Oracle® Database

Installation Guide

10*g* Release 1 (10.1.0.2.0) for Windows

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Oracle Database Installation Guide, 10*g* Release 1 (10.1.0.2.0) for Windows

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Primary Author: Janelle Simmons

Contributors: Punsri Abeywickrema, Eric Belden, Phil Choi, Toby Close, Jim Emmond, Craig Foch, David Friedman, Alex Keh, Mark Kennedy, Peter LaQuerre, Rich Long, Anu Natarajan, Mark MacDonald, Matt McKerley, Mohamed Nosseir, Bharat Paliwal, Christian Shay, Helen Slattery, Debbie Steiner, Linus Tanaka, Ravi Thammaiah, Alice Watson

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Send Us Your Comments

Oracle Database Installation Guide, 10*g* Release 1 (10.1.0.2.0) for Windows

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

- Did you find any errors?
- Is the information clearly presented?
- Do you need more information? If so, where?
- Are the examples correct? Do you need more examples?
- What features did you like most about this manual?

If you find any errors or have any other suggestions for improvement, please indicate the title and part number of the documentation and the chapter, section, and page number (if available). You can send comments to us in the following ways:

- Electronic mail: ntdoc_us@oracle.com
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  Oracle Corporation
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  500 Oracle Parkway, Mailstop 1op6
  Redwood Shores, CA 94065
  USA

If you would like a reply, please give your name, address, telephone number, and electronic mail address (optional).

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

Preface

This manual is your primary source of introduction, preinstallation, installation, and postinstallation information for Oracle Database for Windows. Only the features of Oracle Database for Windows software installed on Windows NT, Windows 2000, Windows XP, and Windows Server 2003 operating systems are discussed in this guide.

This preface contains these topics:

- Intended Audience
- Documentation Accessibility
- Structure
- Related Documents
- Conventions

Intended Audience

Oracle Database Installation Guide for Windows is intended for anyone installing an Oracle Database on a single computer. Additional Installation Guides for Oracle Real Application Clusters and Cluster Ready Services (CRS), Oracle Transparent Gateway for DRDA, Oracle Procedural Gateway for APPC, Oracle Database Client, Oracle Companion CD, and Oracle Enterprise Manager Grid Control are available on the relevant installation media.

To use this document, you need the following:

- A supported Microsoft Windows operating system installed and tested on your computer system
- Administrative privileges on the computer where you are installing the Oracle Database software
- Familiarity with object-relational database management concepts

See Also:

- *Oracle Real Application Clusters Installation and Configuration Guide* on the Oracle Database installation media
- *Oracle Transparent Gateway for DRDA Installation and User's Guide* on the Oracle Database installation media
- *Oracle Procedural Gateway for APPC Installation and Configuration Guide* on the Oracle Database installation media
- *Oracle Database Client Installation Guide for Windows* on the Oracle Database Client installation media
- *Oracle Database Companion CD Installation Guide for Windows* on the Oracle Database Companion CD installation media
- *Oracle Enterprise Manager Grid Control Installation and Basic Configuration* on the Oracle Enterprise Manager Grid Control installation media

Documentation Accessibility

Our goal is to make Oracle products, services, and supporting documentation accessible, with good usability, to the disabled community. To that end, our documentation includes features that make information available to users of assistive technology. This documentation is available in HTML format, and contains markup to facilitate access by the disabled community. Standards will continue to evolve over time, and Oracle is actively engaged with other market-leading technology vendors to address technical obstacles so that our documentation can be accessible to all of our customers. For additional information, visit the Oracle Accessibility Program Web site at

`http://www.oracle.com/accessibility/`

Accessibility of Code Examples in Documentation JAWS, a Windows screen reader, may not always correctly read the code examples in this document. The conventions for writing code require that closing braces should appear on an otherwise empty line; however, JAWS may not always read a line of text that consists solely of a bracket or brace.

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Oracle provides dedicated Text Telephone (TTY) access to Oracle Support Services within the United States of America 24 hours a day, seven days a week.

For technical questions, call:

1.800.446.2398

For non-technical questions, call:

1.800.464.2330

Structure

This document contains:

Chapter 1, "Oracle Database Installation Overview"
Introduces you to Oracle Database and Oracle Universal Installer, describes the installation process and upgrade considerations.

Chapter 2, "Oracle Database Preinstallation Requirements"
Describes supported operating systems, requirements for Oracle Database for Windows installation types and individual components, upgrade information, and supported protocols.

Chapter 3, "Installing Oracle Database"
Describes how to install and deinstall Oracle components.

Chapter 4, "Oracle Database Postinstallation Tasks"
Describes postinstallation configuration tasks.

Chapter 5, "Reviewing Your Installed Starter Database Contents"
Describes the contents of your installed starter database.

Chapter 6, "Removing Oracle Database Software"
Describes how to remove Oracle components from your computer.

Appendix A, "Installing Java Access Bridge"
Describes Java Access Bridge component accessibility.

Appendix B, "Optimal Flexible Architecture"
Describes the Optimal Flexible Architecture (OFA) standard.

Appendix C, "Oracle Database Advanced Installation Topics"
Describes advanced installation topics.

Appendix D, "Oracle Database Globalization Support"
Describes Globalization Support topics.

Appendix E, "Oracle Database Default Port Numbers"
Lists the default port numbers and describes how to change the assigned port after installation.

Appendix F, "Oracle Database Troubleshooting"
Describes troubleshooting information for the installation.

Glossary

Related Documents

For more information, see these Oracle resources:

- *Oracle Database Release Notes for Windows*
- *Oracle Database Client Installation Guide for Windows*
- *Oracle Database Companion CD Installation Guide for Windows*
- *Oracle Real Application Clusters Installation and Configuration Guide*
- *Oracle Transparent Gateway for DRDA Installation and User's Guide*
- *Oracle Procedural Gateway for APPC Installation and Configuration Guide*
- *Oracle Enterprise Manager Grid Control Installation and Basic Configuration*
- *Oracle Database Platform Guide for Windows*
- *Oracle Database Upgrade Guide*
- *Oracle Database 2 Day DBA*

For information about Oracle error messages, see *Oracle Database Error Messages*. Oracle error message documentation is available only in HTML. If you only have access to the Oracle Documentation CD, you can browse the error messages by range. Once you find the specific range, use your browser's "find in page" feature to locate the specific message. When connected to the Internet, you can search for a specific error message using the error message search feature of the Oracle online documentation.

Many books in the documentation set use the sample schemas of the seed database, which is installed by default when you install Oracle. Refer to *Oracle Database Sample Schemas* for information on how these schemas were created and how you can use them yourself.

Printed documentation is available for sale in the Oracle Store at

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

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

`http://otn.oracle.com/membership/`

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

`http://otn.oracle.com/documentation/`

Conventions

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

- Conventions in Text
- Conventions in Code Examples
- Conventions for Windows Operating Systems

Conventions in Text

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

Convention	Meaning	Example
Bold	Bold typeface indicates terms that are defined in the text or terms that appear in a glossary, or both.	When you specify this clause, you create an **index-organized table**.
Italics	Italic typeface indicates book titles or emphasis.	*Oracle Database Concepts* Ensure that the recovery catalog and target database do *not* reside on the same disk.
`UPPERCASE monospace (fixed-width) font`	Uppercase monospace typeface indicates elements supplied by the system. Such elements include parameters, privileges, datatypes, RMAN keywords, SQL keywords, SQL*Plus or utility commands, packages and methods, as well as system-supplied column names, database objects and structures, usernames, and roles.	You can specify this clause only for a `NUMBER` column. You can back up the database by using the `BACKUP` command. Query the `TABLE_NAME` column in the `USER_TABLES` data dictionary view. Use the `DBMS_STATS.GENERATE_STATS` procedure.
`lowercase monospace (fixed-width) font`	Lowercase monospace typeface indicates executables, filenames, directory names, and sample user-supplied elements. Such elements include computer and database names, net service names, and connect identifiers, as well as user-supplied database objects and structures, column names, packages and classes, usernames and roles, program units, and parameter values. **Note:** Some programmatic elements use a mixture of UPPERCASE and lowercase. Enter these elements as shown.	Enter `sqlplus` to start SQL*Plus. The password is specified in the `orapwd` file. Back up the datafiles and control files in the `/disk1/oracle/dbs` directory. The `department_id`, `department_name`, and `location_id` columns are in the `hr.departments` table. Set the `QUERY_REWRITE_ENABLED` initialization parameter to `true`. Connect as `oe` user. The `JRepUtil` class implements these methods.
`lowercase italic monospace (fixed-width) font`	Lowercase italic monospace font represents placeholders or variables.	You can specify the *`parallel_clause`*. Run *`old_release`*`.SQL` where *`old_release`* refers to the release you installed prior to upgrading.

Conventions in Code Examples

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

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

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

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

Convention	Meaning	Example
. . .	Horizontal ellipsis points indicate either: ■ That we have omitted parts of the code that are not directly related to the example ■ That you can repeat a portion of the code	CREATE TABLE ... AS *subquery*; SELECT *col1*, *col2*, ... , *coln* FROM employees;
. . .	Vertical ellipsis points indicate that we have omitted several lines of code not directly related to the example.	SQL> SELECT NAME FROM V$DATAFILE; NAME ---------- /fs1/dbs/tbs_01.dbf /fs1/dbs/tbs_02.dbf . . . /fs1/dbs/tbs_09.dbf 9 rows selected.
Other notation	You must enter symbols other than brackets, braces, vertical bars, and ellipsis points as shown.	acctbal NUMBER(11,2); acct CONSTANT NUMBER(4) := 3;
Italics	Italicized text indicates placeholders or variables for which you must supply particular values.	CONNECT SYSTEM/*system_password* DB_NAME = *database_name*
UPPERCASE	Uppercase typeface indicates elements supplied by the system. We show these terms in uppercase in order to distinguish them from terms you define. Unless terms appear in brackets, enter them in the order and with the spelling shown. However, because these terms are not case sensitive, you can enter them in lowercase.	SELECT last_name, employee_id FROM employees; SELECT * FROM USER_TABLES; DROP TABLE hr.employees;
lowercase	Lowercase typeface indicates programmatic elements that you supply. For example, lowercase indicates names of tables, columns, or files. **Note:** Some programmatic elements use a mixture of UPPERCASE and lowercase. Enter these elements as shown.	SELECT last_name, employee_id FROM employees; sqlplus hr/hr CREATE USER mjones IDENTIFIED BY ty3MU9;

Conventions for Windows Operating Systems

The following table describes conventions for Windows operating systems and provides examples of their use.

Convention	Meaning	Example
Choose **Start** > *menu_item*	How to start a program.	To start Database Configuration Assistant, choose **Start** > **Programs** > **Oracle -** *HOME_NAME* > **Configuration and Migration Tools** > **Database Configuration Assistant**.

Convention	Meaning	Example
File and directory names	File and directory names are not case sensitive. The following special characters are not allowed: left angle bracket (<), right angle bracket (>), colon (:), double quotation marks ("), slash (/), pipe (|), and dash (-). The special character backslash (\) is treated as an element separator, even when it appears in quotes. If the file name begins with \\, then Windows assumes it uses the Universal Naming Convention.	`c:\winnt"\"system32 is the same as C:\WINNT\SYSTEM32`
`C:\>`	Represents the Windows command prompt of the current hard disk drive. The escape character in a command prompt is the caret (^). Your prompt reflects the subdirectory in which you are working. Referred to as the *command prompt* in this manual.	`C:\oracle\oradata>`
Special characters	The backslash (\) special character is sometimes required as an escape character for the double quotation mark (") special character at the Windows command prompt. Parentheses and the single quotation mark (') do not require an escape character. Refer to your Windows operating system documentation for more information on escape and special characters.	`C:\>exp HR/HR TABLES=employees QUERY=\"WHERE job_id='SA_REP' and salary<8000\"`
HOME_NAME	Represents the Oracle home name. The home name can be up to 16 alphanumeric characters. The only special character allowed in the home name is the underscore.	`C:\> net start Oracle`*HOME_NAME*`TNSListener`
ORACLE_HOME and *ORACLE_BASE*	In releases prior to Oracle8*i* release 8.1.3, when you installed Oracle components, all subdirectories were located under a top level *ORACLE_HOME* directory. The default for Windows NT was `C:\orant`. This release complies with Optimal Flexible Architecture (OFA) guidelines. All subdirectories are not under a top level *ORACLE_HOME* directory. There is a top level directory called *ORACLE_BASE* that by default is `C:\oracle\product\10.1.0`. If you install the latest Oracle release on a computer with no other Oracle software installed, then the default setting for the first Oracle home directory is `C:\oracle\product\10.1.0\db_`*n*, where *n* is the latest Oracle home number. The Oracle home directory is located directly under *ORACLE_BASE*. All directory path examples in this guide follow OFA conventions. Refer to *Oracle Database Platform Guide for Windows* for additional information about OFA compliances and for information about installing Oracle products in non-OFA compliant directories.	Go to the *ORACLE_BASE*`\`*ORACLE_HOME*`\rdbms\admin` directory.

What's New in Oracle Database for Windows?

This section describes new features of Oracle Database 10*g* release 1 (10.1) for Windows and provides pointers to additional information.

The following sections describe the new features in Oracle Database:

- Oracle Database 10g Release 1 (10.1) New Features for Windows
- Oracle Database 10g Release 1 (10.1) Deprecated and Desupported Components
- Oracle9i Release 2 (9.2.0.4) New Features

See Also:

- *Oracle Database New Features* for the list of new features, options, and enhancements of Oracle Database
- The README file at the root level of the documentation media for more information about the Oracle Documentation Library

Oracle Database 10*g* Release 1 (10.1) New Features for Windows

This section contains these topics:

- Automatic Storage Management
- Components Requiring Separate Installations
- Database Password Encryption
- Data Pump Import and Export
- Instant Client
- Large Page Support
- Oracle Data Provider for .NET
- Oracle Enterprise Manager Database Control
- Oracle Home Selector
- Oracle Objects for OLE
- Oracle Provider for OLE DB
- Oracle Services for Microsoft Transaction Server
- Renamed Components

- Scheduler

Automatic Storage Management

Automatic Storage Management enables creation of a single disk group from a collection of individual disk devices.

Components Requiring Separate Installations

Several components are no longer installed from the Oracle Database installation media.

> **See Also:** "Additional Software Installations" on page 1-6

Database Password Encryption

When a user attempts a remote login to an Oracle Database 10*g* release 1 (10.1) database, the password is automatically encrypted before it is sent to the remote database.

> **See Also:** "Administering a Database on Windows" in *Oracle Database Platform Guide for Windows*

Data Pump Import and Export

Two new utilities offer faster transfer of files to and from Oracle databases. The older file transfer utilities, Import and Export, are retained for use with Oracle databases created with earlier versions of Oracle software.

> **See Also:** "Database Tools on Windows" in *Oracle Database Platform Guide for Windows*

Instant Client

The Instant Client feature of Oracle Call Interface (OCI) simplifies OCI installation. The activation of Instant Client mode is only dependent on the ability to load the Instant Client data shared library. It requires only two dynamic link libraries to be loaded by the dynamic loader of the operating system.

> **See Also:** "OCI Instant Client" in *Oracle Call Interface Programmer's Guide*

Large Page Support

Large page support provides a performance boost for memory-intensive database instances running on Windows Server 2003. By taking advantage of newly introduced operating system support, Oracle Database 10g can now make more efficient use of processor memory addressing resources.

> **See Also:** "Large Page Support" in *Oracle Database Platform Guide for Windows*

Oracle Data Provider for .NET

Oracle Data Provider for .NET (ODP.NET) 10*g* release 1 (10.1) includes the following:

- Support for Oracle grids

  ODP.NET is grid-enabled, allowing developers to take advantage of Oracle database grid support without having to make changes to their application code.

- Support for new datatypes in the database

ODP.NET supports the new database native types `BINARY_FLOAT` and `BINARY_DOUBLE`.

- Support for multiple Oracle homes

  ODP.NET can be installed in multiple Oracle homes. In order to make multiple homes available, some of the ODP.NET files include a version number, and the use of a `HOME`*`ID`* is required.

- Support for schema-based `XMLType` in the database

  ODP.NET supports the native schema-based `XMLType`.

  See Also: *Oracle Data Provider for .NET Developer's Guide*

Oracle Enterprise Manager Database Control

Oracle Enterprise Manager Database Control is installed in the same Oracle home as the database and supports standalone Oracle Containers for Java (OC4J) instances.

See Also:

- "Accessing Enterprise Manager Database Control" on page 5-1
- *Oracle Database 2 Day DBA* for details on Oracle Enterprise Manager Database Control

Oracle Home Selector

Oracle Home Selector is no longer available from the Start menu. Similar functionality is available through Oracle Universal Installer.

Oracle Objects for OLE

Oracle Objects for OLE (OO4O) 10*g* release 1 (10.1) has the following new and updated features:

- Support for Oracle grids

  OO4O is grid-enabled, allowing developers to take advantage of Oracle database grid support without having to make changes to their application code.

- Support for new datatypes

  Oracle Objects for OLE 10*g* release 1 (10.1) provides support for the `BINARY_DOUBLE` and `BINARY_FLOAT` datatypes introduced in this release. Instances of these types can be fetched from the database or passed as input or output variables to SQL statements and PL/SQL blocks, including stored procedures and functions.

- Support for multiple Oracle homes

  Oracle Objects for OLE can be installed in multiple Oracle homes, starting with 10*g* release 1 (10.1). However, being a COM component, only one instance can be active on the computer. This means that the current (latest) installation renders the previous one inactive.

  In order to make multiple homes available, the use of a `HOME`*`ID`* is required. Also, some of the OO4O files include a version number.

  See Also: *Oracle Objects for OLE Developer's Guide*

Oracle Provider for OLE DB

Oracle Provider for OLE DB 10*g* release 1 (10.1) includes the following:

- Support for Oracle grids

  Oracle Provider for OLE DB is grid-enabled, allowing developers to take advantage of Oracle database grid support without having to make changes to their application code.

- Support for the following datatypes introduced with Oracle Database 10*g* release 1 (10.1):

  – `BINARY_DOUBLE`

  – `BINARY_FLOAT`

- Support for multiple Oracle homes

  Oracle Provider for OLE DB can be installed in multiple Oracle homes, starting with 10*g* release 1 (10.1). However, being a COM component, only one instance can be active on the computer. This means that the current (latest) installation renders the previous one inactive.

  In order to make multiple homes available, some of the Oracle Provider for OLE DB files now include a version number, and the use of a `HOME`*`ID`* is required.

  See Also: *Oracle Provider for OLE DB Developer's Guide*

Oracle Services for Microsoft Transaction Server

Oracle Services for Microsoft Transaction Server supports .NET transactional applications with OLE DB.NET through the Oracle Provider for OLE DB, and ODBC.NET through the Oracle ODBC driver.

Renamed Components

The following components were renamed in this release:

- Oracle Windows Performance Monitor was renamed to Oracle Counters for Windows Performance Monitor.
- Oracle Administration Assistant for Windows NT was renamed to Oracle Administration Assistant for Windows.
- Oracle Demos were renamed to Oracle Examples.

Scheduler

This release includes a new database scheduler to provide enterprise scheduling functionality. External jobs performed by the user are started using the `OracleJobScheduler` service. This service is disabled by default. In order to use the external jobs functionality, the administrator must set the username and password for the user account under which this service must run, and enable the service.

See Also:

- "The Scheduler" in *Oracle Database New Features*
- "Overview of Scheduler Concepts" in *Oracle Database Administrator's Guide*
- "Using the Scheduler" in *Oracle Database Administrator's Guide*
- "Managing the Scheduler" in *Oracle Database Administrator's Guide*

Oracle Database 10*g* Release 1 (10.1) Deprecated and Desupported

Components

The following Oracle Database 10*g* release 1 (10.1) components that were part of Oracle9*i* release 2 (9.2.0) are not available for installation with Oracle Database 10*g* release 1 (10.1):

The following components are desupported in a this release:

- INTYPE File Assistant (IFA)
- Pro*COBOL 1.8.77
- Oracle Names
- Oracle Trace

  Use SQL Trace and TKPROF in place of Oracle Trace.

Oracle9*i* Release 2 (9.2.0.4) New Features

This section contains these topics:

- Oracle Data Provider for .NET
- Oracle Objects for OLE
- Oracle Provider for OLE DB

Oracle Data Provider for .NET

Oracle Data Provider for .NET release 9.2.0.4, which was released on Oracle Technology Network (OTN) included the following:

- XML support in ODP.NET.

  With XML support, ODP.NET can now:

  - Store XML data natively in the database as the Oracle database native type, `XMLType`.
  - Access relational and object-relational data as XML data from an Oracle database instance into Microsoft .NET environment, process the XML using Microsoft .NET framework.
  - Save changes to the database server using XML data.
- Support for PL/SQL Associative Array Binding

  ODP.NET supports PL/SQL Associative Array (formerly known as PL/SQL Index-By Tables) binding.

  An application can bind an `OracleParameter`, as a PL/SQL Associative Array, to a PL/SQL stored procedure using `OracleParameter` properties.
- Support for `InitialLOBFetchSize` property on `OracleCommand` and `OracleDataReader` objects

Oracle Objects for OLE

Oracle Objects for OLE release 9.2.0.4 has the following new datatypes:

- `TIMESTAMP`
- `TIMESTAMP WITH TIME ZONE`
- `TIMESTAMP WITH LOCAL TIME ZONE`

- INTERVAL YEAR TO MONTH
- INTERVAL DAY TO SECOND

Oracle Provider for OLE DB

Oracle Provider for OLE DB release 9.2.0.4, which was released on Oracle Technology Network (OTN) included the following:

- Oracle Provider for OLE DB-Specific Connection String Attribute `UseSessionFormat`

  `UseSessionFormat` specifies whether to use the default NLS session formats or let Oracle Provider for OLE DB override some of these formats for the duration of the session.

- Support for the following datatypes introduced with Oracle9*i* release 1 (9.0.1):
  - TIMESTAMP
  - TIMESTAMP WITH TIME ZONE
  - TIMESTAMP WITH LOCAL TIME ZONE
  - INTERVAL YEAR TO MONTH
  - INTERVAL DAY TO SECOND

1

Oracle Database Installation Overview

This chapter describes the different installation types of Oracle Database for Windows, as well as the issues that you should consider before installing the software.

This chapter contains these topics:

- Planning Your Installation
- Installation Considerations
- Oracle Database Installation Types
- Additional Software Installations
- Database Configuration Options
- Database Storage Options
- Database Management Options
- Database Backup and Recovery Options
- E-mail Notification Options
- Upgrade Considerations

Planning Your Installation

The Oracle Database installation process consists of five steps:

1. Planning your installation: This overview chapter describes the Oracle products that you can install and issues that you must consider before starting the installation.
2. Completing preinstallation tasks: Chapter 2 describes preinstallation tasks that you must complete before installing the product.
3. Installing software: Chapter 3 describes how to use the Oracle Universal Installer to install this product.
4. Completing postinstallation tasks: Chapter 4 describes recommended and required postinstallation tasks.
5. Reviewing the starter database: Chapter 5 describes the contents of the default starter database, including information about Oracle database accounts, passwords, and file locations.

Installation Considerations

This section provides information about Oracle Universal Installer and others concepts you should be aware of in planning an installation.

- Licensing Information
- Installation Differences Between Windows and UNIX
- Oracle Cluster Synchronization Services (CSS)
- Oracle Universal Installer Overview
- Oracle Base Directory
- Oracle Home Directory
- Multiple Oracle Home Support

Licensing Information

Although the installation media in your media pack contain many Oracle components, you are permitted to use only those components for which you have purchased licenses.

Oracle Support Services does not provide support for components for which licenses have not been purchased.

> **See Also:** *Oracle Database Licensing Information*

Installation Differences Between Windows and UNIX

Database administrators experienced with installing Oracle components in UNIX environments must note that many manual setup tasks required on UNIX are not required on Windows. The key differences between UNIX and Windows installations are:

- Environment variables

  In UNIX operating system installations, environment variables such as `PATH`, `ORACLE_BASE`, `ORACLE_HOME`, and `ORACLE_SID` must be set manually. In Windows operating system installations, they are set in the registry by Oracle Universal Installer.

