the Oracle7 Server for Windows NT data dictionary

views) and `catproc.sql` (if you will be using PL/SQL). If you choose Yes, Instance Manager spawns Server Manager and runs these scripts in the background.



Attention: For information on the GUI version (32-bit) Instance Manager, see the following section. For information on the command line version of Instance Manager, see the appendix, *Using the Instance Manager from the Command Line* in this Guide.

Changing Passwords

You can use Instance Manager to change Instance passwords. Follow these steps to change passwords:

1. Select (in the Instance Manager main window) the instance for which you want to change the password.
2. Choose Edit. The Edit Instance dialog box appears.

3. Type in the Old DBA Authorization Password, the DBA Authorization Password, and Confirm DBA Password Authorization in the appropriate fields.
4. Choose OK for your changes to take effect.

Advanced Parameters

From the New Instance dialog box, choose Advanced. The Advanced Parameters dialog box appears.

Advanced Parameters - Database Creation

DATABASE:

ORACLE

Logfile Parameters

LOGFILE:

'd:\orant\database\log10RCL.ora' size 2

MAXLOGFILES:

32

MAXLOGMEMBERS:

2

Datafile Parameters

DATAFILE:

'd:\orant\database\sysORCL.ora' size 10M

MAXDATAFILES:

1

CHARACTER SET

US7ASCII

ARCHIVELOG☐

EXCLUSIVE☐

CONTROLFILE REUSE☐

OK

Cancel

Help

Instance Manager enables you to customize creation of new databases.


Note: Remember that creating new databases is an advanced task.

The following table explains the parameters in the Advanced Parameters dialog box.

Using Oracle7 Server for Windows NT

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<i>Parameter</i>	<i>Description</i>
LOGFILE <i>filespec</i>	Specify the redo log filenames to be created and maintained. If you omit this parameter, Oracle7 creates two log files (the minimum): LOG1sid.ORA and LOG2sid.ORA. The default size of each log file is 50K; there is no maximum size.
MAXLOGFILES <i>integer</i>	Maximum number of redo log files the database will create (2 MAXLOGFILES are created by default). The default value is 32; the range is 2 to 255 log files.
MAXLOGMEMBERS <i>integer</i>	Maximum number of copies for a redo log file group. Set this parameter if you plan to use multiplexed redo log files as discussed in the <i>Oracle7 Server Administrator's Guide</i> . The default value is 2; the range is 2 to 5 log file copies.
MAXLOGHISTORY <i>integer</i>	This parameter is not used with Oracle7 Server for Windows NT.
DATAFILE <i>filespec</i>	Specify one or more database files to be created and maintained. The default database files (DBS1sid.ORA) of 6MB, are stored in \ORANT\DATABASE.
<i>filespec</i>	<p><i>filespec</i> defines the name, size, and location of redo log files and database files using the syntax</p> <p>'d:\path\filename' [SIZE integer [K M]]</p> <p>where <i>d</i>:\path\filename specifies the complete drive, path, and filename for the file. (Always enclose the path and filename in single quotation marks.) The SIZE parameter operates as described in the <i>Oracle7 Server SQL Reference</i>.</p>
MAXDATAFILES <i>integer</i>	Specify the maximum number of data files that the database can create (1 MAXDATAFILE is created by default). The default value is 32; the range is 1 to 254 files.
MAXINSTANCES <i>integer</i>	This parameter is not relevant with Oracle7 Server for Windows NT.
NOARCHIVELOG	To avoid logging the commands used to <i>create</i> your database, you should create the database in NOARCHIVELOG mode (the default). If you plan to <i>operate</i> the database in ARCHIVELOG mode, see the section <i>Enabling Automatic Archiving</i> in Chapter 4 for instructions on changing this setting.
CHARACTER SET <i>name</i>	The character set Oracle7 Server for Windows NT uses to store data. The default is WE8ISO8859P1.



Additional Information:

For more detailed information, see *Oracle7 Server SQL Reference*.

SQL Ref.

Starting a Database

Before starting the database, make sure that a database instance has been created and that the services have been started. (See the section *Creating an Instance with Instance Manager* earlier in this chapter.) Then, use the Database Instance Manager or Server Manager to start the database.

Starting a Database Using Instance Manager

Databases can be started using Instance Manager (by selecting the Services and Instance checkboxes in Startup After Creation), or from ORADIM73 command line mode.

Starting a Database Using Server Manager

To start the database using Server Manager, follow these steps:

1. Start Server Manager by typing (at the command prompt):

```
C:\>SVRMGR73
```

2. Connect to the database using your username:

```
SVRMGR> CONNECT username [/password]
```

When you use Server Manager in line mode, if you do not include a password in your CONNECT statement and a password has been set, Server Manager prompts you to enter one.

When you use Server Manager in screen mode, if you do not include a password in your CONNECT statement and a password has been set, Server Manager displays an error message. To enter your password without typing it on the command line, choose Connect from the Session menu.

3. Start up the database by typing the following:

```
SVRMGR> STARTUP [PFILE=path\filename]
```

where *path\filename* specifies an initialization parameter file other than the default, `INITsid.ORA`. This example starts the database using a file named `INIT2.ORA`:

```
SVRMGR> STARTUP PFILE=C:\ORANT\RDBMS73\INIT2.ORA
```

After completing these steps, you can make local connections to Oracle7 Server.

Shutting Down an Instance/Database

In Release 7.3, you can startup and shutdown a database using Server Manager, Database Manager, or ORADIM73 command line mode. Instance Manager does not provide that functionality, except while creating/deleting an instance.

Delete an Instance

To delete an instance:



Warning: Deleting an instance also deletes the database!

1. Select the instance you wish to delete in the Instance Manager dialog box.
2. Choose the Delete button.
3. Choose Yes to confirm the deletion.

Running Multiple Instances

To run multiple instances, you must ensure that you have already created each instance and started the services for each instance using the Instance Manager (use the Instance Manager to create and delete instances).

You then run multiple instances by starting each of the instances, using either Server Manager or Database Manager (Server Manager is used to start up the database only). Start Services using the Services applet in the Windows NT Control Panel (if the services are not already started).

Using Server Manager

For *each* instance you wish to run:

1. Begin at the command prompt and set a value for the ORACLE_SID configuration parameter by typing:

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

where *sid* is the name of the instance.

2. Start Server Manager and start up the instance by typing:

```
C:\>SVRMGRnn  
SVRMGR>CONNECT INTERNAL/PASSWORD  
SVRMGR>STARTUP
```

Note: In the first line, *nn* is the version of Server Manager you are using (for example, “SVRMGR73”).

Note: After you type the connect internal statement, you’re prompted to type the password of the internal account (this is the same password you entered while creating the instance).

Creating an Instance

The Instance Manager command line tool is run with the `ORADIM73.EXE` executable. To use this tool, from the command line, type `ORADIM73`, followed by appropriate commands and arguments (listed below).

Note: If you enter `ORADIM73` or `ORADIM73.EXE` at the command line followed by a return (that is, without any commands), you start the graphical tool. Likewise, if you type “`ORADIM73`” followed by an invalid command, you start the graphical tool. If you type “`ORADIM73`” followed by a combination of valid and invalid commands, the Instance Manager processes as many valid commands as possible and remain at the command line.

To get a complete listing of `ORADIM73` commands, enter a question mark after the executable name:

```
C:\>ORADIM73 -?
```

To use `ORADIM73` to create an instance called *sid*, enter the following:

```
C:\>ORADIM73 -NEW -SID sid -INTPWD <password> -STARTMODE -PFILE
```

These two commands are mandatory: create an instance (`-NEW`) and the system identifier of the instance (`-SID sid`).

Starting an Instance

To start an instance using `ORADIM73.EXE` directly from the command line, enter the following:

```
C:\>ORADIM73 -STARTUP -SID sid -STARTTYPE SRVC,INST  
-USRPWD <password> -PFILE <filename>
```

where *sid* is the system identifier (SID) of the database, `INST` indicates that the instance should be started.

Running Multiple Instances

For each instance you wish to run, from the command line type:

```
C:\>ORADIM73 -STARTUP -SID sid -STARTTYPE SRVC,INST  
-USRPWD <password> -PFILE <filename>
```

where *sid* is the system identifier (SID) of the database, SRVC,INST indicates that both the services and the instance are to be started (if applicable).

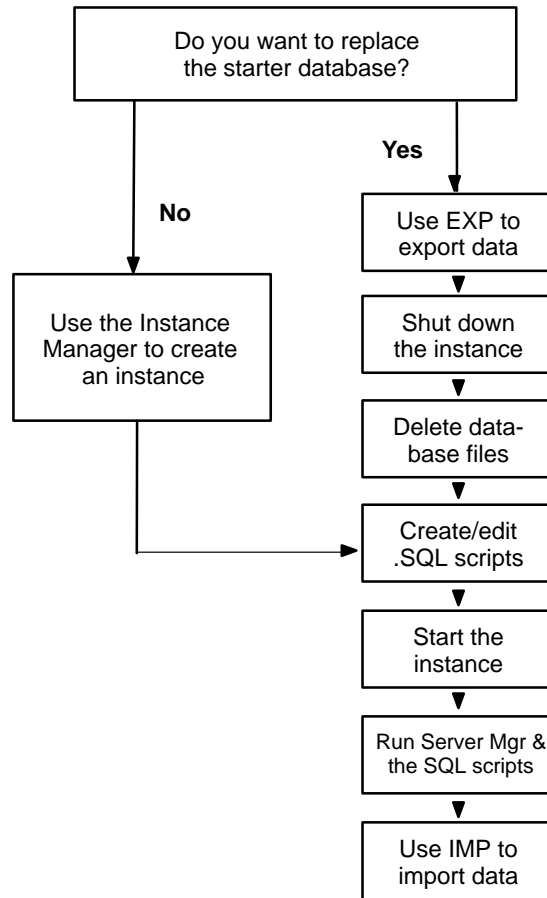
Creating a New Database

After you complete an Oracle7 Server installation of Oracle7 Server for Windows NT, you install a starter database. If you chose Selective Install and did not install a starter database, you must create your own database.

The steps below are divided into two sections:

- preparing to create a new database
- creating a new database

The following flow chart diagrams the decision process for the types of tools and protocols you use if you decide to create a custom database (one specialized for your needs).



If you have installed Oracle7 Server for Windows NT without the starter database or if you are creating an additional database, you must create a separate Oracle instance. See *Creating an Instance with Instance Manager* in this chapter for more details.

Note: To replace the starter database, or if you have already created an instance, follow the steps below.

Preparing to Create a New Database

Follow the steps below to create a new database.

1. Use the EXP utility to export any data from the current database that you wish to migrate to the new database. To start EXP, type:

```
C:\>EXP73 [options]
```



Oracle7 Utilities

Additional Information: When you run the EXP utility from Windows NT workstations, the BUFFER parameter defaults to a value of 4K, and the RECORDLENGTH parameter defaults to 2K. See *Oracle7 Server Utilities* for more information about EXP.

2. Start Server Manager from the console and connect with your user name and password:

```
C:\>SVRMGR73 [MODE=LINE]
```

3. Shut down your Oracle7 Server for Windows NT using Database Manager or the Server Manager SHUTDOWN command.



Additional Information: For more information on using Database Manager, or any of the Database Tools, see the online Help included with your product.

4. Make backup copies of all the database, redo, log, and control files if the database contains important information.



Attention: See the sections *Setting the Archivelog Mode and Recovering the Database* and *Backing Up the Database* in this chapter, and *Oracle7 Server Administrator's Guide* for more information.

5. Delete all the database files (including data files, redo log files, and control files) from the starter database:

- SYS1ORCL.ORA
- USR1ORCL.ORA
- RBS1ORCL.ORA
- TMP1ORCL.ORA
- INITORCL.ORA
- LOG1ORCL.ORA
- LOG2ORCL.ORA
- CTL1ORCL.ORA

If you are replacing the starter database, go to Step 8 now.

6. If you have created a new instance, copy the sample initialization parameter file `INITsid.ORA` to a new file named `INITsid.ORA`, where *sid* is the new instance name.
7. Using any text editor, modify the new `INITsid.ORA` file so that all references to the CONTROL_FILES parameter reflect the new SID.

For example, if the new instance's SID is ABC, replace `CTL1ORCL.ORA` (in the `INITABC.ORA`) with `CTL1ABC.ORA`.



Attention: The CONTROL_FILES parameter in the INITsid.ORA file must specify the complete path(s) of control file(s), including drive designators. For example:

```
CONTROL_FILES =
(D:\MY_ORACLE_HOME\DATABASE\CTL1ABC.ORA)
OR
CONTROL_FILES = (%RDBMS73%\DATABASE\CTL1ABC.ORA)
```



Warning: %RDBMS73% is instantiated by Oracle to a directory with the drive designator stated above. If a drive letter(s) is not provided, Oracle will not start properly.



Attention: See *Initialization File Parameters* in this Guide for important additional information on modifying Windows NT-specific initialization parameters. See also *Oracle7 Server Administrator's Guide*.

8. (Optional) Use a text editor to create a SQL script containing the CREATE DATABASE statement.

A SQL script is a file containing SQL commands just as you would type them in Server Manager. Using a SQL script makes it easier to edit and verify the SQL statement required for creating a new database.

Use the following syntax for the CREATE DATABASE statement:

```
CREATE DATABASE database_name
[CONTROLFILE REUSE]
[LOGFILE filespec [,filespec] ...]
[MAXLOGFILES integer]
[MAXLOGMEMBERS integer]
[DATAFILE filespec [,filespec] ...]
[MAXDATAFILES integer]
[ARCHIVELOG | NOARCHIVELOG]
[EXCLUSIVE]
[CHARACTER SET name]
```



Attention: If you assigned a value to the DB_NAME initialization parameter in the INITsid.ORA file, be sure you use the same value for the *database_name* parameter in the CREATE DATABASE statement.

The CREATE DATABASE parameters are described in Chapter 3.



SQL Ref.

Additional Information: The remaining parameters in the CREATE DATABASE statement are described in *Oracle7 Server SQL Reference*.

Starting an Instance and Creating the Database

Follow these steps to create a new database:

1. Start the instance with the Instance Manager, or follow the instructions in the *Oracle Service* section earlier in this chapter.
2. Set the Oracle SID environment variable to equal the SID. For example:

```
SET ORACLE_SID=ABC
```

If you will use this instance often, you can set the ORACLE_SID key to equal the SID in the Windows NT Registry. To do this, start the Registry's editor, choose Software and Oracle.

3. Start Server Manager from the command line and connect to the database as follows:

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



Attention: If you receive the errors DBA-00314 or ORA-09352, the Oracle SID environment variable is not set to the instance's SID. See Step 2 above.

4. Start an Oracle7 instance without mounting a database. If the initialization parameter file you are using is not named `INITsid.ORA` or is not located in the `\ORANT\DATABASE` directory of the computer executing Server Manager, use the `PFILE` option with the `STARTUP` statement:

```
SVRMGR>STARTUP NOMOUNT [PFILE=path\filename]
```

5. If you created a SQL script file earlier, execute the `CREATE DATABASE` statement stored in that script file by typing:

```
SVRMGR>@[path]filename
```

where *filename* is the name of the file containing the SQL statement.

If you did not create a SQL script for the `CREATE DATABASE` statement, enter the statement directly at the SVRMGR prompt.

Oracle7 Server for Windows NT automatically creates the redo log file(s) and database file(s) that you specify in the `CREATE DATABASE` statement. It also creates the control files listed in the `CONTROL_FILES` initialization parameter.

6. After entering the `CREATE DATABASE` statement, you should run the SQL script `CATALOG.SQL` to create the Oracle7 Server for Windows NT data dictionary views and the script `CATPROC.SQL` if you will be using PL/SQL.

You should also run any other SQL scripts at this time. All SQL scripts for Oracle7 Server for Windows NT are stored in
\\ORANT\\RDBMSnn\\ADMIN.



Attention: See *Advanced Replication Option* if you will be creating a database for Advanced Replication at this time.



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Additional Information: Oracle7 Server for Windows NT SQL scripts have the same names as those scripts listed in the *Oracle7 Server Administrator's Guide*. Please refer to that Guide for additional information.

7. Use the Import utility to import database tables and other objects exported using the Export utility. To start Import, type

```
C:\>IMP73 [options]
```



Utilities

Additional Information: When you run the IMP utility from Windows NT workstations, the BUFFER parameter defaults to a value of 4K and the RECORDLENGTH parameter defaults to 2K. See *Oracle7 Server Utilities* for more information about IMP.

8. If you need to create private rollback segments, use the instructions in the *Oracle7 Server Administrator's Guide* to do so now. Then, add the ROLLBACK_SEGMENTS parameter to the initialization parameter file, if necessary.
9. Back up the entire database to enable you to recover the new database in case you lose it. For more information on making backups, see the sections *Setting the ArchiveLog Mode and Recovering the Database* and *Backing Up the Database* in this Guide and *Oracle7 Server Administrator's Guide*.

