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Send Us Your Comments

Oracle Database Installation Guide 10g Release 1 (10.1.0.2.0) for Windows
Part No. B10130-02

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
- FAX: (650) 506-7357.   Attn: Oracle Database for Windows Documentation
- Postal service:
  Oracle Corporation
  Oracle Database for Windows Documentation Manager
  500 Oracle Parkway, Mailstop 1op4
  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.
This guide provides instructions on installing and configuring 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:

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

Audience

*Oracle Database Installation Guide for Windows* is intended for anyone installing an Oracle Database on a single computer. Additional Installation Guides for Oracle Database Client, Oracle Real Application Clusters and Cluster Ready Services (CRS), Oracle Transparent Gateway for DRDA, Oracle Procedural Gateway for APPC, 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

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.

Accessibility of Links to External Web Sites in Documentation
This documentation may contain links to Web sites of other companies or organizations that Oracle does not own or control. Oracle neither evaluates nor makes any representations regarding the accessibility of these Web sites.

Structure

This document contains:

**Chapter 1, "Oracle Database Installation Overview"**
Introduces you to Oracle Database and Oracle Universal Installer and 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 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 how to install and configure Java Access Bridge, which enables the use of a screen reader with Oracle Database components.

**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, "Managing Oracle Database 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.

<table>
<thead>
<tr>
<th>Convention</th>
<th>Meaning</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bold</strong></td>
<td>Bold typeface indicates terms that are</td>
<td>When you specify this clause, you create an index-organized table.</td>
</tr>
<tr>
<td></td>
<td>defined in the text or terms that appear in</td>
<td></td>
</tr>
<tr>
<td></td>
<td>a glossary, or both.</td>
<td></td>
</tr>
<tr>
<td><em>Italics</em></td>
<td>Italic typeface indicates book titles or</td>
<td>Oracle Database Concepts</td>
</tr>
<tr>
<td></td>
<td>emphasis.</td>
<td></td>
</tr>
<tr>
<td><strong>UPPERCASE</strong></td>
<td>Uppercase monospace typeface indicates</td>
<td>You can specify this clause only for a NUMBER column.</td>
</tr>
<tr>
<td>monospace</td>
<td>elements supplied by the system. Such</td>
<td>You can back up the database by using the BACKUP command.</td>
</tr>
<tr>
<td>(fixed-width) font</td>
<td>elements include parameters, privileges,</td>
<td>Query the TABLE_NAME column in the USER_TABLES data dictionary view.</td>
</tr>
<tr>
<td></td>
<td>datatypes, Oracle Recovery Manager</td>
<td></td>
</tr>
<tr>
<td></td>
<td>keywords, SQL keywords, SQL*Plus or</td>
<td></td>
</tr>
<tr>
<td></td>
<td>utility commands, packages and methods,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>as well as system-supplied column names,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>database objects and structures,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>usernames, and roles.</td>
<td></td>
</tr>
<tr>
<td><strong>lowercase</strong></td>
<td>Lowercase monospace typeface indicates</td>
<td>Enter sqlplus to start SQL*Plus.</td>
</tr>
<tr>
<td>monospace</td>
<td>executable programs, filenames, directory</td>
<td>The password is specified in the orapwd file.</td>
</tr>
<tr>
<td>(fixed-width) font</td>
<td>names, and sample user-supplied elements.</td>
<td>Back up the datafiles and control files in the /disk1/oracle/dbs</td>
</tr>
<tr>
<td></td>
<td>Such elements include computer and</td>
<td></td>
</tr>
<tr>
<td></td>
<td>database names, net service names and</td>
<td></td>
</tr>
<tr>
<td></td>
<td>connect identifiers, user-supplied</td>
<td></td>
</tr>
<tr>
<td></td>
<td>database objects and structures, column</td>
<td></td>
</tr>
<tr>
<td></td>
<td>names, packages and classes, usernames</td>
<td></td>
</tr>
<tr>
<td></td>
<td>and roles, program units, and parameter</td>
<td></td>
</tr>
<tr>
<td></td>
<td>values.</td>
<td></td>
</tr>
<tr>
<td>Note:</td>
<td>Some programmatic elements use a mixture</td>
<td></td>
</tr>
<tr>
<td></td>
<td>of UPPERCASE and lowercase. Enter these</td>
<td></td>
</tr>
<tr>
<td></td>
<td>elements as shown.</td>
<td></td>
</tr>
<tr>
<td><strong>lowercase</strong></td>
<td>Lowercase italic monospace font represents</td>
<td>You can specify the parallel_clause.</td>
</tr>
<tr>
<td>italic</td>
<td>placeholders or variables.</td>
<td>Run old_release.SQL where old_release refers to the release you installed prior to upgrading.</td>
</tr>
<tr>
<td>monospace</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(fixed-width) font</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>Convention</th>
<th>Meaning</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>[ ]</td>
<td>Anything enclosed in brackets is optional.</td>
<td>DECIMAL (digits [ , precision ])</td>
</tr>
<tr>
<td>{ }</td>
<td>Braces are used for grouping items.</td>
<td>{ENABLE</td>
</tr>
<tr>
<td></td>
<td>A vertical bar represents a choice of two options.</td>
<td>{ENABLE</td>
</tr>
<tr>
<td></td>
<td>... Ellipsis points mean repetition in syntax descriptions.</td>
<td>CREATE TABLE ... AS subquery;</td>
</tr>
<tr>
<td>...</td>
<td>In addition, ellipsis points can mean an omission in code examples or text.</td>
<td>SELECT col1, col2, ... , coln FROM employees;</td>
</tr>
<tr>
<td>Other symbols</td>
<td>You must use symbols other than brackets ([ ]), braces ({ }), vertical bars (</td>
<td>), and ellipsis points (...) exactly as shown.</td>
</tr>
<tr>
<td>Italicized text indicates placeholders or variables for which you must supply particular values.</td>
<td>CONNECT SYSTEM/system_password DB_NAME = database_name</td>
<td></td>
</tr>
<tr>
<td>UPPERCASE</td>
<td>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. Because these terms are not case sensitive, you can use them in either UPPERCASE or lowercase.</td>
<td>SELECT last_name, employee_id FROM employees; SELECT * FROM USER_TABLES; DROP TABLE hr.employees;</td>
</tr>
<tr>
<td>lowercase</td>
<td>Lowercase typeface indicates user-defined programmatic elements, such as names of tables, columns, or files.</td>
<td>SELECT last_name, employee_id FROM employees; sqlplus hr/hr CREATE USER mjones IDENTIFIED BY ty3MU9;</td>
</tr>
</tbody>
</table>