- DBA account for database administrators

  In UNIX operating system installations, this account must be created manually. In Windows operating system installations, Oracle Universal Installer creates the ORA_DBA group.

- Account for running Oracle Universal Installer

  In UNIX operating system installations, this account must be created manually. In Windows operating system installations, simply log in with Administrator privileges. A separate account is not required.

> **See Also:** "Oracle Database Windows/UNIX Differences" of *Oracle Database Platform Guide for Windows*

Oracle Cluster Synchronization Services (CSS)

The first time you install Oracle Database on a system, Oracle Universal Installer configures and starts a single-node version of the Oracle Cluster Synchronization

Services (CSS) service. The CSS service is required to enable synchronization between an Automatic Storage Management (ASM) instance and the database instances that rely on it for database file storage. It is configured and started even if you do not choose ASM as a storage mechanism for database files. Because it must be running before any ASM instance or database instance starts, it is configured to start automatically when the system starts.

For Oracle Real Application Clusters installations, the CSS service is installed with Oracle Cluster Ready Services (CRS) in a separate Oracle home directory (also called the CRS home directory). For single-node installations, the CSS service is installed in and runs from the same Oracle home as Oracle Database. For this reason, you must use caution when removing Oracle Database software from the system. Before you remove an Oracle home directory that contains Oracle Database, you must either delete the CSS service configuration, or if necessary, reconfigure the CSS service to run from another Oracle home directory.

Note: If you plan to have more than one Oracle Database installation on a single system and you want to use ASM for database file storage, Oracle recommends that you run the CSS service and the ASM instance from the same Oracle home directory and use different Oracle home directories for the database instances.

See Also:

- "Reconfiguring Oracle Cluster Synchronization Services (CSS)" on page 4-3
- "Removing Oracle Cluster Synchronization Services (CSS)" on page 6-2

Oracle Universal Installer Overview

Oracle Universal Installer is a Java-based graphical user interface (GUI) tool that enables you to install and remove Oracle software. Oracle Universal Installer provides the following capabilities:

- Component and suite installations
- Globalization Support
- Distributed installation support
- Unattended silent installations using response files
- Removal of installed components
- Multiple Oracle homes support

Oracle Universal Installer is capable of running a noninteractive installation of Oracle software and can optionally be configured for silent mode. Silent mode is a background process and does not display screens.

Using the old Oracle Installer (shipped with releases 7.*x* and 8.0.*x*) to install components into an Oracle Database 10*g* release 1 (10.1) Oracle home directory is *not* supported. Likewise, you cannot install 10*g* release 1 (10.1) components into a release 7.*x*, 8.0.*x*, 8.1.3, 8.1.4, or 9.*x* Oracle home.

Oracle Universal Installer automatically installs the Oracle version of the Java Runtime Environment (JRE). This version is required to run Oracle Universal Installer and

several Oracle assistants. Do *not* modify the JRE, unless doing so with a patch provided by Oracle*MetaLink*. Visit

`http://metalink.oracle.com/`

See Also:

- Appendix C, "Oracle Database Advanced Installation Topics"
- *Oracle Universal Installer Concepts Guide*

  Oracle Universal Installer Concepts Guide is included in your Oracle Documentation Library and is automatically installed on your hard drive during installation. To access this guide, choose **Start** > **Programs** > **Oracle -** ***ORACLE_HOME*** > **Oracle Installation Products** > **Universal Installer Concepts Guide**.

Oracle Base Directory

If you install Oracle Database 10*g* release 1 (10.1) on a computer with no other Oracle software installed, then Oracle Universal Installer creates an Oracle base directory for you. If Oracle software is already installed, then one or more Oracle base directories already exist. In the latter case, Oracle Universal Installer offers you a choice of Oracle base directories into which to install Oracle Database.

You are not required to create an Oracle base directory before installation, but you can do so if you want.

Note: You can choose to create a new Oracle base directory, even if other Oracle base directories exist on the system.

Oracle Home Directory

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

- Location of installed component files
- `PATH` variable pointing to binary files of installed components
- Registry entries
- Service names
- Program groups

Oracle homes also have a name associated with them, which you specify along with their location during installation.

Multiple Oracle Home Components

Starting with 10*g* release 1 (10.1), all Oracle components can be installed in multiple Oracle homes on the same computer. However, some components can only support one active instance at a time. This means that the current (latest) installation renders the previous one inactive. These components are:

- Oracle Administration Assistant for Windows
- Oracle Counters for Windows Performance Monitor
- Oracle Objects for OLE
- Oracle Provider for OLE DB

Note: All Oracle7 components and all Oracle8 release 8.0.3 components are non-multiple Oracle home products.

See Also: "Changing the Value of PATH" in *Oracle Database Platform Guide for Windows* for information about selecting an active instance

Multiple Oracle Home Support

This product supports multiple Oracle homes. This means that you can install this release or previous releases of the software more than once on the same system, in different Oracle home directories.

You must install this product into a new Oracle home directory. You cannot install products from one release of Oracle Database into an Oracle home directory of a different release. For example, you cannot install 10*g* release 1 (10.1) software into an existing Oracle9*i* Oracle home directory. If you attempt to install this release into an Oracle home directory that contains software from an earlier Oracle release, the installation fails.

You can install this release more than once on the same system as long as each installation is installed in a separate Oracle home directory.

Oracle Database Installation Types

You can choose one of the following installation types when installing Oracle Database:

- **Enterprise Edition:** Installs licensable Oracle Database options, and database configuration and management tools in addition to all of the products that are installed during a Standard Edition installation. It also installs products most commonly used for data warehousing and transaction processing.
- **Standard Edition:** Installs an integrated set of management tools, full distribution, replication, Web features, and facilities for building business-critical applications.

  Note: If you purchased a Standard Edition license, and you perform a Custom installation, ensure that you install only the components covered by the Standard Edition license.

- **Personal Edition:** Installs the same software as the Enterprise Edition installation type, but supports only a single user development and deployment environment that requires full compatibility with Enterprise Edition and Standard Edition. Oracle Real Application Clusters is not installed with Personal Edition.

  Note: Oracle9*i* release 1 (9.0.1.1.1) was the terminal release for Personal Edition on Windows 98.

- **Custom:** Enables you to select the individual components that you want to install from the list of all available components.

Note: Oracle Database Client is installed separately. You cannot install Oracle Database Client during an Oracle Database installation.

See Also:

- *Oracle Database Client Installation Guide for Windows* for Oracle Database Client installation instructions
- *Oracle Database Licensing Information* for more information about the features available with each Oracle Database edition and for information about licensing

Additional Software Installations

The following components require separate installations. These components are not available from the Oracle Database 10*g* Release 1 (10.1.0.2.0) installation media:

- Cluster Ready Services
- Oracle Database Client
- Oracle Database Companion CD Components
- Oracle Database Examples
- Oracle Enterprise Manager Grid Control Framework
- Oracle HTTP Server
- Oracle Migration Workbench

Cluster Ready Services

Oracle Cluster Ready Services (CRS) are key subcomponents required by Oracle Real Application Clusters installations. It performs workload management and component restart. For example, when an instance supporting a particular service fails, CRS restarts the service on the next available instance that you have configured for that service.

You must install CRS before installing Oracle Real Application Clusters. The software is available on the Cluster Ready Services installation media.

See Also: *Oracle Real Application Clusters Installation and Configuration Guide* for more details

This guide is available on the Oracle Database installation media.

Oracle Database Client

Beginning with the release, Oracle Database Client software is available on the Oracle Database Client installation media.

See Also: *Oracle Database Client Installation Guide for Windows* for more details

This guide is available on the Oracle Database Client installation media.

Oracle Database Companion CD Components

The following components are available on the Oracle Database Companion CD installation media:

- JPublisher
- Legato Single Server Version
- Natively Compiled Java Libraries
- Oracle Database Examples
- Oracle HTML DB
- Oracle HTTP Server
- Oracle Text Supplied Knowledge Bases

> **See Also:** *Oracle Database Companion CD Installation Guide for Windows* for more details
>
> This guide is available on the Oracle Database Companion CD installation media.

Oracle Database Examples

Oracle Database Examples, formerly known as Oracle Demos, are available on the Oracle Database Companion CD installation media.

> **See Also:** *Oracle Database Companion CD Installation Guide for Windows* for more details
>
> This guide is available on the Oracle Database Companion CD installation media.

Oracle Enterprise Manager Grid Control Framework

Oracle Enterprise Manager Grid Control framework includes the Oracle Management Agent, Oracle Management Service, and Oracle Management Repository, as well as Grid Control, a browser-based central console through which administrators can perform all monitoring, administration, and configuration tasks for the enterprise.

> **See Also:** *Oracle Enterprise Manager Grid Control Installation and Basic Configuration* available on the Enterprise Manager Grid Control installation media

Oracle HTTP Server

Beginning with this release, Oracle HTTP Server is available on the Oracle Database Companion CD installation media.

> **See Also:** *Oracle Database Companion CD Installation Guide for Windows* for more details
>
> This guide is available on the Oracle Database Companion CD installation media.

Oracle Migration Workbench

Oracle Migration Workbench software and documentation are available at

`http://otn.oracle.com/tech/migration/`

Database Configuration Options

During the installation, you can choose whether you want to create an Oracle database as part of the installation. If you choose to create an Oracle database, Oracle Universal Installer uses the Database Configuration Assistant to create it. You can choose to create one of the preconfigured database types, which are designed for a variety of different applications, modify one of the preconfigured database types, or create a customized database to suit your own requirements.

Preconfigured Database Types

Oracle provides the following preconfigured database types that you can create or customize during the installation:

- General Purpose
- Transaction Processing
- Data Warehouse

See the online help provided by either Oracle Universal Installer or Database Configuration Assistant for a description of these preconfigured database types.

Installation Choices that Affect Database Creation

Oracle Universal Installer runs Database Configuration Assistant in one of two modes, depending on the choices that you make during the installation:

- Non-interactive mode

  If you choose either the Enterprise Edition, Standard Edition, or Personal Edition installation type, then choose a preconfigured database type, Oracle Universal Installer prompts you for the minimum amount of information required to create a database of the type you choose. It then runs Database Configuration Assistant in non-interactive mode to create the database after it installs the software.

  Note: Oracle recommends that you use this method to create a database if you have not previously created one.

- Interactive mode

  If you choose the Custom installation type or choose the Advanced database configuration option, then Oracle Universal Installer does not prompt you for database information. Instead, it installs the software and then runs Database Configuration Assistant in interactive mode. Using the screens in Database Configuration Assistant, you can either modify one of the preconfigured database types or create a custom database and specify precisely how you want to configure it.

  Note: If you choose this method to create a database, click Help on any of the Database Configuration Assistant screens for a description of the information that you must specify on that screen.

Creating a Database After Installation

If you decide not to create a database during the installation, you can use Database Configuration Assistant to create one after you have installed the software.

See Also: *Oracle Database 2 Day DBA* for more information about using Database Configuration Assistant to create a database after installation

Database Storage Options

If you choose to create a database during the installation, you can specify one of three storage options for database files:

- File System
- Automatic Storage Management (ASM)
- Raw Devices

File System

If you choose the file system option, Database Configuration Assistant creates the database files in a directory on a file system on your computer. Oracle recommends that the file system you choose be separate from the file systems used by the operating system or the Oracle software. The file system that you choose can be any of the following:

- A file system on a disk that is physically attached to the system.

  If you are creating a database on basic disks that are not logical volumes or RAID devices, Oracle recommends that you follow the Optimal Flexible Architecture (OFA) recommendations described in Appendix B and distribute the database files over more than one disk.

- A file system on a logical volume manager (LVM) volume or a RAID device.

  If you are using multiple disks in an LVM or RAID configuration, Oracle recommends that you use the stripe and mirror everything (SAME) methodology to increase performance and reliability. Using this methodology, you do not need to specify more than one file system mount point for database storage.

If you choose the Custom installation type or the Advanced database creation option, you can also choose to use the Oracle-managed files feature with the new database. If you use this feature, you need only specify the database object name instead of file names when creating or deleting database files.

See Also: *Oracle Database Administrator's Guide* for more information about Oracle-managed files

Automatic Storage Management (ASM)

Automatic Storage Management (ASM) is a new feature introduced with this release of Oracle Database. It is a high-performance storage management solution for Oracle database files that is consistent across all supported platforms. Designed specifically to simplify the job of the database administrator (DBA), ASM provides you with a flexible storage solution that simplifies the management of a dynamic database environment. The features provided by ASM make most manual I/O performance tuning tasks unnecessary.

To use ASM for database storage, you must create one or more ASM disk groups. A disk group is a set of disk devices that ASM manages as a single unit. ASM spreads data evenly across all of the devices in the disk group to optimize performance and utilization. To protect against disk failure, you can choose one of three redundancy levels when you create a disk group. The redundancy level defines how files are mirrored within a disk group, as follows:

Redundancy Level	Mirroring
Normal	Two-way mirroring
High	Three-way mirroring
External	No mirroring by ASM

In addition to the manageability, performance, and reliability benefits provided by ASM, it can also increase database availability. You can add or remove disk devices from disk groups without shutting down the database. ASM automatically rebalances the files across the disk group after disks have been added or removed.

Disk groups are managed by a special Oracle instance, called an ASM instance. This instance must be running before you can start a database instance that uses ASM for storage management. If you choose ASM as the storage mechanism for your database, Database Configuration Assistant creates and starts this instance if necessary.

See Also:

- *Oracle Database Concepts* for information about administering ASM
- *Oracle Database Administrator's Guide* for a more detailed description of ASM

Raw Devices

Raw devices are disk partitions or logical volumes that have not been formatted with a file system. When you use raw devices for database file storage, Oracle writes data directly to the partition or volume, bypassing the operating system file system layer. For this reason, you can sometimes achieve performance gains by using raw devices. However, because raw devices can be difficult to create and administer, and because the performance gains over modern file systems are minimal, Oracle recommends that you choose ASM or file system storage in preference to raw devices.

Database Management Options

To simplify database administration, Oracle provides a Web-based management tool called Oracle Enterprise Manager. There are two ways that you can deploy Oracle Enterprise Manager, as follows:

- Deploy Oracle Enterprise Manager 10*g* centrally in your environment.

  To deploy Oracle Enterprise Manager centrally, you must install at least one Oracle Management Repository and one Oracle Management Service within your environment, then install an Oracle Management Agent on every computer that you want to manage. You can then use a single Web-based interface to manage and monitor software and hardware targets on all of those systems. Targets can include Oracle databases, application servers, Net listeners, and third-party software. This single interface is called Oracle Enterprise Manager Grid Control (or simply Grid Control).

  Note: Oracle Enterprise Manager 10*g* is available separately on the Oracle Enterprise Manager Grid Control installation media.

- Deploy Oracle Enterprise Manager Database Control locally on the database system.

Oracle Enterprise Manager Database Control software is installed by default with every Oracle Database installation except Custom. During a Custom installation, you can choose not to install Oracle Enterprise Manager Database Control software. However, Oracle recommends that you do install it. This local installation provides a Web-based interface called Oracle Enterprise Manager Database Control. The Database Control is similar in function to the Grid Control, but it can manage only a single database. If you want to administer more than one database on this system, you must either configure a separate Database Control for each one, or install Oracle Enterprise Manager 10*g*.

> **See Also:** *Oracle Enterprise Manager 10g Concepts* and *Oracle Enterprise Manager 10g Installation and Basic Configuration* for more information about Oracle Enterprise Manager 10*g*

Management Options for Preconfigured Databases

When you choose to create a preconfigured database during the installation, you must select the Oracle Enterprise Manager interface that you want to use to manage the database. The following options are available:

- Use Grid Control for central database management.

  This option is available only if an Oracle Management Agent is installed on the system. When Oracle Universal Installer detects Oracle Management Agent on the system, you can choose this option and specify the Oracle Management Service that you want to use to manage the database.

  If an Oracle Management Agent is not installed, you must choose to use Database Control to manage the database. However, if you install Oracle Management Agent after you install Oracle Database, you can then use Grid Control to manage this database.

- Use Database Control for local database management.

  This option is selected by default if an Oracle Management Agent is not installed on the system. However, even if a Management Agent is installed, you can still choose to configure Database Control to manage the database.

Management Options for Custom Databases

If you choose the Custom installation type or the Advanced database configuration option during the installation, Oracle Universal Installer does not display the options listed in the previous section. Instead, it runs Database Configuration Assistant in interactive mode, which enables you to create a custom database.

Database Configuration Assistant also enables you to specify the Oracle Enterprise Manager interface that you want to use. Furthermore, you can also use Database Configuration Assistant after the installation to configure Database Control for a database that was not previously configured to use it.

Features Provided by Oracle Enterprise Manager Database Control

Oracle Enterprise Manager Database Control provides a Web-based user interface that enables you to monitor, administer, and maintain an Oracle database. You can use it to perform all of your database administration tasks. You can also use it to determine information about the database, such as:

- Instance name, database version, Oracle home location, media recovery options, and other instance data
- Current instance availability

- Database alert information
- Session and SQL-related performance information
- Space usage metrics

Database Backup and Recovery Options

If you choose to use Oracle Enterprise Manager Database Control during the installation, you can optionally enable automated database backups that use the Oracle-suggested default backup strategy.

> **Note:** You do not have to enable automated backups during the installation. If you prefer, you can use Oracle Enterprise Manager Database Control or Grid Control to configure automated backups after you install the software and create a database.

Enabling Automated Backups

If you enable automated backups, Oracle Enterprise Manager schedules a daily backup job that uses Oracle Recovery Manager (RMAN) to back up all of the database files to an on disk storage area called the flash recovery area. The first time the backup job runs, it creates a full backup of the database. Subsequent backup jobs perform incremental back-ups, which enable you to recover the database to its state at any point during the preceding 24 hours.

To enable automated backup jobs during installation, you must specify the following information:

- The location of the flash recovery area.

  You can choose to use either a file system directory or an ASM disk group for the flash recovery area. The default disk quota configured for the flash recovery area is 2 GB. For ASM disk groups, the required disk space depends on the redundancy level of the disk group that you choose. Chapter 2 describes how to choose the location of the flash recovery area and identifies its disk space requirements.

- An operating system username and password for the backup job.

  Oracle Enterprise Manager uses the operating system credentials that you specify when running the backup job. The username that you specify must belong to the Windows group that identifies database administrators (the `ORA_DBA` group).

Backup Job Default Settings

If you enable automated backups after choosing one of the preconfigured databases during the installation, automated backup is configured with the following default settings:

- The backup job is scheduled to run nightly at 2 a.m.
- The disk quota for the flash recovery area is 2 GB.

If you enable automated backups by using Database Configuration Assistant, either during or after the installation, you can specify a different start time for the backup job and a different disk quota for the flash recovery area.

See Also:

- *Oracle Database 2 Day DBA* for information about using Oracle Enterprise Manager Database Control to configure or customize automated backups or to recover a backed up database
- *Oracle Database Backup and Recovery Basics* or *Oracle Database Backup and Recovery Advanced User's Guide* for more detailed information about defining a backup strategy and backing up and recovering Oracle databases

E-mail Notification Options

If you choose to use the Oracle Enterprise Manager Database Control during the installation, you can configure Enterprise Manager to send e-mail when specific events occur. These events can include occurrences such as disk space reaching a critical limit (a threshold), or a database shutting down unexpectedly.

If you choose to enable e-mail notifications, you must specify the following information:

- The host name of an simple mail transport protocol (SMTP) server.
- The e-mail address that should receive the alerts.

  The e-mail address that you specify could belong to an individual or it could be a shared e-mail account or a distribution list.

You can use Enterprise Manager Database Control to set-up, change, or customize e-mail notifications after you have created the database.

Upgrade Considerations

Oracle recommends installing Oracle Database 10*g* release 1 (10.1) into a new Oracle home directory. If you must install Oracle Database 10*g* release 1 (10.1) into an Oracle home directory that contains previously installed Oracle8*i* or Oracle9*i* components, then use Oracle Universal Installer to remove these components before beginning a new installation.

Refer to *Oracle Database Upgrade Guide* before deciding to upgrade an existing database. Upgrade procedures on Windows are covered in *Oracle Database Upgrade Guide*. However, this section describes several Windows-specific issues to understand before following the instructions in *Oracle Database Upgrade Guide*.

See Also: Chapter 6, "Removing Oracle Database Software"

This section contains these topics:

- AL24UTFFSS Character Set
- Policies for Linking and Relinking Applications
- Oracle Real Application Clusters Upgrade Requirements
- Downgrading a Database

AL24UTFFSS Character Set

To upgrade an existing database that uses the AL24UTFFSS character set, upgrade the database character set to UTF8 before upgrading to Oracle Database 10*g* release 1 (10.1). Oracle recommends that you use the Character Set Scanner (`csscan`) utility for

data analysis before attempting to upgrade your existing database character set. The Character Set Scanner utility checks all character data in the database and tests for the effects of, and problems with, changing the character set encoding.

Policies for Linking and Relinking Applications

If you upgrade your Oracle database to 10*g* release 1 (10.1), then Oracle recommends that you upgrade the client software to 10*g* release 1 (10.1) as well. Keeping the server and client software at the same release number ensures maximum stability for your applications. In addition, the latest Oracle client software may provide added functionality and performance enhancements that were not available with previous releases.

> **See Also:** *Oracle Database Upgrade Guide* for rules regarding linking and relinking applications when you perform a feature release upgrade of the client software

Oracle Real Application Clusters Upgrade Requirements

Oracle recommends that you upgrade Oracle Real Application Cluster (RAC) to 10*g* release 1 (10.1).

> **See Also:** *Oracle Real Application Clusters Installation and Configuration Guide* for information regarding RAC upgrade requirements

Downgrading a Database

Steps to downgrade a database, including steps to change the word size, are covered *Oracle Database Upgrade Guide*.

2

Oracle Database Preinstallation Requirements

This chapter describes installation requirements for an Oracle Database for Windows installation.

This chapter contains these topics:

- Oracle Database System Requirements
- Hardware and Software Certification
- Individual Component Requirements

Oracle Database System Requirements

The following sections list the system requirements for Oracle Database. Some individual components also have requirements that must be satisfied before installation.

- Software Requirements
- Hardware Requirements
- Verifying Hardware Requirements

Software Requirements

Table 2–1 lists the software requirements for Oracle Database.

Table 2–1 Software Requirements

Requirement	Value
System Architecture	32-bit **Note:** Oracle provides both 32-bit and 64-bit versions of Oracle Database for Windows. Currently, the 32-bit version of the database must run on the 32-bit version of the operating system. The 64-bit version of the database must run on the 64-bit version of the operating system.

Table 2–1 (Cont.) Software Requirements

Requirement	Value
Operating System	Oracle Database for Windows is supported on the following operating systems: ■ Windows NT Server 4.0, Windows NT Server Enterprise Edition 4.0, and Terminal Server Edition with service pack 6a or higher are supported. Windows NT Workstation is no longer supported. ■ Windows 2000 with service pack 1 or higher. All editions, including Terminal Services and Windows 2000 MultiLanguage Edition (MLE), are supported. ■ Windows Server 2003 ■ Windows XP Professional Windows Multilingual User Interface Pack is supported on Windows XP Professional and Windows Server 2003.
Compiler	Oracle C++ Call Interface supports the following compilers: Microsoft Visual C++ 6.0, Microsoft Visual C++ .NET 2002, and Microsoft Visual C++ .NET 2003 Oracle Call Interface supports the following compilers: Microsoft Visual C++ 6.0, Microsoft Visual C++ .NET 2002, and Microsoft Visual C++ .NET 2003 External callouts support the following compilers: Microsoft Visual C++ 6.0, Microsoft Visual C++ .NET 2002, and Microsoft Visual C++ .NET 2003 PL/SQL native compilation supports the following compilers: Microsoft Visual C++ 6.0, Microsoft Visual C++ .NET 2002, and Microsoft Visual C++ .NET 2003 Pro*COBOL supports the Micro Focus Net Express compiler. Object Oriented COBOL (OOCOBOL) specifications are not supported. XDK supports the following compilers: Microsoft Visual C++ 6.0, Microsoft Visual C++ .NET 2002, and Microsoft Visual C++ .NET 2003
Network Protocol	The **Oracle Net foundation layer** uses Oracle protocol support to communicate with the following industry-standard network protocols: ■ TCP/IP ■ TCP/IP with SSL ■ Named Pipes

See Also:

- "Windows XP Support" on page 2-4
- "Telnet and Terminal Services Support" on page 2-5
- 64-bit software and documentation on OTN

  `http://otn.oracle.com`

Hardware Requirements

The following hardware components are required for Oracle Database:

- RAM: 256 MB minimum, 512 MB recommended

- Virtual memory: double the amount of RAM
- Hard disk space: See Table 2–2
- Temp disk space: 100 MB
- Video adapter: 256 color
- Processor: 200 MHz minimum

See Also:

- "Oracle Transparent Gateway Requirements" on page 2-18 for additional requirements
- "Configuring Disk Storage for Oracle Datafiles and Recovery Files" on page 2-6
- "Creating Directories for Oracle Datafiles or Recovery Files" on page 2-7 for additional requirements
- "Configuring Disks for Automatic Storage Management" on page 2-9 for additional requirements
- "Configuring Raw Logical Volumes or Raw Partitions" on page 2-14 for additional requirements
- "Installing With the Minimum Memory Requirements" on page 3-2

Hard Disk Space Requirements

This section lists system requirements for NT File System (NTFS) file systems. Oracle recommends installing Oracle components on NTFS.