Note: If an accident occurs and you lose your database at this point—that is, before you've entered new data into it—re-creating the database may be easier than attempting to restore it from backup files.

By following these steps, you create a custom database with a single tablespace called SYSTEM.

One rollback segment (called SYSTEM) is created in the SYSTEM tablespace. Two DBA accounts are also created: SYS with password CHANGE_ON_INSTALL and SYSTEM with password MANAGER.

Creating Database Objects

Once you have created new database files, as described in Chapter 3 of this Guide, you can create new database objects including:

- tables
- clusters
- indexes
- views
- roles



Additional Information: See *Oracle7 Server Administrator's Guide* for guidelines on creating database objects. In particular, see the section that provides equations for estimating the space requirements for clusters, nonclustered tables, and indexes. Windows NT uses the same fixed header, transaction header, and row header constants described in that chapter.

When creating database objects such as tables, clusters, and indexes, specify a `STORAGE` clause to define the way in which the object size increases over time.



Additional Information: The individual parameters of the `STORAGE` clause have the same defaults and minimum values as those described in the *Oracle7 Server SQL Reference*.

Setting Resource Costs

Oracle7 Server for Windows NT allows you to limit users' access to database resources and database objects.

For example, you can set limits for a user's file input/output (I/O) regardless of which database objects the user accesses. Set a resource cost for the logical reads of the user's session to set I/O limits.

Define resource costs through user profiles. A profile is a collection of valid database resources and costs for a given user. With Oracle7 Server for Windows NT, you can create user profiles to define the following resource costs:

- logical reads for individual sessions or SQL statements
- number of sessions that a user may create
- idle time and elapsed time for each user session

- CPU time used by each user's session on the server machine



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Additional Information: See *Oracle7 Server Administrator's Guide* for details on setting resource costs.

Using the Oracle7 Server Utilities

The Oracle7 Server utilities enable you to move data to and from an Oracle database and administer database-related functions.

For example, SQL*Loader lets you load data from ASCII text files and other file formats into an Oracle7 Server for Windows NT database. The Import and Export utilities let you move existing Oracle data to and from database files.

The Oracle7 Server utilities are available for many different operating systems and hardware platforms; the utilities operate in essentially the same way for all platforms.

This section describes only those functions of the Oracle7 Utilities that apply to the Windows NT operating system (these utilities are the Windows NT 32-bit versions). For general information on the Oracle7 utilities, refer to *Oracle7 Server Utilities*.

Note: The Oracle7 utilities for Windows NT use the same messages and codes as the Oracle utilities on other platforms. For further information on Oracle utility error messages, refer to the *Oracle7 Server Messages*.

Note: Import, Export, and SQL*Loader are also available in a 16-bit GUI-based version (included with the Windows database tool set).

Using Export and Import

Export and Import utilities can run as operating system command-line tools in Windows NT. Their 16-bit counterparts can run when you choose their respective icons from the Windows Program Manager (or Windows 95 Explorer).

Export

Use the Export utility to export your database tables and other objects to disk when archiving them or prior to migrating data between hardware platforms. To start Export, type:

```
C:\> EXP73 [options]
```

Import

Use the Import utility to import database tables and other objects that you exported using the Export utility. To start Import, type:

```
C:\> IMP73 [options]
```

See *Oracle7 Server Utilities* for complete usage instructions and command-line options available for Export and Import.

BUFFER and RECORDLENGTH Defaults

When running the Export and Import utilities from the Oracle7 Server for Windows NT, note that the default values for certain parameters are operating-system specific. Specifically, the BUFFER parameter defaults to a value of 4K under Windows NT and the RECORDLENGTH parameter defaults to 2K.

Using SQL*Loader

SQL*Loader enables you to load data from delimited ASCII text files and fixed-length record files.

SQL*Loader Release 7.3 includes a direct path option that bypasses the Oracle redo log and data verification features, thereby decreasing loading time. Use the direct path option only with data files known to be error free. To start SQL*Loader, type:

```
C:\> SQLLDR73 [options]
```

SQL*Loader Processing Options

Windows NT supports the following processing options:

- “VAR”—load variable length records. Specify the OSD “VAR <reclsizehint>” in the control file for this option to take effect. The maximum size is 64K bytes.
- “FIXn”—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.
- “”—stream record format in which each record is terminated by a newline character. The maximum record size is 48K bytes.



Additional Information: For a complete list of options and instructions on using SQL*Loader, see the *Oracle7 Server*

Utilities. The directory \ORANT\RDBMS73\LOADER contains a number of examples on the use of SQL*Loader.

Control File Conventions

When preparing a SQL*Loader control file, you must follow certain syntax and notational conventions. For general information on the use and syntax of control files, refer to *Oracle7 Server Utilities*.

Native Datatypes

When specifying datatypes in the SQL*Loader control file, note that the default size of native datatypes are specific to Windows NT. You cannot override these defaults in the control file.

<i>Native Datatype</i>	<i>Default Field Length</i>
INTEGER	4
SMALLINT	2
FLOAT	4
DOUBLE	8

Using the MONITOR Command

In addition to performing database administration tasks outside the scope of the client Database Tools, you can use Server Manager to monitor the performance of the Oracle7 Server for Windows NT using the MONITOR command.

To use Server Manager MONITOR screens, run Server Manager in screen mode and pick one of the selections from the MONITOR menu. For further information, refer to *Oracle7 Server Utilities*.

Instance Manager Command Line Commands

This section describes the ORADIM73 commands and parameters. Note that each command is preceded by a dash.

-NEW

Create an instance by specifying the following parameters:

```
-NEW -SID <sid>
      [-INTPWD <internal_pwd>]
      [-MAXUSERS <number>]
      [-STARTMODE <auto, manual>]
      [-PFILE <filename>]
```

- **-SID** is mandatory; *sid* is the system identifier (SID). The remaining parameters are optional.
- For *internal_pwd* specify the password for the INTERNAL account.
- For *number*, specify the number of users in the password file. The default is 5.



Attention: Creating an instance using ORADIM73 in command line mode only creates the password file and related service. The database is NOT created (that is, database files are not created).

-EDIT

Edit a database instance by specifying the following parameters:

```
-EDIT -SID <sid>
      [-NEWSID <newsid>]
      [-INTPWD <internal_pwd>]
      [-STARTMODE <auto, manual>]
      [-PFILE <filename>]
```

- **-SID** is mandatory; *sid* is the system identifier (SID). The remaining parameters are optional.
- For *newsid*, specify the new SID for the instance (enter only if changing an existing instance name).
- For *internal_pwd* specify the password for the INTERNAL account (this is necessary only if the password file was not created earlier).

-STARTUP

To start an instance, specify the following parameters:

```
-STARTUP -SID <sid>
-PFILE <filename>
[-USRPWD <user_pwd>]
-STARTTYPE <SRVC, INST>
```

- For *sid*, specify the system identifier (SID).
- For *user_pwd*, specify the password for the user account specified. (Not needed if the user has connected as INTERNAL and either the DBA_AUTHORIZATION or DBA_sid_AUTHORIZATION parameter is set to BYPASS.)
- For -STARTTYPE, specify SRVC for services, INST for instance, or both.

-SHUTDOWN

To stop an instance, specify the following parameters:

```
-SHUTDOWN -SID <sid>
[-USRPWD <user_pwd>]
-SHUTTYPE <SRVC, INST>
-SHUTMODE <a, i, n>
```

where *a* is abort mode, *i* is immediate mode, and *n* is normal mode.

-DELETE

To delete any number of instances, specify the following:

```
-DELETE -SID <sida, sidb, sidc, . . . >
-DELETE -SRVC <srvca, srvcb, srvcc, . . . >
```

/help

To display a listing of Instance Manager commands, specify one of the following queries:

```
-? | /? | /h | /help
```

ORADIM Log

When you use ORADIM73 in command line mode, Instance Manager opens a log file (ORADIM73.LOG) in: %ORACLE_HOME%\RDBMS73. All operations (both successful and failed) are logged in this file. You must check this file to verify the success of an operation.

Getting the Most out of Integration with Windows NT

This chapter describes ways in which the tight integration between Oracle7 Server for Windows NT and the Windows NT operating system. This topics are covered in this chapter:

- Oracle7 and the Windows NT Performance Monitor
- Oracle7 Event Viewer
- database security
- starting services automatically
- using Windows NT OS authentication

Oracle7 and the Windows NT Performance Monitor

Oracle7 Server for Windows NT takes advantage of the Windows NT Performance Monitor to help you keep track of, and measure the performance of your database. The following descriptions include Oracle-specific information about Performance Monitor.

- If no data or Oracle objects appear, either the database is down, or an invalid host string or password has been entered. If the database is down, exit Performance Monitor, start the database, and restart Performance Monitor.
- See `operf.log` located in `ORANT\DBS` for information on the status of the Oracle Performance Monitor.
- All Oracle-specific items that can be monitored through Performance Monitor begin with *Oracle7*.



Additional Information: For more information on the Windows NT Performance Monitor, see your operating system documentation.

The following information is located in the Windows NT Registry. After running `regedt32`, the information is located in

```
\\HKEY_LOCAL_MACHINE\SYSTEM\CURRENT_CONTROL_SET\SERVICES\
ORACLE7\PERFORMANCE
```

Value Name	Data Type	Value
Perf_File_Name	REG_EXPAND_SZ	%ORACLE_HOME%\DBS\PERF.ORA
Library	REG_EXPAND_SZ	operfdll.dll
Open	REG_EXPAND_SZ	OpenOracle7PerformanceData
Close	REG_EXPAND_SZ	CloseOracle7PerformanceData
Collect	REG_EXPAND_SZ	CollectOracle7PerformanceData
Hostname	REG_EXPAND_SZ	2:ORCL
Username	REG_EXPAND_SZ	System
Password	REG_EXPAND_SZ	Manager

Only the last 3 items (Hostname, Username, Password) in the above table can be modified. They can point to any Oracle database (local or remote). You must have read access to any tables from which you want to get data.

Note: One SID per machine can be monitored using Performance Monitor at a time.



Additional Information: For more information on the Performance Monitor, see your operating system documentation.



Additional Information: For more information on the meaning of Windows NT Performance Monitor results, and what you can do about your database performance, see *Oracle7 Server Tuning* and your operating system documentation.

Performance Monitor Objects

Performance Monitor objects are detailed below.

Memory Allocation Objects

Object: Oracle7 Library Cache

The Library Cache object contains one counter, the reloads/pins percentage counter.

This value is not time derived.

The reloads/pins is the percent of SQL statements, PL/SQL blocks and object definitions which required re-parsing. This percentage should be near ZERO. If the percentage is greater than 1%, then you should reduce the library cache misses. See *Reducing Library Cache Misses* in *Oracle7 Server Tuning*.

Object: Oracle7 Data Dictionary Cache

The Data Dictionary Cache object contains one counter, the get misses/gets percentage counter.

This value is not time derived.

For frequently accessed dictionary caches, the value of this counter should be less than 10–15%. 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. See *Reducing Data Dictionary Cache Misses* in *Oracle7 Server Tuning*.

Object: Oracle7 Buffer Cache

The Buffer Cache object contains one counter, the phyreads/gets percentage counter.

This value is not time derived.

If the Miss counter is high (higher than 30% – 40%), increase the number of buffers in the cache to improve performance. See *Reducing Buffer Cache Misses* in *Oracle7 Server Tuning*.

Note: The percentage is calculated as a Miss ratio: Reducing Buffer Cache Misses expresses the calculation as a High ratio.

Tuning I/O

Object: Oracle7 Data Files

The Data Files object contains two counters per data file instance, the phydrds/sec and phywrts/sec counters.

These values are time derived.

See *Reducing Disk Contention* in *Oracle7 Server Tuning*.

Object: Oracle7 Dynamic Space Management

The Dynamic Space Management object contains one counter, the recursive/calls per second counter.

If Oracle7 makes excess recursive calls while your application is running, it may be necessary to determine the cause of excess recursive calls. See *Detecting Dynamic Extension* in *Oracle7 Server Tuning*.

Tuning Contention

Object: Oracle7 Redo Log Buffer

The Redo Log Buffer object contains one counter, the redo log space request counter.

The value of this counter should be near 0. If this value increments consistently, processes have had to wait for space in the buffer. In this case, it may be necessary to increase the size of the redo log buffer. See *Space in the Redo Log Buffer* in *Oracle7 Server Tuning*.

Additional Tuning Contentions

Object: Oracle7 Tuning Sorts

The Tuning Sorts object contains two counters, the sorts in memory/sec and the sorts on disk/sec counters.

If a significant number of sorts require disk I/O to temporary segments, your application's performance may benefit from increasing the size of the sort area. See *Increasing Sort Area Size* in *Oracle7 Server Tuning*.

Object: Oracle7 Free List

The Free Lists object contains one counter, the freelist waits/requests percentage counter.

If this value is greater than 1% add more free list to reduce contention. See *Identifying Free List Contention* in *Oracle7 Server Tuning*.

Event Viewer

The Windows NT Event Viewer displays warnings and errors about the Oracle7 database. As with other events displayed in the Event Viewer, you can double-click on them to display more detailed error information.

Note: The Windows NT Event Viewer displays the same information contained in ALERT.LOG.



Additional Information: For more information on using the Windows NT Event Viewer, see your operating system documentation.

Database Security

When a user on the Windows NT server machine (on which the database is running) attempts to connect to a database as INTERNAL, Oracle7 Server for Windows NT verifies if the database can be accessed without a password. The database can be accessed without a password if at least one of the following conditions is true:

- the Windows NT Registry key for the environment variable DBA_AUTHORIZATION is set to BYPASS
- the Windows NT Registry key for the environment variable DBA_sid_AUTHORIZATION is set to BYPASS, where *sid* is the SID of the current instance

Additional Information: See *Configuration Parameters and the NT Registry* in this Guide for details on configuration parameters and the Windows NT Registry.

If either of the above conditions is true, the database connection is considered *secure* (that is, accessible), and Oracle7 Server for Windows NT allows the user to connect to the database without a password.

If neither of these conditions is true, or if the user is not on the same machine as the Oracle7 Server for Windows NT, Oracle7 determines the value of the REMOTE_LOGIN_PASSWORDFILE initialization parameter, and proceeds as follows:

- REMOTE_LOGIN_PASSWORDFILE=EXCLUSIVE:
Oracle7 looks in the Windows NT Registry for the value of the ORA_sid_PWFIL parameter. If not found, it looks in the Registry for the value of the ORA_PWFIL parameter, which points to a file containing the INTERNAL password as well as user names, passwords, and privileges. Based on the value of the parameter

found, the user is granted or denied privileged access to the database

- **REMOTE_LOGIN_PASSWORDFILE=SHARED:**
The SHARED value of this parameter affords backward compatibility with earlier releases of Oracle7. Oracle7 looks for the same files as it does when the value is EXCLUSIVE, but only the INTERNAL account is available for privileged access. Users will not be able to log in with SYSOPER or SYSDBA privileges even if those privileges are granted in the password file.
- **REMOTE_LOGIN_PASSWORDFILE=NONE:**
If the value of this parameter is NONE, either one of the first two security conditions above is true, or no users are granted access to the database.

Additional Information: See *Initialization Parameter Files* in this Guide for details on Windows NT initialization parameters.

Database Password Encryption

With this release of Oracle7 Server for Windows NT, you can require that the password used to verify a remote connection—that is, a connection over SQL*Net—always be encrypted. You do this in two steps:

- Set the DBLINK_ENCRYPT_LOGIN initialization parameter on the server to TRUE.
- Set the ORA_ENCRYPT_LOGIN environment variable on the client machine to TRUE.

Once these parameters are set, whenever you attempt a remote login, Oracle encrypts the password before sending it to the remote database. If the connection fails, the failure is noted in the audit log. Oracle then checks the appropriate parameter values. If either is set to FALSE, Oracle 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.



Attention: Releases of the Oracle7 Server prior to 7.1 did not support encrypted passwords. Therefore, if you know you are connecting to earlier versions of an Oracle7 Server for Windows NT, you must set the initialization parameter DBLINK_ENCRYPT_LOGIN to FALSE for the connection to succeed.

Creating Password Files

You create password files with the Instance Manager, as part of the process of creating an instance. The two essential elements of a password file you specify with the Instance Manager are:

- the password for the INTERNAL account for that instance
- the maximum number of users to whom you wish to grant SYSOPER or SYSDBA privileges

The Instance Manager creates (in \ORANT\DATABASE) a password file with the name PWDsid.ORA, where *sid* is the system identifier (SID).

Later, you can add (or delete) user names, user passwords, and user privileges in the password file, using Server Manager.



Warning: *Do not move or copy password files on your own; do so only with the Instance Manager. If you do, the Instance Manager may not be able to find a password in order to start an instance.*

Starting Services Automatically

You can start Oracle7 Server for Windows NT automatically on restart by setting the OracleStartORCL service to automatic in the Services control panel.