**Note:** Some programmatic elements use a mixture of UPPERCASE and lowercase. Enter these elements as shown.

---

**Conventions for Windows Operating Systems**

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

<table>
<thead>
<tr>
<th>Convention</th>
<th>Meaning</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>From the Start menu, select menu_item</td>
<td>How to start a program.</td>
<td>From the Start menu, select Programs, then Oracle - HOME_NAME, then Configuration and Management Tools, then Database Configuration Assistant.</td>
</tr>
<tr>
<td>File and directory names</td>
<td>File and directory names are not case sensitive. The following special characters are not allowed: left angle bracket (&lt;), right angle bracket (&gt;), colon (:), double quotation marks (&quot;), slash (/), pipe (</td>
<td>), 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.</td>
</tr>
</tbody>
</table>
### Convention | Meaning | Example
--- | --- | ---
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.

### 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.

### ORACLE_HOME and ORACLE_BASE
- In releases prior to Oracle8i 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 Optimal Flexible Architecture conventions.

Refer to Appendix B, "Optimal Flexible Architecture" for additional information about Optimal Flexible Architecture compliances and for information about installing Oracle products in non-Optimal Flexible Architecture compliant directories.
What's New in Oracle Database for Windows?

This chapter describes new features of Oracle Database 10g release 1 (10.1) for Windows and provides pointers to additional information. It also retains new features information from previous releases to help those users migrating to the current release.

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 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 10g Release 1 (10.1) New Features for Windows

This section contains these topics:

- Automatic Storage Management
- Database Password Encryption
- Data Pump Import and Data Pump 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 Scheduler
- Oracle Services for Microsoft Transaction Server
- Components Requiring Separate Installations
Renamed Components

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

See Also: Oracle Database Administrator’s Guide for more information
on Automatic Storage Management

Database Password Encryption
When a user attempts a remote login to an Oracle Database 10g 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 Data Pump Export
Two new utilities, Data Pump Import and Data Pump Export, offer faster transfer of
files to and from Oracle databases. The previous 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
- Oracle Database Client Installation Guide for Windows

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 now can make more efficient use of
processor memory addressing resources.

See Also: "Large Page Support for 64-Bit Windows" in Oracle
Database Platform Guide for Windows

Oracle Data Provider for .NET
Oracle Data Provider for .NET (ODP.NET) 10g release 1 (10.1) includes the following
new features:
- Support for Oracle grids
  Oracle Data Provider for .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
Oracle Data Provider for .NET supports the new database native types `BINARY_FLOAT` and `BINARY_DOUBLE`.

Support for multiple Oracle homes
You can install Oracle Data Provider for .NET in multiple Oracle homes. In order to make multiple homes available, some of the Oracle Data Provider for .NET files include a version number, and the use of a `HOMEID` is required.

Support for schema-based `XMLType` in the database
Oracle Data Provider for .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. Instead, use Oracle Universal Installer, which has functionality similar to Oracle Home Selector.

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

- Support for Oracle grids
  Oracle Objects for OLE 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 10g release 1 (10.1) now provides support for the `BINARY_DOUBLE` and `BINARY_FLOAT` datatypes. You can fetch instances of these types from the database or passed them as input or output variables to SQL statements and PL/SQL blocks, including stored procedures and functions.

- Support for multiple Oracle homes
  You can install Oracle Objects for OLE in multiple Oracle homes, starting with 10g 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, you must use a `HOMEID`. Also, some of the Oracle Objects for OLE files include a version number.

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

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

- 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 10g release 1 (10.1):
  - BINARY_DOUBLE
  - BINARY_FLOAT

- Support for multiple Oracle homes
  
  You can install Oracle Provider for OLE DB in multiple Oracle homes, starting with 10g 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 HOMEID is required.

See Also: Oracle Provider for OLE DB Developer’s Guide

Oracle Scheduler

This release includes a new database scheduler, Oracle Scheduler, to provide enterprise scheduling functionality. You can use the OracleJobScheduler service to start external jobs. 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 then 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 Services for Microsoft Transaction Server

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

Components Requiring Separate Installations

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

See Also: "Additional Software Installations” on page 1-10
Renamed Components

The following components were renamed in this release:

<table>
<thead>
<tr>
<th>Previous Name</th>
<th>New Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oracle Windows Performance Monitor</td>
<td>Oracle Counters for Windows Performance Monitor</td>
</tr>
<tr>
<td>Oracle Administration Assistant for Windows NT</td>
<td>Oracle Administration Assistant for Windows</td>
</tr>
<tr>
<td>Oracle Demos</td>
<td>Oracle Examples</td>
</tr>
</tbody>
</table>

Oracle Database 10g Release 1 (10.1) Deprecated Components

The following Oracle Database 10g release 1 (10.1) components that were part of Oracle9i release 2 (9.2.0) are not available for installation with Oracle Database 10g release 1 (10.1):

- INTYPE File Assistant (IFA)
- Migration Utility
- Oracle Names
- Oracle Trace
  - Use SQL Trace and TKPROF in place of Oracle Traces
- Pro*C GUI
- Pro*COBOL 1.8.77

Oracle9i 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:

- Support for validating pool connections
  Oracle Data Provider for .NET has a new connection string, validate connection. Set validate connection to true to validate connections that come from the connection pool. By default, validate connection is set to false.
  
  Note that validation causes a round trip to the database for each connection coming from the connection pool, which can be very expensive in terms of performance. Therefore, use the validate connection attribute only when absolutely necessary.

- XML support in Oracle Data Provider for .NET.
  With XML support, Oracle Data Provider for .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 Oracle9i release 1 (9.0.1):
  - TIMESTAMP
  - TIMESTAMP WITH TIME ZONE
  - TIMESTAMP WITH LOCAL TIME ZONE
  - INTERVAL YEAR TO MONTH
  - INTERVAL DAY TO SECOND
Oracle Database Installation Overview

This chapter describes the different installation types of Oracle Database for Windows, and issues to consider before you install Oracle Database.

This chapter contains these topics:

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

Installation FAQ for Oracle Database Components

Use the following guidelines to decide how to install Oracle Database components:

- Installing Oracle Database or Oracle Database Client
- Installing Oracle Database Tools
- Installing Oracle Database with Oracle Applications
- Installing Oracle Database Connectivity Tools for Other Database Components

Installing Oracle Database or Oracle Database Client

I only need one instance of Oracle Database or I just want to install a test database to get familiar with the product.