The NTFS system requirements listed in this section are more accurate than the hard disk values reported by the Oracle Universal Installer Summary screen. The Summary screen does not include accurate values for disk space, the space required to create a database, or the size of compressed files that are expanded on the hard drive.

The hard disk requirements for Oracle Database components include 32 MB required to install Java Runtime Environment (JRE) and Oracle Universal Installer on the partition where the operating system is installed. If sufficient space is not detected, installation fails and an error message appears.

Table 2–2 lists the space requirements for NTFS. The starter database requires 720 MB of disk space. The figures in Table 2–2 include the starter database. FAT32 space requirements are slightly larger.

Table 2–2 Hard Disk Space Requirements for NTFS

Installation Type	System Drive	Oracle Home Drive
Basic Installation	100 MB	1.5 GB
Advanced Installation: Enterprise Edition	100 MB	1.5 GB
Advanced Installation: Standard Edition	100 MB	1.4 GB
Advanced Installation: Personal Edition	100 MB	1.5 GB

See Also: "NTFS File System and Windows Registry Permissions" in *Oracle Database Platform Guide for Windows*

Verifying Hardware Requirements

To ensure that the system meets these requirements, follow these steps:

1. Determine the physical RAM size. For a computer using Windows 2000, for example, open **System** in the control panel and select the **General** tab. If the size of the physical RAM installed in the system is less than the required size, then you must install more memory before continuing.
2. Determine the size of the configured swap space (also known as paging file size). For a computer using Windows 2000, for example, open **System** in the control panel, select the **Advanced** tab, and click **Performance Options**.

   If necessary, see your operating system documentation for information about how to configure additional swap space.
3. Determine the amount of free disk space on the system. For a computer using Windows 2000, for example, open **My Computer**, right-click the drive where the Oracle software is to be installed, and choose **Properties**.
4. Determine the amount of disk space available in the `temp` directory. This is equivalent to the total amount of free disk space, minus what will be needed for the Oracle software to be installed.

   If there is less than 100 MB of disk space available in the `temp` directory, then first delete all unnecessary files. If the temp disk space is still less than 100 MB, then set the `TEMP` or `TMP` environment variable to point to a different hard drive. For a computer using Windows 2000, for example, open the **System** control panel, select the **Advanced** tab, and click **Environment Variables**.

Hardware and Software Certification

The platform-specific hardware and software requirements included in this installation guide were current at the time this guide was published. However, because new platforms and operating system software versions might be certified after this guide is published, review the certification matrix on the Oracle*MetaLink* Web site for the most up-to-date list of certified hardware platforms and operating system versions. This Web site also provides compatible client and database versions, patches, and workaround information for bugs. The Oracle*MetaLink* Web site is available at the following URL:

`http://metalink.oracle.com/metalink/certify/`

Web Browser Support

The following Web browsers are supported for *i*SQL*Plus and Oracle Enterprise Manager Database Control:

- Netscape Navigator 4.78, 4.79, 7.0.1, or 7.1.0
- Microsoft Internet Explorer 5.5 with service pack 1
- Microsoft Internet Explorer 6.0 with service pack 2

Windows XP Support

The following components are not certified on Windows XP:

- DCE Adapter Support
- Entrust PKI Support

- Generic Connectivity
- Oracle Enterprise Integration Gateways, which include the following:
  - Procedural Gateway for APPC
  - Transparent Gateway for IBM DRDA
- Oracle Messaging Gateway
- Oracle Open System Gateways, which include the following:
  - Transparent Gateway for Sybase
  - Transparent Gateway for Teradata
  - Transparent Gateway for Microsoft SQL Server
- Oracle Real Application Clusters, including Cluster File System and Server Management
- nCipher Accelerator Support

Telnet and Terminal Services Support

This section contains these topics:

- Windows Telnet Services Support
- Windows Terminal Services Support

Windows Telnet Services Support

Windows XP, Windows 2000, and Windows Server 2003 include a Telnet Service that allows remote users to log on to the operating system and run console programs using the command line. Oracle supports the use of database command line utilities such as `sqlplus`, `export`, `import` and `sqlldr` using this feature, but does not support the database GUI tools such as Oracle Universal Installer, Database Configuration Assistant, and Oracle Net Configuration Assistant.

Note: Ensure that the Telnet service is started on the Services control panel.

Windows Terminal Services Support

Oracle supports Terminal Services on Windows 2000 Server, Windows XP Professional, and Windows Server 2003. If you attempt to install Oracle Database 10*g* release 1 (10.1) in this manner, then many configuration tools will stop responding. Start all configuration tools from the Terminal Server console and not from the Terminal Services Client.

The following products and features are not supported with Windows Terminal Services:

- Oracle Connection Manager
- Oracle Object Link Manager
- Oracle Services for Microsoft Transaction Server
- Server Management (SRVM)

See Also:

- The Microsoft Web site for more information about terminal servers

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

- The Oracle*MetaLink* Web site for the latest Terminal Server certification information

  `http://metalink.oracle.com/metalink/certify/`

Individual Component Requirements

This section contains these topics:

- Configuring Disk Storage for Oracle Datafiles and Recovery Files
- Creating Directories for Oracle Datafiles or Recovery Files
- Configuring Disks for Automatic Storage Management
- Configuring Raw Logical Volumes or Raw Partitions
- Oracle Advanced Security Requirements
- Oracle Enterprise Manager Requirements
- Oracle Managed Files Requirements
- Oracle Real Application Clusters
- Oracle Snap-Ins to the Microsoft Management Console Requirements
- Oracle Transparent Gateway Requirements

Configuring Disk Storage for Oracle Datafiles and Recovery Files

This section describes the storage options for storing Oracle datafiles and optionally, Oracle database recovery files. After you choose the storage method that you want to use for each file type, see the following sections for information about configuring the required storage.

Note: You do not have to use the same storage option for each type of file.

Choosing a Storage Option for Oracle Datafiles

If you want to create a database during the installation, you must choose one of the following storage options for the datafiles:

- File system
- Automatic Storage Management
- Raw Devices

Choosing a Storage Option for Oracle Database Recovery Files

Additionally, if you want to enable automated backups during the installation, you must choose one of the following storage options for recovery files (the flash recovery area):

- File system

- Automatic Storage Management

The storage option that you choose for recovery files can be the same as or different to the option you choose for the datafiles.

Configuring Disk Storage

For more information about these options, see the "Database Storage Options" section on page 1-9. For information about how to configure disk storage before you start the installation, see one of the following sections depending on your choice:

- To use a file system for database or recovery file storage, see the "Creating Directories for Oracle Datafiles or Recovery Files" section on page 2-7.
- To use ASM for database or recovery file storage, see the "Configuring Disks for Automatic Storage Management" section on page 2-9.
- To use raw devices for database file storage, see the "Configuring Raw Logical Volumes or Raw Partitions" section on page 2-14.

Creating Directories for Oracle Datafiles or Recovery Files

If you decide to place the Oracle database or recovery files on a file system, use the following guidelines when deciding where to place them.

Guidelines for Placing Oracle Datafiles on a File System

If you choose to place the Oracle datafiles on a file system, use the following guidelines when deciding where to place them:

- You can choose either a single file system or more than one file system to store the datafiles:
  - If you want to use a single file system, choose a file system on a physical device that is dedicated to the database.

    For best performance and reliability, choose a RAID device or a logical volume on more than one physical device and implement the stripe-and-mirror-everything (SAME) methodology.
  - If you want to use more than one file system, choose file systems on separate physical devices that are dedicated to the database.

    Select this method to enable distribute physical I/O and create separate control files on different devices for increased reliability. It also enables full implement the OFA guidelines described in Appendix B, "Optimal Flexible Architecture". You must choose either the Advanced database creation option or the Custom installation type during the installation to implement this method.
- If you intend to create a preconfigured database during the installation, the file system (or file systems) that you choose must have at least 1.2 GB of free disk space.

  For production databases, you must estimate the disk space requirement depending on the use you want to make of the database.
- For optimum performance, the file systems that you choose should be on physical devices that are used only by the database.
- The default location suggested by Oracle Universal Installer for the database file directory is a subdirectory of the Oracle base directory. However, this default location is not recommended for production databases.

Guidelines for Placing Oracle Recovery Files on a File System

> **Note:** You must choose a location for recovery files only if you intend to enable automated backups during the installation.

If you choose to place the Oracle recovery files on a file system, use the following guidelines when deciding where to place them:

- To prevent disk failure from making both the datafiles and the recovery files unavailable, place the recovery files in a file system on a different physical disk from the datafiles.

  > **Note:** Alternatively use an ASM disk group with a normal or high redundancy level for either or both file types.

- The file system that you choose should have at least 2 GB of free disk space.

  The disk space requirement is the default disk quota configured for the flash recovery area (specified by the `DB_RECOVERY_FILE_DEST_SIZE` initialization parameter).

  If you choose the Custom installation type or the Advanced database configuration option, you can specify a different disk quota value. After you create the database, you can also use Oracle Enterprise Manager Grid Control or Database Control to specify a different value.

  For more information about sizing the flash recovery area, see *Oracle Backup and Recovery Basics*.

- The default location suggested by Oracle Universal Installer for the database file directory is a subdirectory of the Oracle base directory. However, this default location is not recommended for production databases.

Creating Required Directories

> **Note:** You must complete this procedure only if you want to place the Oracle database or recovery files on a separate file system to the Oracle base directory.

To create directories for the Oracle database or recovery files on separate file systems to the Oracle base directory, follow these steps:

1. Use Windows Explorer to determine the free disk space on the file system.
2. From the display, identify the file systems that you want to use:

File Type	File System Requirements
Datafiles	Choose either: ■ A single file system with at least 1.2 GB of free disk space. ■ Two or more file systems with at least 1.2 GB of free disk space in total.
Recovery files	Choose a file system with at least 2 GB of free disk space.

If you are using the same file system for more than one type of file, add the disk space requirements for each type to determine the total disk space requirement.

3. Note the names of the directories for the file systems that you identified.
4. If you also want to use ASM or raw devices for storage, see one of the following sections:
   - Configuring Disks for Automatic Storage Management
   - Configuring Raw Logical Volumes or Raw Partitions

   Otherwise see the "Stop Existing Oracle Services" section on page 2-16.

Configuring Disks for Automatic Storage Management

This section describes how to configure disks for use with ASM. Before you configure the disks, you must determine the number of disks and the amount of free disk space that you require.

The following sections describe how to identify the requirements and configure the disks:

- Identifying Storage Requirements for ASM
- Using an Existing ASM Disk Group
- Configuring Disks for ASM

Identifying Storage Requirements for ASM

To identify the storage requirements for using ASM, you must determine how many devices and the amount of free disk space that you require. To complete this task, follow these steps:

1. Determine whether you want to use ASM for Oracle datafiles, recovery files, or both.

   Note: You do not have to use the same storage mechanism for datafiles and recovery files. One can use the file system, while the other uses ASM.

   If you enable automated backups during the installation, you can choose ASM as the storage mechanism for recovery files by specifying an ASM disk group for the flash recovery area. Depending how you choose to create a database during the installation, you have the following options:

   - If you select an installation method that runs Database Configuration Assistant in interactive mode, by choosing the Advanced database configuration option for example, you can decide whether you want to use the same ASM disk group for datafiles and recovery files, or you can choose to use different disk groups for each file type.

     The same choice is available to you if you use Database Configuration Assistant after the installation to create a database.

   - If you select an installation type that runs Database Configuration Assistant in non-interactive mode, you must use the same ASM disk group for datafiles and recovery files.
2. Choose the ASM redundancy level that you want to use for the ASM disk group.

The redundancy level that you choose for the ASM disk group determines how ASM mirrors files in the disk group and determines the number of disks and amount of disk space that you require, as follows:

- External redundancy

  An external redundancy disk group requires a minimum of one disk device. The effective disk space in an external redundancy disk group is the sum of the disk space in all of its devices.

  Because ASM does not mirror data in an external redundancy disk group, Oracle recommends that you use only RAID or similar devices that provide their own data protection mechanisms as disk devices in this type of disk group.

- Normal redundancy

  In a normal redundancy disk group, ASM uses two-way mirroring by default, to increase performance and reliability. A normal redundancy disk group requires a minimum of two disk devices (or two failure groups). The effective disk space in a normal redundancy disk group is *half* the sum of the disk space in all of its devices.

  For most installations, Oracle recommends that you use normal redundancy disk groups.

- High redundancy

  In a high redundancy disk group, ASM uses three-way mirroring to increase performance and provide the highest level of reliability. A high redundancy disk group requires a minimum of three disk devices (or three failure groups). The effective disk space in a high redundancy disk group is *one-third* the sum of the disk space in all of its devices.

  While high redundancy disk groups do provide a high level of data protection, you must consider the higher cost of additional storage devices before deciding to use this redundancy level.

3. Determine the total amount of disk space that you require for the datafiles and recovery files.

   Use the following table to determine the minimum number of disks and the minimum disk space requirements for the installation:

Redundancy Level	Minimum Number of Disks	Datafiles	Recovery FIles	Both File Types
External	1	1.15 GB	2.3 GB	3.45 GB
Normal	2	2.3 GB	4.6 GB	6.9 GB
High	3	3.45 GB	6.9 GB	10.35 GB

   If an existing ASM instance exists on the system, you can use an existing disk group to meet these storage requirements. If necessary, you can add disks to an existing disk group during the installation.

   The following section describes how to identify existing disk groups and determine the free disk space that they contain.

4. Optionally identify failure groups for the ASM disk group devices.

> **Note:** You need to complete this step only if you intend to use an installation method that runs Database Configuration Assistant in interactive mode, for example, if you intend to choose the Custom installation type or the Advanced database configuration option. Other installation types do not enable you to specify failure groups.

If you intend to use a normal or high redundancy disk group, you can further protect your database against hardware failure by associating a set of disk devices in a custom failure group. By default, each device comprises its own failure group. However, if two disk devices in a normal redundancy disk group are attached to the same SCSI controller, the disk group becomes unavailable if the controller fails. The controller in this example is a single point of failure.

To avoid failures of this type, you could use two SCSI controllers, each with two disks, and define a failure group for the disks attached to each controller. This configuration would enable the disk group to tolerate the failure of one SCSI controller.

> **Note:** If you define custom failure groups, you must specify a minimum of two failure groups for normal redundancy disk groups and three failure groups for high redundancy disk groups.

5. If you are sure that a suitable disk group does not exist on the system, install or identify appropriate disk devices to add to a new disk group. Use the following guidelines when identifying appropriate disk devices:
   - All of the devices in an ASM disk group should be the same size and have the same performance characteristics.
   - Do not specify more than one partition on a single physical disk as a disk group device. ASM expects each disk group device to be on a separate physical disk.
   - Although you can specify a logical volume as a device in an ASM disk group, Oracle does not recommend their use. Logical volume managers can hide the physical disk architecture, preventing ASM from optimizing I/O across the physical devices.

   For information about completing this task, see the "Configuring Disks for ASM" section on page 2-12.

Using an Existing ASM Disk Group

If you want to use ASM as the storage option for either database or recovery files, and an existing ASM disk group exists, you have the following choices, depending on the installation method that you select:

- If you select an installation method that runs Database Configuration Assistant in interactive mode, by choosing the Advanced database configuration option for example, you can decide whether you want to create a new disk group or use an existing one.

  The same choice is available to you if you use Database Configuration Assistant after the installation to create a database.
- If you select an installation type that runs Database Configuration Assistant in non-interactive mode, you must choose an existing disk group for the new

database; you cannot create a new disk group. However, you can add disk devices to an existing disk group if it has insufficient free space for your requirements.

> **Note:** The ASM instance that manages the existing disk group can be running in a different Oracle home directory.

To determine whether an existing ASM disk group exists, or to determine whether there is sufficient disk space in a disk group, you can use Oracle Enterprise Manager Database Grid Control or Database Control. Alternatively, you can use the following procedure:

1. Check the Services Control Panel for the `OracleASMService+ASM` service.
2. Temporarily set the `ORACLE_SID` and `ORACLE_HOME` environment variables to specify the appropriate values for the ASM instance that you want to use.
3. Connect to the ASM instance as the `SYS` user with `AS SYSDBA` privilege and start the instance if necessary:

   ```
   ORACLE_BASE\ORACLE_HOME\bin\sqlplus "SYS/SYS_password as SYSDBA"
   SQL> STARTUP
   ```

4. Enter the following command to view the existing disk groups, their redundancy level, and the amount of free disk space in each one:

   ```
   SQL> SELECT NAME,TYPE,TOTAL_MB,FREE_MB FROM V$ASM_DISKGROUP;
   ```

5. From the output, identify a disk group with the appropriate redundancy level and note the free space that it contains.
6. If necessary, install, or identify the additional disk devices required to meet the storage requirements listed in the previous section.

> **Note:** If you are adding devices to an existing disk group, Oracle recommends that you use devices that have the same size and performance characteristics as the existing devices in that disk group.

Configuring Disks for ASM

Automatic Storage Management (ASM) is supported on Windows 2000, Windows XP, and Windows Server 2003. ASM is not supported on Windows NT. To use ASM with direct attached storage (DAS) or storage area network (SAN) storage, the disks must be stamped with a header by `asmtool` or `asmtoolg` (GUI version).

In order to use a DAS or SAN disk in ASM, the disk must have a partition table. Oracle recommends creating exactly one partition for each disk containing the entire disk. Use Microsoft Computer Management or the command line tool `diskpart` to create the partition. Once the partitions have been created, run `asmtoolg` or `asmtool`. These tools associate meaningful, persistent names with disks to facilitate using those disks with ASM. ASM uses disk strings to more easily operate on groups of disks at once, so the names created by `asmtool` make this easier than using Windows drive letters.

All disk names created by `asmtool` begin with the prefix `ORCLDISK` for identification purposes. They can be used as raw devices in the ASM instance by specifying a name `\\.\ORCLDISK`*n*.

See Also: "Assigning Logical Names or Drive Letters, or Mounting Directories" on page 2-15 for more information about using `diskpart` to create a partition

Using asmtoolg (Graphical User Interface)

`asmtoolg` is a graphical interface for creating device names. Use `asmtoolg` to add, change, delete, and examine the devices available for use in ASM.

To add or change disk stamps:

1. Double-click `asmtoolg`.
2. Select the **Add or change label** option, then click **Next**.

   `asmtoolg` will show the devices available on the system. Unrecognized disks are labeled as "Candidate device", raw device files as "Oracle raw device file", stamped ASM disks as "Stamped ASM disk", and unstamped ASM disks as "Unstamped ASM disks." The tool also shows disks that are recognized by Windows as a file system (such as NTFS). These are not available for use as disks and cannot be selected. In addition Microsoft Dynamic disks are not available for use as ASM disks.
3. On the Stamp Disks screen, select the disks to stamp.

   For ease of use, ASM can generate unique stamps for all of the devices selected for a given prefix. The stamps are generated by concatenating a number with the prefix specified. For example, if the prefix is `DATA`, then the first ASM link name is `ORCLDISKDATA0`.

   You can also specify the stamps of individual devices.
4. Optionally, select a disk to edit the individual stamp (ASM link name).
5. Click **Next**.
6. Click **Finish**.

To delete disk stamps:

1. Select the **Delete labels** option, then click **Next**.

   The delete option is only available if disks exist with stamps. The delete screen shows all stamped ASM disks.
2. On the Delete Stamps screen, select the disks to unstamp.
3. Click **Next**.
4. Click **Finish**.

Using asmtool (Command Line)

`asmtool` is a command-line interface to stamping disks. It has the following options:

Option	Description	Example
`-add`	Adds or changes stamps. You must specify the hard disk, partition, and new stamp name. If the disk is a raw device or has an existing ASM stamp, then you must specify the `-force` option.	`asmtool -add [-force] \Device\Harddisk1\Partition1 ORCLDISKASM0 \Device\Harddisk2\Partition1 ORCLDISKASM2...`

Option	Description	Example
`-addprefix`	Adds or changes stamps using a common prefix to generate stamps automatically. The stamps are generated by concatenating a number with the prefix specified. If the disk is a raw device or has an existing ASM stamp, then you must specify the `-force` option.	`asmtool -addprefix ORCLDISKASM [-force] \Device\Harddisk1\Partition1 \Device\Harddisk2\Partition1...`
`-list`	List available disks. The stamp, windows device name, and disk size in megabytes are shown. Some disks may be file systems, and cannot be stamped. If the disk is a raw device or has an existing ASM stamp, then you must specify the `-force` option.	`asmtool -list [-force]`
`-delete`	Removes existing stamps from disks.	`asmtool -delete ORCLDISKASM0 ORCLDISKASM1...`
`-create`	Creates an empty file.	`asmtool -create` *`path_to_file size_in_megabytes`*

Note: For `-add`, `-addprefix`, and `-delete`, asmtool will notify any ASM instances on the local machine and other nodes in the cluster if available, to rescan the available disks.

Configuring Raw Logical Volumes or Raw Partitions

This section contains these topics:

- Creating Partitions, Logical Drives, or Volumes
- Assigning Logical Names or Drive Letters, or Mounting Directories
- Creating Raw Logical Volumes in a New Disk Group

Creating Partitions, Logical Drives, or Volumes

To create and configure raw volumes or partitions, use the disk administration tools provided by the operating system or third party vendors. The following administration tools are provided by the operating system:

- Windows NT provides Disk Administrator

  To access this tool, type `windisk.exe` at the command prompt or navigate to **Start** >**Programs** > **Administrative Tools** > **Disk Administrator**.

- Windows 2000, Windows XP, and Windows Server 2003 provide Disk Management snap-in

  To access this tool, type `diskmgmt.msc` at the command prompt or navigate to **Start** > **Programs** > **Administrative Tools** > **Computer Management**. Then select the **Disk Management** node in the Storage tree.

- Windows XP and Windows Server 2003 provide a command line tool to manage disks.

  To access this tool, type `diskpart.exe` at the command prompt.

Note: `Diskpart.exe` for Windows 2000 is part of Windows 2000 Resource Kit. To download this tool, consult Microsoft documentation on the Microsoft Web site

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

See Also: The online help or documentation for the administration tool you are using

Assigning Logical Names or Drive Letters, or Mounting Directories

After creating volumes, assign logical names or drive letters, or mount them on directories for use by Oracle. Use the Windows graphical interface or the command line to create a mounted drive or assign a drive letter to the partition, logical drive or volume. Names can be assigned to partitions using `setlinks` or Oracle Object Link Manager.

The following example, uses the `diskpart` tool to create a 32 MB partition on disk 100, and assigns the drive letter `B` to the partition. In this example, `diskpart.exe` is the command line tool for managing disks.

```
c:\> diskpart.exe
diskpart> select disk 100
diskpart> create partition primary size=32
diskpart> assign letter=B
```

Optionally, mount the partition on an NTFS folder instead of assigning a drive letter:

```
diskpart> assign mount=C:\mnt\raw_1
```

Creating Raw Logical Volumes in a New Disk Group

To create the required raw logical volumes in a new disk group, follow these steps:

1. Choose a name for the database that you want to create.
2. Create the logical volumes listed in the following table. You must create these volumes in order to install an Oracle database.