Using Windows NT OS Authentication

When enrolling ORACLE users, you may optionally use the NT username as the basis for ORACLE usernames. Users enrolled in this way can connect to ORACLE7 Server faster and more conveniently. When using the NT username for authentication, the database administrator sets the OS_AUTHENT_PREFIX parameter in the INITsid.ORA file. If this parameter is not set, the default value is OPS\$. The syntax for granting automatic logins when using the default value of OS_AUTHENT_PREFIX is as follows:

```
SVRMGR> create user TO OPS$USERID IDENTIFIED EXTERNALLY;
```

where USERID is the user's NT username.



Additional Information: For more information on operating system authentication, see *Oracle7 Server Administrator's Guide*.

For example, to enroll a user whose NT username is FRANK, when the OS_AUTHENT_PREFIX is set to XYZ, enter:

```
SVRMGR> CREATE USER XYZFRANK IDENTIFIED EXTERNALLY;
```

Subsequently, if you are accessing a shared resource from a Windows NT or Windows 95 station, and you connect to Oracle, you need not enter your Oracle username. For example, after you enter SVRMGR you can enter:

```
CONNECT /<@destination>
```

at the SVRMGR prompt. Oracle searches the directory tables for an automatic login username corresponding to the NT username of FRANK, verifies it, and allows you to connect as XYZFRANK.

Because the Oracle Username is the whole name XYZFRANK, all objects created by XYZFRANK (that is tables, views, indexes, etc.) are prefixed by this name. For another user to reference the table SHARK owned by XYZFRANK, the user would enter:

```
SVRMGR> Select * from XYZFRANK.SHARK
```

Note: Automatic authorization accounts are supported for all protocols under SQL*Net V2. The user must be already authenticated on the NT workstation/server running the ORACLE7 database. An authenticated connection is established between the client's workstation and the NT workstation/server when a shared resource is accessed and the correct username/password are supplied.

You can set OS_AUTHENT_PREFIX to the null string (a set of double quotes with no string included). This eliminates the need for any prefix to the NT usernames.

Note: No INITsid.ORA changes are necessary to enable automatic login.

NT GROUPS and ROLES

Oracle7 Server for Windows NT allows database roles to be granted to users directly by Windows NT. When database users are enrolled using the automatic authenticated accounts, Windows NT groups can be used to grant these users database roles. NT groups are created by using the Windows NT USER MANAGER utility.



Additional Information: For more information on managing roles, see *Oracle7 Server Administrator's Guide*.

One INITsid.ORA parameter must be properly set before Windows NT groups can be used to grant a database role:

OS_ROLES must be set to TRUE.

The default setting for this parameter is FALSE. Unless set to TRUE, Windows NT groups cannot be used to grant a database role.

1. Set the INITsid.ORA parameter OS_ROLES to be TRUE
2. Start or restart the database instance
3. Create and add users using the Windows NT USER MANAGER. Include the ORA_%SID%_ROLENAME format as described :

ORA_%SID%_ROLENAME[_[D][A]]

where %SID% indicates the database instance.

ROLENAME identifies the role assigned to database users during the session.

D indicates the role as the default role

A indicates the role includes the ADMIN OPTION. This option allows the user to grant the role to other roles only. Roles cannot be granted to users if the operating system is used to manage roles.

Note: Oracle will convert the group name to UPPERCASE.

Note: Both the [D] and [A] characters are optional. If either the D or A characters are specified, they must be preceded by an underscore.

For example, a database instance of ORCL would have the following names if the role was identified by USERS:

- ORA_ORCL_USERS
- ORA_ORCL_USERS_D
- ORA_ORCL_USERS_A
- ORA_ORCL_USERS_DA

In the following example the Groups user are:

- ORA_ORCL_VIEWUSERS
(created using CREATE ROLE)
- ORA_ORCL_UPDATEUSERS_A
(created using CREATE ROLE)
- ORA_ORCL_CONNECT_DA
(predefined ROLE; active even if OS ROLES is false)

- ORA_ORCL_RESOURCE_D
(predefined ROLE; active even if OS ROLES is false)

In this example, when a database user connects to the Oracle7 Server using an automatic authenticated account whose user id is also included in the above NT Groups (ORA_ORCL_CONNECT_DA and ORA_ORCL_RESOURCE_D are the default roles)

ORA_ORCL_UPDATEUSERS_A and ORA_ORCL_VIEWUSERS are available for use by the user through the SET ROLE command. Additionally, users can grant ORA_ORCL_UPDATEUSER_A and ORA_ORCL_CONNECT_DA to other roles.

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.

When OS_ROLES is set to TRUE in the INITSid.ORA file, it is important to understand how roles, and the privileges granted to these roles are obtained by Oracle users whose IDs are not defined externally.

For example, if an authenticated connection exists between a client's workstation and a Windows NT machine running Oracle7, and the user connects over SQL*Net V2 with the Oracle username scott/tiger, the roles applied to the Oracle username SCOTT consist of all roles defined for the Windows NT user NTUSER. All roles available under an authenticated connection are determined by the Windows NT user id and the groups available to the user.

Administration group

- CONNECT / as sysdba
- CONNECT / as sysoper
- CONNECT INTERNAL

Database administrators who use CONNECT INTERNAL from a client workstation may belong to the ORA_OPER, ORA_DBA, ORA_%SID%_DBA or ORA_%SID%_OPER groups.

The SYSDBA and SYSOPER roles are mapped as follows:

```
SYSDBA> ORA_%SID%_DBA, ORA_DBA
SYSOPER> ORA_%SID%_OPER, ORA_OPER
```

For example:

If an authenticated connection exists between a client workstation and a Windows NT machine running Oracle7 (with the authenticated

username being NTUSER2), then the following takes place when the user issues the command `SVRMGR> connect / as sysdba`

Oracle will search for the username NTUSER2 in group ORA_ORCL_DBA. If found, the user will be given DBA privileges. If not found Oracle will check the global group ORA_DBA.

Database Administration

This chapter explains how to perform the following routine database tasks using the Oracle7 Utilities for Windows NT:

- backup manager
- hot database file backup
- recovery manager
- refreshing table snapshots
- using trace and alert files
- logging error messages
- advanced replication option
- SQL language conventions

SQL language conventions specific to Windows NT are discussed at the end of this chapter.

Backup Manager

Backup Manager is one of the Windows NT-based database management tools included with Oracle7 Server for Windows NT. Use it to back up your Oracle7 database.

The Backup Manager runs in two modes (depending upon the status of the database and the Support Recovery option), located on the Configure Initialization Parameters dialog box of Database Manager.

The Backup Manager, when opened, appears in one of two ways, depending upon the status of the database:

- running in **ARCHIVELOG** mode—the database is running and the Support Recovery option is on, the database is in ARCHIVELOG mode
- running in **NOARCHIVELOG** mode or not running—the database is running and the Support Recovery option is off, the database is in NOARCHIVELOG mode

During the Backup process, you may be prompted to enter your database password. If so, type your database password and choose OK.

Hot Database File Backup

This section discusses:

- backing up active files
- restoring active files
- backing up RAW files
- restoring RAW files



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Additional Information: See *Oracle7 Server Administrator's Guide* for a detailed discussion of backing up the database.

Backing Up Active Files

Use OCOPY two ways. The first way is to copy the open file to another name and location on a hard disk, where an archive utility can back it up.

The syntax for using OCOPY in this way is:

```
C:\>OCOPYnn old_file new_file
```

where *nn* indicates the version of OCOPY Release 7.3 or later, *old_file* specifies the name and location of the open file you want to back up, and *new_file* specifies the name and location for the backup copy.

Note: OCOPY also accepts two other optional command line options, *a* and *size_1 [size_n]*. These command line options should not be used to make backups of database files.

OCOPY can also back up large open files directly to multiple diskettes. Use OCOPY with the /B option to split large files over multiple diskettes.

OCOPY also reconstructs the parts of a file that have been split over multiple diskettes if the backup copy must be restored to the hard disk. The syntax for using OCOPY with the /B option is:

```
C:\>OCOPYnn /B open_file a:
```

where *open_file* specifies the path and filename of the open file you want to back up and *a:* specifies the diskette drive containing the diskette on which the backup copy should be saved.

If the file is too large to fit on one diskette, OCOPY prompts you to insert new diskettes as needed. OCOPY catalogs the parts of the file automatically so that it can be reconstructed at a later time.

Note: Always use a fresh diskette for each OCOPY procedure; **do not** use OCOPY to back up a file onto a diskette that contains part or all of another file backed up using OCOPY.

Restoring Active Files

To restore files backed up with OCOPY *without* the /B option, use the Windows NT COPY command to restore the files to the desired directory.

To restore a file that has been backed up to multiple diskettes using OCOPY *with* the /B option, insert the diskette containing the first part of the backed up file into the disk drive and use the following syntax:

```
OCOPYnn /R a: restore_dir
```

where /R specifies the restore option, *a:* specifies the drive containing the diskette with the backed up file, and *restore_dir* specifies the directory on the server where the file being restored should be placed. (The restored file will have the same name as the original file that was backed up.)

Backing Up RAW Files

This section describes how to back up Logical RAW files and Physical RAW files.

Logical RAW Files

To back up Logical RAW files, use the following syntax:

```
C:\>OCOPYnn \\. \C: new_file  
C:\>OCOPYnn /B \\. \C: a:
```

where *c*: represents the raw drive, which holds a single RAW database file. If you use a different drive as your raw drive, substitute it for *c*.

Physical RAW Files

To back up Physical RAW files, use the following syntax:

```
C:\>OCOPYnn \\. \physicaldriveN: new_file  
C:\>OCOPYnn /B \\. \physicaldriveN: a:
```

where *N* is the number(s) representing each of the physical drives in the system.

Restoring RAW Files

To restore RAW files, use the following syntax:

```
C:\>OCOPYnn new_file \\. \c:  
C:\>OCOPYnn /R a: \\. \c:
```

where *c*: represents the raw drive, which holds a single RAW database file. If you use a different drive as your raw drive, substitute it for *c*.
OCOPY prompts you to insert diskettes as needed.

Recovery Manager

Use Recovery Manager to recover your Oracle7 database after a failure.

During the Recovery process, you are prompted to enter your database password. If so, enter your database password and select OK.



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Additional Information: For more information about recovery, see *Oracle7 Server Administrator's Guide*.

Using Trace and Alert Files

Oracle7 Server for Windows NT 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 initialization parameter file. If BACKGROUND_DUMP_DEST is set, the trace files are stored in that directory. If the parameter is not set, the trace files are stored in the \ORANT\RDBMSnn\TRACE directory.

Oracle7 Server for Windows NT 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. Some sample trace file syntax is *sidDBWR*.TRC and *sidSMON*.TRC, where *sid* represents the name of the instance (the value of the ORACLE_SID configuration parameter).

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 ORAxxxxxx.TRAC, where xxxxxx is a 5-digit number indicating the Windows NT thread ID.

The alert file contains important information about error messages and exceptions during database operations. Each Oracle7 Server for Windows NT instance has one alert file; information is appended to the file each time you start the instance. All threads are able to 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 you should check if something goes wrong with the database and the cause is not immediately obvious.

The alert file is named *sidALRT*.LOG and is found in the directory specified by the BACKGROUND_DUMP_DEST parameter in the initialization parameter file. If the BACKGROUND_DUMP_DEST parameter is not set, the *sidALRT*.LOG file is generated in \ORANT\RDBMSnn\TRACE.

Logging Error Messages

You can keep a log of the error messages you receive from the Oracle7 Utilities by redirecting them to a file. You can record the contents of normal utility messages by using the LOGFILE parameter discussed in the *Oracle7 Server Utilities*. You can separately record the error message portion by using standard Windows NT file redirection. For example,

you might use the following syntax to redirect the output from the EXP73 utility:

```
C:\>EXP73 username/password PARFILE=filename 1>FILE1.LOG  
2>FILE2.ERR
```

In this command line, FILE1.LOG receives the standard output from EXP, while FILE2.ERR receives the standard error.

Refreshing Table Snapshots

Oracle7 Server for Windows NT allows you to create copies of a remote database table.

These copies, referred to as table *snapshots*, can reside on multiple nodes of a distributed database. Snapshots allow users to query remote tables on a local Oracle7 Server, thereby reducing network traffic.

The information in a table snapshot is periodically updated, or refreshed, to reflect the most recent information in the original table from which it was created.



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Additional Information: See *Managing Table Snapshots* in *Oracle7 Server Administrator's Guide*, for information on creating and managing table snapshots.

Oracle7 Server for Windows NT also creates one or more background threads called *Snapshot Refresh* threads, which can periodically refresh snapshots. Several Snapshot initialization parameters control refresh threads including:

- SNAPSHOT_REFRESH_PROCESSES
- SNAPSHOT_REFRESH_INTERVAL
- SNAPSHOT_REFRESH_KEEP_CONNECTIONS



SQL Ref.

Additional Information: The *Oracle7 Server SQL Reference* lists these initialization parameters, their default values, and the range of acceptable values, as well as providing explanations of these parameters.

Note: Snapshot Refresh threads are only available with the Distributed Option of Oracle7 Server for Windows NT.

Advanced Replication Option

This section includes details not contained in the source documents for the Advanced Replication Option.



Additional Information: There are many configuration and usage possibilities with Advanced Replication. For more information about Advanced Replication, see *Oracle7 Server Distributed Systems, Volume II: Replicated Data*, *Oracle7 Server Concepts*, *Oracle7 Server Administrator's Guide*, and other appropriate documentation.

Installation Requirements

Certain requirements must be met during the installation process for the Advanced Replication Option to function properly. These installation requirements are:

- advanced replication option must be installed at all sites participating in replication (both master and updatable snapshot sites)
- PL/SQL and the distributed database option must also be installed
- `catproc.sql` and `catalog.sql` must already have been run if you are not using the starter database
- advanced replication option cannot be used with releases prior to release 7.1.6. All sites must upgrade to Version 7.1.6 or later to use the advanced replication option
- SHARED POOL SIZE must be at least 10MB (this requirement may be greater depending on your replication needs. If you receive an error, increase the SHARED POOL SIZE.)
- SQL*Net V2. Consult the SQL*Net documentation on how to set up V2.

You should monitor the installation of the replication scripts and increase the amount of rollback segment resources as necessary.

Upgrading

If you are migrating from a previous version of Oracle7 Server for Windows NT and want to use the advanced replication option, you must first complete the migration (see *Migrating from Earlier Oracle7 Versions* in this Guide). After migrating, you can choose the advanced

replication option during Release 7.3 installation (see *Installation* in this Guide).

Using Advanced Replication Option

Caution: The Advanced Replication Option is an advanced feature. Please consult your *Oracle7 Server Distributed Systems, Volume II: Replicated Data* documentation for concepts and details before proceeding. Consult with Oracle Consulting if necessary.

System Requirements for the Advanced Replication Option

In addition to the hardware and software requirements found in *Installation*, the following are highly recommended:

- a minimum of 32 MB memory
- 90 MB of free hard disk space (essentially double the normal recommended requirements)

Oracle Tablespace Requirements

These are the recommended tablespace requirements for the Advanced Replication Option:

- System Tablespace: at least 20 MB of free space is required for replication packages. Replication triggers and procedures are stored here.
- Rollback Segments: at least two:
 - Rollback Initial Extent = 50 K
 - Rollback Next Extent = 50 K
- Rollback Tablespace: at least 5 MB of free space
- Temporary Tablespace: at least 10 MB free space
- User Tablespace: user specific

Initialization Parameters for Advanced Replication

The following initialization parameters must be set or added to the INITsid.ORA file (recommended values are included):

Master Site Parameters

<i>Parameter Name</i>	<i>Recommended Value</i>
COMPATIBLE	7.3.2
SHARED_POOL_SIZE	at least 10 MB
DISTRIBUTED_LOCK_TIMEOUT	300 seconds
DISTRIBUTED_TRANSACTIONS	5
GLOBAL_NAMES	TRUE
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
JOB_QUEUE_KEEP_CONNECTIONS	FALSE

Note: A practical limit of 10 Master Sites can be set up.

Snapshot Site Parameters (add these parameters for snapshot sites)

<i>Parameter Name</i>	<i>Recommended Value</i>
SNAPSHOT_REFRESH_PROCESSES	2
SNAPSHOT_REFRESH_INTERVAL	60 seconds
SNAPSHOT_REFRESH_KEEP_CONNECTIONS	FALSE

Setup Procedures

After setting up the INITsid.ORA file with the initialization parameters for Advanced Replication, run SVRMGR23. Connect as INTERNAL/password and start the database. Once the database has started, execute the script: CATREP.SQL. The script can be found in the %ORACLE_HOME%\RDBMS73\ADMIN directory. It will take approximately one hour to run. A good idea is to spool to a log file first before running CATREP.