- If you want a quick installation using a default installation, use Oracle Database Quick Installation Guide
- If your site has special requirements, use Oracle Database Installation Guide.
My site needs a database designed for transaction-heavy or data warehousing applications.
Use Oracle Database Installation Guide and select the Advanced Installation method if you want to create starter databases designed for these types of applications. After the installation, if you have data warehousing applications, see Oracle Data Warehousing Guide.

I need to install multiple Oracle databases.
Use Oracle Database Installation Guide and consider running Oracle Universal Installer in noninteractive mode. This method allows you to run Oracle Universal Installer at a command line using a response file that contains settings specific to each computer.

My site requires client connections to the Oracle database.
1. Install Oracle Database onto your server by using Oracle Database Installation Guide.
2. Use Oracle Database Client Installation Guide to install Oracle Database Client on each client node.
   If you have many client nodes, consider staging the software centrally, mapping the drive, and running Oracle Universal Installer in noninteractive mode.
   If your client nodes only require a default installation into a new Oracle home directory, consider using Oracle Database Client Quick Installation Guide.

My Oracle Database client nodes have limited disk space.
1. Install Oracle Database onto your server by using Oracle Database Installation Guide.
2. Use Oracle Database Client Installation Guide or Oracle Database Client Quick Installation Guide to install Oracle Database Client on each client node, and select the Instant Client installation type.
   If you have many client nodes, consider running Oracle Universal Installer in noninteractive mode.

I need to upgrade my Oracle Database.
See Oracle Database Upgrade Guide.

The computers on my site have been configured to run as a cluster. How should I install Oracle Database?
Use Oracle Real Application Clusters Installation and Configuration Guide to install Oracle Real Applications Clusters. The installation process includes installing Cluster Ready Services clusterware and Oracle Database.

If you are installing the Standard Edition onto Windows and only need to install Oracle Real Applications Clusters on a two-node cluster, consider using Oracle Real Application Clusters Quick Installation Guide for Oracle Database Standard Edition on Windows.

Installing Oracle Database Tools

I need to install Oracle Application Server.
See Oracle Application Server Installation Guide. How you install Application Server depends on whether you already have Oracle Database installed:

- If you do not have Oracle Database installed or you do not want Oracle Application Server to use any of your existing Oracle Databases, the Oracle
Universal Installer lets you install Oracle Application Server with its own Oracle Database. This database is populated with the metadata that Oracle Application Server needs in order to run.

- If you want Oracle Application Server to use an existing Oracle Database, do the following:
  1. From the Oracle Application Server installation media, run Oracle Application Server Repository Creation Assistant to populate your database with the metadata that Application Server needs.
  2. Install the remaining Oracle Application Server components by following the instructions in the Oracle Application Server Installation Guide.

I need to administer and monitor my Oracle Database products.
To perform regular administrative functions such as creating, configuring, or deleting databases, or managing database templates, use one of the following methods:

To manage only the single database and listener that you are installing:
  1. Use Oracle Database Installation Guide to install Oracle Database.
  2. From Oracle Database, use Database Configuration Assistant to manage your databases. You can also use Oracle Enterprise Manager Grid Control, which is installed by default with Oracle Database,

To perform advanced administration tasks, such as monitoring Oracle Database and managing multiple hosts, application servers, and databases including the one that you are installing, install Oracle Enterprise Manager as follows:
  1. Use Oracle Database Installation Guide to install Oracle Database.
     If you plan to use Oracle Real Application Clusters, install Oracle Database by using Oracle Real Application Clusters Installation and Configuration Guide.
  2. Use Oracle Enterprise Manager Grid Control Installation and Basic Configuration to install and configure Oracle Enterprise Manager. For postconfiguration tasks, use Oracle Enterprise Manager Advanced Configuration.

Installing Oracle Database with Oracle Applications

How do I install my Oracle applications with Oracle Database?
In most cases, install Oracle Database itself, then install the Oracle application. The Oracle Universal Installer for that application prompts you for the connection information. Check the application documentation requirements.

If you need to implement your applications with Oracle Real Applications Clusters databases, see Oracle Real Application Clusters Deployment and Performance Guide.

I need to create Web applications that communicate with Oracle Database.
Install Oracle HTML DB and Oracle HTTP Server:
  1. Use Oracle Database Installation Guide to install Oracle Database.
  2. Use Oracle Database Companion CD Installation Guide to install Oracle HTML DB and Oracle HTTP Server.

  If you only need to install Oracle HTML DB and Oracle HTTP Server using the default settings into a new Oracle home, consider using Oracle Database Companion CD Quick Installation Guide.
I need to automate and streamline my processes for both traditional applications-based workflow as well as e-business integration workflow.

Install Oracle Workflow:

1. Use Oracle Database Installation Guide to install Oracle Database.
2. Use Oracle Workflow Installation Notes for Oracle Database, Release 2.6.3 to install Oracle Workflow.

My Oracle applications need a Web Server.

Install Oracle HTTP Server:

1. Use Oracle Database Installation Guide to install Oracle Database.
2. Use Oracle Database Companion CD Installation Guide to install Oracle HTTP Server.

Installing Oracle Database Connectivity Tools for Other Database Components

My Oracle applications need to connect to my APPC-enabled systems (including IBM mainframe data and services).


My distributed Oracle applications need to communicate with each other using the IBM MQSeries message queuing system.


My Oracle applications need to connect to IBM DRDA (Distributed Relational Database Architecture) databases.

For Windows, use Oracle Transparent Gateway for DRDA Installation and User’s Guide for Microsoft Windows to install Oracle Transparent Gateway for DRDA. For UNIX systems, use Oracle Database Transparent Gateway for DRDA Installation and User’s Guide for UNIX.

My Oracle applications need to access data from Sybase databases.

Use Oracle Database Installation Guide to install Oracle Transparent Gateway for Sybase. When you run Oracle Universal Installer, choose Advanced Installation, then the Custom installation type. After the installation, refer to the Oracle Transparent Gateway for Sybase Administrator’s Guide for more information on using this driver.

My Oracle applications need to access Microsoft SQL Server databases.

Use Oracle Database Installation Guide to install Oracle Transparent Gateway for Microsoft SQL Server. When you run Oracle Universal Installer, choose Advanced Installation, then the Custom installation type. After the installation, refer to the Oracle Transparent Gateway for Microsoft SQL Server Administrator’s Guide for more information on using this driver.