Number	Partition Size (MB)	Purpose and Sample Logical Volume Name
1	500	`SYSTEM` tablespace: *dbname*`_system_raw_500m`
1	500	`SYSAUX` tablespace: *dbname*`_sysaux_raw_500m`
1	500	`UNDOTBS1` tablespace: *dbname*`_undotbs1_raw_500m`
1	160	`EXAMPLE` tablespace: *dbname*`_example_raw_160m`
1	120	`USERS` tablespace: *dbname*`_users_raw_120m`
2	120	Two online redo log files (where *m* is the log number, 1 or 2): *dbname*`_redo1_m_raw_120m`
2	110	First and second control files: *dbname*`_control[1|2]_raw_110m`
1	250	`TEMP` tablespace: *dbname*`_temp_raw_250m`
1	5	Server parameter file (SPFILE): *dbname*`_spfile_raw_5m`
1	5	Password file: *dbname*`_pwdfile_raw_5m`

3. To create the other required logical volumes, using the command-line interface, enter a command similar to the following:

```
c:\> diskpart.exe
DISKPART> select disk diskn
DISKPART> create partition primary size=sizen
DISKPART> assign mount=folder
```

In this example:

- `diskpart.exe` is the command line tool for managing disks
- *`diskn`* is the disk number where the partitions are created
- *`sizen`* is the size of the partition, for example 500 represents 500 Megabytes
- *`folder`* is the absolute path to the NTFS where the partitions is mounted.

The following example shows a sample command to create 500 MB partition on disk 5 for the `SYSAUX` tablespace of a database named test:

```
c:\> diskpart.exe
DISKPART> select disk 5
DISKPART> create partition primary size=500
DISKPART> assign mount=D:\oracle\product\10.1.0\oradata\test\test_sysaux_500m
```

Stop Existing Oracle Services

Attention: If you are installing additional Oracle Database components in an existing Oracle home, stop **all** processes running in the Oracle home. You must complete this task to enable Oracle Universal Installer to relink certain executables and libraries.

If you choose to create a database during the installation, most installation types configure and start a default Oracle Net listener using TCP/IP port 1521 and the IPC key value `EXTPROC`. However, if an existing Oracle Net listener process is using the same port or key value, Oracle Universal Installer can only configure the new listener; it cannot start it. To ensure that the new listener process starts during the installation, you must shut down any existing listeners before starting Oracle Universal Installer.

See Also: "Stopping Oracle Services" on page 6-3

Oracle Advanced Security Requirements

Satisfy hardware and software requirements to use authentication support with Oracle components. In addition, using Oracle Advanced Security with Secure Socket Layer (SSL) and public key infrastructure (PKI) requires preinstallation of a Lightweight Directory Access Protocol (LDAP) directory such as Oracle Internet Directory (provided on the installation media).

See Also: *Oracle Advanced Security Administrator's Guide*

Oracle Enterprise Manager Requirements

All Oracle Enterprise Manager products must be of the same release. Older versions of Enterprise Manager are not supported with the new release.

Note: All Oracle Enterprise Manager products, except Oracle Enterprise Manager Database Control and the Enterprise Manager Java Console, are released on the Enterprise Manager Grid Control installation media. Enterprise Manager Database Control is available on the Oracle Database installation media and Enterprise Manager Java Console is available on the Oracle Client installation media.

See Also: *Oracle Enterprise Manager Grid Control Installation and Basic Configuration* available on the Enterprise Manager Grid Control installation media

Oracle Managed Files Requirements

If you choose the Custom installation type or the Advanced database creation option, you can also choose to use the Oracle-managed files feature with the new database. If you use this feature, you need only specify the database object name instead of file names when creating or deleting database files.

Configuration procedures are required in order to enable Oracle Managed Files.

See Also: "Using Oracle-Managed Files" in *Oracle Database Administrator's Guide*

Oracle Real Application Clusters

To install Oracle Real Application Cluster, you must first install Oracle Cluster Ready Services (CRS).

See Also: *Oracle Real Application Clusters Installation and Configuration Guide*

Oracle Snap-Ins to the Microsoft Management Console Requirements

Oracle Database ships several Snap-Ins for the Microsoft Management Console (MMC). These Snap-Ins require MMC version 1.2 or higher.

MMC is a built-in feature of Windows 2000. Windows NT requires the Windows NT 4.0 Option pack. Reapply the previously installed service pack after installing the Windows NT option pack.

Install Internet Explorer version 5.0 (IE 5.0) or later before installing Oracle Snap-Ins. If you install any Oracle Snap-Ins before installing IE 5.0, then reinstall the Oracle Snap-Ins.

The following components depend on Oracle Snap-In components:

- Oracle Administration Assistant for Windows
- Oracle Counters for Windows Performance Monitor

Note: Installing Oracle Administration Assistant for Windows automatically installs each Oracle Snap-in component.

Download the MMC add-on from the following Web site

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

Oracle Transparent Gateway Requirements

This section contains these topics:

- Oracle Transparent Gateway Supported Configurations
- Oracle Transparent Gateway System Requirements

Oracle Transparent Gateway Supported Configurations

Table 2–3 provides gateway configurations tested by Oracle at the time of this document release. Oracle continually updates supported gateway configurations. For the latest supported configuration information, visit the following Web site

`http://metalink.oracle.com/metalink/certify/`

Table 2–3 Supported Software for Oracle Transparent Gateway Components

Oracle Transparent Gateway	Requirement
Oracle Transparent Gateway for Microsoft SQL Server	Microsoft SQL Server Version 7.0 or SQL Server 2000 Microsoft SQL Server ODBC Drivers
Oracle Transparent Gateway for Sybase	Sybase Server, version 12.0, or 12.5 is required. If Sybase Server is not on the same computer as the gateway, then the version of Sybase Open client library certified for your Sybase Server is required.
Oracle Transparent Gateway for Teradata	Teradata V2R.03.00.02 or V2R.04.00.0115 NCR Teradata ODBC Driver version 02.08.00.00
Oracle Transparent Gateway for IBM DRDA	See *Oracle Transparent Gateway for DRDA Installation and User's Guide* for details.
Oracle Procedural Gateway for APPC	See *Oracle Procedural Gateway for APPC Installation and Configuration Guide* for details.

Oracle Transparent Gateway System Requirements

Table 2–4 lists the system requirements for Oracle Transparent Gateways for Microsoft SQL Server, Sybase, and Teradata. Each Oracle Transparent Gateway has the same memory, networking, and disk space requirements.

> **See Also:** *Oracle Transparent Gateway for DRDA Installation and User's Guide* and *Oracle Procedural Gateway for APPC Installation and Configuration Guide* for system requirements for the IBM DRDA and APPC gateways
>
> These guides are available on the Oracle Database installation media.

Table 2–4 System Requirements for Oracle Transparent Gateways

Requirement	Value
Disk Space	200 MB of additional disk space.
Memory	26 MB of real memory is recommended to support the gateway. The total real memory requirement for the concurrent use of the gateway also depends on these factors: ▪ The SQL statement issued by the user ▪ The number of cursors currently opened against Microsoft SQL, Sybase, or Teradata server ▪ The number of columns in the table being accessed

Table 2–4 (Cont.) System Requirements for Oracle Transparent Gateways

Requirement	Value
Oracle Networking	Oracle Net Services and Oracle Protocol Support for Named Pipes or TCP/IP must be installed on the Oracle database computer and the gateway computer. The Oracle Net Services components are included on the Oracle Database installation media.

3

Installing Oracle Database

The Oracle Database software is available on disk (CD-ROM or DVD-ROM) or you can download it from the Oracle Technology Network (OTN) Web site. In most cases, you use the graphical user interface (GUI) provided by Oracle Universal Installer to install the software. However, you can also use Oracle Universal Installer to complete non-interactive installations, without using the GUI.

This chapter describes how to install Oracle Database from the installation media or from a hard disk using Oracle Universal Installer. To install the software from a hard disk, you must either download it from OTN and unpack it, or copy it from the discs, if you have them.

This chapter contains these topics:

- Before You Install Oracle Database
- Reviewing Component-Specific Installation Guidelines
- Installing With the Minimum Memory Requirements
- Downloading Oracle Software from the OTN Web Site
- Copying the Oracle Database Software to a Hard Disk
- Installing the Oracle Database Software

See Also:

- Chapter 1, "Oracle Database Installation Overview"
- Chapter 2, "Oracle Database Preinstallation Requirements"
- Appendix C, "Oracle Database Advanced Installation Topics" for information about noninteractive installations

Before You Install Oracle Database

Perform the following tasks before installing Oracle Database:

1. Review and satisfy applicable system and component requirements in Chapter 2, "Oracle Database Preinstallation Requirements" and "Reviewing Component-Specific Installation Guidelines" on page 3-3 before running Oracle Universal Installer. Refer to "Installing With the Minimum Memory Requirements" on page 3-2 if your system *only* meets the minimal memory requirements.

See Also:

- "Upgrade Considerations" on page 1-13 before running Oracle Universal Installer
- "Pre-Installation Tasks for Installing RAC on Windows-Based Systems" in *Oracle Real Application Clusters Installation and Configuration Guide* before running Oracle Universal Installer

2. Log on as a member of the Administrators group to the computer on which to install Oracle components. Log on as a member of the Domain Administrators group if you are installing on a Primary Domain Controller (PDC) or a Backup Domain Controller (BDC).
3. Delete the `ORACLE_HOME` environment variable if it exists. Refer to your Microsoft online help for more information about deleting environment variables.

Note: The `ORACLE_HOME` environment variable is automatically set in the registry. Manually setting this variable prevents installation.

4. Back up any databases to upgrade. Review "Upgrade Considerations" on page 1-13.
5. If you are installing in an existing Oracle Database 10*g* release 1 (10.1) home, then stop all Oracle services. If any Oracle services (their names begin with "Ora") exist and have the status *Started*, then stop them. In particular, ensure that all Oracle listener services are stopped.

See Also: Your Microsoft online help for more information about stopping services

6. Continue to the "Reviewing Component-Specific Installation Guidelines" section on page 3-3.

Installing With the Minimum Memory Requirements

Installations of Oracle Database on computers with 256 MB of RAM and 500 MB of virtual memory have the following limitations:

- Computers with 256 MB of memory are not able to run Oracle Database Upgrade Assistant, Database Configuration Assistant, or Oracle Net Services Configuration Assistant during an Oracle Universal Installer installation session.
- Depending on how many applications are running on the computer, you may need to further increase the paging file size or reduce the size of the System Global Area (SGA) if you run out of virtual memory. Note that if temporary files and the paging file are both stored on the same physical drive, then a situation can occur where the space requirements for one can limit the size of another. If your system has limited free space, then first install the Oracle Database software. After the installation is finished, create a database with Database Configuration Assistant.

On computer systems that barely meet the minimum memory and virtual memory requirements, 256 MB and 200 MB respectively, do not install the database. Follow these guidelines:

- Select **Basic Installation** and deselect **Create Starter Database**.

- Select **Advanced Installation**, select **Do not create a starter database** from the Select Database Configuration screen.
- Select **Advanced Installation**, select the **Custom** installation type from the Select Installation Type screen, and select **No** on the Create Database screen when prompted to create the database.
- Cancel Database Configuration Assistant from the Configuration Assistants screen.

After installation, run the appropriate configuration assistant for your needs:

- To create a new database, run Database Configuration Assistant from the Start Menu. Choose **Start** > **Programs** > **Oracle -** ***HOME_NAME*** > **Configuration and Migration Tools** > **Database Configuration Assistant**.
- To upgrade an existing database, run Oracle Database Upgrade Assistant from the Start Menu. Choose **Start** > **Programs** > **Oracle -** ***HOME_NAME*** > **Configuration and Migration Tools** > **Database Upgrade Assistant**.

Reviewing Component-Specific Installation Guidelines

Review the following guidelines before starting Oracle Universal Installer:

- Oracle Universal Installer

  Do not use Oracle Universal Installer from an earlier Oracle release to install components from this release.

- Installations on a Cluster

  Note: Installing Oracle Real Application Clusters is not covered in this guide. Installation instructions are located in *Oracle Real Application Clusters Installation and Configuration Guide*.

  If Oracle Cluster Ready Services (CRS) and Oracle Real Application Clusters (RAC) are already installed on the system, Oracle Universal Installer displays the Specify Hardware Cluster Installation Mode screen. You must select Local Installation on this screen, unless you want to install Oracle Real Application Clusters.

- Oracle Connection Manager

  To install Oracle Connection Manager, choose Advanced Installation and then the Custom installation type.

- Oracle Counters for Windows Performance Monitor

  To install Oracle Counters for Windows Performance Monitor, choose Advanced Installation and then the Custom installation type.

- Oracle Label Security

  To install the Oracle Label Security option, choose Advanced Installation and then the Custom installation type.

  To configure Oracle Label Security to use Oracle Internet Directory, choose the Oracle Internet Directory option when running Database Configuration Assistant.

Note: If you are installing Oracle Label Security in an existing Oracle home, then shut down each database in the Oracle home.

- Oracle Procedural Gateways

  To install Oracle Procedural Gateways, choose Advanced Installation and then the Custom installation type.

- Oracle Transparent Gateways

  To install Oracle Transparent Gateways, choose Advanced Installation and then the Custom installation type.

- Reinstalling Oracle Software

  If you reinstall Oracle software into an Oracle home directory where Oracle Database is already installed, you must also reinstall any components, such as Oracle Partitioning, that were installed before you began the reinstallation.

Downloading Oracle Software from the OTN Web Site

This section describes how to download the installation files from OTN and extract them on your hard disk.

To download the installation files:

1. Use any browser to access the software download page on OTN:

   `http://otn.oracle.com/software/`

2. Navigate to each of the download pages for the product that you want to install.
3. On each download page, identify the required disk space by adding the file sizes for each required file. The file sizes are listed next to the filenames.
4. Select a file system with enough free space to store and expand the files. In most cases, the available disk space must be at least twice the size of each compressed file.
5. On the file system that you just selected, create a parent directory for each product you plan to install, for example OraDB10g, to hold the installation directories.
6. Download all of the installation files to the directories that you just created.
7. Verify that the files you downloaded are the same size as the corresponding files on OTN.
8. Extract the files in each directory that you just created.

When you have extracted all of the required installation files, see the "Installing the Oracle Database Software" section on page 3-5.

Copying the Oracle Database Software to a Hard Disk

To copy the contents of the installation media to a hard disk:

1. Create a directory on your hard drive. For example:

   ```
   d:\install\Disk1
   ```

2. Copy the contents of the installation media to the directory that you just created.

3. Continue to the "Installing the Oracle Database Software" section on page 3-5.

When you have copied all of the required installation files, see the "Installing the Oracle Database Software" section on page 3-5.

Installing the Oracle Database Software

> **Note:** Use the same installation media to install Oracle Database on all supported Windows platforms.

Start Oracle Universal Installer and install the software, as follows:

1. Insert the CD labeled Oracle Database 10*g* Release 1 (10.1) Disk 1 of 1 or navigate to the directory you created for the downloaded or copied installation files.

   When installing from a hard disk, double-click `setup.exe` located in the directory you created for the downloaded or copied installation files.

   When installing from the installation media, the Autorun screen automatically appears. If the Autorun screen does not appear, then:

   a. Click **Start** > **Run**.

   b. Enter the following:

      ```
      DRIVE_LETTER:\autorun\autorun.exe
      ```

      The Autorun screen appears. Click **Install/Deinstall Products** from the Autorun screen.

   The Welcome screen appears. Table 3–1 on page 3-6 lists the recommended action for each screen.

2. Use the following guidelines to complete the installation:

   - Follow the instructions displayed in the Oracle Universal Installer screens. If you need additional information, click **Help**.
   - Do not install Oracle Database 10*g* release 1 (10.1) software into an existing Oracle home that contains Oracle9*i* or earlier software.
   - If you install Oracle Database 10*g* release 1 (10.1) in an Oracle home directory that already contains Oracle Database 10*g* release 1 (10.1) client software, the listener is not created. To create the listener, install and run Oracle Net Configuration Assistant. If the Administrator client is installed before Oracle Database, then Oracle Net Configuration Assistant is already installed.
   - When prompted for the `SYS`, `SYSTEM`, `SYSMAN`, and `DBSNMP` passwords, Oracle recommends that the passwords you specify:
     - Are at least four characters long
     - Are not the same as the usernames
     - Have at least one alphabetic, one numeric, and one punctuation mark character
     - Are not simple or obvious words, such as welcome, account, database, or user

   > **Note:** You must remember the passwords that you specify.

- Do not modify the Java Runtime Environment (JRE) except by using a patch provided by Oracle Support Services. Oracle Universal Installer automatically installs the Oracle-supplied version of the JRE. This version is required to run Oracle Universal Installer and several Oracle assistants.
- If you encounter errors while installing or linking the software, see Appendix F for information about troubleshooting.
- If you chose an installation type that runs Database Configuration Assistant and Oracle Net Configuration Assistant in interactive mode, you must provide detailed information about configuring your database and network.

  If you need assistance when using the Database Configuration Assistant or Oracle Net Configuration Assistant in interactive mode, click **Help** on any screen.

  Note: If you chose a default installation, Database Configuration Assistant and Oracle Net Configuration Assistant run non-interactively.

3. When all of the configuration tools have finished, click **Exit**, then click **Yes** to exit from Oracle Universal Installer.
4. When Oracle Enterprise Manager Database Control opens a Web browser, enter a username and password.

   You can log in as `SYS`, `SYSTEM`, or `SYSMAN`. If you log in as `SYS`, then you must connect `AS SYSDBA`. Enter the password you specified for the account during installation.
5. Optionally, delete the `\temp\OraInstall`*`date_time`* directory if you want to remove the temporary files that were created during the installation process. The OraInstalldate_time directory holds about 45 MB of files.

   Restarting your computer also removes the OraInstalldate_time directory.
6. See Chapter 4, "Oracle Database Postinstallation Tasks" for information about tasks that you must complete after you have installed the software.

Table 3–1 Oracle Universal Installer Screens

Screen	Recommended Action
Welcome	Select **Basic Installation** or **Advanced Installation**. Select **Basic Installation** installation method if you want to quickly install Oracle Database. This installation method requires minimal user input. It installs the software and optionally creates a general-purpose database using the information that you specify on this screen. Click **Next**.
Specify File Locations	In the **Destination** section, accept the default values or enter the Oracle home name and directory path in which to install Oracle components. The directory path should not contain spaces. Click **Next**.
Select Installation Type	Select **Enterprise Edition**, **Standard Edition**, **Personal Edition**, or **Custom**. Click **Next**.

Table 3–1 (Cont.) Oracle Universal Installer Screens

Screen	Recommended Action
Select Database Configuration	Select the database configuration that best meets your needs. See the online help provided by either Oracle Universal Installer or Database Configuration Assistant for a description of these preconfigured database types. Click **Next**.
Specify Database Configuration Options	Specify the following information, then click **Next**: **Global Database Name** Specify a name for the database, followed by the domain name of the system: `sales.`*`your_domain.com`* The value that you specify, up to the first period, is also used for the **SID** value. **Select Database Character Set** Accept the default value, which is based on your system locale, or if you need to support more than one language, click **Help** for more information about the supported character sets. **Create database with example schemas** Choose this option to create the `EXAMPLE` tablespace that contains the Sample Schemas (optional, but recommended).
Select Database Management Option	Accept the default values, then click **Next**. **Note:** You can enable e-mail notifications after you have installed the software.
Specify Database File Storage Option	Select the **File System** option and specify the database file location, then click **Next**. **Specify database file location:** Accept the default location or specify a new file location.
Specify Backup and Recovery Options	Accept the default values, then click **Next**. **Note:** You can enable automated backups after you have installed the software.
Specify Database Schema Passwords	Enter and confirm passwords for all of the privileged database accounts, then click **Next**. **Note:** Oracle recommends that you specify a different password for each account. You must remember the passwords that you specify.
Summary	Review the information displayed, then click **Install**.

Table 3–1 (Cont.) Oracle Universal Installer Screens

Screen	Recommended Action
Install	The Install screen displays status information while the product is being installed.
Configuration Assistants	The Configuration Assistants screen displays status information for the configuration assistants that configure the software and create a database. After Database Configuration Assistant finishes, review the information on the screen. Make a note of the following information: ■ Enterprise Manager URL ■ Database creation logfiles location ■ Global Database Name ■ System Identifier (SID) ■ Server parameter filename and location Click **OK** to continue or click **Password Management** to unlock accounts and set passwords.
End of Installation	The configuration assistants configure several Web-based applications, including Oracle Enterprise Manager Database Control. This screen displays the URLs configured for these applications. Make a note of the URLs used. The port numbers used in these URLs are also recorded in the following file: *ORACLE_BASE**ORACLE_HOME*\install\portlist.ini To exit from Oracle Universal Installer, click **Exit**, then click **Yes**. Oracle Enterprise Manager Database Control displays in a Web browser.

4

Oracle Database Postinstallation Tasks

This chapter identifies postinstallation configuration tasks. Where appropriate, this chapter references other guides for procedures on performing these configuration tasks.

This chapter contains these topics:

- Patch Set Information
- Validating Invalid PL/SQL Modules
- Configuring Oracle Components

Patch Set Information

Oracle recommends installing the latest patch set release after successful installation of the Oracle Database.

You must register online before using Oracle*MetaLink*. After logging in to Oracle*MetaLink*, select Patches from the left-hand column.

To find and download patches:

1. Go to the Oracle*MetaLink* Web site

   `http://metalink.oracle.com/`

2. Log in to Oracle*MetaLink*.

   Note: If you are not an Oracle*MetaLink* registered user, then click **Register for MetaLink!** and follow the registration instructions.

3. Click **Patches** on the main Oracle*MetaLink* page.
4. Select **Simple Search**.
5. Specify the following information, then click **Go**:
   - In the **Search By** field, choose Product or Family, then specify RDBMS Server.
   - In the **Release** field, specify the current release number.
   - In the **Patch Type** field, specify Patchset/Minipack
   - In the **Platform or Language** field, select your platform.
6. Find the latest patch set for Oracle Database using Oracle*MetaLink*.
7. From the list of available patches, select a patch to download.

Note that patch sets for Oracle databases are identified as "*x.x.x* PATCH SET FOR ORACLE DATABASE SERVER."

8. Review the README before proceeding with the download.

   Each patch has a README file with installation requirements and instructions. Some patches install with Oracle Universal Installer; others require special procedures. Oracle recommends that you always read the README before proceeding.

9. Download and install the patch.

Validating Invalid PL/SQL Modules

Oracle recommends running the `utlrp.sql` script after creating, or upgrading a database. This script recompiles all PL/SQL modules that may be in an INVALID state, including packages, procedures, types, and so on. This step is optional, but recommended so that the cost of recompilation is incurred during the installation rather than in the future.

> **Note:** There should be no other data definition language (DDL) statements running on the database while the script is running, and packages `STANDARD` and `DBMS_STANDARD` must already be valid.

1. Start SQL*Plus:

   ```
   C:\> sqlplus /nolog
   ```

2. Connect to the database with the `SYS` account:

   ```
   SQL> CONNECT SYS/PASSWORD@service_name AS SYSDBA
   ```

   where *PASSWORD* is the password you assigned to the `SYS` account during the install process.

3. Start the database (if necessary):

   ```
   SQL> STARTUP
   ```

4. Run the `utlrp.sql` script:

   ```
   SQL> @ORACLE_BASE\ORACLE_HOME\rdbms\admin\utlrp.sql
   ```

Configuring Oracle Components

Many Oracle components and options must be configured before you use them for the first time. Before using individual Oracle Database components or options, see the appropriate manual available on the Oracle Documentation Library CD-ROM, the DVD-ROM, and the OTN Web site.

This section contains these topics:

- Configuring Messaging Gateway
- Installing Natively Compiled Java Libraries for Oracle JVM and Oracle interMedia
- Configuring Oracle Administration Assistant for Windows
- Reconfiguring Oracle Cluster Synchronization Services (CSS)
- Configuring Oracle Counters for Windows Performance Monitor

- Configuring Oracle Label Security
- Configuring Oracle Net Services
- Configuring Oracle Services for Microsoft Transaction Server
- Installing Oracle Text Supplied Knowledge Bases
- Configuring or Reinstalling Oracle XML DB
- Configuring PL/SQL External Procedures
- Configuring Shared Server Support
- Setting Credentials for the Job System
- Installing Oracle Database Components from the Companion CD

Note: You need only perform postinstallation tasks for components that you intend to use.