To confirm that CATREP ran correctly, run a query on ALL_OBJECTS where STATUS = 'INVALID'. (ie: SELECT * FROM ALL_OBJECTS WHERE STATUS = 'INVALID';)

If you find that any of the package bodies ran incorrectly, rerun them manually. Here is the syntax for running them manually:

```
ALTER PACKAGE <package name> COMPILE BODY;
```

If CATREP.SQL has run successfully, a number of replication tables are made in the SYSTEM subdirectory. The database is now set up for Advanced Replication. Refer to the *Oracle7 Server Distributed Systems, Volume II: Replicated Data* documentation for details on setting up a Master Definition Site, Master Sites, Updatable Snapshot Sites, and Conflict Resolution.



Attention: Execute the following statement on the master site when setting up updatable snapshot sites:

```
GRANT EXECUTE ON DBMSOJGWRAPPER TO PUBLIC
```

Other Notes

The practical limit as to the number of Master Sites an environment may have is 10. The SNP0 to SNP9 process each handle one destination master at a time.

If you use the advanced replication option and intend to set up a large number of replicated objects, monitor the following data dictionary tables:

- SOURCES
- IDL_UB1\$
- IDL_UB2\$
- I_SOURCE1
- ARGUMENT\$
- I_ARGUMENT1
- IDL_SB4\$
- IDL_CHARS\$
- TRIGGERS

If necessary, increase the storage parameters to accommodate the storage requirements of large numbers of replicated objects.

SQL*Language Conventions

The *Oracle7 Server SQL Reference* describes all aspects of Oracle's implementation of the SQL language. Certain features of SQL have operating system-specific variations.

ROWID Datatype

The ROWID datatype provides a hexadecimal address of each row in a database table. The format of the ROWID datatype is:

`block.row.file`

where *block*, *row*, and *file* are hexadecimal addresses that indicate the data block, row, and database file of the queried row. The hexadecimal lengths for block, row, and file, are eight, four, and four, respectively. These lengths do not vary with Oracle7 Server for Windows NT.



Additional Information: See *Oracle7 Server SQL Reference* for more information on the ROWID datatype.

SQL Ref.

APPENDIX

A

Documentation Roadmap

This appendix describes the documentation set included in your package. It covers the following topics:

- documentation catalog
- using the documentation
- roadmap
- documentation sets

Note: Documentation may be included in your package detailing products that you did not buy/license.

Documentation Catalog

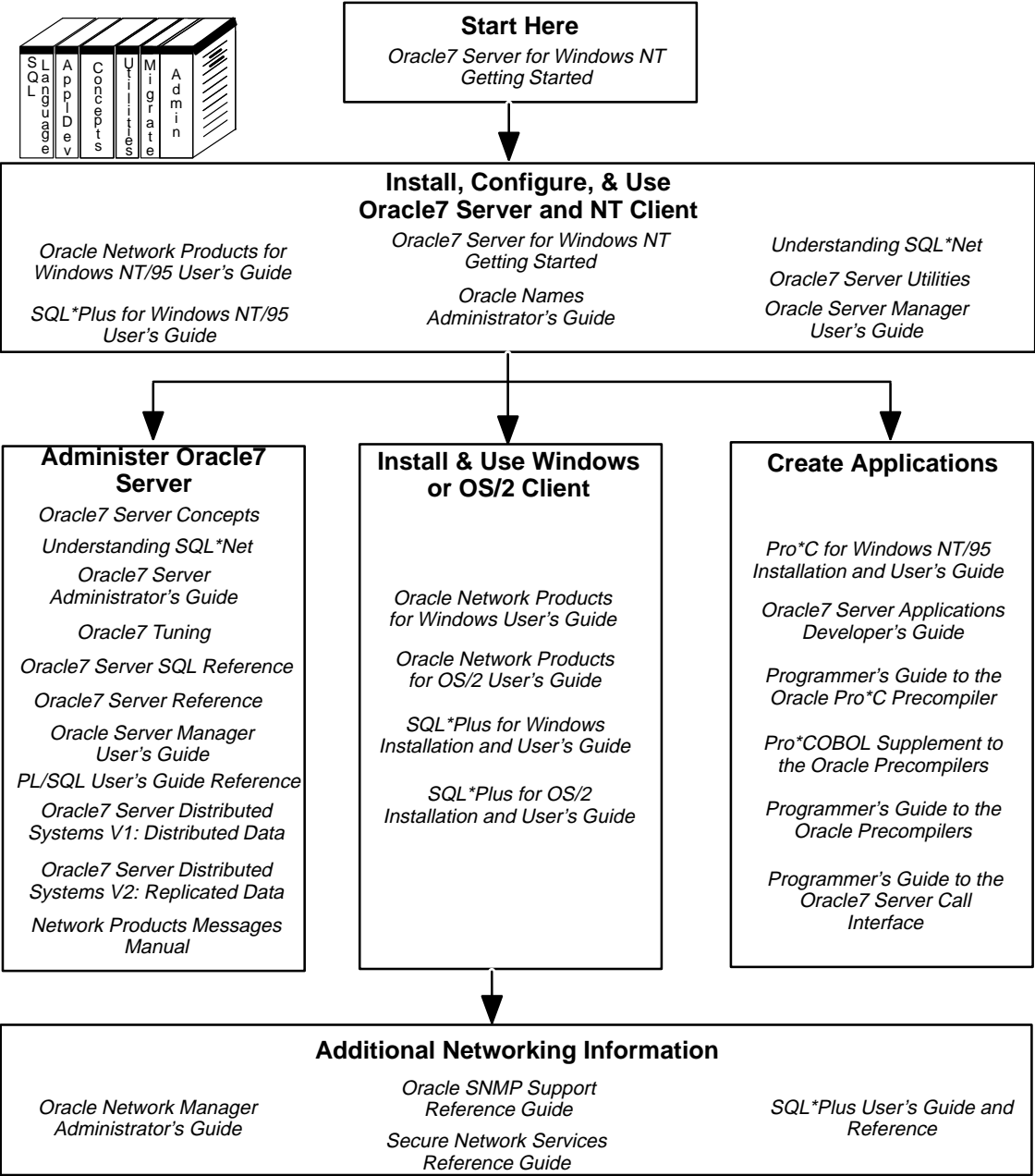
The following table lists the online documentation included with your Oracle7 Server for Windows NT package. The documentation is in Adobe Acrobat format. You can install the Adobe Acrobat files onto your hard drive, or leave them on the CD-ROM. At the end of server installation, you will be prompted to install Adobe Acrobat using the Adobe installer (included).

<i>Product Name</i>	<i>Product Documentation</i>
Oracle7 Server for Windows NT	<i>Oracle7 Server for Windows NT Getting Started</i> <i>Oracle7 Server Concepts</i> <i>Oracle7 Server Administrator's Guide</i> <i>Oracle7 Server Applications Developer's Guide</i> <i>Oracle7 Server SQL Reference</i> <i>Oracle7 Server Reference</i> <i>Oracle7 Server Utilities</i> <i>Oracle7 Server Messages</i> <i>Oracle7 Server Migration</i> <i>PL/SQL User's Guide and Reference</i> <i>Oracle7 Server Distributed Systems, Volume I: Distributed Data</i> <i>Oracle7 Server Distributed Systems, Volume II: Replicated Data</i> <i>Programmer's Guide to the Oracle Call Interface</i> <i>Oracle7 Parallel Server Concepts and Administration</i> <i>Oracle7 Server SQL Reference</i> <i>Oracle7 Server Tuning</i> <i>Oracle Server Manager User's Guide</i> <i>Oracle Server Manager for Windows User's Guide</i> <i>Oracle Server Manager for Windows Installation Guide</i> <i>Oracle Server Manager Release 2.3.2 Addendum</i> <i>SQL*DBA to Oracle Server Manager Migration Guide</i> <i>Oracle7 Spatial Data Option Application Developer's Guide</i> <i>Oracle7 Spatial Data Option Reference & Administrator's Guide</i> <i>Oracle7 Spatial Data Option Overview</i> <i>Oracle Enterprise Manager Performance Monitoring User's Guide</i>

Product Name	Product Documentation
	<i>Oracle Enterprise Manager Administrator's Guide</i> <i>Oracle Enterprise Manager for Windows NT Installation Release Notes</i> <i>Oracle Enterprise Manager Concepts Guide</i> <i>Oracle Enterprise Manager Application Developer's Guide</i>
SQL*Plus	<i>SQL*Plus User's Guide and Reference</i> <i>SQL*Plus Quick Reference</i> <i>SQL*Plus for Windows Installation Guide</i> <i>SQL*Plus for Windows NT/95 User's Guide</i>
Oracle WebServer	<i>Oracle WebServer User's Guide</i>
SQL*Net	<i>Understanding SQL*Net</i> <i>Oracle Network Products Messages Manual</i> <i>Oracle SNMP Support Reference Guide</i> <i>Oracle Network Manager Administrator's Guide</i> <i>Oracle Names Administrator's Guide</i> <i>Secure Network Services Administrator's Guide</i> <i>Oracle Network Products Troubleshooting Guide</i> <i>Oracle Network Products for Windows NT/95 User's Guide</i> <i>Multi-Protocol Interchange</i>
Programmer 2000	<i>Programmer's Guide to the Oracle Call Interface</i> <i>Programmer's Guide to the Oracle Pro*C/C++ Precompiler</i> <i>Programmer's Guide to the Oracle Precompilers</i> <i>Oracle Call Interface for Windows NT User's Guide</i> <i>Pro*C/C++ for Windows NT User's Guide</i>

You can read the documentation online and print out portions you need. For details on installing Oracle online documentation, see *Installing Oracle7 Server for Windows NT* in Oracle7 Server Getting Started for Windows NT .

Roadmap



Documentation Sets

Your Oracle documentation is divided into the following sets:

- Installation Guides
- RDBMS
- Networking
- Programmer 2000

Note: Oracle product documentation is provided in electronic (Adobe Acrobat) format only (except for this Guide and *Oracle Network Products for Windows NT/95 Installation and User's Guide* which are also provided as hard copy documents). You can order hard copy books of Oracle product documentation by contacting Documentation Sales at 800.252.0303.

Following is a brief explanation of the Oracle documentation set.

Installation Documentation

Oracle7 Release Notes

The latest information about products in your package is contained in hard copy Release Notes. Read these documents first for the latest information, restrictions, and instructions.

Oracle7 Server for Windows NT Getting Started

Instructions for installing and configuring this release of Oracle7 Server and tools. It provides Windows NT-specific information on the architecture, maintenance, administration, and tuning of Oracle7 Server.

Other Installation Documentation

You may receive other installation documentation with your Oracle software shipment, depending on the products you have licensed.

Oracle7 for Windows NT Administration Documentation

Information specific to the Windows NT operating system. The Oracle7 for Windows NT administration documentation set includes the documents listed below.

SQL*Plus for Windows NT/95 Installation and User's Guide

Operating system-specific information about the installation, use, and administration of SQL*Plus for Windows NT.

SQL*Plus for Windows Installation and User's Guide

Information to help you get started with SQL*Plus. Specifically, it covers setup/installation, the SQL*Plus for Windows menu interface, and SQL*Plus in the Microsoft Windows environment.

Oracle Server Manager for Windows User's Guide

Explains how to install Oracle Server Manager for Windows. Server Manager is Oracle's graphical database administration tool.

Oracle Network Products for Windows NT/95 Installation and User's Guide

Operating system-specific information about the architecture, maintenance, administration, and installation of Oracle Network Products for Windows NT.

Pro*C for Windows NT Installation and User's Guide

Operating system-specific information about the installation, use, and administration of Pro*C and OCI for Windows NT.

Oracle Product Documentation

Oracle product documentation consists of generic information fully describing a particular Oracle product, for any hardware or operating system. You received the product documentation for each product you licensed.

The Oracle7 Server documentation set is important for installing and administering your Oracle7 Server. Following are descriptions of the Oracle7 Server documentation set.

Oracle7 Server Concepts

Describes the features of Oracle7 Server, a relational database management system (RDBMS). It is designed to help you understand how Oracle functions. It lays a conceptual foundation for much of the practical information contained in other Oracle7 Server documentation.

Information in this manual applies to the Oracle7 Server running on all operating systems. It provides information about the base Oracle Server

and the following special options: Distributed, Advanced Replication, Parallel Query, WebServer, Spatial Data, and Parallel Server options.

Oracle7 Server Administrator's Guide

Describes how to manage the Oracle7 Server. Information in this Guide applies to the Oracle7 Server, running on all operating systems. It provides information about the base Oracle Server and the following special options: Distributed, Advanced Replication, and Parallel Server options.

Oracle7 Tuning

The Oracle7 Server is a highly tunable Relational Database Management System (RDBMS). You can enhance database performance by adjusting database applications, the database itself, and the operating system. Proper tuning of Oracle provides the best possible database performance for your specific application and hardware configuration.

It contains the following information:

- the path for the Oracle7 Server documentation
- a step-by-step process for tuning the Oracle7 Server
- a description of diagnostic tools useful in tuning Oracle7
- installation recommendations for optimal performance
- a list of all parts of the tuning process that vary, depending on what operating system runs Oracle

Oracle7 Server Application Developer's Guide

Describes all features of the Oracle7 Server, a relational database management system (RDBMS). This Guide is provided so that you can understand how to develop applications for Oracle7.

Information in this Guide applies to the Oracle7 Server, running on all operating systems.

Oracle7 Server SQL Reference

Complete description of the Structured Query Language (SQL) used to manage information in an Oracle7 database.

This manual notes any features that require the Distributed Option, Parallel Server Option, Parallel Query Option, or PL/SQL to be installed. Also noted are parts of Oracle7 SQL that are only used with the Trusted Oracle7 Server.

Oracle7 Server Reference

Provides reference information about Oracle7 Server release 7.3, including:

- initialization parameters
- data dictionary views
- National Language Support (NLS)
- National Language Support Utilities
- database limits
- Structured Query Language (SQL) scripts

Oracle7 Server Utilities

Describes the basic concepts of, and how to use the Export, Import, SQL*Loader, and Server Manager Oracle7 Server utilities for data transfer, maintenance, and database administration.

Oracle7 Server Messages

Provides complementary information about messages generated by the Oracle7 Server and its parts. Except for operating system-specific messages, all messages in this manual are common to all Oracle products that interface with Oracle7 Server.

Oracle7 Server Migration

Aides database administrators and system programmers in the planning and implementation of migrating databases from Version 6 to Version 7 and in upgrading and downgrading among Oracle 7 releases. It is designed to guide you through each step of the process and explains the tools and features involved with each step.

PL/SQL User's Guide and Reference

PL/SQL is Oracle Corporation's procedural language extension to SQL, the standard data access language for relational databases. PL/SQL offers modern software engineering features such as data encapsulation, information hiding, overloading, and exception handling, and so brings state-of-the-art programming to the Oracle Server and Toolset.

Oracle7 Server Distributed Systems, Volume I: Distributed Data

Describes the concepts necessary for implementing Oracle7 Server, Release 7.3 with the Distributed Option and its related tools, utilities,

and applications in a distributed environment. This manual is intended to help you understand the concepts of distributed systems, and to aid you in database and network administration in a distributed system.

Oracle7 Server Distributed Systems, Volume II: Replicated Data

Describes the Oracle7 Server features available to support advanced distributed applications. Information in this manual applies to the Oracle7 Server, running on all operating systems. The topics discussed in this manual include: read-only snapshots, updatable snapshots, the symmetric replication facility, and deferred transactions.

Information in this manual applies to users of the Distributed Option only. Information on the symmetric replication facility applies to users of the Advanced Replication Option only.

Oracle7 Parallel Server Concepts and Administration

Describes parallel processing and parallel database technologies, and how to use them to make the most of their capabilities. This manual prepares administrators to successfully implement parallel processing by providing a thorough presentation of the concepts and procedures involved.

Programmer's Guide to the Oracle7 Server Call Interface

Provides a sound basis for developing applications using the OCI. It includes:

- the structure of an OCI application
- conversion of data between the server and variables in your OCI application
- reference sections that describe OCI calls in detail
- sample programs that illustrate the features of the OCI

Programmer's Guide to the Oracle Precompilers

Comprehensive user's guide and on-the-job reference to the Oracle Pro*COBOL and Pro*FORTRAN Precompilers. It shows you step-by-step how to develop applications that use the powerful database language SQL to access and manipulate Oracle data. It explores a full range of topics—from underlying concepts to advanced programming techniques—and uses clear, hands-on examples to teach you all you need to know.

Programmer's Guide to the Oracle Pro*C Precompiler

Comprehensive user's guide and on-the-job reference to the Oracle Pro*C/C++ Precompiler release 2.1. It shows you how to use the database language SQL and Oracle's procedural extension (PL/SQL) in conjunction with Pro*C to manipulate data in an Oracle7 database. It explores a full range of topics—from underlying concepts to advanced programming techniques—and uses hands-on examples to teach you all you need to know.

Pro*COBOL Supplement to the Oracle Precompilers, Release 1.7

Shows you how to write COBOL programs that use the powerful database language (SQL) to access and manipulate Oracle data. It provides easy-to-follow examples, instructions, and programming tips, as well as several full-length programs to enhance your understanding and demonstrate the usefulness of embedded SQL.