My Oracle applications need to access data in Teradata databases.

Use Oracle Database Installation Guide to install Oracle Transparent Gateway for Teradata. When you run Oracle Universal Installer, choose Advanced Installation, then the Custom installation type. After the installation, refer to the Oracle Transparent Gateway for Teradata Administrator’s Guide for more information on using this driver.
My Oracle applications need to access data from iWay Server databases. Use Oracle Transparent Gateway for iWay Installation and User's Guide for IBM zOS (OS/390) to install Oracle Transparent Gateway for iWay.

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 Oracle Database.

3. **Installing software**: Use the following sections to install Oracle Database:
   - Chapter 3 describes how to use Oracle Universal Installer (OUI) to install Oracle Database.
   - Appendix C describes advanced installation topics: performing noninteractive (silent) installations, which you may want to use if you need to perform multiple installations of Oracle Database. This appendix also covers how to install and use Oracle components in different languages.
   - Appendix A describes how to install Java Access Bridge, which enables a screen reader with Oracle components.
   - Appendix F provides troubleshooting advice in case you encounter problems with the installation.
   - Chapter 6 describes how to remove Oracle Database.

4. **Completing postinstallation tasks**: Chapter 4 describes 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. You may also want to read Appendix B on the Optimal Flexible Architecture, which is a set of guidelines that ensure reliable Oracle installations that require little maintenance. Appendix D describes globalization support information, and Appendix E explains how to manage Oracle Database port numbers.

Oracle Database Installation Types

You can choose one of the following installation types when installing Oracle Database 10g:

- **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.
Oracle Database Installation Methods

- **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:** Oracle9i 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

Oracle Database Installation Methods

There are two methods that you can use to install Oracle Database:

- **Basic:** Select this 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. It is the default installation method.

- **Advanced:** Select this installation method if you want to complete any of the following tasks:
  - Perform a custom software installation, in which you choose components individually, or choose a different database configuration
    
    The Available Product Components installation screen automatically selects the components most customers need in their Oracle Database installation. It also lists several components that are not selected by default, but which you may want to include. To find the listing of available components, select **Advanced**, and then in the Installation Type screen, select **Custom**.

    **See Also:** "Reviewing Component-Specific Installation Guidelines" on page 3-3

    - Install Oracle Real Application Clusters
    - Upgrade an existing database
    - Select a database character set or different product languages
    - Create the EXAMPLE tablespace during the installation
    - Create a database on a different file system from the software
– Configure Automatic Storage Management (ASM) or use raw devices for database storage
– Specify different passwords for administrative schemas
– Configure automated backups or Oracle Enterprise Manager notifications

**Installation Considerations**

This section provides information about Oracle Universal Installer and other concepts you should be aware of when you plan the 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:

- Start-up and shutdown services
  
  In UNIX, administrators are responsible for creating start-up and shutdown services. On Windows, Oracle Universal Installer creates and sets these services at installation time.

- Environment variables
  
  In UNIX operating system installations, you must manually set environment variables such as `PATH`, `ORACLE_BASE`, `ORACLE_HOME`, and `ORACLE_SID`. In Windows operating system installations, Oracle Universal Installer sets them in the registry.

- DBA account for database administrators
  
  In UNIX operating system installations, you must create this account 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, you must create this account manually. In Windows operating system installations, you 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 Automatic Storage Management as a storage mechanism for database files. Because it must be running before any Automatic Storage Management instance or database instance starts, Oracle Universal Installer configures it 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 Automatic Storage Management for database file storage, Oracle recommends that you run the CSS service and the Automatic Storage Management instance from the same Oracle home directory and use different Oracle home directories for the database instances.

**See Also:**
- "Running Oracle Cluster Synchronization Services (CSS) from a Different Oracle Home" on page 4-4
- "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 can run 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. See the "Installing Oracle Components in Noninteractive Mode" section on page C-1 for more information.

You cannot use the earlier Oracle Installer (shipped with releases 7.x and 8.0.x) to install components into an Oracle Database 10g release 1 (10.1) Oracle home directory. Likewise, you cannot install 10g 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 OracleMetaLink. Visit the following site to find Oracle patches to download:

http://metalink.oracle.com/

When Oracle Universal Installer runs, it creates an OraHome_n directory, which keeps track of the components you are installing. Do not modify the contents of this directory. By default, this directory is located in on the same directory level as ORACLE_BASE\ORACLE_HOME.

See Also:
- Appendix C, “Oracle Database Advanced Installation Topics”
- Oracle Universal Installer Concepts Guide

Oracle Base Directory

If you install Oracle Database 10g release 1 (10.1) on a computer with no other Oracle software installed, 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. You can set the ORACLE_BASE environment directory to point to this directory, which Oracle Universal Installer will recognize.

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 10g release 1 (10.1), you can install all Oracle components 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

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

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**Multiple Oracle Home Support**

Oracle Database 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 10g release 1 (10.1) software into an existing Oracle9i 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.

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**Additional Software Installations**

The following components require separate installations. These components are not available from the Oracle Database 10g Release 1 (10.1) installation media:

- Cluster Ready Services
- Oracle Database Client
- Oracle Database Companion CD Components
- Oracle HTTP Server
- Oracle Database Examples
- Oracle Enterprise Manager Grid Control Framework
- Oracle Migration Workbench
- Oracle Internet Directory Client Tools
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, Cluster Ready Services restarts the service on the next available instance that you have configured for that service.

You must install Cluster Ready Services 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 Client software is available on the Oracle Client installation media.

See Also: Oracle Database Client Installation Guide for Windows for more details
This guide is available on the Oracle 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 HTTP Server

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 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 Migration Workbench
Oracle Migration Workbench software and documentation are available at http://otn.oracle.com/tech/migration/

Oracle Internet Directory Client Tools
The Oracle Internet Directory client tools, but not the Oracle Internet Directory server components, are available with this release of Oracle Database. If you want to install the Oracle Internet Directory server components, run Oracle Universal Installer from an Oracle 10g Application Server installation.

The Oracle Internet Directory client tools are the LDAP command-line tools, the Oracle Internet Directory SDK, and Oracle Directory Manager. The Oracle Internet Directory server components include the directory server, the directory replication server, the directory integration server, and various tools for starting and stopping them.