Configuring Messaging Gateway

Messaging Gateway, an Oracle Database Advanced Queuing feature, requires additional configuration.

See Also: "Loading and Setting Up Oracle Messaging Gateway" in *Oracle Streams Advanced Queuing User's Guide and Reference*

Installing Natively Compiled Java Libraries for Oracle JVM and Oracle *inter*Media

If you plan to use Oracle JVM or Oracle *inter*Media, Oracle strongly recommends that you install the natively compiled Java libraries (NCOMPs) used by those components from the Oracle Database Companion CD. These libraries are required to improve the performance of the components on your platform.

See Also: "Installing Oracle Database Components from the Companion CD" section on page 4-7 for more information about installing components from the Companion CD

Configuring Oracle Administration Assistant for Windows

This tool requires the Microsoft Management Console and HTML Help 1.2 or higher to run. Microsoft Management Console is included with Windows 2000, but must be manually installed if you are using Windows NT 4.0. MMC version 1.2 or higher is required. The latest MMC version available is recommended.

See Also: Microsoft documentation

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

Reconfiguring Oracle Cluster Synchronization Services (CSS)

To reconfigure Oracle Cluster Synchronization Services (CSS) to run from a different Oracle home, enter the following at the command prompt:

```
localconfig reset [destination_Oracle_home]
```

where *destination_Oracle_home* is required if you run this command from the Oracle home where the CSS service is currently configured.

See Also: "Removing Oracle Cluster Synchronization Services (CSS)" on page 6-2

Configuring Oracle Counters for Windows Performance Monitor

Before using Oracle Counters for Windows Performance Monitor to view Oracle-specific counters, you must specify the `SYSTEM` password using `Operfcfg.exe` located in the *`ORACLE_BASE`*`\`*`ORACLE_HOME`*`\bin` directory.

To set the system password, enter the following:

```
operfcfg.exe -U SYSTEM -P password -D TNS_Alias_for_database
```

See Also: *Oracle Database Platform Guide for Windows* for additional information about Oracle Counters for Windows Performance Monitor

Configuring Oracle Label Security

If you installed Oracle Label Security, you must configure it in a database before you use it. You can configure Oracle Label Security with or without Oracle Internet Directory integration. If you configure Oracle Label Security without Oracle Internet Directory integration, you cannot configure it to use Oracle Internet Directory at a later stage.

Note: To configure Oracle Label Security with Oracle Internet Directory integration, Oracle Internet Directory must be installed in your environment and the Oracle database must be registered in the directory.

See Also: *Oracle Label Security Administrator's Guide* for more information about Oracle Label Security enabled with Oracle Internet Directory

Configuring Oracle Net Services

If you have a previous release of Oracle software installed on this system, you might want to copy information from the Oracle Net `tnsnames.ora` and `listener.ora` configuration files from the previous release to the corresponding files for the new release.

Note: The default location for the `tnsnames.ora` and `listener.ora` files is the *`ORACLE_BASE`*`\`*`ORACLE_HOME`*`\network\admin\` directory.

Modifying the listener.ora File

If you are upgrading from a previous release of Oracle Database, Oracle recommends that you use the current release of Oracle Net listener instead of the listener from the previous release.

To use the listener from the current release, you may need to copy static service information from the `listener.ora` file from the previous release to the version of that file used by the new release.

For any database instances earlier than release 8.0.3, add static service information to the `listener.ora` file. Oracle Database releases later than release 8.0.3 do not require static service information.

Modifying the tnsnames.ora File

Unless you are using a central `tnsnames.ora` file, copy Oracle Net service names and connect descriptors from the previous release `tnsnames.ora` file to the version of that file used by the new release.

If necessary, you can also add connection information for additional database instances to the new file.

Configuring Oracle Services for Microsoft Transaction Server

For Windows NT installations, if you did not install the Microsoft Management Console (MMC) before installing Oracle Database, then you must manually start the `OracleMTSRecoveryService` service and change its status to *Automatic*.

Perform the following tasks before using Oracle Services for Microsoft Transaction Server:

- Create the Microsoft Transaction Server administrator account
- Schedule a database server-level transaction recovery job

> **See Also:** "Managing Recovery Scenarios" of *Oracle Services for Microsoft Transaction Server Developer's Guide*

Installing Oracle Text Supplied Knowledge Bases

An Oracle Text knowledge base is a hierarchical tree of concepts used for theme indexing, ABOUT queries, and deriving themes for document services. If you plan to use any of these Oracle Text features, you can install two supplied knowledge bases (English and French) from the Oracle Database Companion CD.

Note: You can extend the supplied knowledge bases depending on your requirements. Alternatively, you can create your own knowledge bases, possibly in languages other than English and French. For more information about creating and extending knowledge bases, see *Oracle Text Reference*.

> **See Also:** "Installing Oracle Database Components from the Companion CD" section on page 4-7 for more information about installing components from the Companion CD

Configuring or Reinstalling Oracle XML DB

Refer to *Oracle XML DB Developer's Guide* for more information about the following tasks:

- Reinstallation of Oracle XML DB
- Configuring or customizing the Oracle XML DB tablespace
- Configuring FTP, HTTP/WebDAV port numbers

> **See Also:** Appendix A of *Oracle XML DB Developer's Guide*

Configuring PL/SQL External Procedures

Configuration is dependent on the network configuration files used. In nearly all cases, configuration is automatic. However, if you are using pre-8.0.3 `tnsnames.ora` and `listener.ora` files with your 10*g* release 1 (10.1) database, then manual configuration is required.

> **See Also:** "Developing Applications for Windows" of *Oracle Database Platform Guide for Windows*

Configuring Shared Server Support

Configuration is dependent on how support was installed. If you installed Oracle Database through the Enterprise Edition, Standard Edition, or Personal Edition installation types, then shared support was *not* configured. If you created your database through Database Configuration Assistant, then you were offered a choice of shared or dedicated server support.

> **See Also:** "Postinstallation Configuration Tasks on Windows" of *Oracle Database Platform Guide for Windows*

Setting Credentials for the Job System

Windows systems require that you set the correct credentials for the Jobs system to work properly in Enterprise Manager. By default, the Management Agent service is installed as a `LocalSystem` user. When submitting jobs, the user submitting the job must have the **Log on as a batch job** privilege enabled.

Perform the following steps to establish that privilege for any operating system user who needs to submit an Enterprise Manager job.

On Windows 2000 and Windows XP systems:

1. Start the **Local Security Policy** tool located in the **Start** menu by clicking **Settings** > **Control Panel** > **Administrative Tools** > **Local Security Policy**.
2. Under **Local Policies/User Rights Assignment**, add the user to the **Log on as a batch job** privilege.
3. Windows 2000 may require a restart for the policy change to take effect. Restart as necessary.

On Windows NT 4.0 systems:

1. Start the **User Manager** tool located in the **Start** menu by clicking **Programs** > **Administrative Tools** > **User Manager**.
2. Select **User Rights** from the **Policies** menu.
3. Select the **Show Advanced User Rights** check box.
4. Select **Log on as a batch job** from the **Right** drop-down menu.
5. Click **Add** to add the Windows user who is submitting an Enterprise Manager job.

If a user exist both locally and at the domain level, Windows gives the local user precedence. To use the domain user, qualify the username with the domain name. For example, to use the user `joe` in the `ACCOUNTS` domain specify the username as `ACCOUNTS\joe`.

If the Management Agent service is installed as any other user (that is, not `LocalSystem`), then, in addition to granting the **Log on as a batch job** privilege, the "Windows service" user must be granted the following three privileges:

- **Act as part of the operating system**
- **Adjust memory quotas for a process**. (This is named **Increase memory quotas** on Windows 2000 and Windows NT Server 4.0.)
- **Replace a process level token**

Installing Oracle Database Components from the Companion CD

The Oracle Database Companion CD contains additional components that you can install. Whether you need to install these components depends on which Oracle Database components or features that you plan to use. If you plan to use the following components or features, Oracle strongly recommends that you install the components from the Companion CD:

- JPublisher
- Oracle Database Examples (formerly Oracle Demos)
- Oracle JVM
- Oracle *inter*Media
- Oracle Text

> **See Also:** *Oracle Database Companion CD Installation Guide*, available on the Companion CD, for detailed installation information

To install Oracle Database components from the Companion CD, follow these steps:

1. Insert the CD labeled Oracle Database Companion CD Disk 1 of 1 in the disk drive.

   When installing from a hard disk, double-click `setup.exe`.

   When installing from the Oracle Database CD, the Autorun screen automatically appears. If the Autorun screen does not appear, then:

   a. Click **Start** > **Run**.

   b. Enter the following:

      ```
      DRIVE_LETTER:\autorun\autorun.exe
      ```

      The Autorun screen appears. Click **Install/Deinstall Products** from the Autorun screen.

2. Use the following guidelines to complete the installation:

   - On the Specify File Locations screen, select the Oracle home name and path for the existing Oracle Database installation where you want to add these components.
   - On the Select a Product to Install Screen, select **Oracle Database 10g Products**.

   > **Note:** For more information about any of Oracle Universal Installer screens, click **Help**.

5

Reviewing Your Installed Starter Database Contents

This chapter describes the contents of the default starter database, including information about Oracle database accounts, passwords, and file locations.

This chapter contains these topics:

- Accessing Enterprise Manager Database Control
- Usernames and Passwords Overview
- Database Identification Overview
- Server Parameter File Overview
- Tablespaces and Datafiles Overview
- Redo Log Files Overview
- Control Files Overview
- Rollback Segments Overview
- Data Dictionary Overview
- Oracle Database Services on Windows Overview

Accessing Enterprise Manager Database Control

Oracle Enterprise Manager Database Control provides a Web-based user interface that enables you to monitor, administer, and maintain an Oracle database.

To display Oracle Enterprise Manager Database Control:

1. Open your Web browser and enter the following URL

   `http://`*`hostname`*`:`*`port`*`/em`

   If you are unsure of the correct port number to use, look for the following line in the *`ORACLE_BASE`*`\`*`ORACLE_HOME`*`\install\portlist.ini` file:

   `Enterprise Manager Console HTTP Port (`*`db_name`*`) = `*`port`*

   For example, if you installed the database on a host computer named `mgmt42`, and the port number listed in the `portlist.ini` file is 5500, then enter the following URL

   `http://mgmt42:5500/em`

   Enterprise Manager displays the Database Control Login Page.

2. Log in to the database using the SYSMAN database user account. Enterprise Manager displays the Oracle Database home page.

   Use the password you specified for the SYSMAN account during the Oracle Database installation.

   See Also: "Usernames and Passwords Overview" on page 5-2

Understanding Database Control Login Privileges

When you log in to Oracle Enterprise Manager Database Control using the SYSMAN user account, you are logging in as the Oracle Enterprise Manager super user. The SYSMAN account is automatically granted the roles and privileges required to access all the management functionality provided with Database Control.

You can also use the SYS and SYSTEM accounts to log in to Database Control. In addition, you can grant login privileges to other database users. To grant management access for other database users, use the following procedure:

1. Log in to Database Control.

   See Also: "Accessing Enterprise Manager Database Control" on page 5-1

2. Click **Setup** at the top of the Database Control home page.
3. Click **Administrators** in the left navigation bar.
4. Click **Create** to create a new Enterprise Manager user.
5. In the **Name** field, enter the username of an existing database user or click the flashlight icon and select a user from the pop-up window.
6. Enter the password for this user, then click **Finish**.

Enterprise Manager assigns login privileges to the specified user and includes this user in the list of Enterprise Manager users on the Setup Administrators page.

Usernames and Passwords Overview

All databases created by Database Configuration Assistant include the SYS, SYSTEM, SYSMAN, and DBSNMP database accounts. In addition, Oracle provides several other administrative accounts. Before using these other accounts, you must unlock them and reset their passwords. Table 5–1 on page 5-3 describes these accounts, listing their usernames and passwords.

See Also:

- "Unlocking and Changing Passwords" on page 5-4 for information about using Oracle Enterprise Manager Database Control to view a complete list of the user accounts defined for your database
- "Modifying Oracle Counters for Windows Performance Monitor Parameters", of *Oracle Database Platform Guide for Windows*, for instructions on how to change the password for Oracle Counters for Windows Performance Monitor
- *Oracle Database Administrator's Guide* for information about Oracle security procedures and security best practices

Reviewing Administrative Accounts

Table 5–1 describes the administrative usernames.

Table 5–1 Administrative Accounts

Username	Description	See Also
ANONYMOUS	Allows HTTP access to Oracle XML DB.	Not applicable
BI	Owns the Business Intelligence schema included in the Oracle Sample Schemas. It is only available if you loaded the Sample Schemas.	*Oracle Database Sample Schemas*
CTXSYS	The Oracle Text account.	*Oracle Text Reference*
DBSNMP	Used by Management Agent of Oracle Enterprise Manager to monitor and manage the database. This account is created only if you configure the database to use Database Control.	*Oracle Enterprise Manager Grid Control Installation and Basic Configuration*
DIP	Used by Directory Integration Platform (DIP) to synchronize the changes in Oracle Internet Directory with the applications in the database.	*Oracle Internet Directory Administrator's Guide*
DMSYS	Performs data mining operations.	*Oracle Spatial User's Guide and Reference*
EXFSYS	Owns the Expression Filter schema.	None
HR	Owns the Human Resources schema included in the Oracle Sample Schemas. It is available only if you loaded the Sample Schemas.	*Oracle Database Sample Schemas*
IX	Owns the Information Transport schema included in the Oracle Sample Schemas. This account is available only if you loaded the Sample Schemas.	*Oracle Database Sample Schemas*
LBACSYS	The Oracle Label Security administrator account.	*Oracle Label Security Administrator's Guide*
MDDATA	Used by Oracle Spatial for storing Geocoder and router data.	*Oracle Spatial User's Guide and Reference*
MDSYS	The Oracle Spatial and Oracle Locator administrator account.	*Oracle Spatial User's Guide and Reference*
MGMT_VIEW	Used by Oracle Enterprise Manager Database Control.	None
ODM	Performs data mining operations.	*Oracle Data Mining Administrator's Guide* *Oracle Data Mining Concepts*
ODM_MTR	Associated with the data repository for Data Mining sample programs.	*Oracle Data Mining Administrator's Guide* *Oracle Data Mining Concepts*
OE	Owns the Order Entry schema included in the Oracle Sample Schemas. This account is available only if you loaded the Sample Schemas.	*Oracle Database Sample Schemas*
OLAPSYS	Owns the OLAP catalogs	*Oracle OLAP Application Developer's Guide*
ORDPLUGINS	The Oracle *inter*Media Audio and Video account. Plug-ins supplied by Oracle and third party plug-ins are installed in this schema.	*Oracle interMedia Reference*
ORDSYS	The Oracle *inter*Media Audio, Video, Locator, and Image administrator account.	*Oracle interMedia Reference*

Table 5–1 (Cont.) Administrative Accounts

Username	Description	See Also
OUTLN	Centrally manages metadata associated with stored outlines. Supports plan stability, which enables maintenance of the same execution plans for the same SQL statements.	*Oracle Database Performance Tuning Guide*
PM	Owns the Product Media schema included in the Oracle Sample Schemas. This account is created only if you loaded the Sample Schemas.	*Oracle Database Sample Schemas*
SCOTT	An account used by Oracle sample programs and examples.	*Oracle Database Administrator's Guide*
SH	Owns the Sales History schema included in the Oracle Sample Schemas. This account is available only if you loaded the Sample Schemas during an Enterprise Edition installation	*Oracle Database Sample Schemas*
SI_INFORMTN_ SCHEMA	Stores the information views for the SQL/MM Still Image Standard.	*Oracle interMedia Reference*
SYS	Used for performing database administration tasks.	*Oracle Database Administrator's Guide*
SYSMAN	The account used to perform Oracle Enterprise Manager database administration tasks.This account is created only if you configure the database to use the Database Control.	*Oracle Enterprise Manager Grid Control Installation and Basic Configuration*
SYSTEM	Used for performing database administration tasks.	*Oracle Database Administrator's Guide*
WK_TEST	The default Ultra Search instance schema.	*Oracle Ultra Search User's Guide*
WKPROXY	The Ultra Search proxy user.	*Oracle Ultra Search User's Guide*
WKSYS	Used for storing Ultra Search system dictionaries and PL/SQL packages.	*Oracle Ultra Search User's Guide*
WMSYS	The account used to store the metadata information for Oracle Workspace Manager.	*Oracle Database Application Developer's Guide - Workspace Manager*
XDB	Used for storing Oracle XML DB data and metadata.	*Oracle XML DB Developer's Guide*

See Also:

- "Privileges, Roles, and Security Policies" of *Oracle Database Concepts*
- "The Oracle Database Administrator" of *Oracle Database Administrator's Guide*
- "Administering External Users and Roles on Windows" of *Oracle Database Platform Guide for Windows*

Unlocking and Changing Passwords

Passwords for all Oracle system administration accounts except SYS, SYSTEM, SYSMAN, and DBSNMP are revoked after installation. Before you use a locked account, you must unlock it and reset its password. If you created a starter database during the installation, Database Configuration Assistant displays a screen with your database information and the Password Management button. Use the Password Management button to unlock only the usernames you will use.

If you created a starter database during the installation, but you did not unlock the required account, unlock the account using one of the following methods:

- Using SQL*Plus
- Using Enterprise Manager Database Control

Note: To permit unauthenticated access to your data through HTTP, unlock the ANONYMOUS account.

See Also: *Oracle Database Administrator's Guide* for more information about:

- Unlocking and changing passwords after installation
- Oracle security procedures
- Security best practices

Using SQL*Plus

Use SQL*Plus to unlock accounts and change passwords any time after the installation process.

To change a password after installation:

1. Start SQL*Plus:

   ```
   C:\> sqlplus /NOLOG
   ```

2. Connect as SYSDBA:

   ```
   SQL> CONNECT "SYS/SYS_password AS SYSDBA"
   ```

3. Enter a command similar to the following, where *account* is the user account that you want to unlock and *password* is the new password:

   ```
   SQL> ALTER USER account [IDENTIFIED BY password] ACCOUNT UNLOCK;
   ```

   In this example:

   - The ACCOUNT UNLOCK clause unlocks the account.
   - The IDENTIFIED BY *password* clause resets the password.

Using Enterprise Manager Database Control

To unlock and reset user account passwords with Oracle Enterprise Manager Database Control:

1. Log in to Database Control.

   See Also: "Accessing Enterprise Manager Database Control" on page 5-1

2. Click **Administration**.

3. In the Security section of the Administration page, click **Users**.

   Enterprise Manager displays a table containing all database accounts. The Account Status column indicates whether the account is locked and whether the password is expired.

4. Select the user account you want to modify, then click **Edit**.
5. Use the General page of the Users property sheet to change the password and lock or unlock the selected account. Click **Help** for additional information.

Database Identification Overview

The Oracle Database software identifies a database by its global database name. A global database name consists of the database name and database domain. Usually, the database domain is the same as the network domain, but it need not be. The global database name uniquely distinguishes a database from any other database in the same network. You specify the global database name when you create a database during the installation, or using Database Configuration Assistant. For example:

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

In this example:

- `sales` is the name of the database. The database name portion is a string of no more than eight characters that can contain alphanumeric, underscore (_), and pound (#) characters. The `DB_NAME` initialization parameter specifies the database name.
- `us.acme.com` is the network domain in which the database is located. Together, the database name and the network domain make the global database name unique. The domain portion is a string of no more than 128 characters that can contain alphanumeric, underscore (_), and pound (#) characters. The `DB_DOMAIN` initialization parameter specifies the domain name.

The `DB_NAME` parameter and the `DB_DOMAIN` name parameter combine to create the global database name value assigned to the `SERVICE_NAMES` parameter in the initialization parameter file.

The System Identifier (SID) identifies a specific database instance. The SID uniquely distinguishes the instance from any other instance on the same computer. Each database instance requires a unique SID and database name.

For example, if the SID and database name for an Oracle database are `ORCL`, then each database file is located in the *`ORACLE_BASE`*`\`*`ORACLE_HOME`*`\orcl` directory and the initialization parameter file is located in the *`ORACLE_BASE`*`\admin\orcl\pfile` directory.

Server Parameter File Overview

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

The server parameter file (SPFILE) is created from the initialization parameter file, then the initialization parameter file is renamed. The SPFILE filename is `spfile`*`SID`*`.ora` and is located in the *`ORACLE_BASE`*`\`*`ORACLE_HOME`*`\database` directory.

You can use Oracle Enterprise Manager Database Control to view the location of the server parameter file and list all of the initialization parameters, as follows:

1. Log in to Database Control.

See Also: "Accessing Enterprise Manager Database Control" on page 5-1

2. Click **Administration**.
3. In the Instance section of the Administration page, click **All Initialization Parameters**.

   Database Control displays a table listing the current value of each initialization parameter.
4. Click **SPFile**.

   Database Control displays a table listing the value of each initialization parameter specified in the server parameter file. The location of the server parameter file is displayed before the table.

See Also:

- "Oracle Database Specifications for Windows" of *Oracle Database Platform Guide for Windows* for a list of Oracle Database-specific initialization parameters for Windows and their default values
- *Oracle Database Reference* for more information about initialization parameters

Tablespaces and Datafiles Overview

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

Note: The `SYSAUX` and `SYSTEM` tablespaces must be present in all Oracle Database 10*g* release 1 (10.1.0.2.0) databases.

Table 5–2 list the tablespaces and datafiles in the Oracle Database. By default, the datafiles are located in the *`ORACLE_BASE`*`\oradata\`*`DB_NAME`* directory.

Table 5–2 Tablespaces and Datafiles

Tablespace	Datafile	Description
`EXAMPLE`	`EXAMPLE01.DBF`	Stores the Sample Schemas, if you included them.
`SYSAUX`	`SYSAUX01.DBF`	Serves as an auxiliary tablespace to the `SYSTEM` tablespace. Some products and options that previously used the `SYSTEM` tablespace now use the `SYSAUX` tablespace to reduce the load on the `SYSTEM` tablespace.
`SYSTEM`	`SYSTEM01.DBF`	Stores the data dictionary, including definitions of tables, views, and stored procedures needed by the Oracle Database. Information in this area is maintained automatically.
`TEMP`	`TEMP01.DBF`	Stores temporary tables and indexes created during the processing of your SQL statement. If you are running a SQL statement that involves a lot of sorting, such as the constructs `GROUP BY`, `ORDER BY`, or `DISTINCT`, then you may need to expand this tablespace.

Table 5–2 (Cont.) Tablespaces and Datafiles

Tablespace	Datafile	Description
UNDOTBS	UNDOTBS01.DBF	Stores undo information. The **undo tablespace** contains one or more undo segments that maintain transaction history that is used to roll back, or undo, changes to the database. All starter databases are configured to run in automatic undo management mode.
USERS	USERS01.DBF	Stores database objects created by database users.

To use Oracle Enterprise Manager Database Control to view the list of tablespaces currently available in your database:

1. Log in to Database Control.

   See Also: "Accessing Enterprise Manager Database Control" on page 5-1

2. Click **Administration**.
3. In the Storage section of the Administration page, click **Tablespaces**.

   Enterprise Manager displays a table containing all the tablespaces currently defined for this database instance. For more information about using Database Control to view, modify, and create tablespaces, click **Help**.

   See Also:

   - "Tablespaces, Datafiles, and Control Files" of *Oracle Database Concepts*
   - "Managing Tablespaces" and "Managing Datafiles and Tempfiles" of *Oracle Database Administrator's Guide*
   - "Managing the Undo Tablespace" of *Oracle Database Administrator's Guide*

Redo Log Files Overview

A redo log can be either an online redo log or an archived redo log. The online redo log is a set of two or more redo log groups that records all changes made to Oracle datafiles and control files. An archived redo log is a copy of an online redo log that has been copied to an offline destination. If the database is in ARCHIVELOG mode and automatic archiving is enabled, then the archive process or processes copy each online redo log to one or more archive log destinations after it is filled.

The starter database and the custom database each contain three redo log files located in the *ORACLE_BASE*\oradata*DB_NAME* directory. Redo log files hold a record of all changes made to data in the database buffer cache. If an instance fails, then Oracle Database uses the redo log files to recover the modified data in memory.