Oracle Network Products Messages Manual

Provides information required to understand and use the problem resolution facilities of the following Oracle network products:

- SQL*Net version 2.0 and later
- MultiProtocol Interchange
- Oracle Protocol Adapters
- Oracle Network Manager
- Oracle Names
- Secure Network Services
- Oracle Native Naming Adapters

In particular, this Guide:

- provides an overview of messages, error logs, and trace facilities
- describes how to use the error logs and trace facilities
- describes how to configure the client, server, Interchange, listener, and Names server components to invoke the trace facility
- lists all the Oracle network product error messages and their probable causes, and provides the actions recommended to correct them

Understanding SQL*Net

Provides the information you need to understand and use SQL*Net Release 2.3. This guide describes or provides:

- an overview of SQL*Net
- a detailed description of the SQL*Net Release 2.3 architecture
- what to consider when upgrading from earlier versions
- how to use the network listener
- how to use a SQL*Net version 2 client
- important concepts about using externally-identified logins
- a description of SQL*Net-related features of the Oracle7 Server

Oracle Network Manager Administrator's Guide

Provides information about how to use Oracle Network Manager. Oracle Network Manager is a tool that configures and administers all Oracle network products based on the transparent network substrate (TNS), including:

- SQL*Net
- Oracle MultiProtocol Interchange
- Oracle Names
- Secure Network Services
- Oracle Native Naming Adapters
- Oracle SNMP Support

Follow the instructions in this Guide as you use Oracle Network Manager to create the definition of your network and the configuration files that the network components require.

Oracle SNMP Support Reference Guide

Covers the Oracle SNMP Support feature and the public and private MIBs that support its use with certain products. This information is provided to assist you in developing SNMP-based management applications for these products.

Secure Network Services Administrator's Guide

Provides generic information on Secure Network Services and how to configure it into your existing SQL*Net network. Because this guide is

meant to be used in conjunction with Oracle platform-specific documentation, you will also need to refer to the port-specific guide for your particular platform for information on how to install and configure Secure Network Services.

SQL*Plus User's Guide and Reference

Introduces the SQL*Plus program and its uses. It also provides a detailed description of each SQL*Plus command.

Oracle Server Manager User's Guide

Describes how to use Oracle Server Manager, Oracle's database administration tool. This guide describes Server Manager's graphical component and line mode component. Information in this guide applies to Server Manager running on all platforms. Platform-specific differences are noted in platform-specific documentation. Other Oracle Server Manager documents included with your documentation set are: *Oracle Server Manager for Windows User's Guide*, *Oracle Server Manager for Windows Installation Guide*, *Oracle Server Manager Release 2.3.2 Addendum*, and *SQL*DBA to Oracle Server Manager Migration Guide*.

Oracle Names Administrator's Guide

Contains examples and figures that refer to specific machine types, network protocols, and operating systems. These references are examples of possible configurations and are not representative of all configurations. Use this guide in conjunction with an Oracle operating system-specific manual that includes notes on installation and operating system-specific information such as configuration file locations and protocol support on that platform.

Oracle7 Spatial Data Option Application Developer's Guide

Describes how to efficiently and simply store, access, and manage different types of data in a single database, and how to improve performance for very large spatial databases holding gigabytes of spatial data. Other Oracle Spatial Data documents included with your documentation set are: *Oracle7 Spatial Data Option Reference and Administrator's Guide*, *Oracle7 Spatial Data Option Overview*.

Oracle Enterprise Manager Concepts Guide

Describes Oracle Enterprise Manager, Oracle Corporation's newest generation of system management tools. Enterprise Manager combines a single point-of-control management console, intelligent agents, and common services in an integrated, comprehensive systems management

platform. Other documentation about Oracle Enterprise Manager includes: *Oracle Enterprise Manager Performance Monitoring User's Guide*, *Oracle Enterprise Manager for Windows NT Installation Release Notes*, and *Oracle Enterprise Manager Application Developer's Guide*

Using Oracle Documentation

After installation, you can view and print the online documentation by double-clicking the Adobe Acrobat icon in your Oracle Program Group.

B

Oracle7 Server Directory Structures

Oracle Installer creates top-level directories on your hard disk. For Windows NT, the default home directory is \ORANT. The default Oracle home directory for Windows is named \ORAWIN; for Windows 95, it is \ORAWIN95.

This section describes the directory structures created by the installation procedures appearing earlier in this guide. These topics are covered:

- Oracle for Windows NT
- Oracle for Windows/Windows 95
- Oracle WebServer Installation Types





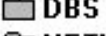
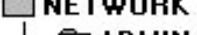
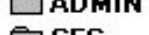

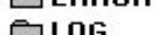
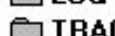



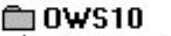


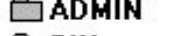
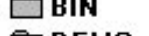

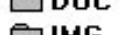
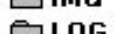
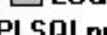
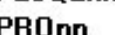







Note: The following graphics (directory structures) represent typical directory structures that result from installing Oracle products for Windows NT, Windows, Windows 95 you may have purchased/licensed. Your directory structures may vary.

Windows NT Directory Structure

Oracle Installer places all Oracle products for Windows NT into subdirectories of \ORANT. The actual directory names vary according to the different products you install.











The letters *nn* designate the version number of the product installed. For example, if you have installed Version 7.0 (or 7.1/7.2) of the Oracle7 Server for Windows NT, an \RDBMS70 (or 7.1/7.2) subdirectory under \ORANT already exists. If you now install Release 7.3, the Oracle Installer adds an \RDBMS73 subdirectory.

The subdirectories of \ORANT contain the files listed below. For all versions of Oracle7 Server for Windows NT *subsequent* to 7.0, 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 Instance Manager executable for version 7.1 is ORADIM71 . EXE; the executable for Release 7.3 is ORADIM73 . EXE.

Directory Structure	Directory Name	Directory Contents
 ORANT	\BIN	executable, DLL, icon, and library files, such as the Oracle7 RDBMS, Server Manager, SQL*Net, and Utilities.
 BIN		
 DATABASE	\DATABASE	Oracle7 RDBMS database, password, and initialization files.
 ARCHIVE		
 DBS	\RDBMSnn\ADMIN	Oracle7 RDBMS SQL scripts. Use SQL scripts to create data dictionary tables/views, and other views used by Oracle software.
 NETWORK		
 ADMIN	\RDBMSnn\LOADER	sample files for SQL*Loader.
 CFG	\RDBMSnn\TRACE	informational trace and alert files generated by the Oracle7 RDBMS.
 ERROR		
 LOG	\RDBMSnn\OCI	sample files that show OCI (Oracle Call Interface) usage.
 TRACE	\DATABASE	Oracle7 RDBMS database, password, and initialization files.
 NLSRTLnn		
 DATA	\DBS	Oracle Toolkit II message files and other utility files.
 ORAINST	\NETWORK	created when you install SQL*Net V2.3 for Windows NT.
 OWS10		\NETWORK also contains the three subdirectories described below.
 ADMBIN	\NETWORK\ADMIN	*.ora configuration files used by SQL*Net V2.3 for Windows NT.
 ADMDOC		
 ADMIN	\NETWORK\LOG	log files placed here by default.
 BIN	\NETWORK\TRACE	trace files placed here by default. See <i>Oracle Network Products for Windows NT/95 User's Guide</i> for additional information on the \NETWORK directory and its subdirectories.
 DEMO		
 DOC		
 IMG	\NLSRTLnn	loadable NLS files.
 LOG		
 PLSQLnn	\ORAINST	files used by the Oracle Installer.
 PROnn	\OWS10	executables, scripts, and .HTML files for Oracle Web Agent and Oracle Web licenses.
 RDBMSnn		
 ADMIN	\PLSQLnn	message files, SQL scripts, and demonstration files for PL/SQL.
 LOADER		
 OCI	\PROnn	Oracle7 RDBMS database, password, and initialization files.
 TRACE	\RDBMSnn	Oracle7 RDBMS message, resource, and readme files. \RDBMSnn also contains the four subdirectories described below.

Windows/ Windows 95 Directory Structure

You install Windows products on your Windows NT server machine using Oracle Installer for Windows. Oracle Installer places all Oracle for Windows products into subdirectories of \ORAWIN. (\ORAWIN95 for Windows 95) The actual directory names vary depending on the different products that you install.

Directory Structure	Directory Name	Directory Contents
 ORAWIN	\BIN	executable, DLL, and batch files for the Oracle Windows tools and the SQL*Net networking software.
 BIN	\DBS	Oracle Toolkit II message files and other utility files.
 DBS	\NETWORK	various configuration files associated with SQL*Net and the Oracle protocol adapters. The \NETWORK directory also contains the three subdirectories described below:
 NETWORK		
 NLSRTLnn		
 ORAINST	\NETWORK\ADMIN	* .ora configuration files used by SQL*Net V2.3 for Windows NT.
 PLUSnn	\NETWORK\LOG	log files placed here by default.
 PROnn	\NETWORK\TRACE	trace files placed here by default.
 RDBMSnn		
 SVRMGRnn	\NLSRTLnn	loadable NLS files.
	\ORAINST	files used by Oracle Installer.
	\PLUSnn	SQL*Plus files.
	\PROnn	Oracle7 RDBMS database, password, and initialization files.
	\RDBMSnn	error message files relating to the Oracle7 Server.
	\SVRMGRnn	Oracle Server Manager files.

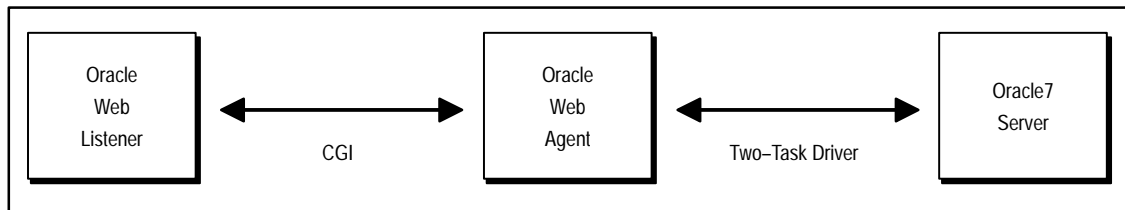
Oracle WebServer Installation Types

Oracle WebServer 1.0 can be installed in one of two ways:

- Oracle WebServer 1.0 and Oracle7 database on a single machine
- Oracle WebServer 1.0 and Oracle7 database on separate machines

Single-Machine Installation

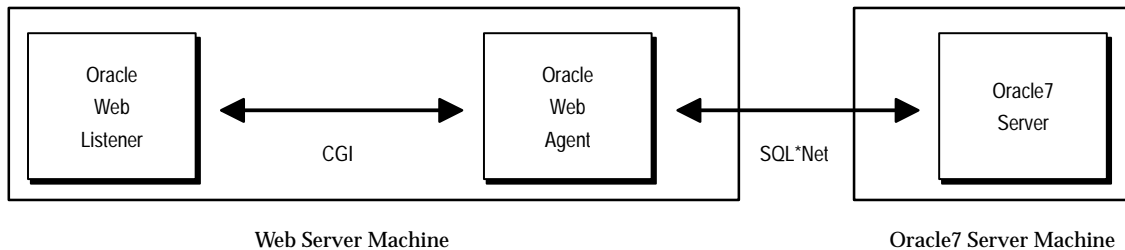
In a single machine installation, Oracle WebServer and the Oracle7 database reside on the same machine. Communications between the Oracle Web Agent and the Oracle7 Database Server are through a two-task driver.



To install Oracle WebServer on the same machine as an Oracle7 database, use the Oracle WebServer installation.

Separate-Machines Installation

When Oracle WebServer 1.0 and the Oracle7 database reside on separate machines, communication between the Oracle Web Agent and the Oracle7 Database Server is accomplished through SQL*Net.



To install Oracle WebServer 1.0 on one machine, and an Oracle7 Server on another, use the Selective installation procedure.

Note: If you want to configure a Client/Server networked environment in which the Oracle Web Listener and Agent are clients and the Oracle7 Server is the server, you must use the Selective installation procedure.

C

Initialization Parameter Files

Oracle7 Server for Windows NT uses initialization parameters to determine various features of the database every time an instance is started.

This appendix:

- describes initialization parameter files
- specifies the parameters you need to set at the time you create a database
- lists default values and valid ranges for parameters that have special characteristics under Windows NT



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Additional Information: For a complete list and descriptions of all initialization parameters, see *Oracle7 Server Administrator's Guide*.

What Is an Initialization Parameter File?

An initialization parameter file is an ASCII text file containing a list of parameters. Every instance has a corresponding initialization parameter file and ORACLE_SID parameter.

The initialization parameter filenames take the form `INIT sid .ORA`, where sid is the name of the instance. For example, the initialization parameter file for the initial database is named `INITORCL.ORA`, because the initial database SID is ORCL.

A single instance might also have several initialization parameter files, each having some differences to affect system performance and so forth.



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Additional Information: A general description of the initialization parameter file can be found in the *Oracle7 Server Administrator's Guide*.

By changing the value of these parameters you can specify, for example, the amount of memory the database uses, whether filled online redo logs will be archived, and which control files currently exist for the database.

Initialization parameters reside in initialization parameter files. To allow parameter values to be unique to a particular database, each database normally has its own initialization parameter file.

Location of Initialization Parameter Files

The computer that starts the instance must have access to the appropriate initialization parameter files. Oracle7 uses the initialization parameter files located in `\ORANT\DATABASE`, unless you specify a file with the `PFILE` option at startup.

Editing Initialization Parameter Files

To customize Oracle7 Server for Windows NT databases functions, you may need to edit the initialization parameter files. Use any ASCII text editor to modify the file.

The Sample Initialization Parameter File

The initialization parameter file (`INITORCL.ORA`) used by the initial database that you can install with Oracle7 Server for Windows NT is installed in `\ORANT\DATABASE`. You can use this file as a model for creating a new Oracle7 Server for Windows NT database.

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. By default, the parameter that would create a small SGA is active, as in:

```
db_block_buffers = 200          # SMALL
# db_block_buffers = 550        # MEDIUM
# db_block_buffers = 3200       # LARGE
```

If you wish to create a medium-sized SGA instead, comment out the small parameter definition, and activate the medium. In the previous example, you would change file to read:

```
# db_block_buffers = 200        # SMALL
db_block_buffers = 550          # MEDIUM
# db_block_buffers = 3200       # LARGE
```

Parameters to Modify when Creating a New Database

Check the initialization parameters described in this section carefully at the time you create a new database; they **cannot be modified** after you have created the database. (See Chapter 3 of this Guide for details on creating a new database, including the part of the procedure when you modify these parameters.)

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.

CHARACTER_SET

Specifies the database NLS character set to use. This parameter can be set only when you create the database.

CONTROL_FILES

Designates the names and locations of all control files to be created and maintained. By default, Oracle7 Server for Windows NT installs a single

control file for the initial database, `CTL1ORCL.ORA`, in `\ORANT\DATABASE`.

If you created your database with the `CREATE DATABASE` command, Oracle7 Server for Windows NT creates the control file, `CTL1sid.ORA`, where *sid* is the SID of that database.

At least two (identical) control files, each located on a separate storage device, should be used. The size of Oracle7 Server for Windows NT control files vary according to the complexity of your database structure. The maximum size of an Oracle7 Server for Windows NT control file is 2500 database blocks.



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Additional Information: See *Oracle7 Server Administrator's Guide* for more information on initialization parameters.

Initialization Parameters

Oracle7 Server Administrator's Guide includes descriptions of all initialization parameters and instructions for setting and displaying their values.