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 (DBCA) 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:

- **Noninteractive mode**
  
  If you choose either the Enterprise Edition, Standard Edition, or Personal Edition installation type, and 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 as a background process, using the default settings for information not covered during the initial prompting session, 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 the Advanced database configuration option, 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 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), Automatic Storage Management provides you with a flexible storage solution that simplifies the management of a dynamic database environment. Automatic Storage Management makes most manual I/O performance tuning tasks unnecessary.

Automatic Storage Management (ASM) is supported on Windows 2000, Windows XP, and Windows Server 2003. Automatic Storage Management is not supported on Windows NT.

To use Automatic Storage Management for database storage, you must create one or more ASM disk groups. A disk group is a set of disk devices that Automatic Storage Management manages as a single unit. Automatic Storage Management 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:

<table>
<thead>
<tr>
<th>Redundancy Level</th>
<th>Mirroring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>Two-way mirroring</td>
</tr>
<tr>
<td>High</td>
<td>Three-way mirroring</td>
</tr>
<tr>
<td>External</td>
<td>No mirroring by Automatic Storage Management</td>
</tr>
</tbody>
</table>

In addition to the manageability, performance, and reliability benefits that Automatic Storage Management provides, it can increase database availability. You can add or remove disk devices from disk groups without shutting down the database. Automatic Storage Management 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 Automatic Storage Management instance. This instance must be running before you can start a database instance that uses Automatic Storage Management for storage management. If you
choose Automatic Storage Management 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 Automatic Storage Management
- *Oracle Database Administrator’s Guide* for a more detailed description of Automatic Storage Management

**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 Automatic Storage Management 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 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 Enterprise Management Agent on every computer that you want to manage. You then can use a single HTML 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 10g 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. 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 10g Grid Control.
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 Advanced database configuration option or choose to create a database during a Custom installation, Oracle Universal Installer runs Database Configuration Assistant (DBCA) in interactive mode. Use Database Configuration Assistant to specify the Oracle Enterprise Manager interface that you want to use to manage the database. Alternatively, you can choose not to configure the database with Enterprise Manager.

Oracle recommends that you configure the database to use Enterprise Manager during installation. However, if you choose not to configure the database to use Enterprise Manager during the installation, you can use Database Configuration Assistant after the installation to configure the database to use it.

Features Provided by Oracle Enterprise Manager Database Control
Oracle Enterprise Manager Database Control provides a Web-based user interface that you can use 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
- Automatic notification of security alerts
- Ability to apply patches
- Session and SQL-related performance information
- Space usage metrics

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

However, 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 Automatic Storage Management disk group for the flash recovery area. The default disk quota configured for the flash recovery area is 2 GB. For Automatic Storage Management 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 10g release 1 (10.1) into a new Oracle home directory. If you must install Oracle Database 10g release 1 (10.1) into an Oracle home directory that contains previously installed Oracle8i or Oracle9i 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 10g 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 10g release 1 (10.1), then Oracle recommends that you upgrade the client software to 10g 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 Clusters to 10g release 1 (10.1).

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

**Downgrading a Database**

Steps to downgrade a database, including steps to change the word size, are covered in *Oracle Database Upgrade Guide*. 
This chapter describes installation requirements for a 32-bit Windows installation of Oracle Database.

This chapter contains these topics:

- Oracle Database Hardware Requirements
- Oracle Database Software Requirements
- Oracle Database Hardware and Software Certification
- Oracle Database Network Topics
- Individual Component Requirements

**Oracle Database Hardware Requirements**

This section describes hardware component and hard disk space requirements.

- Hardware Component Requirements
- Hard Disk Space Requirements
- Verifying Hardware Requirements

**Hardware Component 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 2–1
- Temp disk space: 100 MB
- Video adapter: 256 color
- Processor: 200 MHz minimum
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 2–1 lists the space requirements for NTFS. The starter database requires 720 MB of disk space. The figures in this table include the starter database. FAT32 space requirements are slightly larger.

<table>
<thead>
<tr>
<th>Installation Type</th>
<th>System Drive</th>
<th>Oracle Home Drive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic Installation</td>
<td>100 MB</td>
<td>1.5 GB</td>
</tr>
<tr>
<td>Advanced Installation: Enterprise Edition</td>
<td>100 MB</td>
<td>1.5 GB</td>
</tr>
<tr>
<td>Advanced Installation: Standard Edition</td>
<td>100 MB</td>
<td>1.4 GB</td>
</tr>
<tr>
<td>Advanced Installation: Personal Edition</td>
<td>100 MB</td>
<td>1.5 GB</td>
</tr>
</tbody>
</table>

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.

See Also:
- "Oracle Transparent Gateway Requirements" on page 2-30 for additional requirements
- "Configuring Disk Storage for Oracle Datafiles and Recovery Files" on page 2-18
- "Creating Directories for Oracle Datafiles or Recovery Files" on page 2-19 for additional requirements
- "Configuring Disks for Automatic Storage Management" on page 2-21 for additional requirements
- "Configuring Raw Logical Volumes or Raw Partitions" on page 2-26 for additional requirements
- "Installing with Minimum Memory Requirements" on page 3-2

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

---

**Oracle Database Software Requirements**

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

**Table 2–2 Software Requirements**

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>System Architecture</td>
<td>32-bit</td>
</tr>
<tr>
<td></td>
<td>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.</td>
</tr>
<tr>
<td>Operating System</td>
<td>Oracle Database for Windows is supported on the following operating systems:</td>
</tr>
<tr>
<td></td>
<td>■ 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.</td>
</tr>
<tr>
<td></td>
<td>■ Windows 2000 with service pack 1 or higher. All editions, including Terminal Services and Windows 2000 MultiLanguage Edition (MLE), are supported.</td>
</tr>
<tr>
<td></td>
<td>■ Windows Server 2003</td>
</tr>
<tr>
<td></td>
<td>■ Windows XP Professional</td>
</tr>
</tbody>
</table>
Oracle Database 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/

You must register online before using Oracle MetaLink. After logging in, select Certify & Availability from the left-hand column. From the Product Lifecycle page, select the Certifications button. Other Product Lifecycle options include Product Availability, Desupport Notices, and Alerts.