To use Oracle Enterprise Manager Database Control to view or modify the redo log files for your starter database:

1. Start your Web browser and log in to Database Control.

   See Also: "Accessing Enterprise Manager Database Control" on page 5-1

2. Click **Administration**.
3. In the Storage section of the Administration page, click **Redo Log Groups**.

   Enterprise Manager displays a table containing the control files currently defined for this database instance.
4. To view the name and location of the redo log file associated with a particular group, select that group then click **View**.

   For more information about using Database Control to view, modify, and create tablespaces, click **Help**.

See Also:

- *Oracle Database Backup and Recovery Basics*
- "Managing Archived Redo Logs" of *Oracle Database Administrator's Guide*

Control Files Overview

The starter database and the custom database contain three control files located in the *ORACLE_BASE*\oradata*DB_NAME* directory. Oracle recommends that you keep at least three control files (on separate physical drives) for each database and set the CONTROL_FILES initialization parameter to list each control file.

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

To use Oracle Enterprise Manager Database Control to view or modify the control files for your starter database:

1. Log in to Database Control.

   See Also: "Accessing Enterprise Manager Database Control" on page 5-1
2. Click **Administration**.
3. In the Storage section of the Administration page, click **Controlfiles**.

   Enterprise Manager displays a table containing the control files currently defined for this database instance. For more information about using control files and backing up control files, click **Help**.

   See Also: "Managing Control Files" of *Oracle Database Administrator's Guide* for information about setting this initialization parameter value

Rollback Segments Overview

Oracle databases are capable of managing their own undo (rollback) segments. Administrators no longer need to carefully plan and tune the number and sizes of rollback segments or decide how to strategically assign transactions to a particular rollback segment. Oracle databases also allow administrators to allocate their undo space in a single undo tablespace with the database taking care of issues such as undo block contention, consistent read retention, and space utilization.

See Also:

- *Oracle Database Administrator's Guide*
- *Oracle Database Backup and Recovery Basics*

Data Dictionary Overview

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

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

See Also:

- "The Data Dictionary" of *Oracle Database Concepts*
- "Static Data Dictionary Views" of *Oracle Database Reference*

Oracle Database Services on Windows Overview

Two main Oracle services are automatically started after installation when you create a database:

- `OracleService`*`SID`* (the Oracle Database service)
- `Oracle`*`HOME_NAME`*`TNSListener` (the Oracle Database listener service)

If you installed Oracle Enterprise Manager Database Control, then the `OracleDBConsole`*`SID`* service is automatically started. However, other services for networking or other individual components may not automatically start.

6

Removing Oracle Database Software

This chapter describes how to remove Oracle databases, instances, and software. Always use Oracle Universal Installer to initially remove Oracle components. To avoid installation and configuration problems with new Oracle installations, follow the instructions in this chapter.

This chapter contains these topics:

- Removing Oracle HTML DB from the Database
- Removing Oracle Cluster Synchronization Services (CSS)
- Removing All Oracle Components

See Also:

- *Oracle Real Application Clusters Installation and Configuration Guide* for information about removing an Oracle Real Application Clusters (RAC) installation
- *Oracle Database Companion CD Installation Guide for Windows* for information about removing an Oracle HTML DB installation
- Component-specific documentation for individual requirements and restrictions

Removing Oracle HTML DB from the Database

This section describes how to remove the Oracle HTML DB schema, synonyms, and users from the database without deleting the database. If you are going to delete the database, then you do not need to complete these steps.

After using Oracle Universal Installer to remove Oracle HTML DB from its Oracle home, you can remove Oracle HTML DB components from the database. Perform the following steps:

1. Use SQL*Plus to connect to the database as a privileged user, such as `SYS` or `SYSTEM`.
2. Execute the following commands:

```
SQL> ALTER SESSION SET CURRENT_SCHEMA = flows_010500;
SQL> EXEC wwv_flow_upgrade.drop_public_synonyms;
SQL> ALTER SESSION SET CURRENT_SCHEMA = SYSTEM;
SQL> DROP USER flows_010500 CASCADE;
SQL> DROP USER flows_files CASCADE;
SQL> DROP USER htmldb_public_user CASCADE;
```

Removing Oracle Cluster Synchronization Services (CSS)

The first time you install Oracle Database on a system, Oracle Universal Installer configures and starts a single-node version of the Oracle Cluster Synchronization Services (CSS) service. The CSS service is required to enable synchronization between an Automatic Storage Management (ASM) instance and the database instances that rely on it for database file storage. It is configured and started even if you do not choose ASM as a storage mechanism for database files.

If you do not choose ASM as a storage option, you can delete `OracleCSService`. To delete this service without deleting the Oracle home, perform the following:

1. Open a command prompt window.
2. Temporarily set the `ORACLE_HOME` environment variable. For example:

   ```
   set ORACLE_HOME=c:\oracle\product\10.1.0\db_1
   ```

3. Run the `localconfig` batch file with the `delete` option to delete the service. For example:

   ```
   c:\oracle\product\10.1.0\db_1\bin\localconfig delete
   ```

Note: You do not need to complete this step if you are removing the Oracle home. See "Reconfiguring Oracle Cluster Synchronization Services (CSS)" on page 4-3 for information about configuring the service to use a different Oracle home.

Removing All Oracle Components

Use Oracle Universal Installer to remove Oracle components from the inventory on the computer. Afterwards, you need to manually remove the remaining components.

Do not delete Oracle home files or directories (for example, using Windows Explorer or the command prompt) without first using Oracle Universal Installer unless you exit Oracle Universal Installer during an installation. Otherwise, the components in the Oracle home remain registered in the Oracle Universal Installer inventory. If you manually delete Oracle home files and you attempt an installation in the same Oracle home, then some or all of the selected components may not be installed or properly configured.

Oracle Universal Installer does not register the installation in its inventory if the installation is unexpectedly interrupted. However, files may have been copied to your Oracle home. Remove these files manually and restart the installation.

Note: You can use Database Configuration Assistant (DBCA) to remove an instance and related services. For information about Database Configuration Assistant, see "Installing Oracle and Building the Database" chapter of *Oracle Database 2 Day DBA*.

This section contains these steps:

1. Stopping Oracle Services
2. Removing Components with Oracle Universal Installer
3. Removing Components Manually

Stopping Oracle Services

You must first stop the Oracle services before removing Oracle components.

To stop Windows services:

1. Open the Services control panel:
   - On Windows NT, choose **Start** > **Settings** > **Control Panel** > **Services**.
   - On Windows 2000, choose **Start** > **Settings** > **Control Panel** > **Administrative Tools** > **Services**.
   - On Windows XP, and Windows Server 2003 choose **Start** > **Control Panel** > **Administrative Tools** > **Services**.
2. If any Oracle services (names begin with `Oracle` or `Ora`) exist and have the status *Started*, then select each of the services, and click **Stop**.
3. Click **Close** to exit the Services window.
4. Exit the Control Panel.

> **See Also:** Your Microsoft online help for more information about stopping services

Removing Components with Oracle Universal Installer

To remove components with Oracle Universal Installer:

1. Ensure that you first follow the instructions in "Stopping Oracle Services" on page 6-3.
2. Start Oracle Universal Installer. Choose **Start** > **Programs** > **Oracle - *HOME_NAME*** > **Oracle Installation Products** > **Universal Installer**.

   The Welcome screen for Oracle Universal Installer appears.
3. Click the **Deinstall Products** button.

   The Inventory screen appears.
4. Expand the tree of installed components until you find the components to remove.

   For example, if you installed a database with the Enterprise Edition option and later installed additional components with the Custom option, expand the Oracle home component to display all the components installed in the Oracle home.
5. Select the components to remove.
6. Click **Remove**.

   The Confirmation screen appears.
7. Click **Yes** to remove the selected components to initiate the removal process.

   > **Note:** A message may appear indicating that removing some components may cause other components to not function properly.

   After the components are removed from your computer, the Inventory screen appears without the removed components.
8. Click **Close** to close the Inventory screen.
9. Click **Cancel** to exit Oracle Universal Installer.

10. Click **Yes** to confirm that you want to exit.

Removing Components Manually

Oracle Universal Installer does not remove all Oracle components. After using Oracle Universal Installer to remove Oracle components, you need to manually remove remaining registry keys, environment variables, Start menu options, and directories.

1. Removing an ASM Instance
2. Removing Oracle Keys From the Registry on Windows
3. Updating the System Variable Path
4. Removing Oracle from the Start Menu
5. Removing Oracle Directories

> **Note:** In rare situations, you may want to correct serious system problems by completely removing Oracle components manually from the computer without first deinstalling with Oracle Universal Installer. Do this only as a last resort, and only if you want to remove all Oracle components from your system.

Removing an ASM Instance

To remove an Automatic Storage Management (ASM) instance running in the Oracle home after the database has been removed, perform the following steps:

1. At the command prompt, set the `ORACLE_SID` environment variable to the SID for the ASM instance. For example:

   ```
   SET ORACLE_SID=+ASM
   ```

2. Start SQL*Plus and connect to the ASM instance as the `SYS` user:

   ```
   SQLPLUS SYS/sys_password AS SYSDBA
   ```

3. Enter the following command to determine whether any Oracle database instance is using the ASM instance:

   ```
   SQL> SELECT INSTANCE_NAME FROM V$ASM_CLIENT;
   ```

   This command lists all of the database instances that are using this ASM instance. This command only lists database instances that are running. It is possible that other instances are associated with the ASM instance, but they are not currently running.

   If you removed a database from this Oracle home but the output from the command shows that this ASM instance is supporting a database instance in another Oracle home, do not remove the ASM instance or the Oracle home.

4. If there are no database instances associated with this ASM instance, drop the disk group associated with this instance.

   > **Note:** Dropping the ASM disk group makes the disk device available for use with another ASM instance if required. However, all data in the disk group is lost. Make sure that no other database instance requires any data from this disk group before you drop it.

a. Identify the disk groups associated with the ASM instance:

```
SQL> SELECT NAME FROM V$ASM_DISKGROUP;
```

b. For each disk group that you want to delete, enter a command similar to the following:

```
SQL> DROP DISKGROUP disk_group_name INCLUDING CONTENTS;
```

5. Shut down the ASM instance and exit SQL*Plus:

```
SQL> SHUTDOWN
SQL> EXIT
```

6. At the command prompt, enter the following command to remove the ASM service:

```
ORADIM -DELETE -ASMSID +ASM
```

See Also:

- "Automatic Storage Management (ASM)" on page 1-9
- "Configuring Disks for Automatic Storage Management" on page 2-9

Removing Oracle Keys From the Registry on Windows

Oracle Universal Installer creates Windows services for Oracle components during installation but it does not delete all the services created by Oracle Net Configuration Assistant and Database Configuration Assistant during deinstallation. In addition, Oracle Universal Installer does not delete several other registry keys. You need to remove any existing registry keys manually by following the instructions in one of the following sections:

- Removing Only the Oracle Net Service Registry Key
- Removing All Oracle Registry Keys

Caution: Use Microsoft Registry Editor at your own risk. Incorrectly using the Registry Editor can cause serious problems and may require reinstallation of your operating system.

Removing Only the Oracle Net Service Registry Key

To remove only the Oracle Net Service registry entry (if it exists):

1. Log in as a member of the Administrators group.
2. Ensure that you first follow the instructions in "Stopping Oracle Services" on page 6-3.
3. Start the registry editor at the command prompt:

```
C:\> regedt32
```

4. Go to `HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services` and delete the `Oracle`*`HOME_NAME`*`TNSListener` registry entry. Oracle Universal Installer automatically deletes all other Oracle Net services.
5. Exit the registry editor.

6. Restart your computer.

Removing All Oracle Registry Keys

> **Caution:** These instructions remove *all* Oracle components, services, and registry entries from your computer. Use extreme care when removing registry entries. Removing incorrect entries can break your system. Do not delete any database files under *ORACLE_BASE**ORACLE_HOME**DB_NAME* until you have completed these instructions.

To remove all Oracle registry keys from a computer (if any exist):

1. Log in as a member of the Administrators group.
2. Ensure that you first follow the instructions in "Stopping Oracle Services" on page 6-3.
3. Start the registry editor at the command prompt:

```
C:\> regedt32
```

4. Go to `HKEY_CLASSES_ROOT`.
5. Delete keys that begin with `Ora`, `Oracle`, `Orcl`, or `EnumOra`. This collection of keys includes those that begin with `EnumOraHomes`, `OracleConfig`, `OracleDatabase`, `OracleHome`, `OracleInProcServer`, `OracleProcess`, `ORADC`, `ORAMMCCFG10`, `ORAMMCPMON10`, `OraOLEDB`, `OraPerfMon`, ORCLMMC, and `ORCLSSO`.
6. Go to `HKEY_LOCAL_MACHINE\SOFTWARE`.
7. Delete the `ORACLE Group` key.
8. Go to `HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services`.
9. Delete all keys under this branch that begin with `Oracle`.
10. Go to `HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services \ Eventlog\Application`.
11. Delete all keys under this branch that begin with `Oracle`.
12. Go to `HKEY_CURRENT_USER`.
13. Delete the `ORACLE` key.
14. Go to `HKEY_CURRENT_USER\Software`.
15. Delete all Oracle keys, including `Oracle-`*`HOME_NAME`* entries under: `Microsoft\Windows\CurrentVersion\Explorer\MenuOrder\Start Menu\Programs`.
16. Exit the registry editor.
17. Restart your computer.

Updating the System Variable Path

Check the `Path` environmental variable and remove any Oracle entries.

1. Choose **Start** > **Settings** > **Control Panel** > **System** > **Advanced tab** > **Environment Variables**. You can use the **Windows** key + the **Pause/Break** key to display the **System** properties from the control panel.
2. Select the system variable `Path` and edit the `Path` variable to remove any Oracle entries.

   For example, remove Oracle entries that contain *`ORACLE_BASE`*`\`*`ORACLE_HOME`* in the `Path` variable. You may see a `Path` variable that contains entries similar to the following:

   ```
   C:\oracle\products\10.1.0\db_1\bin;C:\oracle\products\10.1.0\db_1\jre\1.4.2\
   bin\client;C:\oracle\products\10.1.0\db_1\jre\1.4.2\bin
   ```

3. Save any changes and then exit the Control Panel.

Removing Oracle from the Start Menu

Check the Start menu for any Oracle entries and remove them.

On Windows NT, perform the following:

1. Using My Computer or Windows Explorer, navigate to the *`SYSTEM_DRIVE`*`:\WINNT\Profiles\All Users\Start Menu\Programs` folder.
2. Delete the **Oracle -** ***HOME_NAME*** folder.

On Windows 2000 and Windows XP computers, perform the following:

1. Using My Computer or Windows Explorer, navigate to the *`SYSTEM_DRIVE`*`:\Document and Settings\All Users\Start Menu\Programs` folder.
2. Delete the **Oracle -** ***HOME_NAME*** folder.

You can also remove Oracle menu entries with the following instructions:

1. Right click the **Start** button to display the pop-up menu.
2. Select the **Explore All Users** option.
3. Expand the `\Start Menu\Programs` folder if necessary.
4. Delete the **Oracle -** ***HOME_NAME*** folder.

Removing Oracle Directories

After removing all Oracle registry keys and restarting the computer, delete any existing Oracle directories and files.

1. Using My Computer or Windows Explorer, delete the *`SYSTEM_DRIVE`*`:\program files\oracle` directory.
2. Using My Computer or Windows Explorer, delete all *`ORACLE_BASE`* directories on your hard drive.

A

Installing Java Access Bridge

This appendix describes how to install Java Access Bridge. Java Access Bridge enables use of a screen reader with Oracle components.

This appendix contains these topics:

- Introduction
- Setup for JRE 1.4.2
- Setup for Oracle Installed Components

Introduction

Java Access Bridge enables assistive technologies, such as JAWS screen reader, to read Java applications running on the Windows platform. Assistive technologies can read Java-based interfaces, such as Oracle Universal Installer and Oracle Enterprise Manager Database Control.

Your Oracle Database, Oracle Database Client, and Oracle Database Companion CD installation media contain the Java Runtime Environment (JRE) 1.4.2, which Oracle Universal Installer uses during installation. The JRE enables use of Java Access Bridge during installation. See "Setup for Oracle Installed Components" on page A-1 for information about installing and configuring Java Access Bridge after you install Oracle components.

Setup for JRE 1.4.2

To set up Java Access Bridge with JRE 1.4.2, run the following batch file on Oracle installation media.

```
DRIVE_LETTER:\install\access_setup.bat
```

After the batch file has run, restart your assistive technology program.

Setup for Oracle Installed Components

This section describes how to install and configure Java Access Bridge for Windows after installing Oracle components. This section contains the following topics:

- Installing Java Access Bridge
- Configuring Oracle Components to Use Java Access Bridge

Installing Java Access Bridge

To install Java Access Bridge, follow these steps:

1. On the Oracle installation media, go to the `AccessBridge` directory.
2. Select the `accessbridge-1_0_4.zip` file and extract its files to the system where you plan to install Access Bridge. For example:

   ```
   c:\AccessBridge-1.0.4
   ```

3. Copy the Java Access Bridge files listed in Table A–1 into the JRE 1.4.2 directory used by Oracle components. By default, the JRE used by Oracle components is installed in:

   ORACLE_BASE`\`*ORACLE_HOME*`\jre\1.4.2`

   Table A–1 lists the files you need to copy from the Java Access Bridge location on your hard drive to the JRE directory used by Oracle components:

Table A–1 Copy Files to JRE Directory

Copy	To
`\AccessBridge-1_0_4\installer\installerFiles\jaccess-1_4.jar`	*ORACLE_BASE*`\`*ORACLE_HOME*`\jre\1.4.2\lib\ext`
`\AccessBridge-1_0_4\installer\installerFiles\access-bridge.jar`	*ORACLE_BASE*`\`*ORACLE_HOME*`\jre\1.4.2\lib\ext`
`\AccessBridge-1_0_4\installer\installerFiles\JavaAccessBridge.dll`	*windows_directory*`\system32`
`\AccessBridge-1_0_4\installer\installerFiles\WindowsAccessBridge.dll`	*windows_directory*`\system32`
`\AccessBridge-1_0_4\installer\installerFiles\JAWTAccessBridge.dll`	*windows_directory*`\system32`
`\AccessBridge-1_0_4\installer\installerFiles\accessibility.properties`	*ORACLE_BASE*`\`*ORACLE_HOME*`\jre\1.4.2\lib`

4. Rename `jaccess-1_4.jar` (now located in *ORACLE_BASE*`\`*ORACLE_HOME*`\jre\1.4.2\lib\ext`) to `jaccess.jar`.
5. Following a successful installation, you can access Java Access Bridge documentation located at:

   ```
   c:\AccessBridge-1.0.4\doc
   ```

Configuring Oracle Components to Use Java Access Bridge

You can configure Oracle components to use the Access Bridge after you complete the installation. To do so, you need to set the system variable `ORACLE_OEM_CLASSPATH` to point to the installed Java Access Bridge files.

Configuring for Windows NT

To configure Oracle components to use Access Bridge on Windows NT, follow these steps:

1. Choose **Start** > **Settings** > **Control Panel** > **System** to display the Windows System Control Panel.
2. Select the Environment tab.

3. Select a variable in the **System Variables** list.
4. In the **Variable** field, enter `ORACLE_OEM_CLASSPATH`.
5. In the **Value** field, enter the full path to `jaccess.jar` and `access-bridge.jar`.

   Use a semicolon to separate the two paths. Do not use quotes or space characters. For example, if JRE 1.4.2 is installed in the default location, the setting would be:

   ORACLE_BASE`\`*ORACLE_HOME*`\jre\1.4.2\lib\ext\jaccess.jar;`*ORACLE_BASE*`\`*ORACLE_HOME*`\jre\1.4.2\lib\ext\access-bridge.jar`

6. Click **Set.**
7. Click **OK**.

Configuring for Windows 2000, Windows XP, or Windows Server 2003

To configure Oracle components to use Access Bridge on Windows 2000, Windows XP, or Windows Server 2003, follow these steps:

1. Choose **Start** > **Settings** > **Control Panel** > **System** to display the Windows System Control Panel.
2. Select the Advanced tab.
3. Click the **Environment Variables** button.
4. Click the **New** button under the System Variable list. The New System Variable dialog appears.
5. In the **Variable Name** field, enter `ORACLE_OEM_CLASSPATH`.
6. In the **Variable Value** field, enter the full path to `jaccess.jar` and `access-bridge.jar`.

   Use a semicolon to separate the two paths. Do not use quotes or character spaces. For example, if JRE 1.4.2 is installed in the default location, the setting would be:

   ORACLE_BASE`\`*ORACLE_HOME*`\jre\1.4.2\lib\ext\jaccess.jar;`*ORACLE_BASE*`\`*ORACLE_HOME*`\jre\1.4.2\lib\ext\access-bridge.jar`

7. Click **OK**.

B

Optimal Flexible Architecture

This appendix describes the Optimal Flexible Architecture (OFA) standard. The OFA standard is a set of file naming and configuration guidelines created to ensure reliable Oracle installations that require little maintenance.

This appendix contains these topics:

- Changes to the Optimal Flexible Architecture for Oracle Database 10g
- Overview of the Optimal Flexible Architecture Standard
- Differences Between Directory Trees by Release
- OFA Directory Naming Conventions
- OFA and Multiple Oracle Home Configurations
- Increasing Reliability and Performance
- Comparison Between OFA on Windows and UNIX

Changes to the Optimal Flexible Architecture for Oracle Database 10*g*

For previous releases of Oracle Database, the OFA recommended Oracle home path was similar to the following:

```
c:\oracle\ora92
```

For Oracle Database 10*g* release 1 (10.1), the OFA recommended Oracle home path has changed. The OFA recommended path is now similar to the following:

```
c:\oracle\product\10.1.0\type_n
```

In this example, *type* is the type of Oracle home, for example Oracle Database (`db`) or Oracle Database Client (`client`), and *n* is an optional counter. This syntax provides the following benefits:

- You can install different products with the same release number in the same Oracle base directory, for example:

  ```
  c:\oracle\product\10.1.0\db_1
  c:\oracle\product\10.1.0\client_1
  ```

- You can install the same product more than once in the same Oracle base directory, for example:

  ```
  c:\oracle\product\10.1.0\db_1
  c:\oracle\product\10.1.0\db_2
  ```

Overview of the Optimal Flexible Architecture Standard

When you install Oracle Database, you are installing one of the largest applications that your computer can support. Using multiple Oracle homes and OFA provides many advantages when administering large databases. The OFA standard is designed to:

- Organize large amounts of complicated software and data on disk, to avoid device bottlenecks and poor performance
- Facilitate routine administrative tasks such as software and data backup, which are often vulnerable to data corruption
- Facilitate switching between multiple Oracle databases
- Adequately manage and administer database growth
- Help eliminate fragmentation of free space in the data dictionary, isolate other fragmentation, and minimize resource contention

OFA can be thought of as a set of good habits to adopt when organizing Oracle directories and files on your computer. All Oracle components on the installation media are OFA-compliant; that is, Oracle Universal Installer places Oracle components in directory locations that follow OFA guidelines. Although using OFA is not a requirement, Oracle recommends that you use it if your database will grow in size, or if you plan to have multiple databases.

The aim of OFA is to prevent an entire class of problems that can occur when you have different releases of Oracle software and multiple, growing databases on your computer.

Oracle Universal Installer separates Oracle software executables from database files. Previously, database files were placed in *ORACLE_HOME*\database, a subdirectory of the Oracle home directory that also contained Oracle software.

Using OFA, Oracle Universal Installer puts Oracle software in *ORACLE_BASE**ORACLE_HOME* and database files in *ORACLE_BASE*\oradata. Now when you upgrade a database to the latest release, the new Oracle software executables will be placed in a different Oracle home directory. After you judge the upgrade successful, you can easily remove the old Oracle home directory and reclaim space, because the database does not reside there.

Characteristics of an OFA-Compliant Installation

An OFA-compliant database has the following characteristics:

- Independent subdirectories

  Categories of files are separated into independent subdirectories so that files in one category are minimally affected by operations on files in other categories.