<i>Parameter Name</i>	<i>Default Value</i>	<i>Range of Values</i>
BACKGROUND_DUMP_DEST	%RDBMSnn%\TRACE\	Any valid directory
COMMIT_POINT_STRENGTH	1	0 – 255
CONTROL_FILES	%ORACLE_HOME%\DATABASE\CTL1%ORACLE_SID%.ORA	Any valid path and filename.
DB_BLOCK_SIZE	2048	512 – 8192
DB_FILES	32	254, cannot exceed DB_BLOCK_BUFFERS
DB_FILE_MULTIBLOCK_READ_COUNT	4	1 – 32
DB_FILE_SIMULTANEOUS_WRITES	4	1 – 24
DISTRIBUTED_TRANSACTIONS	25 * TRANSACTIONS	0 – TRANSACTIONS
LOG_ARCHIVE_BUFFER_SIZE	127	1 – 127
LOG_ARCHIVE_BUFFERS	4	1 – 8
LOG_ARCHIVE_DEST	%RDBMSnn%\	Any valid directory
LOG_ARCHIVE_FORMAT	ARC%S.%T	A valid filename format
LOG_CHECKPOINT_INTERVAL	8000	2 – Unlimited
LOG_FILES	255	2 – 255
LOG_SMALL_ENTRY_MAX_SIZE	800	0 – Unlimited
MTS_MAX_DISPATCHERS	(unused)	(unused)
MTS_MAX_SERVERS	(unused)	(unused)
MTS_SERVERS	(unused)	(unused)
NLS_LANGUAGE	AMERICAN	Any valid language
NLS_SORT	(Language dependent)	(Language dependent)
NLS_TERRITORY	AMERICA	Any valid territory

<i>Parameter Name</i>	<i>Default Value</i>	<i>Range of Values</i>
OPEN_CURSORS	50	1 - Unlimited
OS_AUTHENT_PREFIX	OPSS	any character string
PROCESSES	25	3 - Unlimited
REMOTE_LOGIN_PASSWORDFILE	shared	shared, exclusive, none
SHARED_POOL_SIZE	6,500,000	300K - Unlimited
SORT_AREA_SIZE	65536	0 - Unlimited
SORT_READ_FAC	20	0 - Unlimited
SORT_SPACEMAP_SIZE	512	0 - Unlimited
TEMPORARY_TABLE_LOCKS	SESSIONS	0 - Unlimited
TRANSACTIONS_PER_ROLLBACK_SEGMENT	30	1 - 255
USER_DUMP_DEST	%RDBMSnn%\TRACE	Any valid directory

These are the default values for the Replication Database:

- `global_name = true`
- `job_queue_processes = 2`
- `job_queue_interval = 10`
- `snapshot_refresh_processes = 2`
- `shared_pool_size = 10,000,000`

D

Configuration Parameters and the Windows NT Registry

The Windows NT Registry stores the Oracle configuration parameters. This appendix describes only the configuration parameters applying to your Oracle7 Server for Windows NT and SQL*Net listener service.

About Configuration Parameters

Oracle software 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, the Oracle7 Server for Windows NT consults the associated parameter.

Editing Configuration Parameters

You can set configuration parameters on your Windows NT Server machine three ways.

In the Windows NT Registry

Oracle configuration parameters are stored in \HKEY_LOCAL_MACHINE\SOFTWARE\ORACLE. You can modify the values stored in this key by running the registry editor program, REGEDT32, included with your Windows NT software. To access the Oracle configuration parameters in the Windows NT Registry, type the following:

```
C:\>REGEDT32
```

In the AUTOEXEC.BAT file

The syntax for setting any configuration parameter in your AUTOEXEC.BAT file is

```
SET PARAMETER_NAME=PARAMETER_VALUE
```

where *parameter_name* is the name of the parameter and *parameter_value* is the value you choose.

A value you set in the AUTOEXEC.BAT file is inherited by every command prompt you launch from within Windows NT.

Note: Values set in AUTOEXEC.BAT do not take effect until you start up a new Windows NT command prompt. Any Oracle software you run subsequently recognizes values set in AUTOEXEC.BAT, and does not search for corresponding values in the Windows NT Registry.

At the Command Prompt

The syntax for setting any configuration parameter at the command prompt is

```
C:\>SET parameter_name=parameter_value
```


where *parameter_name* is the name of the parameter and *parameter_value* is the value you choose.

Note: A value set at the command prompt is valid for only that particular instance of the command prompt. Any Oracle software you run during that instance recognizes the values set at the command prompt, and does not search for corresponding values in the Windows NT Registry or in AUTOEXEC.BAT.

Configuration Parameter Descriptions

This section describes individual configuration parameters affecting the operation of the Oracle7 Server for Windows NT and SQL*Net for Windows NT software.

Individual Oracle tools may use additional configuration parameters; refer to the documentation for the tool you are using for more information on those parameters.

General Parameters

The following parameters define characteristics of Oracle7 Server for Windows NT and other Oracle products:

NLS_LANG

Operating System: Windows NT

Default:

Legal Values: supported languages, territories,
and character sets

This NLS_LANG parameter includes three components: language, territory, and character set. This parameter specifies the language in which the messages is displayed, the format that the date is displayed, and the character set displayed. The default value causes all messages to be displayed in English.



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Additional Information: See *Oracle7 Server Administrator's Guide* for additional information about the NLS_LANG parameter and its components.

ORACLE_GROUP_NAME

Operating System: Windows NT

Default: Oracle for Windows NT

Legal Values: any ASCII string

This parameter specifies the name of the group containing icons of the Oracle products installed. The parameter is added to your Windows NT Registry when you first install Oracle products, even if the Installer does not create a program group for the Oracle products you have installed (e.g., if you have installed only SQL*Net software).

ORACLE_HOME

Operating System: Windows NT

Default: \ORANT

Legal Values: any valid directory on any drive

This parameter specifies the Oracle home directory in which Oracle products are installed. It is added to your Windows NT registry when you first install Oracle products. This directory is the top directory in the Oracle directory hierarchy.

ORACLE_PRIORITY

Operating System: Windows NT

Default: CLASS:normal; DEF:normal

Legal Values: See the following table.

This parameter determines the Windows NT scheduling priorities of the threads within the Oracle process. The format is:

```
name1:priority1;name2:priority2 . . .
```

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.



Attention: Oracle Corporation recommends that the Oracle process (CLASS) be set at high priority and that the default thread priority setting (DEF) be set at time_critical. The syntax of the recommended ORACLE_PRIORITY setting is therefore:

CLASS:high;DEF:time_critical

Setting the Oracle process and the threads within it to other priorities may result in performance degradation.

Relative Thread Priority	Process Priority Class		
	idle	normal	high
time_critical	15	15	15
highest	6	9	15
above_normal	5	8	14
normal	4	7	13
below_normal	3	6	12
lowest	2	5	11
idle	1	1	1

ORACLE_SID

Operating System: Windows NT

Default: none
Legal Values: any combination of up to 4 alpha-numeric characters

This parameter specifies the name of the Oracle7 RDBMS instance on the host machine. The value of this parameter is system identifier (SID) for the database.

ORA_sid_PWFILE

Operating System: Windows NT

Default: none
Legal Values: any legal filename

This parameter specifies the name of the password file containing the password for the database designated by the system identifier *sid*.

ORA_SVRMGR_MODE

Operating System: Windows NT

Default: SCREEN
Legal Values: LINE, SCREEN

This parameter specifies the mode in which Server Manager starts from the command line.

ORA_SVRMGR_TERM

Operating System: Windows NT

Default: none

Legal Values: any valid terminal name, such as “BIOS,” “BIOSM”

This parameter specifies the default terminal mapping to use in Server Manager.

Note: The suffix “M” indicates monochrome.

PLSQLnn

Operating System: Windows NT

Default: none

Legal Values: any valid path

This parameter specifies the directory in which Oracle7 Server for Windows NT looks for PL/SQL message files. Although it has no default, the Oracle7 Server for Windows NT installation process sets the parameter as %ORACLE_HOME%\PLSQLnn, where *nn* indicates the version of PL/SQL being used.

RDBMSnn

Operating System: Windows NT

Default: none

Legal Values: any valid path

This parameter defines the directory in which the Oracle7 Server for Windows NT database files are located. Oracle7 Server for Windows NT and the Oracle7 Utilities also use this directory to locate message and resource files. Although it has no default, the Oracle7 Server for Windows NT installation process sets the parameter as %ORACLE_HOME%\RDBMSnn, where *nn* indicates the version of Oracle7 Server for Windows NT being used.

Networking Parameters

The following parameter applies to the SQL*Net V1 for Windows NT products used on your Oracle7 Server for Windows NT machine.

Note: None of the configuration parameters stored in the NT Registry are associated with SQL*Net V2.

LOCAL

Operating System: Windows NT

Default:	2:
Legal Values:	any valid SQL*Net driver prefix, including database string parameters

This parameter specifies the SQL*Net driver and complete connect string to use when no communications driver is specified upon loading an Oracle tool. The parameter enables the DBA to define a *default* network connection. When a user logs on without specifying any network parameters, Oracle7 uses the LOCAL connection.

The default, 2:, connects the user to the instance designated by the ORACLE_SID parameter on the local machine. If multiple instances are running on the local machine, follow the colon with the SID—e.g., 2:ORCL” connects the user to the ORCL instance on the local machine.

Note: You can reset this parameter on the command line at any time.

NMP_MAX_CLIENTS

Operating System: Windows NT

SQL*Net:	Version 1.1 of SQL*Net Named Pipes
Default :	10
Legal Values:	1 to maximum number of sessions allowed by the requester

NMP_MAX_CLIENTS sets the maximum number of shadow and listener threads allowed on the server.

Note: Setting this parameter to zero causes the parameter to take its default value.

NMP_MIN_CLIENTS

Operating System: Windows NT

SQL*Net:	SQL*Net:
Default:	5
Legal Values:	1 to NMP_MAX_CLIENTS

NMP_MIN_CLIENTS is the number of listener threads that will be pre-spawned by the server at startup.

Note: Setting this parameter to zero causes the parameter to take its default value.

NMP_FREE_CLIENTS

Operating System: Windows NT

SQL*Net:	Version 1.1 of SQL*Net Named Pipes
Default:	5
Legal Values:	1 to NMP_MAX_CLIENTS

NMP_FREE_CLIENTS is the minimum number of listener threads that will be maintained by the server at any one time.

Note: Setting this parameter to zero causes the parameter to take its default value.

NMP_SPAWN_INCREMENT

Operating System: Windows NT

SQL*Net:	Version 1.1 of SQL*Net Named Pipes
Default:	5
Legal Values:	1 to NMP_MAX_CLIENTS

NMP_SPAWN_INCREMENT is the maximum number of listener threads created at one time when listener thread creation is necessary. When the number of listener threads falls below the value of NMP_FREE_CLIENTS, new listener threads are generated in batches with maximum size of NMP_SPAWN_INCREMENT. Fewer listener threads are generated than required by NMP_SPAWN_INCREMENT if fewer are required. A delay of length NMP_SPAWN_DELAY occurs between the generation of each batch of listener threads.

Note: Setting this parameter to zero causes the parameter to take its default value.

NMP_SPAWN_DELAY

Operating System: Windows NT

SQL*Net: Version 1.1 of SQL*Net Named Pipes

Default: 0 milliseconds (ms)

Legal Values: 1 to any positive integer (ms)

NMP_SPAWN_DELAY is the length of time that the server waits between creating batches of listener threads.

Note: Setting this parameter to zero causes the parameter to take its default value.

TK2_TIO

Operating System: Windows NT

Default: VIDEO

Legal Values: Legal Values:

This parameter sets the screen driver (terminal input–output) that Toolkit II–based interfaces use to write to the screen. The final letter *m* in an available value name indicates monochrome mode.

REMOTE

Operating System: Windows NT

SQL*Net:.4 Version 1.1 of SQL*Net Named Pipes and SQL*Net TCP/IP

Default: None

Legal Values: Any valid SQL*Net connect string.

This parameter enables you to define a default remote network connection. For example, a valid entry for REMOTE is:

`p:houston`

where *p* is the network prefix for SQL*Net Named Pipes and *houston* is the database name. If a user logs on and specifies a connection with an explicit driver prefix matching the one specified in REMOTE, but specifies no connect string, the connect string specified in REMOTE is used.

For example, a user might connect to a database with Server Manager using SQL*Net Named Pipes as follows:

```
SVRMGR>CONNECT username/password@p:
```

The connect string includes only the network prefix (p:), which matches the network prefix specified in the above REMOTE parameter. Therefore, Server Manager automatically uses the REMOTE parameter to complete the connection to the HOUSTON database.

This configuration parameter enables the DBA to define a network connection for which the SQL*Net user need not specify connection parameters.

Note: You can reset this parameter on the command line at any time.

SQLNET

Operating System: Windows NT

Default: None

Legal Values: The word "DBNAME" followed by an alias and any valid connect string

This parameter allows you to set a unique alias for each server on your network or distributed network. By setting multiple aliases, you can refer to connect strings by simple names or mnemonic conventions when using any of the Oracle utilities. You do not have to remember the complete connect string for each one.

The syntax for the SQLNET parameter is:

```
alias=connect_string
```

For example, if you create a Registry key value SQLNET DBNAME FINANCE for the connect string P:MKTG_SRV2_NY:FIN1, you can access the database from within SQL*Plus by typing:

```
SQL>CONNECT username/password@FINANCE
```


E

Messages and Codes

This appendix lists error messages and codes that are specific to installation and operation of Oracle7 Server for Windows NT.

The error message descriptions in this appendix list possible causes for the errors and suggest corrective actions. The information in this appendix does not duplicate information in *Oracle7 Server Messages*.

This appendix is divided into the sections listed below.

- logging error messages
- Oracle Installer Messages
- Oracle Database Messages
- Windows NT-Specific Oracle Messages
- SQL*Net TCP/IP Messages
- SQL*Net Named Pipes Messages
- NETCMN Messages