The following sections list the following certification information:

- Windows Telnet Services Support

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### Table 2-2 (Cont.) Software Requirements

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compiler</td>
<td>ACUCOBOL-GT for Pro<em>COBOL compiler version 6.0.0 is supported. Pro</em>COBOL supports the Micro Focus Net Express compiler. Object Oriented COBOL (OOCOBOL) specifications are not supported. The following components are not supported with the Microsoft Visual C++ 6.0, Microsoft Visual C++ .NET 2002, and Microsoft Visual C++ .NET 2003 compilers:</td>
</tr>
<tr>
<td></td>
<td>Oracle C++ Call Interface</td>
</tr>
<tr>
<td></td>
<td>Oracle Call Interface</td>
</tr>
<tr>
<td></td>
<td>External callouts</td>
</tr>
<tr>
<td></td>
<td>PL/SQL native compilation</td>
</tr>
<tr>
<td></td>
<td>XDK</td>
</tr>
<tr>
<td>Network Protocol</td>
<td>The <strong>Oracle Net foundation layer</strong> uses Oracle protocol support to communicate with the following industry-standard network protocols:</td>
</tr>
<tr>
<td></td>
<td>TCP/IP</td>
</tr>
<tr>
<td></td>
<td>TCP/IP with SSL</td>
</tr>
<tr>
<td></td>
<td>Named Pipes</td>
</tr>
</tbody>
</table>

---

**See Also:**

- “Windows Support” on page 2-6
- "Windows Telnet Services Support" on page 2-5
- Windows Terminal Services and Remote Desktop Support on page 2-5
- 64-bit software and documentation on OTN

http://otn.oracle.com/documentation

Oracle Database 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/

You must register online before using Oracle MetaLink. After logging in, select Certify & Availability from the left-hand column. From the Product Lifecycle page, select the Certifications button. Other Product Lifecycle options include Product Availability, Desupport Notices, and Alerts.

The following sections list the following certification information:

- Windows Telnet 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 database command line utilities such as `sqlplus`, `sqlldr`, `import`, and `export` 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 and Remote Desktop Support

Oracle supports installing, configuring, and running Oracle Database through Terminal Services, on Windows 2000 Server, Windows XP Professional, and Windows Server 2003. If you encounter problems with the installation through Terminal Server, Oracle recommends that you try connecting to the Terminal Services console session of the server (using `mstsc/console`).

Platform-specific support information is as follows:

- **Windows 2000:** Oracle supports installing, configuring, and running Oracle Database from a remote Terminal Services Client.
- **Windows XP:** The Remote Desktop is only available in Single User Mode.
- **Windows Server 2003:** You can configure Windows Server 2003 to use Terminal Services in Remote Desktop for Administration Mode or Terminal Server Mode.

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

- Oracle Connection a 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
  

- The OracleMetaLink Web site for the latest Terminal Server certification information
  
Windows 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

Web Browser Support

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

- Netscape Navigator 7.0 and higher
- Microsoft Internet Explorer 5.5, 6.0, and higher with service pack 1
- Mozilla version 1.3.1 and higher

Oracle Database Network Topics

Typically, the computer on which you want to install Oracle Database is connected to the network, has local storage to contain the Oracle Database installation, has a display monitor, and has a CD-ROM or DVD-ROM drive.

This section describes how to install Oracle Database on computers that do not meet the typical scenario. It covers the following cases:

This section covers these topics:

- Installing on DHCP Computers
- Installing on Multihomed Computers
- Installing on Computers with Multiple Aliases
- Installing on Non-Networked Computers
- Installing a Loopback Adapter
Installing on DHCP Computers

Dynamic Host Configuration Protocol (DHCP) assigns dynamic IP addresses on a network. Dynamic addressing allows a computer to have a different IP address each time it connects to the network. In some cases, the IP address can change while the computer is still connected. You can have a mixture of static and dynamic IP addressing in a DHCP system.

In a DHCP setup, the software tracks IP addresses, which simplifies network administration. This lets you add a new computer to the network without having to manually assign that computer a unique IP address. However, before installing Oracle Database onto a computer that uses the DHCP protocol, you need to install a loopback adapter to assign a local IP address to that computer.

See also:
- "Checking if a Loopback Adapter Is Installed on Your Computer" on page 2-9
- "Installing a Loopback Adapter on Windows 2003 or Windows XP" on page 2-16

Installing on Multihomed Computers

If you are installing Oracle Database on a computer that has multiple network cards, Oracle Universal Installer uses the first name in the \etc\hosts file. You may need to re-order the lines in this file so the desired hostname appears first. You can change the file back to its original state after installation.

A multihomed computer is associated with multiple IP addresses. This is typically achieved by having multiple network cards on the computer. Each IP address is associated with a hostname; additionally, you can set up aliases for the hostname.

When you install Oracle Database on a multihomed computer, Oracle Universal Installer configures Oracle Database to use the hostname and IP address on the primary network adapter.

Clients must be able to access the computer using this hostname (or using aliases for this hostname). To check, ping the hostname from the client computers using the short name (hostname only) and the full name (hostname and domain name). Both must work.

You can determine the primary hostname and IP address by running the hostname and ipconfig commands. For example:

```
prompt> hostname
    test-pc2

prompt> ipconfig
Windows IP Configuration
Ethernet adapter Local Area Connection:
    Connection-specific DNS Suffix . : us.mycompany.com
    IP Address . . . . . . . . . . . . . . : 139.185.140.166
    Subnet Mask . . . . . . . . . . . . . : 255.255.255.0
    Default Gateway . . . . . . . . . . : 139.185.140.1

Ethernet adapter Wireless Network Connection:
    Media State . . . . . . . . . . . . : Media disconnected
```
If the primary adapter is not the one you want to use for Oracle Database, you need to make the network adapter that you want to use for Oracle Database to be the primary network adapter.

**See Also:** "Installing a Loopback Adapter" on page 2-9 for how Windows determines the primary adapter

### Installing on Computers with Multiple Aliases

A computer with multiple aliases is registered with the naming service under a single IP but with multiple aliases. The naming service resolves any of those aliases to the same computer.

Before installing Oracle Database on such a computer, you must:

- Install a loopback adapter on the computer.
- Make sure the loopback adapter is the primary network adapter.

The loopback adapter ensures that when Oracle Database queries for the hostname, it always gets the same name because the queries are run locally. Without the loopback adapter, the queries can return any of the aliases for the computer because the queries get the response from the naming service.

**See Also:** "Installing a Loopback Adapter" on page 2-9 for how Windows determines the primary adapter and how to install the loopback adapter

### Installing on Non-Networked Computers

You can install Oracle Database on a non-networked computer. If the computer, such as a laptop, is configured for DHCP and you plan to connect the computer to the network after the Oracle Database installation, perform these steps before you install Oracle Database on the non-networked computer.

1. Install a loopback adapter on the computer.

   The loopback adapter and local IP address simulate a networked computer. If you connect the computer to the network, Oracle Database still uses the local IP and hostname.