- Consistent naming conventions for database files

  Database files are easily distinguishable from all other files. Files of one database are easily distinguishable from files of another database. Datafiles, **redo log files**, and **control files** are easily identifiable. Datafiles are clearly associated with a particular **tablespace**.

- Integrity of Oracle home directories

  You can add, move, or delete Oracle home directories without having to revise applications that refer to them.

- Separation of administrative information for each database

The ability to distinguish administrative information about one database from that of another ensures a reasonable structure for the organization and storage of administrative data.

- Separation of tablespace contents

  Tablespace free space fragmentation and I/O request contention are minimized, while administrative flexibility is maximized.

- Tuning I/O loads across all disks

  I/O loads are tuned across all disks, including disks storing Oracle data in raw devices, if needed.

Differences Between Directory Trees by Release

OFA has necessitated changes to the Oracle Database directory tree. This section lists the differences.

Top-Level Oracle Directory

When you install an Oracle8*i* release 8.1.3 or earlier release, all subdirectories are located under a top-level `ORACLE_HOME` directory that by default is `C:\orant`.

When you install an Oracle8*i* release 8.1.4 or later OFA-compliant database, all subdirectories are no longer under a top-level *`ORACLE_HOME`* directory. There is now a new top-level directory called **ORACLE_BASE** of form `c:\oracle\product\10.1.0`, where `c` is any hard drive.

`ORACLE_BASE` contains `\`*`ORACLE_HOME`* directories, `\oradata` directories (for database files), and `\admin` directories (for database administration files).

Database Filenames

In Oracle8*i* release 8.1.3 and earlier releases, database files have the SID in the database filename. For example, the first control file is named `ctl1`*`SID`*`.ora`.

Beginning with Oracle8*i* release 8.1.4, database files no longer have the SID in the database filename. For example, the first control file is named `control01.ctl`. There is no need for the presence of the SID in the filename, because all the database files for a particular database are placed in `\oradata` under a directory called *`DB_NAME`* that is named for that database.

Database Filename Extensions

In Oracle8*i* release 8.1.3 and earlier releases, all database files have the same `".ORA"` extension.

In an OFA-compliant release, the convention of having `".ora"` as the filename extension for database files is no longer used. Database filenames now have more meaningful extensions. These are:

- `.ctl` for control files
- `.log` for log files
- `.dbf` for datafiles

OFA Directory Naming Conventions

OFA uses directory naming conventions that make it easy to identify the precise Oracle home and database name that is associated with a set of files. This section describes the naming conventions used for top-level directories of an OFA-compliant database directory tree:

- ORACLE_BASE Directory
- ORACLE_HOME Directory
- ADMIN Directory
- ORADATA Directory
- DB_NAME Directory

ORACLE_BASE Directory

ORACLE_BASE is the root of the Oracle directory tree. If you install an OFA-compliant database using Oracle Universal Installer defaults, then ORACLE_BASE is x:\oracle\product\10.1.0 where x is any hard drive.

If you are installing Oracle Database for Windows on a computer with no other Oracle software installed, then you can change ORACLE_BASE before running Oracle Universal Installer. Most users will not need or want to do this.

Do not change the value of ORACLE_BASE after you run Oracle Universal Installer for the first time. If there is an existing ORACLE_BASE and you change it, then there will be a conflict of Oracle base directories. If you create another ORACLE_BASE when the original ORACLE_BASE already exists, then certain tools and the database will not be able to find previously created files. They will look for them in the new ORACLE_BASE instead of the original ORACLE_BASE.

> **See Also:** Your operating system documentation for instructions on editing environment variables

ORACLE_HOME Directory

The \ORACLE_HOME directory is located beneath c:\ORACLE_BASE and contains subdirectories for Oracle software executables and network files.

If you install Oracle Database for Windows on a computer with no other Oracle software installed and you use default settings, then the first Oracle home directory that you create is called \db_1.

ADMIN Directory

Database administration files are stored in subdirectories of *ORACLE_BASE*\\admin*DB_NAME*. Names and brief descriptions of some of these subdirectories are:

```
\bdump     --background process trace files
\cdump     --core dump files
\create    --database creation files
\exp       --database export files
\pfile     --initialization parameter files
\udump     --user SQL trace files
```

ORADATA Directory

Database files are stored in `ORACLE_BASE\ORADATA\DB_NAME`. Names and brief descriptions of these files are:

```
CONTROL01.CTL   --control file 1
CONTROL02.CTL    --control file 2
CONTROL02.CTL    --control file 3
EXAMPLE01.DBF    --EXAMPLE tablespace datafiles
SYSAUX01.DBF     --SYSAUX tablespace datafiles
SYSTEM01.DBF     --SYSTEM tablespace datafile
TEMP01.DBF       --TEMP tablespace datafile
USERS01.DBF      --USERS tablespace datafile
*.dbf            --datafiles corresponding to each tablespace in your database
REDO01.LOG       --redo log file group one, member one
REDO02.LOG       --redo log file group two, member one
REDO03.LOG       --redo log file group three, member one
```

Note: This directory structure allows for disk striping only on UNIX platforms. See "Support for Symbolic Links on Windows" on page B-10.

DB_NAME Directory

`DB_NAME` is the unique name for a particular database and has the same value as parameter `DB_NAME` in the **initialization parameter file**. When you create a database, `DB_NAME` can be no more than eight characters long and can contain only the following characters:

- Alphabetic characters
- Numbers
- Underscores (_)
- Pound sign (#)
- Dollar sign ($)

OFA and Multiple Oracle Home Configurations

The following sections describe various OFA and multiple Oracle homes configurations.

Specifying an ORACLE_HOME Directory

To install an OFA-compliant database, you must specify an Oracle home directory in the Path field of Oracle Universal Installer. It is of the form:

`X:\[`*`PATHNAME`*`]\oracle\`*`HOME_NAME`*

where:

- `X:\` is any hard drive. For example, `C:\`
- *`PATHNAME`* is an optional directory path name
- `\oracle` is a mandatory directory path name, unless you changed the value of registry key `ORACLE_BASE` before performing the installation
- *`HOME_NAME`* is the name of the Oracle home

The following are examples of OFA-compliant Oracle home directories:

- `C:\test\oracle\product\10.1.0\db_1`
- `D:\oracle\product\10.1.0\db_1`

Installing a Default OFA Database: Example

1. Install any Oracle Database that supports OFA (Oracle Database 8.1.6 or later) on a computer with no other Oracle software installed and make sure that you accept default settings for the Oracle home (for example, `c:\oracle\ora81`).
2. Install any Oracle Database (for example, Oracle Database) in a second Oracle home accepting the default settings.

Table B–1 shows the default OFA database settings.

Table B–1 Default OFA Database Settings

Setting	Value
ORACLE_BASE	`C:\oracle\product\10.1.0` (same for all Oracle homes)
Oracle home 1	`C:\oracle\product\10.1.0\db_1`
Oracle home 2	`C:\oracle\product\10.1.0\db_2`

Installing a Nondefault OFA Database: Example 1

1. Install any Oracle Database that supports OFA (Oracle Database 8.1.6 or later) on a computer with no other Oracle software installed and change default Oracle Universal Installer settings for the first Oracle home (for example, from `C:\oracle\ora81` to `X:\xyz`).
2. Install any Oracle Database (for example, Oracle Database 10*g* release 1 (10.1)) in a second Oracle home and change default Oracle Universal Installer settings for the second Oracle home (for example, from `X:\xyz` to `Y:\abc`).

Table B–2 shows the nondefault OFA database settings for example 1.

Table B–2 Nondefault OFA Database Settings: Example 1

Directory	Value
ORACLE_BASE	`X:\xyz` for first Oracle home; `Y:\abc` for second Oracle home
Oracle home 1	`X:\xyz`
Oracle home 2	`Y:\abc`

The resulting directory tree would look similar to this:

```
X:\xyz
     \admin
          \DB_NAME1
          \DB_NAME2
     \bin
     \network
     \oradata
          \DB_NAME1
               CONTROL01.CTL
               CONTROL02.CTL
               CONTROL03.CTL
               EXAMPLE01.DBF
```

```
                SYSAUX01.DBF
                SYSTEM01.DBF
                TEMP01.DBF
                USERS01.DBF
                REDO01.LOG
                REDO02.LOG
                REDO03.LOG
           \DB_NAME2
 Y:\abc
     \admin
          \DB_NAME1
          \DB_NAME2
     \bin
     \network
     \oradata
          \DB_NAME1
                CONTROL01.CTL
                CONTROL02.CTL
                CONTROL03.CTL
                EXAMPLE01.DBF
                SYSAUX01.DBF
                SYSTEM01.DBF
                TEMP01.DBF
                USERS01.DBF
                REDO01.LOG
                REDO02.LOG
                REDO03.LOG
           \DB_NAME2
```

Installing a Nondefault OFA Database: Example 2

1. Install any Oracle Database that supports OFA (Oracle Database 8.1.6 or later) on a computer with no other Oracle software installed and change default Oracle Universal Installer settings for the first Oracle home (for example, from `C:\oracle\ora81` to `X:\xyz\oracle\abc`).
2. Install any Oracle Database and change default Oracle Universal Installer settings for the second Oracle home (for example, from `C:\oracle\ora10` to `X:\pqr`).

Table B–3 shows the nondefault OFA database settings for example 2.

Table B–3 Nondefault OFA Database Settings: Example 2

Setting	Value
ORACLE_BASE	`X:\xyz\oracle` (same for both Oracle homes)
Oracle home 1	`X:\xyz\oracle\abc`
Oracle home 2	`X:\pqr`

The resulting directory tree would look similar to this:

```
X:\pqr                          --Oracle home 2
  \bin
  \network
X:\xyz
    \oracle                     --ORACLE_BASE for both Oracle homes
      \abc                      --Oracle home 1
        \bin
```

```
    \network
  \admin
    \DB_NAME1
      \adhoc
      \bdump
      \cdump
      \create
      \exp
      \pfile
      \udump
    \DB_NAME2
      \...
  \oradata
    \DB_NAME1
      CONTROL01.CTL
      CONTROL02.CTL
      CONTROL03.CTL
      EXAMPLE01.DBF
      SYSAUX01.DBF
      SYSTEM01.DBF
      TEMP01.DBF
      USERS01.DBF
      REDO01.LOG
      REDO02.LOG
      REDO03.LOG
    \DB_NAME2
```

Increasing Reliability and Performance

One of the basic goals of OFA is to increase reliability and performance by distributing I/O loads across different physical drives. Two ways to do that are:

- Disk Mirroring
- Disk Striping

Disk Mirroring

Oracle Database log files and database files can be separated and treated with different levels of hardware reliability. Oracle Database log files are highly reliable to start with, because they are stored redundantly. Creating similar reliability for database files may require you to duplicate all of your data, using disk mirrors.

Disk mirroring usually involves two or more identical drives and either a hardware controller or Windows Disk Administrator. If one disk fails, then the other disk(s) can be used to recover data that would otherwise be lost. Using one of the disks to recover lost data may involve "breaking" the mirror. If the mirror breaks, then you must build a new mirror.

Disk mirroring is part of some levels of Redundant Array of Independent Disks (RAID) configurations, provided by the disk controller. The RAID level determines the amount of redundancy. Some RAID levels can use the "hot swapping" feature, which means that you can replace a bad disk with a good one without turning off the computer or losing functionality.

Disk Striping

How you set up disks for use in a database depends on the number of disks and the type of hard disk controllers available. If the hard disk controllers support both

striping and mirroring, then Oracle recommends you configure the controllers to support striping.

Some controllers are configured at system startup time by issuing a keyboard sequence that brings up configuration programs written by the controller manufacturer. One goal is to stripe as many drives together as possible by configuring the controllers. Each stripe shows up as one logical device.

Striping provides significant performance advantages. All the space from the striped drives appears as a single logical drive. Furthermore, the space is used by interlacing "stripes" of space from all of the disks in the stripe. This means that a large file uses some space from the first disk, then some from the second disk and so on to the last disk and then starting back at the first disk again. Each file can be spread over all of the striped disks. Data in such a file may be accessed randomly by more than one CPU without contention.

Controllers that support striping usually provide caching as well. This means that data can be written to the controller and cached and saved for a time in storage not on the disk. Data that is read can be cached on the controller in a similar fashion. Read caching should not be used with Oracle Database, because all database reads are cached already in the **System Global Area** (SGA). The value of parameter `DB_CACHE_SIZE` in the initialization parameter file (`init.ora`) determines the buffer size that can be used in the SGA. This value also configures Oracle Database on startup.

Note:

- Read caching should be disabled.
- Disk write caching should be disabled on disks containing Oracle datafiles and redo log files where the contents of the write cache are not flushed to disk on power failures or operating system failure. Consult your vendor documentation for additional information.

Using Raw Partitions for Tablespaces

A raw partition is a portion of a physical disk that is accessed at the lowest possible level. I/O of a raw partition improves performance by approximately 5% to 10% compared to I/O of a partition containing a file system. Therefore, Oracle encourages you to use **raw partitions** for your tablespace files.

Comparison Between OFA on Windows and UNIX

You implement OFA on Windows and UNIX in the same way. However, differences exist with regard to the following:

- Directory Naming
- ORACLE_BASE Directory
- Support for Symbolic Links on Windows

> **See Also:** Your UNIX operating system-specific administrator's reference for information about OFA on UNIX

Directory Naming

Top-level names of the OFA directory tree differ between Windows and UNIX. However, main subdirectory and filenames are the same on both operating systems.

ORACLE_BASE Directory

On Windows, ORACLE_BASE is associated with an Oracle home directory. ORACLE_BASE is defined in the registry (for example, in HKEY_LOCAL_MACHINE\SOFTWARE\ORACLE\KEY_*HOME_NAME*).

On UNIX, ORACLE_BASE is associated with a UNIX user's environment.

Support for Symbolic Links on Windows

The goal of OFA is to place all Oracle software under one ORACLE_BASE directory and to spread files across different physical drives as your databases increase in size.

On UNIX, although everything seems to be in one directory on the same hard drive, files can be on different hard drives if they are symbolically linked or have that directory as a mount point.

Windows currently does not support symbolic links, so datafiles will not all show up under a single directory like on UNIX. Instead, you may have oradata directories on multiple drives, with datafiles in each one. In this way, you still get OFA benefits, even though datafiles are not all visible in a single directory.

Oracle recommends that you use one logical drive to store your database administration files and that you place other files, as needed, on other logical drives in an oradata*DB_NAME* directory.

In the following example, there are four logical drives for a database named prod:

- C:\ contains an Oracle home and database administration files.
- F:\ contains redo log files. (F:\ drive could also represent two physical drives that have been striped to increase performance.)
- G:\ contains one of the control files and all **tablespace** files. (G:\ drive could also use a RAID Level-5 configuration to increase reliability.)
- H:\ contains the second control file.

The directory structure would look similar to this:

```
C:\oracle\product\10.1.0  --First logical drive
    \db_1                  --Oracle home
      \bin                 --Subtree for Oracle binaries
      \network             --Subtree for Oracle Net
      \...
    \admin                 --Subtree for database administration files
      \prod                --Subtree for prod database administration files
        \adhoc             --Ad hoc SQL scripts
        \adump             --Audit files
        \bdump             --Background process trace files
        \cdump             --Core dump files
        \create            --Database creation files
        \exp               --Database export files
        \pfile             --Initialization parameter file
        \udump             --User SQL trace files

F:\oracle\product\10.1.0   --Second logical drive (two physical drives, striped)
    \oradata               --Subtree for Oracle Database files
      \prod                --Subtree for prod database files
        redo01.log         --Redo log file group one, member one
        redo02.log         --Redo log file group two, member one
        redo03.log         --Redo log file group three, member one
```

```
G:\oracle\product\10.1.0   --Third logical drive (RAID level 5 configuration)
    \oradata               --Subtree for Oracle Database files
      \prod                --Subtree for prod database files
        CONTROL01.CTL      --Control file 1
        EXAMPLE01.DBF      --EXAMPLE tablespace datafiles
        SYSAUX01.DBF       --SYSAUX tablespace datafiles
        SYSTEM01.DBF       --System tablespace datafile
        TEMP01.DBF         --Temporary tablespace datafile
        USERS01.DBF        --Users tablespace datafile

H:\oracle\product\10.1.0   --Fourth logical drive
    \oradata               --Subtree for Oracle Database files
      \prod                --Subtree for prod database files
        CONTROL02.CTL      --Control file 2
```

C

Oracle Database Advanced Installation Topics

This appendix describes advanced installation topics.

- About Oracle Components in Noninteractive Mode
- About Oracle Components in Different Languages

About Oracle Components in Noninteractive Mode

Typically, Oracle Universal Installer runs in interactive mode, which means you are prompted to provide information in screens. However, experienced users can also run Oracle Universal Installer in noninteractive (also called silent) mode by using response files. These are text files containing variables and values used by Oracle Universal Installer during the installation process.

Silent installations are recommended in cases when no interaction with the user is intended or when a nongraphical terminal is used. The user needs to first edit a response file to specify the components to install. With Oracle Universal Installer (OUI) release 1.7.*x* or earlier, the target installation system still requires login to a desktop system.

Using silent installation enables you to bypass the graphical user interface (GUI) of Oracle Universal Installer interactive mode. Table C–1 lists the available response files in the `\Response` directory on the CD labeled Oracle Database 10*g* Release 1 (10.1) Disk 1 of 1:

Table C–1 Response Files

Response File Name	This File Silently Runs The...
`enterprise.rsp`	Enterprise Edition installation of Oracle Database
`standard.rsp`	Standard Edition installation of Oracle Database
`personal.rsp`	Personal Edition installation of Oracle Database
`custom.rsp`	Custom installation of Oracle Database
`dbca.rsp`	Database Configuration Assistant
`netca.rsp`	Oracle Net Configuration Assistant

Copying and Modifying a Response File

To copy and modify a response file:

1. Copy the appropriate files from the `\Response` directory on the CD labeled Oracle Database 10*g* Release 1 (10.1) Disk 1 of 1 to your hard drive.
2. Choose **Start** > **Programs** > **Oracle - *HOME_NAME*** > **Oracle Installation Products** > **Universal Installer Concepts Guide**.

   Oracle Universal Installer Concepts Guide appears in HTML format.
3. Modify the response files with any text file editor by following the instructions in both the response files and *Oracle Universal Installer Concepts Guide*.

Running Oracle Universal Installer and Specifying a Response File

To run Oracle Universal Installer and specify a response file:

1. Go to the command prompt.
2. Go to the directory where Oracle Universal Installer is installed.
3. Run the appropriate response file. For example,

   ```
   C:\program files\oracle\oui\install> setup.exe [-silent]
   [-nowelcome] -responseFile filename
   ```

Where...	Description
filename	Identifies the full path of the specific response file
`-silent`	Runs Oracle Universal Installer in complete silent mode. The Welcome screen is suppressed automatically. If you use `-silent`, `-nowelcome` is not necessary.
`-nowelcome`	Suppresses the Welcome screen that appears during installation.

See Also:

- "Installing Oracle Products" in *Oracle Universal Installer Concepts Guide* for more information about installing on using response files
- "Deinstalling Products" in *Oracle Universal Installer Concepts Guide* for more information about deinstalling using response files

About Oracle Components in Different Languages

This section describes the following features:

- Running Oracle Universal Installer in Different Languages
- Using Oracle Components in Different Languages

Running Oracle Universal Installer in Different Languages

Oracle Universal Installer runs by default in the selected language of your operating system. Oracle Universal Installer can also be run in the following languages:

- Brazilian Portuguese
- German
- Japanese
- Simplified Chinese

- Traditional Chinese
- French
- Italian
- Korean
- Spanish

To run Oracle Universal Installer in a different language:

1. Change the language in which your operating system is running. For example, on Windows 2000:
   a. Choose **Start** > **Settings** > **Control Panel** > **Regional Options**.
   b. Select a language from the preceding table list and choose **OK**.
2. Run Oracle Universal Installer by following the instructions in the "Installing the Oracle Database Software" section on page 3-5.

> **Note:** The selected language is assigned to the `NLS_LANG` registry parameter.

Using Oracle Components in Different Languages

You can select other languages in which to use Oracle components (such as, Oracle Net Configuration Assistant, and Database Configuration Assistant). Note that this does *not* change the language in which Oracle Universal Installer is run. For the Oracle component to run in the selected language, it must be the same as the language set for your operating system. You can change your operating system language in the Regional Settings window from the Control Panel.

To use components in different languages:

1. Follow the instructions in the "Installing the Oracle Database Software" section on page 3-5 to start Oracle Universal Installer.
2. From the Select Installation Type screen, select **Product Languages**. button.

   The Language Selection screen appears.
3. Select a language in which to use Oracle components from the Available Languages field.
4. Use the > arrow to move the language to the Selected Languages field and **OK**.
5. Select appropriate products for installation and **Next**.

   After installation is complete, the dialog box wording, messages, and online help for the installed components display in the language you selected.

D

Oracle Database Globalization Support

This appendix describes these Globalization Support topics:

- About NLS_LANG Parameters
- Commonly Used Values for NLS_LANG
- NLS_LANG Settings in MS-DOS Mode and Batch Mode

About NLS_LANG Parameters

Oracle provides Globalization Support that enables users to interact with a database in their own language, as defined by the NLS_LANG parameter. When you install Oracle Database components, the NLS_LANG parameter is set in the registry.

The value of the NLS_LANG parameter at installation is automatically chosen based on the locale setting of the operating system. The operating system locale and NLS_LANG value mappings are listed under "Commonly Used Values for NLS_LANG" on page D-2.

The NLS_LANG parameter is stored in the registry under the HKEY_LOCAL_MACHINE\SOFTWARE\ORACLE\HOME*ID*\NLS_LANG subkey, where *ID* is the unique number identifying the Oracle home.

The NLS_LANG parameter uses the following format:

NLS_LANG = *LANGUAGE_TERRITORY.CHARACTER_SET*

where:

Parameter	Description
LANGUAGE	Specifies the language and conventions for displaying messages, day name, and month name.
TERRITORY	Specifies the territory and conventions for calculating week and day numbers.
CHARACTER_SET	Controls the character set used for displaying messages.

See Also:

- *Oracle Database Platform Guide for Windows* for more information about the subkey locations for multiple Oracle homes
- *Oracle Database Globalization Support Guide* for information about the NLS_LANG parameter and Globalization Support initialization parameters

Commonly Used Values for NLS_LANG

Table D–1 lists commonly used NLS_LANG values for various operating system locales:

Table D–1 NLS_LANG Parameter Values

Operating System Locale	NLS_LANG Value
Arabic (U.A.E.)	ARABIC_UNITED ARAB EMIRATES.AR8MSWIN1256
Bulgarian	BULGARIAN_BULGARIA.CL8MSWIN1251
Catalan	CATALAN_CATALONIA.WE8MSWIN1252
Chinese (PRC)	SIMPLIFIED CHINESE_CHINA.ZHS16GBK
Chinese (Taiwan)	TRADITIONAL CHINESE_TAIWAN.ZHT16MSWIN950
Croatian	CROATIAN_CROATIA.EE8MSWIN1250
Czech	CZECH_CZECH REPUBLIC.EE8MSWIN1250
Danish	DANISH_DENMARK.WE8MSWIN1252
Dutch (Netherlands)	DUTCH_THE NETHERLANDS.WE8MSWIN1252
English (United Kingdom)	ENGLISH_UNITED KINGDOM.WE8MSWIN1252
English (United States)	AMERICAN_AMERICA.WE8MSWIN1252
Estonian	ESTONIAN_ESTONIA.BLT8MSWIN1257
Finnish	FINNISH_FINLAND.WE8MSWIN1252
French (Canada)	CANADIAN FRENCH_CANADA.WE8MSWIN1252
French (France)	FRENCH_FRANCE.WE8MSWIN1252
German (Germany)	GERMAN_GERMANY.WE8MSWIN1252
Greek	GREEK_GREECE.EL8MSWIN1253
Hebrew	HEBREW_ISRAEL.IW8MSWIN1255
Hungarian	HUNGARIAN_HUNGARY.EE8MSWIN1250
Icelandic	ICELANDIC_ICELAND.WE8MSWIN1252
Indonesian	INDONESIAN_INDONESIA.WE8MSWIN1252
Italian (Italy)	ITALIAN_ITALY.WE8MSWIN1252
Japanese	JAPANESE_JAPAN.JA16SJIS
Korean	KOREAN_KOREA.KO16MSWIN949
Latvian	LATVIAN_LATVIA.BLT8MSWIN1257
Lithuanian	LITHUANIAN_LITHUANIA.BLT8MSWIN1257
Norwegian	NORWEGIAN_NORWAY.WE8MSWIN1252
Polish	POLISH_POLAND.EE8MSWIN1250
Portuguese (Brazil)	BRAZILIAN PORTUGUESE_BRAZIL.WE8MSWIN1252
Portuguese (Portugal)	PORTUGUESE_PORTUGAL.WE8MSWIN1252
Romanian	ROMANIAN_ROMANIA.EE8MSWIN1250
Russian	RUSSIAN_CIS.CL8MSWIN1251
Slovak	SLOVAK_SLOVAKIA.EE8MSWIN1250
Spanish (Spain)	SPANISH_SPAIN.WE8MSWIN1252

Table D–1 (Cont.) NLS_LANG Parameter Values

Operating System Locale	NLS_LANG Value
Swedish	SWEDISH_SWEDEN.WE8MSWIN1252
Thai	THAI_THAILAND.TH8TISASCII
Spanish (Mexico)	MEXICAN SPANISH_MEXICO.WE8MSWIN1252
Spanish (Venezuela)	LATIN AMERICAN SPANISH_VENEZUELA.WE8MSWIN1252
Turkish	TURKISH_TURKEY.TR8MSWIN1254
Ukrainian	UKRAINIAN_UKRAINE.CL8MSWIN1251
Vietnamese	VIETNAMESE_VIETNAM.VN8MSWIN1258

NLS_LANG Settings in MS-DOS Mode and Batch Mode

When using Oracle utilities such as SQL*Plus, SQL Loader, Import, and Export in MS-DOS mode, the character set field of the `NLS_LANG` parameter for the session must first be set to the correct value.