Logging Error Messages

You can keep a log of the error messages you receive from the Oracle7 Server for Windows NT utilities by redirecting the messages to a file. You can record the contents of normal utility messages by using the LOGFILE parameter discussed in the *Oracle7 Server Utilities*. You can separately record the error message portion by using standard Windows NT file redirection. For example, you might use the following syntax to redirect the output from the Export utility:

```
C:\> EXP username/password PARFILE=filename  
1> 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.

Installer Error Messages

This section lists potential error messages that can occur while using the Oracle Installer. Most of the Installer error messages are accompanied with corrective information right on the screen; therefore, they are not listed in this appendix. This appendix lists potential error messages in alphabetical order and provides the probable cause and corrective action.

DISK_FULL

- | | |
|---------------|--|
| Cause | There is not enough disk space on the destination volume to copy the selected program. |
| Action | Create space on the destination volume. |

DRIVE_LOCKED

- | | |
|---------------|--|
| Cause | The device specified in the full error message is in use or locked by another process. |
| Action | Terminate or release the other process, or wait for it to complete. |

FILE_CORRUPTED

- | | |
|---------------|---|
| Cause | The file or directory specified in the full error message is damaged or not readable. |
| Action | Try to repair or replace the file or repair the directory specified. |

FILE_NOT_FOUND

Cause It was not possible to locate a file on the source or destination media.

Action 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

Cause The file or directory name or volume label specified in the full message is syntactically incorrect.

Action Respecify the file, directory, or volume using correct syntax.

LEXICAL_ERROR

Cause An error has been detected in the installation scripts.

Action Call Oracle Customer Support.

LOCKING_VIOLATION

Cause A portion of the file specified in the full message has been locked by another process.

Action Release or terminate the other process, or wait for it to complete.

OS_ERROR

Cause There is an unexpected operating system error.

Action 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

Cause The network has denied permission to perform the selected action.

Action Check with the network administrator; make sure you have Supervisor privileges and can perform the selected action.

READ_ERROR

- Cause** A problem has been detected on the source or destination media while executing an I/O operation.
- Action** 1: If in a network environment, verify that you have read permission for the networked 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

- Cause** A hardware problem has been detected on the hard drive to which you are installing.
- Action** Run a utility program to diagnose the hard drive.

SHARING_VIOLATION

- Cause** 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.)
- Action** Release or terminate the other process, or wait until it completes.

TOO_MANY_OPEN_FILES

- Cause** Too many files are open on Windows NT.
- Action** Close some of the open files.

WRITE_ERROR

- Cause** A problem has been detected on the destination media while executing an I/O operation.
- Action** 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

Cause The file or directory specified in the full message—in which Oracle software is to be installed—is write protected.

Action Remove the write-protection from the specified file or directory.

Codes 9200–9499: Oracle Database Messages

The messages in this section are Oracle messages issued by the database. Each one is triggered by an Oracle operating-system-dependent (OSD) message specific to Windows NT specifying the error condition signal. (The OSD messages appear in the next section.) When you receive one of these messages, look up the accompanying OSD message number in the following section for an explanation of the error.

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	sfof: 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
ORA-09245	smcstk: error switching stacks
ORA-09246	sfsmmap: 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	salloc: error allocating memory for security
ORA-09271	szlon: error verifying user name
ORA-09272	remote OS login 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
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-09350	Windows NT two-task driver unable to allocate context area
ORA-09351	Windows NT two-task driver unable to allocate shared memory
ORA-09352	Windows NT two-task driver unable to spawn new Oracle task
ORA-09353	Windows NT two-task driver unable to open event semaphore
ORA-09354	Windows NT two-task driver: Oracle task unexpectedly died

Codes 4000–4999: Windows NT–Specific Oracle Messages

The messages in this section are Oracle operating–system–dependent (OSD) messages that issue in response to an error condition in Windows NT. Each message in this section triggers an Oracle database message (listed in the preceding section).

File I/O Errors: OSD-4000 to OSD-4099

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 filename is invalid, or the destination device is full. This error can also be caused by insufficient Windows NT file handles.
Action	Make sure that the path and file exist, and that 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 option specified, file already exists

Cause The file that 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 reused 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 filename 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-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.

Memory Errors: OSD-4100 to OSD-4199

OSD-04100 malloc() failure, unable to allocate memory
Cause The program is out of memory.
Action Shutdown all unnecessary processes or install more memory in the machine.

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 System Global Area (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** Shutdown all unnecessary processes; install more memory in the machine.
-
- OSD-04107 unable to deallocate memory with VirtualFree**
- Cause** This is an internal error, not normally expected to occur.
- Action** Contact Oracle Customer Support.
-
- OSD-04108 unable to protect memory with VirtualProtect**
- Cause** This is an internal error, not normally expected to occur.
- Action** Contact Oracle Customer Support.

Process Errors: OSD-4200 to OSD-4299

OSD-04200 unable to begin another thread

Cause The program has run out of system resources.

Action Shutdown all unnecessary processes; install more memory in the machine.

OSD-04201 no pid structure supplied to spdcr()

Cause This is an internal error, not normally expected to occur.

Action Contact Oracle Customer Support.

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 Customer Support.
OSD-04210	Timeout waiting for thread semaphore
Cause	An Oracle7 thread died holding the semaphore.
Action	Restart Oracle7 instance.
OSD-04211	Thread information not found
Cause	An Oracle7 thread died without deleting its information.
Action	Restart Oracle7 instance.
OSD-04212	Maximum number of Oracle threads reached
Cause	The maximum number of Oracle7 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 Customer Support.
OSD-04214	Oracle thread unable to CreateEvent()
Cause	This is an internal error, not normally expected to occur.
Action	Contact Oracle Customer Support.
OSD-04215	Bad function code supplied to ssthreadop
Cause	This is an internal error, not normally expected to occur.
Action	Contact Oracle Customer Support.

OSD-04216 Unable to find file handle for that thread

Cause This is an internal error, not normally expected to occur.

Action Contact Oracle Customer Support.

OSD-04217 Unable to retrieve system user name for current user

Cause This is an internal error, not normally expected to occur.

Action Contact Oracle Customer Support.

Loader Errors: OSD-4300 to OSD-4399

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-4400 to OSD-4499

OSD-04400 unable to acquire internal semaphore for process

Cause Oracle7 Server for Windows NT has exceeded the maximum number of connections.

Action Delete any unused connections and try again.

OSD-04401 WaitForSingleObject() failure, unable to obtain semaphore

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-4500 to OSD-4599

OSD-04500 illegal option specified

Cause This is an internal error, not normally expected to occur.

Action Contact Oracle Customer Support.

OSD-04501 internal buffer overflow

Cause This is an internal error, not normally expected to occur.

Action Contact Oracle Customer Support.

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 elements

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 Shutdown unnecessary processes; install more memory in machine. 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 logins 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 NT Group name is too long for internal buffer

Cause The NT Group name is too long.

Action Use a shorter NT group name.

Codes 6100 – 6199: SQL*Net TCP/IP Errors

The messages in this section apply only if you are using SQL*Net V1.
For messages relating to use of SQL*Net V2, see *Oracle Network Products Messages Manual*.

ORA-06102: NETTCP: cannot allocate context area

Cause The dynamic memory available for the connection context area is insufficient.

Action Contact your Oracle Customer Support representative.

ORA-06105: NETTCP: remote host is unknown

Cause The host name specified in the login (connect) string is unknown.

Action Verify the spelling of the host name. Make sure the name exists in the TCP/IP HOST file, and try again.

ORA-06106: NETTCP: socket creation failure

Cause The process open file quota was probably exceeded.

Action Contact your Oracle Customer Support representative.

ORA-06107: NETTCP: ORACLE network server not found

Cause The entry for Oracle7 Server for Windows NT in the SERVICES file is missing.

Action Add "orasrv" to the TCP/IP SERVICES file.

ORA-06108: NETTCP: connect to host failed

Cause The attempt to connect to a remote host has failed. The SQL*Net TCP/IP server on the remote host is not up, or the host itself is not up. Check the latter possibility by targeting it with Telnet.

Action Start the SQL*Net TCP/IP server process on the remote host.

ORA-06109: NETTCP: message receive failure

Cause An I/O error occurred while attempting a network read operation.

Action Contact your Oracle Customer Support representative.

ORA-06110: NETTCP: message send failure

Cause An I/O error occurred while attempting a network write operation.

Action Contact your Oracle Customer Support representative.

ORA-06111: NETTCP: disconnect failure

Cause An error occurred while attempting to close a socket.

Action Contact your Oracle Customer Support representative.

ORA-06112: NETTCP: invalid buffer size

Cause The buffer size specified in the login string exceeds 4096.

Action Specify the correct buffer size (4096 or less in length).

ORA-06113: NETTCP: Too many connections

Cause The number of concurrently open connections has exceeded the maximum.

Action Close a connection by exiting an application with an open connection that is no longer needed.

ORA-06114: NETTCP: SID lookup failure

Cause The database SID specified in the login (connect) string was not recognized (from the remote host's SQL*Net TCP/IP server).

Action Add the appropriate SID entry to the parameter file on the remote host, then restart the SQL*Net TCP/IP server.

ORA-06115: NETTCP: unable to create ORACLE logicals

Cause The host's SQL*Net TCP/IP server was unable to create the necessary logicals required by the Oracle7 Server for Windows NT process.

Action See the SQL*Net TCP/IP server log file for more information. Contact your system administrator.

ORA-06116: NETTCP: unable to create ORASRV process

Cause The host's SQL*Net TCP/IP server was unable to create the Oracle7 Server for Windows NT process.

Action See the SQL*Net TCP/IP server log file for more information. Contact your system administrator.

ORA-06117: NETTCP: unable to create ORASRV: quota exceeded

Cause The host's SQL*Net TCP/IP server was unable to create the Oracle7 Server for Windows NT process because of quota depletion.

Action Increase the quota allocations to the SQL*Net TCP/IP server process.

ORA-06118: NETTCP: unable to complete handshake with ORASRV

Cause The Oracle7 Server for Windows NT process was started but failed to complete its initialization.

Action Contact your Oracle Customer Support representative.

ORA-06119: NETTCP: spurious client request

Cause The host's SQL*Net TCP/IP server was unable to recognize the connection request.

Action See the SQL*Net TCP/IP server log file for more information. Contact your Oracle Customer Support representative.

ORA-06120: NETTCP: network driver not loaded

Cause The TCP/IP network driver is not loaded.

Action Verify that the TCP/IP driver loads correctly.

ORA-06121: NETTCP: access failure

Cause The host's SQL*Net TCP/IP server was unable to test the accessibility of the SID mapping file (specified in the configuration file) associated with this connection request.

Action Check the log file for the operating system-specific error code. Contact your Oracle Customer Support representative.

ORA-06122: NETTCP: setup failure

Cause The host's SQL*Net TCP/IP server was unable to set up the appropriate environment to service this connection request.

Action Check the log file for the operating system-specific error code. Contact your Oracle Customer Support representative.

ORA-06123: NETTCP: cannot set KEEPALIVE

Cause The host's SQL*Net TCP/IP server was unable to set the socket KEEPALIVE option.

Action Check the log file for the operating system-specific error code. Contact your Oracle Customer Support representative.

ORA-06124: NETTCP: timeout waiting for ORASRV

Cause The Oracle7 Server for Windows NT process was started but failed to respond after a period of time (n seconds).

Action This failure can occur on heavily-loaded systems. Increase the value of *n* (the default is 30) by adding the following entry in the initialization parameter file:

`SQLNET ORASRV_WAIT = number`

ORA-06125: NETTCP: ORASRV exited unexpectedly

Cause The Oracle7 Server for Windows NT process was started but exited unexpectedly.

Two possible causes:

1. There were insufficient quotas to run ORASRV on the Oracle7 Server for Windows NT.
2. Oracle7 is not installed.

Action See the ORASRV output file for more information. The ORASRV output file resides in the ORA_SQLNET directory and has a name in the following form:

`ORA_SrvTnn_[SID].OUT`

If the ORASRV output file does not indicate the appropriate action, contact your Oracle Customer Support representative.

ORA-06126: NETTCP: ORASRV unable to open network connection

Cause The Oracle7 Server for Windows NT process was started but was unable to open the socket that TCPSRV passed to it.

Action Contact your Oracle Customer Support representative.

ORA-06127: NETTCP: unable to change username

Cause The host's SQL*Net TCP/IP server could not establish a Proxy login connection because the client username is unknown to the host operating system.

Action Create new user account on the host and retry the connection.

ORA-06128: NETTCP: unable to create mailbox

Cause The host's SQL*Net TCP/IP server was unable to create a mailbox needed for IPC communication with the Oracle7 Server for Windows NT process.

Action See the SQL*Net TCP/IP server log file for more information. Contact your Oracle Customer Support representative.

ORA-06129: NETTCP: unable to transfer socket ownership to ORASRV

Cause The host's SQL*Net TCP/IP server was unable to transfer the network communication handle to the Oracle7 Server for Windows NT process.

Action Check the log file for the operating system-specific error code. Contact your Oracle Customer Support representative.

ORA-06130: NETTCP: host access denied

Cause The host's SQL*Net TCP/IP server rejected this connection request because the client node does not have sufficient access privileges.

Action To grant access, add the appropriate entry to the host's Valid Node Table (VNT).

ORA-06131: NETTCP: user access denied

Cause The host's SQL*Net TCP/IP server rejected this connection request because the client username does not have sufficient access privileges. Privileges are determined by the contents of the Username Mapping Table (UMT), a subset of the host's configuration parameters.

Action To grant access, add the appropriate entry to the host's UMT.

ORA-06132: NETTCP: access denied, wrong password

Cause The host SQL*Net TCP/IP server rejected this connection request because the client password did not match the host password.

Action To grant access, make sure the passwords are the same.

ORA-06133: NETTCP: file not found

Cause The host's SQL*Net TCP/IP server could not find the SID mapping file associated with this connection request.

Action Verify the spelling and existence of the SID mapping file.

ORA-06134: NETTCP: file access privilege violation

Cause The host's SQL*Net TCP/IP server did not have READ/EXECUTE permissions for the SID mapping file associated with this connection request.

Action Change the protection on the SID mapping file.

ORA-06135: NETTCP: connection rejected; server is stopping

Cause The host's SQL*Net TCP/IP server rejected this connection request because the server is in the process of stopping.

Action Restart SQL*Net TCP/IP server.

ORA-06136: NETTCP: error during connection handshake

Cause A network I/O failure occurred while communicating with the host's SQL*Net TCP/IP server.

Action Check the log file for the operating system-specific error code. Contact your Oracle Customer Support representative.

ORA-06137: NETTCP: error during connection handshake

Cause A network I/O failure occurred while communicating with the host's SQL*Net TCP/IP server.

Action Check the log file for the operating system-specific error code. Contact your Oracle Customer Support representative.

ORA-06138: NETTCP: error during connection handshake

Cause A network I/O failure occurred while communicating with the host's SQL*Net TCP/IP server.

Action Check the log file for the operating system-specific error code. Contact your Oracle Customer Support representative.

ORA-06140: NETTCP: no such user

Cause A Proxy login connect attempt failed because the client username is not defined on the host.

Action Contact your network administrator.

ORA-06141: NETTCP: no privilege for user

Cause A proxy login connect attempt failed because the SQL*Net TCP/IP server had insufficient privileges to access the proxy account.

Action Change the account protection, change the server privileges, or both.

ORA-06142: NETTCP: error getting user information

Cause A proxy login connect attempt failed because the SQL*Net TCP/IP server was unable to access the proxy account.

Action Check the log file for the operating system-specific error code. Contact your Oracle Customer Support representative.

ORA-06143: NETTCP: maximum connections exceeded

Cause The connect failed because the number of concurrent connections has exceeded the maximum supported by the host's SQL*Net TCP/IP server.

Action Wait for a short period and retry the operation.

ORA-06144: NETTCP: SID (database) is unavailable

Cause The database administrator on the host has taken the database to which you are requesting access offline.

Action Wait for it to be brought back online.

ORA-06145: NETTCP: unable to start ORASRV: images not installed

Cause The host's SQL*Net TCP/IP server was unable to start the Oracle7 Server for Windows NT process because the Oracle7 protected images were not installed.

Action Install the images.

Codes 6220 – 6400: SQL*Net Named Pipes Errors

The messages in this section apply only if you are using SQL*Net V1.
For messages relating to use of SQL*Net V2, see *Oracle Network Products Messages Manual*.

ORA-06220: NETNMP: Server not specified in command line

Cause A hostname is not specified in the DOS command-line after “p:”.

Action Specify the hostname after the network prefix and retry, or set the LOCAL parameter in your configuration parameter file.

ORA-06221: NETNMP: Named pipe busy

Cause Either the database to which you are trying to connect does not exist, or all available Named Pipes instances are in use.

Action 1: Check your connect string
2: Close any unused connections and retry the operation.

ORA-06222: NETNMP: Error allocating memory

Cause The system is unable to allocate memory block.

Action Resubmit the entry. If the error persists, contact your DBA.

ORA-06223: NETNMP: Error receiving data from pipe

Cause Oracle encountered an error when receiving data from the pipe.

Action Check all LAN connections and cables. If any connections are loose, secure them and retry. Otherwise, reboot your machine and reload the SQL*Net Named Pipes driver. If the error persists, contact your DBA.

ORA-06224: NETNMP: Error sending data to pipe

Cause The system encountered an error sending data to the pipe.

Action Check all LAN connections and cables. If any connections are loose, secure them and retry. Otherwise, reboot the machine and reload the SQL*Net Named Pipes driver. If the error persists, contact your DBA.

ORA-06225: NETNMP: Invalid packet type

Cause The system received erroneous data.

Action Check all LAN connections and cables. If any connections are loose, secure them and retry. Otherwise, reboot the machine and reload the SQL*Net Named Pipes driver. If the error persists, contact your DBA.

ORA-06226: NETNMP: Send byte count error

Cause An error was encountered in sending data.

Action Check all LAN connections and cables. If any connections are loose, secure them and retry. Otherwise, reboot the machine and reload the SQL*Net Named Pipes driver. If the error persists, contact your DBA.

ORA-06227: NETNMP: Error resetting connection

Cause The system encountered an error when resetting the connection.

Action Check all LAN connections and cables. If any connections are loose, secure them and retry. Otherwise, reboot the machine and reload the SQL*Net Named Pipes driver. If the error persists, contact your DBA.

ORA-06228: NETNMP: Unable to open named pipe

Cause Your workstation is not logged on to a valid account, or you do not have appropriate privileges to create a pipe.

Action Log onto a valid account (do not use the default guest account). Alternatively, ask your DBA assign appropriate privileges for creating a pipe to your account.

ORA-06229: NETNMP: Windows NT failed to create or access shared memory

Cause Unable to open shared memory segment containing the connection status of Oracle Server.

Action Ensure that Oracle Server has been properly started so that the shared memory segment is available.

ORA-06230: NETNMP: SQL*Net handshake error

Cause An error occurred during the SQL*Net handshake.

Action Ensure pipe has been created successfully. Check SQL*Net versions on your Server machine and reinstall matching versions if different.

ORA-06231: NETNMP: Unable to put pipe into listening mode

Cause Named pipe was not properly created.

Action Restart Oracle7 Server for Windows NT and attempt the connection again.

ORA-06232: NETNMP: Unable to create a pipe instance

Cause Named pipe could not be properly opened.

Action Ensure that Named Pipes software is installed properly in Windows NT and that the Server machine is successfully started.

Codes 6401 – 6430: NETCMN Errors

This section lists and explains the error codes you might receive when using SQL*Net. The error message descriptions in this section list possible causes for the errors and suggest corrective actions. The messages in this section apply only if you are using SQL*Net V1. For messages relating to use of SQL*Net V2, see *Oracle Network Products Messages Manual*.

ORA-06401: NETCMN: invalid driver designator

Cause The specified driver is unknown.

Action Check the last entry and resubmit the connect string using the designated name for the SQL*Net driver.

ORA-06402: NETCMN: error receiving break message

Cause The SQL*Net driver detected that its server has unexpectedly exited.

Action Check the network operating system and resubmit the connect string.

ORA-06403: NETCMN: cannot allocate context area

Cause The SQL*Net driver could not allocate heap space for the context area.

Action Resubmit the connect string. Contact your DBA.

ORA-06404: NETCMN: invalid login string

Cause The SQL*Net driver detected a syntax error in the database ID portion of the user's logon string.

Action Check the logon string and then correct the syntax error.

ORA-06405: NETCMN: reset protocol error

Cause The SQL*Net driver detected an error while trying to reset the connection from a break state.

Action Resubmit the connect string.

ORA-06406: NETCMN: error sending break message

Cause The SQL*Net driver could not correctly handle an incoming out-of-band message.

Action Resubmit the connect string.

ORA-06407: NETCMN: unable to set up break handling environment

Cause The SQL*Net driver could not set up out-of-band break handler.

Action Resubmit the connect string.

ORA-06408: NETCMN: incorrect message format

Cause A message from a partner contains a bad header.

Action Contact your Oracle Customer Support representative.

ORA-06409: NETCMN: message send failure

Cause SQL*Net driver failed to send a message across the communication channel.

Action Resubmit the connect string.

ORA-06410: NETCMN: message receive failure

Cause SQL*Net driver failed to receive a message across the communication channel.

Action Resubmit the connect string. Contact the DBA if the error message persists.

ORA-06411: NETCMN: message send failure

Cause The SQL*Net driver failed to send a complete message across the communication channel.

Action Resubmit the connect string. Contact the DBA if the error message persists.

ORA-06412: NETCMN: message receive failure

Cause The SQL*Net driver failed to receive a complete message from the communication channel.

Action Resubmit the connect string. Contact the DBA if the error message persists.

ORA-06413: NETCMN: connection not open

Cause The SQL*Net driver was unable to open a connection with a remote node.

Action Check node or wait for available connection to open, then re-submit the connect string.

ORA-06414: NETCMN: disconnect failure

Cause The SQL*Net driver was unable to close a connection.

Action Check the node or wait for an available connection to close and then re-submit the connect string.

ORA-06415: NETCMN: incompatible versions

Cause The version of SQL*Net driver loaded differs from SQL*Net listener process opened.

Action Check the installation of SQL*Net on both Windows and Windows NT. Upgrade the software to the same version on both sides of the network.

ORA-06416: NETCMN: error on test

Cause An error occurred while testing the I/O status of the network connection.

Action Contact your Oracle Customer Support representative.

ORA-06419: NETCMN: server cannot start oracle

Cause The Server was unable to start an Oracle process.

Action Make sure permissions on the remote Oracle program are correctly set. Contact your system administrator.

ORA-06420: NETCMN: SID lookup failure

Cause Oracle7 Server for Windows NT failed to recognize the database SID specified in the login (connect) string.

Action Verify that the instance is running. If it is, verify that the services for the instance are present and running. If they are not, create the services and restart the machine.

ORA-06421: NETCMN: error detected in the read-in data

Cause An error occurred in the recomputation of checksum or CRC. There is a possible hardware failure in the communication nodes.

Action Contact your system administrator.

ORA-06422: NETCMN: error in sending data

Cause SQL*Net was unable to transmit data to Oracle7 Server for Windows NT.

Action Attempt to reconnect to the Server. Contact your system administrator.

ORA-06423: NETCMN: error in receiving data

Cause SQL*Net was unable to receive data from the Server.

Action Attempt to reconnect to the Server. Contact your system administrator.

F

National Language Support

The Oracle7 Server for Windows NT provides National Language Support (NLS), that allows users to interact with the database in their selected language. When you installed Oracle7 Server for Windows NT, you selected a language, and the Installer recorded that language in the NLS_LANG configuration parameter.

This appendix explains the NLS_LANG parameter and its components, and lists the available options. This appendix also includes information about several initialization parameters that provide NLS support.

This appendix also describes the procedure for installing support for additional languages.



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Additional Information: For additional information on the NLS_LANG parameter and NLS initialization parameters, see *Oracle7 Server Administrator's Guide*.

NLS_LANG

When you install Oracle7 Server for Windows NT, you select a language for database messages. The Oracle Installer supplies a value for the NLS_LANG parameter to specify the language selected.

The NLS_LANG parameter uses the following format:

```
NLS_LANG = LANGUAGE_TERRITORY.CHARACTER_SET
```

where *language* specifies the language and its conventions for displaying messages and day and month names, *territory* specifies the territory and its conventions for calculating week and day numbers, and *character_set* controls the character set used for displaying messages.

The default language at installation is American English. If you accept the default language, the following value is supplied for the NLS_LANG parameter:

```
AMERICAN_AMERICA.WE8ISO8859P1
```



Attention: To reset the NLS_LANG parameter to different values for language, territory, or character set, you must install the complete set of language files for that component in the \ORANT\RDBMSnn directory. Refer to the section *Installing Additional Languages* later in this appendix for installation information.

Territory and Character Set Defaults

The following table lists the default territories and character sets for each of the languages supported by Oracle7 Server for Windows NT.

Language	Territory	Charset
AMERICAN	AMERICA	US7ASCII
ARABIC	UNITED ARAB EMIRATES	AR8ISO8859P6
BRAZILIAN PORTUGUESE	BRAZIL	WE8ISO8859P1
BULGARIAN	BULGARIA	CL8ISO8859P5
CANADIAN FRENCH	CANADA	WE8ISO8859P1
CATALAN	CATALONIA	WE8ISO8859P1
CROATIAN	CROATIA	EE8ISO8859P2
CZECH	CZECH REPUBLIC	EE8ISO8859P2
DANISH	DENMARK	WE8ISO8859P1
DUTCH	THE NETHERLANDS	WE8ISO8859P1
EGYPTIAN	EGYPT	AR8ISO8859P6
ENGLISH	UNITED KINGDOM	WE8ISO8859P1
ESTONIAN	ESTONIA	WE8ISO8859P1
FINNISH	FINLAND	WE8ISO8859P1
FRENCH	FRANCE	WE8ISO8859P1
GERMAN	GERMANY	WE8ISO8859P1
GERMAN DIN	GERMANY	WE8ISO8859P1
GREEK	GREECE	EL8ISO8859P7
HEBREW	ISRAEL	IW8ISO8859P8
HUNGARIAN	HUNGARY	EE8ISO8859P2
ICELANDIC	ICELAND	WE8ISO8859P1
ITALIAN	ITALY	WE8ISO8859P1
JAPANESE	JAPAN	JA16EUC
KOREAN	KOREA	KO16KSC5601
LATIN AMERICAN SPANISH	AMERICA	WE8ISO8859P1
LITHUANIAN	LITHUANIA	NEE8ISO8859P4
MEXICAN SPANISH	MEXICO	WE8ISO8859P1
NORWEGIAN	NORWAY	WE8ISO8859P1
POLISH	POLAND	EE8ISO8859P2
PORTUGUESE	PORTUGAL	WE8ISO8859P1
ROMANIAN	ROMANIA	EE8ISO8859P2
RUSSIAN	CIS	CL8ISO8859P5
SIMPLIFIED CHINESE	CHINA	ZHS16CGB231280
SLOVAK	CZECHOSLOVAKIA	EE8ISO8859P2
SPANISH	SPAIN	WE8ISO8859P1
SWEDISH	SWEDEN	WE8ISO8859P1
THAI	THAILAND	TH8TISASCII
TRADITIONAL CHINESE	TAIWAN	ZHT32EUC
TURKISH	TURKEY	WE8ISO8859P9
UKRAINIAN	UKRAINE	CL8ISO8859P5

Selecting Alternate Territories and Character Sets

Although the languages have default territories and character sets associated with them, any language, territory, and character set values can be mixed and included in a single NLS_LANG parameter. Any NLS_LANG values, however, must correspond to a fully installed language. Refer to the section *Installing Additional Languages* in this appendix for installation information.



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Additional Information: See *Oracle7 Server Administrator's Guide* for additional information about the NLS_LANG parameter and its components.

NLS Initialization Parameters

National Language Support can also be set by database instance using several parameters in the initialization parameter file. The NLS initialization parameters set NLS information specific to a database session or instance.

NLS_LANGUAGE and NLS_TERRITORY

Any of the language and territory components listed in the previous table can be used as values for the NLS_LANGUAGE and NLS_TERRITORY parameters respectively. Also, any of the territory values in the section *Parameter Lists* in this appendix can be used for the NLS_TERRITORY parameter.

Using ALTER SESSION

If you wish to set the language for a single Server Manager session, define NLS_LANGUAGE and NLS_TERRITORY with the command:

```
SRVMGR>ALTER SESSION SET NLS_LANGUAGE = LANGUAGE  
NLS_TERRITORY = TERRITORY
```

where *language* and *territory* correspond to values in the next section, “Parameter Lists”. This changes the language only until you start a new Server Manager session. For more information on National Language Support, see *Oracle7 Server Administrator's Guide*.

NLS_SORT

The value for the NLS_SORT initialization parameter is dependent on the language selected for the database instance. See *Oracle7 Server Administrator's Guide* contains information about all of the available NLS initialization parameters.

Parameter Lists

The following lists include all parameters for the supported languages, territories, and character sets for Oracle7 Server for Windows NT. Use these values independently within the NLS_LANG configuration parameter or use the language parameter to set the default values for territory and character set. Additionally, the language and territory values listed can be used in the initialization parameters NLS_LANGUAGE and NLS_TERRITORY. Refer to the previous sections “NLS_LANG” and “NLS Initialization Parameters” for information on the usage of the following parameters.

Languages

AMERICAN	FRENCH	NORWEGIAN
ARABIC	GERMAN	POLISH
BRAZILIAN PORTUGUESE	GERMAN DIN	PORTUGUESE
BULGARIAN	GREEK	ROMANIAN
CANADIAN FRENCH	HEBREW	RUSSIAN
CATALAN	HUNGARIAN	SIMPLIFIED CHINESE
CROATIAN	ICELANDIC	SLOVAK
CZECH	ITALIAN	SPANISH
DANISH	JAPANESE	SWEDISH
DUTCH	KOREAN	THAI
EGYPTIAN	LATIN AMERICAN SPANISH	TRADITIONAL CHINESE
ENGLISH	LITHUANIAN	TURKISH
ESTONIAN	MEXICAN SPANISH	UKRAINIAN
FINNISH		

Territories

ALGERIA	HONG KONG	ROMANIA
AMERICA	HUNGARY	SAUDI ARABIA
AUSTRIA	ICELAND	SLOVAKIA
BAHRAIN	IRAQ	SLOVENIA
BRAZIL	ISRAEL	SOMALIA
BULGARIA	ITALY	SPAIN
CANADA	JAPAN	SUDAN
CATALONIA	JORDAN	SWEDEN
CHINA	KOREA	SWITZERLAND
CIS	KUWAIT	SYRIA
CROATIA	LEBANON	THAILAND
CZECH REPUBLIC	LIBYA	TAIWAN
CZECHOSLOVAKIA	LITHUANIA	THE NETHERLANDS
DENMARK	MAURITANIA	TUNISIA
DJIBOUTI	MEXICO	TURKEY
EGYPT	MOROCCO	UKRAINE
ESTONIA	NORWAY	UNITED ARAB EMIRATES
FINLAND	OMAN	UNITED KINGDOM
FRANCE	POLAND	YEMEN
GERMANY	PORTUGAL	
GREECE	QATAR	

Single-byte Character Sets

AR7AMEER	D8EBCDIC273	IW8ISO8859P8	WE8EBCDIC284
AR7ASMO449PLUS	DK7SIEMENS9780X	IW8MSWIN1255	WE8EBCDIC285
AR7SEDCOT	DK8BS2000	IW8PC1507	WE8EBCDIC37
AR8ADOS710	DK8EBCDIC277	LA8PASSPORT	WE8EBCDIC37C
AR8ADOS710T	E7DEC	LT8MSWIN921	WE8EBCDIC500
AR8ADOS720	E7SIEMENS9780X	LT8PC772	WE8EBCDIC500C
AR8ADOS720T	E8BS2000	LT8PC774	WE8EBCDIC871
AR8APTEC715	EE8EBCDIC870	N7SIEMENS9780X	WE8GCOS7
AR8APTEC715T	EE8ISO8859P2	N8PC865	WE8HP
AR8ARABICMAC	EE8MACCE	NDK7DEC	WE8ICL
AR8ARABICMACS	EE8MACCES	NE8ISO8859P10	WE8ISO8859P1
AR8ASMO708PLUS	EE8MACCROATIAN	NEE8ISO8859P4	WE8ISO8859P9
AR7ASMO449PLUS	EE8MACCROATIANS	NL7DEC	WE8ISOICLUK
AR8ASMO8X	EE8MSWIN1250	RU8BESTA	WE8MACROMAN8
AR8EBCDICX	EE8PC852	RU8PC855	WE8MACROMAN8S
AR8HPARABIC8T	EEC8EUROPA3	RU8PC866	WE8NCR4970
AR8ISO8859P6	EL8DEC	S7DEC	WE8NEXTSTEP
AR8MSWIN1256	EL8EBCDIC875	S7SIEMENS9780X	WE8PC850
AR8MUSSAD768	EL8GCOS7	S8EBCDIC278	WE8PC860
AR8MUSSAD768T	EL8ISO8859P7	SE8ISO8859P3	WE8ROMAN8
AR8NAFITHA711	EL8MACGREEK	SF7ASCII	WE8ROMAN8
AR8NAFITHA711T	EL8MACGREEKS	SF7DEC	YUG7ASCII
AR8NAFITHA721	EL8MSWIN1253	TH8MACTHAI	
AR8NAFITHA721T	EL8PC437S	TH8MACTHAIS	
AR8SAKHR706	EL8PC737	TH8TISASCII	
AR8SAKHR707	ET8MSWIN923	TH8TISEBCDIC	
AR8SAKHR707T	F7DEC	TR7DEC	
AR8XBASIC	F7SIEMENS9780X	TR8DEC	
BG8MSWIN	F8BS2000	TR8ISO8859P9	
CDN8PC863	F8EBCDIC297	TR8MACTURKISH	
CH7DEC	HU8ABMOD	TR8MACTURKISHS	
CL8BS2000	HU8CWI2	TR8PC857	
CL8EBCDIC1025	I7DEC	US7ASCII	
CL8EBCDIC1025X	I7SIEMENS9780X	US7ASCII	
CL8ISO8859P5	I8EBCDIC280	US8BS2000	
CL8MACCYRILLIC	IS8MACICELANDIC	US8ICL	
CL8MACCYRILLICS	IS8MACICELANDICS	US8PC437	
CL8MSWIN1251	IS8PC861	WE8BS2000	
D7DEC	IW7IS960	WE8BS2000L5	
D7SIEMENS9780X	IW8EBCDIC1086	WE8DEC	
D8BS2000	IW8EBCDIC424	WE8DG	

Multi Byte Character Sets

AL24UTFFSS	JA16SJIS	KO16DBCS	ZHT16DBT
JA16DBCS	JA16TSTSET	KO16KSC5601	ZHT32EUC
JA16EBCDIC930	JA16TSTSET2	ZHS16CGB231280	ZHT32SOPS
JA16EUC	JA16VMS	ZHT16BIG5	ZHT32TRIS

Installing Additional Languages

If you wish to install an additional language for your Oracle7 Server for Windows NT—for example, to specify different National Language Support for different instances—you must install the language files for that language directly to your Oracle7 Server for Windows NT directories. If you installed Oracle7 Server for Windows NT from CD-ROM, you can install additional languages by directly copying the complete set of language files for that language from the CD-ROM to \ORANT\RDBMS*nn*.

Copy the following files from the \NT_X86\V7\UTIL, \NT_X86\V7\RSF, and \NT_X86\V7\RDBMS subdirectories on the CD-ROM to the \ORANT subdirectories indicated in the following table. In the filenames, x represents the abbreviation for the desired message language. The language file abbreviations are listed in the Language File Abbreviations table.

Copy these files . . .	Into this directory . . .
ORA <i>x</i> .MSB DBA <i>x</i> .MSB EXP <i>x</i> .MSB IMP <i>x</i> .MSB OPW <i>x</i> .MSB SOSD <i>x</i> .MSB UL <i>x</i> .MSB LCD <i>x</i> .MSB	\ORANT\RDBMS <i>nn</i>
UI <i>x</i> .MSB	\ORANT\DBS
PCM <i>x</i> .MSB PLS <i>x</i> .MSB PX <i>x</i> .MSB	\ORANT\PLSQL <i>nn</i>
SQL <i>x</i> .MSB	\ORANT\PRO <i>nn</i>

Language	Language File Abbreviation	Language	Language File Abbreviation
AMERICAN	US	ITALIAN	I
ARABIC	AR	JAPANESE	JA
BRAZILIAN PORTUGUESE	PTB	KOREAN	KO
BULGARIAN	BG	LATIN AMERICAN SPANISH	ESA
CANADIAN FRENCH	FRC	LITHUANIAN	LT
CATALAN	E	MEXICAN SPANISH	ESM
CROATIAN	HR	NORWEGIAN	N
CZECH	CS	POLISH	PL
DANISH	DK	PORTUGUESE	PT
DUTCH	NL	ROMANIAN	RO
EGYPTIAN	EG	RUSSIAN	RU
ENGLISH	US	SIMPLIFIED CHINESE	ZHS
ESTONIAN	ET	SLOVAK	SK
FINNISH	SF	SLOVENIAN	SL
FRENCH	F	SPANISH	E
GERMAN	D	SWEDISH	S
GERMAN DIN	D	THAI	TH
GREEK	EL	TRADITIONAL CHINESE	ZHT
HEBREW	IW	TURKISH	TR
HUNGARIAN	HU	UKRAINIAN	UK
ICELANDIC	IS		

For example, the following list is the complete set of American language files:

ORAUS.MSB	PCMUS.MSB
DBAUS.MSB	PLSUS.MSB
EXPUS.MSB	PXUS.MSB
IMPUS.MSB	OPWUS.MSB
SOSDUS.MSB	SQLUS.MSB
ULUS.MSB	UIUS.MSB
LCDUS.MSB	

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