This is required because MS-DOS mode uses, with a few exceptions, a different character set (or code-page) from Windows (ANSI code-page), and the default Oracle home `NLS_LANG` parameter in the registry is always set to the appropriate Windows code-page. If the `NLS_LANG` parameter for the MS-DOS mode session is not set appropriately, error messages and data can be corrupted due to incorrect character set conversion.

For Japanese, Korean, Simplified Chinese, and Traditional Chinese, the MS-DOS code-page is identical to the ANSI code-page. In this case, there is no need to set the `NLS_LANG` parameter in MS-DOS mode.

Similarly, in batch mode, set the correct character set value of `NLS_LANG` by inserting a `SET NLS_LANG` command at the start of the batch procedure, according to the character set of the files to be processed in the procedure.

Table D–2 lists the Oracle character sets that correspond to the MS-DOS mode for various operating system locales:

Table D–2 Oracle Character Sets for Operating System Locales

Operating System Locale	Character Set
Arabic	AR8ASMO8X
Catalan	WE8PC850
Chinese (PRC)	ZHS16GBK
Chinese (Taiwan)	ZHT16MSWIN950
Czech	EE8PC852
Danish	WE8PC850
Dutch	WE8PC850
English (United Kingdom)	WE8PC850
English (United States)	US8PC437
Finnish	WE8PC850
French	WE8PC850
German	WE8PC850

Table D–2 (Cont.) Oracle Character Sets for Operating System Locales

Operating System Locale	Character Set
Greek	EL8PC737
Hungarian	EE8PC852
Italian	WE8PC850
Japanese	JA16SJIS
Korean	KO16MSWIN949
Norwegian	WE8PC850
Polish	EE8PC852
Portuguese	WE8PC850
Romanian	EE8PC852
Russian	RU8PC866
Slovak	EE8PC852
Slovenian	EE8PC852
Spanish	WE8PC850
Swedish	WE8PC850
Turkish	TR8PC857

E

Oracle Database Default Port Numbers

During installation, Oracle Universal Installer assigns port numbers to components from a set of default port numbers. This appendix lists the default port numbers and describes how to change the assigned port after installation. It includes information about the following topics:

- Components and Port Ranges
- Configured Ports and Access URLs
- Changing the Enterprise Manager Agent HTTP Port
- Changing the Enterprise Manager Database Control Ports
- Changing the iSQL*Plus Ports
- Changing the Oracle Ultra Search Ports

Components and Port Ranges

The following table lists the port ranges used by components that are configured during the installation. By default, the first port in the range is assigned to the component, if it is available.

Component	Port Range
Enterprise Manager Agent	HTTP: 1830 - 1849
Enterprise Manager Database Control	HTTP: 5500 - 5519 RMI: 5520 - 5539 JMS: 5540 - 5559
*i*SQL*Plus	HTTP: 5560 - 5579 RMI: 5580 - 5599 JMS: 5600 - 5619
Oracle Services for Microsoft Transaction Server	HTTP: 2030 - 2049
Oracle Ultra Search	HTTP: 5620 - 5639 RMI: 5640 - 5659 JMS: 5660 - 5679

Configured Ports and Access URLs

During Oracle Database installation, the `portlist.ini` file and `readme.txt` files are created. These files are located in *`ORACLE_BASE`*`\`*`ORACLE_HOME`*`\install`. The

readme.txt file lists the access URLs for the installed J2EE Web applications and the portlist.ini file lists the configured ports for the applications.

Changing the Enterprise Manager Agent HTTP Port

To change the Oracle Enterprise Manager Agent HTTP port, modify the *ORACLE_BASE**ORACLE_HOME*\host_sid\sysman\config\emd.properties file with the following parameter:

```
EMD_URL=http://host.domain:1830/emd/main
```

Changing the Enterprise Manager Database Control Ports

The following sections describe how to change the Oracle Enterprise Manager Database Control ports.

Changing the HTTP Port

To change the HTTP port, edit the following files:

- *ORACLE_BASE**ORACLE_HOME**host_sid*\sysman\config\emoms.properties

  Modify the following parameters in the file:

  ```
  oracle.sysman.emSDK.svlt.ConsoleServerPort=5500
  oracle.sysman.emSDK.svlt.ConsoleServerHTTPSPort=5500
  ```

- *ORACLE_BASE**ORACLE_HOME**host_sid*\sysman\config\emd.properties

  Modify the following parameters in the file:

  ```
  REPOSITORY_URL=http://host.domain:5500/em/upload/
  emdWalletSrcUrl=http://host.domain:5500/em/wallets/emd
  ```

- *ORACLE_BASE**ORACLE_HOME*\oc4j\j2ee\OC4J_DBConsole_*host_sid*\config\http-web-site.xml

  Modify the port attribute of the web-site element:

  ```
  <web-site port="5500" ...>
  ```

Changing the RMI Port

To change the RMI port, modify the port attribute of the rmi-server element in the *ORACLE_BASE**ORACLE_HOME*\oc4j\j2ee\OC4J_DBConsole_*host_sid*\config\rmi.xml file:

```
<rmi-server port="5520"...>
```

Changing the JMS Port

To change the JMS port, modify the port attribute of the jms-server element in the *ORACLE_BASE**ORACLE_HOME*\oc4j\j2ee\OC4J_DBConsole_*host_sid*\config\jms.xml file:

```
<jms-server port="5540"...>
```

Changing the *i*SQL*Plus Ports

The following sections describe how to change the *i*SQL*Plus ports.

Changing the HTTP Port

To change the HTTP port, edit the following files:

- *ORACLE_BASE**ORACLE_HOME**host_sid*\sysman\config\emoms.properties

  Modify the following parameters in the file:

  ```
  oracle.sysman.db.isqlplusUrl=http\://host.domain\:5560/isqlplus/dynamic
  oracle.sysman.db.isqlplusWebDBAUrl=http\://host.domain\:5560/isqlplus/
  dynamic
  ```

- *ORACLE_BASE**ORACLE_HOME*\oc4j\j2ee\isqlplus\config\http-web-site.xml

  Modify the port attribute of the web-site element:

  ```
  <web-site port="5560" ...>
  ```

Changing the RMI Port

To change the RMI port, modify the port attribute of the rmi-server element in the *ORACLE_BASE**ORACLE_HOME*\oc4j\j2ee\isqlplus\config\rmi.xml file:

```
<rmi-server port="5580"...>
```

Changing the JMS Port

To change the JMS port, modify the port attribute of the jms-server element in the *ORACLE_BASE**ORACLE_HOME*\oc4j\j2ee\isqlplus\config\jms.xml file:

```
<jms-server port="5600"...>
```

Changing the Oracle Ultra Search Ports

The following sections describe how to change the Oracle Ultra Search ports.

Changing the HTTP Port

To change the HTTP port, modify the port attribute of the web-site element in the *ORACLE_BASE**ORACLE_HOME*\oc4j\j2ee\OC4J_SEARCH\config\http-web-site.xml file:

```
<web-site port="5620"...>
```

Changing the RMI Port

To change the RMI port, modify the port attribute of the rmi-server element in the *ORACLE_BASE**ORACLE_HOME*\oc4j\j2ee\OC4J_SEARCH\config\rmi.xml file:

```
<rmi-server port="5640"...>
```

Changing the JMS Port

To change the JMS port, modify the port attribute of the jms-server element in the *ORACLE_BASE**ORACLE_HOME*\oc4j\j2ee\OC4J_SEARCH\config\jms.xml file:

```
<jms-server port="5660"...>
```

F

Oracle Database Troubleshooting

This appendix contains information about troubleshooting. It includes information about the following topics:

- Verify Requirements
- What to Do If an Installation Error Occurs
- Reviewing the Log of an Installation Session
- Troubleshooting Configuration Assistants
- Silent Response File Error Handling
- Cleaning Up After a Failed Installation

See Also: Chapter 6, "Removing Oracle Database Software"

Verify Requirements

Before performing any of the troubleshooting steps in this appendix, ensure that the system meets the requirements and that you have completed all of the preinstallation tasks specified in Chapter 2, "Oracle Database Preinstallation Requirements".

Read the Release Notes

Read the release notes for the product on your platform before installing it. The release notes are available on the Oracle Database installation media. The latest version of the release notes is also available on the OTN Web site

`http://otn.oracle.com/documentation/`

What to Do If an Installation Error Occurs

If you encounter an error during installation:

- Do not exit Oracle Universal Installer.
- If you clicked **Next** after you entered incorrect information about one of the installation screens, click **Back** to return to the screen and correct the information.
- If you encounter an error while Oracle Universal Installer is copying or linking files, see the "Reviewing the Log of an Installation Session" section on page F-2.
- If you encounter an error while a configuration assistant is running, see the "Troubleshooting Configuration Assistants" section on page F-2.
- If you cannot resolve the problem, remove the failed installation by following the steps listed in the "Cleaning Up After a Failed Installation" section on page F-3.

Reviewing the Log of an Installation Session

During an installation, Oracle Universal Installer records all of the actions that it performs in a log file. If you encounter problems during the installation, review the log file for information about possible causes of the problem.

Log files are located in the *SYSTEM_DRIVE*:\Program Files\Oracle\Inventory\logs directory. Log filenames take the form installActions*date_time*.log (for example, installActions2003-05-14_09-00-56-am.log).

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

Troubleshooting Configuration Assistants

To troubleshoot an installation error that occurs when a configuration assistant is running:

- Review the installation log files listed in the "Reviewing the Log of an Installation Session" section on page F-2.
- Review the specific configuration assistant log file located in the *ORACLE_BASE**ORACLE_HOME*\cfgtoollogs directory. Try to fix the issue that caused the error.
- If you see the Fatal Error. Reinstall message, look for the cause of the problem by reviewing the log files. Refer to the "Fatal Errors" section on page F-2 for further instructions.

Configuration Assistant Failure

Oracle configuration assistant failures are noted at the bottom of the installation screen. The configuration assistant interface displays additional information, if available. The configuration assistant execution status is stored in the installActions*date_time*.log file.

The execution status codes are listed in the following table:

Status	Result Code
Configuration assistant succeeded	0
Configuration assistant failed	1
Configuration assistant cancelled	-1

Fatal Errors

If you receive a fatal error while a configuration assistant is running, you must remove the current installation and reinstall the Oracle software, as follows:

1. Remove the failed installation as described in the "Cleaning Up After a Failed Installation" section on page F-3.
2. Correct the cause of the fatal error.
3. Reinstall the Oracle software.

Silent Response File Error Handling

To determine whether a silent installation succeeds or fails, see the `installActions`*`date_time`*`.log` file.

If necessary, see the previous section for information about determining the location of the `Inventory` directory.

A silent installation fails if:

- You do not specify a response file
- You specify an incorrect or incomplete response file
- Oracle Universal Installer encounters an error, such as insufficient disk space

Oracle Universal Installer or configuration assistant validates the response file at runtime. If the validation fails, the silent installation or configuration process ends. Oracle Universal Installer treats values for parameters that are of the wrong context, format, or type as if no value was specified in the file.

Cleaning Up After a Failed Installation

If an installation fails, you must remove files that Oracle Universal Installer created during the attempted installation and remove the Oracle home directory.

See Also: Chapter 6, "Removing Oracle Database Software"

Glossary

Automatic Storage Management

Automated Storage Management enables creation of a single disk group from a collection of individual disk devices. It balances I/O to the disk group across all of the devices in the disk group. It also implements striping and mirroring to improve I/O performance and data reliability.

automatic undo management mode

A mode of the database in which undo data is stored in a dedicated **undo tablespace**. Unlike in **manual undo management mode**, the only undo management that you must perform is the creation of the undo tablespace. All other undo management is performed automatically.

connect descriptor

A specially formatted description of the destination for a network connection. A connect descriptor contains destination service and network route information.

The destination service is indicated by using its service name for the Oracle Database or its Oracle system identifier (**SID**) for Oracle release 8.0, or version 7 databases. The network route provides, at a minimum, the location of the **listener** through use of a network address.

connect identifier

A name, net service name, or service name that resolves to a connect descriptor. Users initiate a connect request by passing a username and password along with a connect identifier in a connect string for the service to which they want to connect, for example:

```
SQL> CONNECT username/password@connect_identifier
```

control files

Files that record the physical structure of a database and contain the database name, the names and locations of associated databases and online **undo tablespace**, the time stamp of the database creation, the current log sequence number, and checkpoint information.

default domain

The network domain within which most client requests take place. It can be the domain where the client resides, or a domain from which the client often requests network services. The default domain is also the client configuration parameter that determines what domain to append to unqualified network name requests. A name request is unqualified if it does not have a "." character within it.

directory naming

A **naming method** that specifies a directory server to resolve a net service name into a connect descriptor. The net service name is stored centrally in a directory server.

directory server

A Lightweight Directory Access Protocol (LDAP)-compliant directory server. A directory can provide centralized storage and retrieval of database network components, user and corporate policies preferences, user authentication, and security information, replacing client-side and server-side localized files.

Enterprise Edition

The complete database installation type.

external procedures

A PL/SQL routine executing on an Oracle server can call an external procedure or function that is written in the C programming language and stored in a shared library. In order for the Oracle Database to connect to external procedures, the server must be configured with a net service name and the **listener** must be configured with protocol address and service information.

global database name

The full database name that uniquely distinguishes it from any other database in your network domain.

For example:

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

where `sales` is the name you want to call your database and `us.acme.com` is the network domain in which the database is located.

initialization parameter file

An ASCII text file that contains information needed to initialize a database and **instance**.

instance

Every running Oracle Database is associated with an Oracle Database instance. When a database is started on a database server (regardless of the type of computer), Oracle Database allocates a memory area called the **System Global Area** and starts one or more Oracle Database processes. This combination of the System Global Area and Oracle Database processes is called an instance. The memory and processes of an instance manage the associated database's data efficiently and serve the users of the database.

installation type

An installation type is a predefined component set that automatically selects which components to install. See "Oracle Database Installation Types" on page 1-5 for a list of installation types available with each top-level component.

Interprocess Communication (IPC)

A protocol used by client applications that resides on the same node as the **listener** to communicate with the database. IPC can provide a faster local connection than TCP/IP.

listener

A process that resides on the server and whose responsibility is to listen for incoming client connection requests and manage the traffic to the server.

When a client requests a network session with a database server, a listener receives the actual request. If the client information matches the listener information, then the listener grants a connection to the database server.

listener.ora file

A configuration file for the listener that identifies the:

- Listener name
- Protocol addresses on which it is accepting connection requests
- Services for which it is listening

The `listener.ora` file resides in the *ORACLE_BASE*`\`*ORACLE_HOME*`\network\admin` directory.

An Oracle Database 10*g* release 1 (10.1) does not require identification of the database service because of service registration. However, static service configuration is required for an Oracle Database 10*g* release 1 (10.1) if you plan to use Oracle Enterprise Manager.

local naming

A **naming method** that resolves a net service name into a connect descriptor. This name is configured and stored in the **tnsnames.ora file** on each individual client.

manual undo management mode

A mode of the database in which undo blocks are stored in user-managed rollback segments.

naming method

A resolution method used by a client application to resolve a connect identifier to a network address when attempting to connect to a database service. Oracle Net Services supports the following naming methods:

- Local naming
- Directory naming
- Host naming
- External naming

net service name

A simple name for a service that resolves to a connect descriptor. Users initiate a connect request by passing a username and password along with a net service name in a connect string for the service to which they want to connect:

```
SQL> CONNECT username/password@net_service_name
```

Depending on your needs, net service names can be stored in a variety of places, including:

- Local configuration file, `tnsnames.ora`, on each client
- Directory server
- External naming service, such as Network Information Service (NIS) or Cell Directory Service (CDS)

operating system authenticated connections

Windows login credentials can be used to authenticate users connecting to an Oracle Database. The benefits of Windows native authentication include:

- Enabling users to connect to multiple Oracle Databases without supplying a username or password
- Centralizing Oracle Database user authorization information in Windows, which frees Oracle database from storing or managing user passwords

OPS$

The initialization file parameter `OS_AUTHENT_PREFIX` enables users to specify a prefix that Oracle uses to authenticate users attempting to connect to the database. Oracle concatenates the value of this parameter to the beginning of the user's operating system account name and password. When a connection request is attempted, Oracle compares the prefixed username with Oracle usernames in the database.

The default value of this parameter is `""` (a null string), thereby eliminating the addition of any prefix to operating system account names. In earlier releases, `OPS$` (short for operating system specific) was the default setting.

ORACLE_BASE

ORACLE_BASE is the root of the Oracle Database directory tree. If you install an OFA-compliant database using Oracle Universal Installer defaults, then *ORACLE_BASE* is *X*`:\oracle\product\10.1.0` where *X* is any hard drive (for example, `C:\oracle\product\10.1.0`).

ORACLE_HOME

Corresponds to the environment in which Oracle Database products run. This environment includes location of installed product files, `PATH` variable pointing to products' binary files, **registry** entries, **net service name**, and program groups.

If you install an OFA-compliant database, using Oracle Universal Installer defaults, Oracle home (known as *\ORACLE_HOME* in this guide) is located beneath *X*`:\`*ORACLE_BASE*. The default Oracle home is `db_`*n* where *n* is the Oracle home number. It contains subdirectories for Oracle Database software executables and network files.

Oracle Context

The root of a directory subtree with a relative distinguished name of `cn=OracleContext`, under which all Oracle software information is kept. There may be one (or more than one) Oracle Context in a directory. An Oracle Context can be associated with a directory naming context.

The Oracle Context can contain the following Oracle entries:

- Connect identifiers for use with Oracle Net Services directory naming to make database connections
- Enterprise user security for use with Oracle Advanced Security

Oracle home

The directory path in which to install Oracle components (for example, `D:\oracle\product\10.1.0\db_`*n*). You are prompted to enter an Oracle home in the Path field of the Specify File Locations screen.

Oracle home name

The name of the current Oracle home. Each Oracle home has a home name that distinguishes it from all other Oracle homes on your computer. During installation, you are prompted to enter an Oracle home name in the Name field on the Specify File Locations screen.

Oracle schema

A set of rules that determine what can be stored in an LDAP-compliant directory server. Oracle has its own schema that is applied to many types of Oracle entries, including Oracle Net Services entries. The Oracle schema for Oracle Net Services entries includes the attributes the entries may contain.

Oracle Documentation Library

The media in your kit that includes the Oracle Database documentation. The Oracle Documentation Library is separate from the installation media.

The Oracle Documentation Library does not include this installation guide or *Oracle Database Release Notes for Windows*. These documents are included on the CD labeled Oracle Database 10*g* Release 1 (10.1) Disk 1 of 1 and are available on OTN.

Oracle Net foundation layer

A networking communication layer that is responsible for establishing and maintaining the connection between the client application and server, as well as exchanging messages between them.

protocol address

An address that identifies the network address of a network object.

When a connection is made, the client and the receiver of the request, such as the **listener**, or Oracle Connection Manager, are configured with identical protocol addresses. The client uses this address to send the connection request to a particular network object location, and the recipient "listens" for requests on this address. It is important to install the same protocols for the client and the connection recipient, as well as configure the same addresses.

raw partitions

Portions of a physical disk that are accessed at the lowest possible disk (block) level.

redo log files

Files that contain a record of all changes made to data in the database buffer cache. If an instance failure occurs, then the redo log files are used to recover the modified data that was in memory.

registry

A Windows repository that stores configuration information for a computer.

repository

A set of tables located in any Oracle database accessible to the Oracle Management Server. Oracle Management Server uses a repository to store all system data and application data, information about the state of managed nodes distributed throughout the environment, as well as information about the separately licensable management packs.

service registration

A feature by which the PMON process (an instance background process) automatically registers information with a **listener**. Because this information is registered with the listener, the **listener.ora file** does not need to be configured with this static information.

Service registration provides the listener with the following information:

- Service name(s) for each running instance of the database
- Instance name(s) of the database
- Service handlers (dispatchers and dedicated servers) available for each instance

  This allows the listener to direct a client's request appropriately.
- Dispatcher, instance, and node load information

  This allows the listener to determine which dispatcher can best handle a client connection's request. If all dispatchers are blocked, the listener can spawn a dedicated server for the connection.

This information allows the listener to determine how best to service a client connection request.

SID

The Oracle system identifier that distinguishes the database from all other database on your computer. The SID automatically defaults to the database name portion of the global database name (`sales` in the example `sales.us.acme.com`) until you reach eight characters or enter a period. You can accept or change the default value.

sqlnet.ora file

A configuration file for the client or server that specifies the:

- Client domain to append to unqualified service names or net service names
- Order of naming methods for the client to use when resolving a name
- Logging and tracing features to use
- Route of connections
- External naming parameters
- Oracle Advanced Security parameters

The `sqlnet.ora` file resides in *`ORACLE_BASE`*`\`*`ORACLE_HOME`*`\network\admin`.

System Global Area

A group of shared memory structures that contain data and control information for an Oracle Database **instance**.

system identifier

See **SID**.

tablespace

A database is divided into one or more logical storage units called tablespaces. Tablespaces are divided into logical units of storage called segments, which are further divided into extents.

Terminal Server

Microsoft Windows Terminal Server is a Windows thin-client terminal server, a product that adds support for multiple, simultaneous client sessions on the Windows NT Server. Windows Terminal Server provides an operating system graphical user interface (GUI) to users of Oracle databases.

tnsnames.ora file

A configuration file that contains net service names mapped to connect descriptors. This file is used for the local naming method. The `tnsnames.ora` file resides in *`ORACLE_BASE`*`\`*`ORACLE_HOME`*`\network\admin`.

UNC

See **Universal Naming Convention (UNC)**

undo tablespace

An undo tablespace contains one or more undo segments. The creation of any other types of segment (for example, tables, indexes) in undo tablespaces is not allowed.

In the automatic mode, each Oracle instance is assigned one and only one undo tablespace. Each undo tablespace is composed of a set of undo files. Undo blocks are grouped in extents. At any point in time, an extent is either allocated to (and used by) a transaction table, or is free.

Blocks in undo tablespaces are grouped into the following categories:

- File control blocks, bitmap blocks, and so forth used for space management
- Undo segments containing transaction table blocks, undo blocks, and extent-map blocks used for transaction management
- Free blocks that are unallocated to file control or undo segments

unqualified name

A net service name that does not contain a network domain.

Universal Naming Convention (UNC)

The Universal Naming Convention provides a means to access files on a network without mapping the network drive to a drive letter. UNC names are constructed in the following manner:

`\\`*`computer name\share name\filename`*

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