   **See Also:** "Installing a Loopback Adapter" on page 2-9

2. Ping the computer from itself, using only the hostname and using the fully qualified name, which should be in the `etc\host` file.

   For example, if you installed a loopback adapter on a computer called `mycomputer` on the `mydomain.com` domain, check the following:

   ```
   prompt> ping mycomputer
   Reply from 10.10.10.10
   prompt> ping mycomputer.mydomain.com
   Reply from 10.10.10.10
   ```

   **Note:** When you ping a computer from itself, the `ping` command should return the local IP (the IP of the loopback adapter).

   If `ping` fails, contact your network administrator.
Connecting the Computer to the Network after Installation

If you connect the computer to a network after installation, your Oracle Database instance on your computer can work with other instances on the network. Remember that you must have installed a loopback adapter on your computer. Your computer can use a static IP or DHCP, depending on the network to which you are connected.

Installing a Loopback Adapter

When you install a loopback adapter, the loopback adapter assigns a local IP for your computer. After you install a loopback adapter on your computer, you have at least two network adapters on your computer: your own network adapter and the loopback adapter. Oracle Database needs to have Windows using the loopback adapter as the primary adapter.

The primary adapter is determined by the order in which you installed the adapters:

- On Windows NT, the primary adapter is the first adapter installed. This means that you have to install the loopback adapter, deinstall your network adapter, and reinstall the network adapter.

- On Windows 2000, Windows Server 2003, and Windows XP, the primary adapter is the last adapter installed. If you install additional network adapters after you install the loopback adapter, you need to deinstall the loopback adapter and reinstall it.

A loopback adapter is required if:

- You are installing on a DHCP computer, or

  See Also: "Installing on DHCP Computers" on page 2-7

- You are installing on a non-networked computer and plan to connect the computer to a network after installation.

  See Also: "Installing on Non-Networked Computers" on page 2-8

The procedure for installing a loopback adapter depends on the version of Windows on which you plan to install Oracle Database:

- Checking if a Loopback Adapter Is Installed on Your Computer
- Installing a Loopback Adapter on Windows NT
- Installing a Loopback Adapter on Windows 2000
- Installing a Loopback Adapter on Windows 2003 or Windows XP
- Removing a Loopback Adapter from Windows NT
- Removing a Loopback Adapter from Windows 2000, 2003, or XP

Checking if a Loopback Adapter Is Installed on Your Computer

To check if a loopback adapter is installed on your computer, run the `ipconfig /all` command:

```prompt> ipconfig /all```

If there is a loopback adapter installed, you would see a section that lists the values for the loopback adapter. For example:

```
Ethernet adapter Local Area Connection 2:
```
Installing a Loopback Adapter on Windows NT

Installing a loopback adapter on Windows NT is more complicated than on other Windows platforms because Windows NT reports on the first network adapter installed. Since your DHCP computer already has a network adapter, you need to remove it and reinstall it later so that the loopback adapter becomes the first network adapter installed. This section describes how to do this in these subsections:

- "High-Level Steps" on page 2-10
- "Requirements" on page 2-10
- "Detailed Steps" on page 2-10

High-Level Steps

The high-level steps to install a loopback adapter on Windows NT are:

1. Collect information for the existing network adapter on your computer.
   
   You need to perform this step because you must remove the existing network adapter and reinstall it.

2. Install the loopback adapter.

3. Remove the existing network adapter.

4. Finish configuring the loopback adapter.

5. Restart the computer.

6. Reinstall the network adapter.

7. Restart the computer.

Requirements

To install a loopback adapter on Windows NT, you need the following items:

- Windows NT Installation CD-ROM, so you can install the loopback adapter.
- Drivers for your network adapters when you reinstall the network adapters.

Detailed Steps

1. Collect information for your existing network adapter so that you can reinstall it. Typically you need the following pieces of information:

   Table 2–3 Information for Your Existing Network Adapter

<table>
<thead>
<tr>
<th>Item</th>
<th>Where to Get Its Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>IP address</td>
<td>Network control panel, Adapter tab. Select the network adapter, then click Properties.</td>
</tr>
<tr>
<td>Subnet mask</td>
<td>Network control panel, Protocols tab. Select TCP/IP, then click Properties. In the Properties dialog, select the IP Address tab and click Advanced.</td>
</tr>
</tbody>
</table>
Table 2–3 (Cont.) Information for Your Existing Network Adapter

<table>
<thead>
<tr>
<th>Item</th>
<th>Where to Get Its Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>WINS Server address</td>
<td>Network control panel, Protocols tab. Select TCP/IP, then click Properties. In the Properties dialog, select the WINS Address tab.</td>
</tr>
<tr>
<td>DNS Server address</td>
<td>Network control panel, Protocols tab. Select TCP/IP, then click Properties. In the Properties dialog, select the DNS tab.</td>
</tr>
</tbody>
</table>

2. Insert the Windows NT Installation CD-ROM in the CD-ROM drive.

3. Right-click Network Neighborhood on the desktop, and choose Properties. This displays the Network control panel.

4. Select the Adapters tab.

5. Click Add.

6. Select MS Loopback Adapter and click OK.

7. In the MS Loopback Adapter Card Setup dialog, click OK to accept the default frame type (the default value is 802.3).

8. Enter the location of your Windows NT CD-ROM (for example, E:\i386) and click Continue.

   When the loopback adapter is installed, Windows NT displays the Network control panel showing all the network adapters (Figure 2–1).

   ![Figure 2–1 Network Control Panel Showing the Loopback Adapter](image)

9. In the Network control panel, delete the network adapters that were installed before the loopback adapter. Select the network adapter and click Remove.

   You must do this because you need the loopback adapter to be the first network adapter. In the example, you would delete the Intel network adapter. You will reinstall it later.

10. Click Close in the Network control panel. This displays the Microsoft TCP/IP Properties dialog (Figure 2–2).
11. In the Microsoft TCP/IP Properties dialog, select **MS Loopback Adapter**, and do the following:

   a. **IP Address**: Enter a non-routable IP for the loopback adapter. Oracle recommends the following non-routable addresses:
      - `192.168.x.x` (x is any value between 1 and 255)
      - `10.10.10.10`

   b. **Subnet mask**: Enter `255.255.255.0`.

   c. Leave all other fields empty.

   d. Click **OK**.

   ![TCP/IP Properties Dialog Showing Values for the Loopback Adapter](image)

12. Restart your computer.

13. When the computer comes back up, reinstall your real network adapter.

14. Restart the computer again.

**Installing a Loopback Adapter on Windows 2000**

Windows 2000 reports on the **last** network adapter installed. This means that if you install additional network adapters after you install the loopback adapter, you need to remove and reinstall the loopback adapter. The loopback adapter must be the last network adapter installed on the computer.

To install a loopback adapter on Windows 2000:

1. From the **Start** menu, select **Settings**, then **Control Panel**.
2. Double-click **Add/Remove Hardware**. This starts up the Add/Remove Hardware wizard.
3. In the Welcome page, click **Next**.
4. In the Choose a Hardware Task page, select **Add/Troubleshoot a device**, and click **Next**.

5. In the Choose a Hardware Device page, select **Add a new device**, and click **Next**.

6. In the Find New Hardware page, select **No, I want to select the hardware from a list**, and click **Next**.

7. In the Hardware Type page, select **Network adapters**, and click **Next**.

8. In the Select Network Adapter page, do the following:
   a. **Manufacturers**: Select **Microsoft**.
   b. **Network Adapter**: Select **Microsoft Loopback Adapter**.
   c. Click **Next**.

9. In the Start Hardware Installation page, click **Next**.

10. In the Completing the Add/Remove Hardware Wizard page, click **Finish**.

11. Right-click **My Network Places** on the desktop and choose **Properties**. This displays the Network and Dial-up Connections control panel.

12. Right-click the connection that was just created. This is usually "Local Area Connection 2". Choose **Properties**.

13. On the **General** tab, select **Internet Protocol (TCP/IP)**, and click **Properties**.

14. In the Properties dialog (Figure 2–3), do the following:
   a. **IP Address**: Enter a non-routable IP for the loopback adapter. Oracle recommends the following non-routable addresses:
      - 192.168.x.x (x is any value between 1 and 255)
      - 10.10.10.10
   b. **Subnet mask**: Enter **255.255.255.0**.
   c. Leave all other fields empty.
   d. Click **OK**.
15. Click OK in the Local Area Connection 2 Properties dialog.

16. Restart the computer.

17. Add a line to the `C:\windows\system32\drivers\etc\hosts` file with the following format, right after the `localhost` line:

   ```
   IP_address  hostname.domainname  hostname
   ```

   where:
   - `IP_address` is the non-routable IP address you entered in step 14.
   - `hostname` is the name of the computer.
   - `domainname` is the name of the domain.

   For example:
   ```
   10.10.10.10  mycomputer.mydomain.com  mycomputer
   ```

18. Check the network configuration:

   a. Open the System control panel, and select the **Network Identification** tab.
      In **Full computer name**, make sure you see the hostname and the domain name (Figure 2–4).
b. Click Properties.
   
   In Computer name, you should see the hostname, and in Full computer name, you should see the hostname and domain name (Figure 2–5).

Figure 2–5 Identification Changes Dialog

![Identification Changes Dialog](image)

    c. Click More. In Primary DNS suffix of this computer, the domain name should appear (Figure 2–6).
Figure 2–6  DNS Suffix and NetBIOS Computer Name Dialog

Installing a Loopback Adapter on Windows 2003 or Windows XP

To install a loopback adapter on Windows 2003 or Windows XP:

1. From the Start menu, select Control Panel.
2. Double-click Add Hardware to start the Add Hardware wizard.
3. On the Welcome screen, click Next.
4. On the Is the hardware connected? screen, select Yes, I have already connected the hardware, and click Next.
5. On the The following hardware is already installed on your computer screen, select Add a new hardware device, and click Next.
6. On the The wizard can help you install other hardware screen, select Install the hardware that I manually select from a list, and click Next.
7. From the list, select the type of hardware you are installing screen, select Network adapters, and click Next.
8. On the Select Network Adapter screen, make the following selections:
   - Manufacturer: select Microsoft.
   - Network Adapter: select Microsoft Loopback Adapter.
9. Click Next.
10. On the The wizard is ready to install your hardware screen, click Next.
11. On the Completing the Add Hardware Wizard screen, click Finish.
12. If you are using Windows 2003, restart your computer.
13. Right-click My Network Places on the desktop and choose Properties. This displays the Network Connections control panel.
14. Right-click the connection that was just created. This is usually named "Local Area Connection 2". Choose Properties.
15. On the General tab, select Internet Protocol (TCP/IP), and click Properties.
16. In the Properties dialog, do the following:
   a. IP Address: Enter a non-routable IP for the loopback adapter. Oracle recommends the following non-routable addresses:
      - 192.168.x.x (x is any value between 1 and 255)
      - 10.10.10.10
   b. Subnet mask: Enter 255.255.255.0.
c. Leave all other fields empty.

d. Click OK.

17. Click OK.

18. Click OK in the Local Area Connection 2 Properties dialog.

19. Restart the computer.

20. Add a line to the \C:\windows\system32\drivers\etc\hosts file with the following format, after the localhost line:

```
IP_address  hostname.domainname  hostname
```

where:

- **IP_address** is the non-routable IP address you entered in step 16.
- **hostname** is the name of the computer.
- **domainname** is the name of the domain.

For example:
```
10.10.10.10   mycomputer.mydomain.com   mycomputer
```

21. Check the network configuration:

a. Open System Properties, and select the **Computer Name** tab. In **Full computer name**, make sure you see the hostname and the domain name.

b. Click **Change**. In **Computer name**, you should see the hostname, and in **Full computer name**, you should see the hostname and domain name.

c. Click **More**. In **Primary DNS suffix of this computer**, you should see the domain name.

Removing a Loopback Adapter from Windows NT

To remove the loopback adapter from Windows NT:

1. From the **Start** menu, select **Settings**, then **Control Panel**.

2. Double-click **Network**.

3. Select the **Adapters** tab.

4. Select **MS Loopback Adapter** and click **Remove**.

5. Restart your computer.

Removing a Loopback Adapter from Windows 2000, 2003, or XP

To remove the loopback adapter from Windows 2000, Windows 2003, or Windows XP:

1. Display the System control panel.

   - **Windows 2000**: From the **Start** menu, select **Settings**, then **Control Panel**, and then double-click **System**.
   - **Windows 2003**: From the **Start** menu, select **Settings**, then **Control Panel**, then **System**.
   - **Windows XP**: From the **Start** menu, select **Control Panel**, then double-click **System**.

2. In the Hardware tab, click **Device Manager**.
3. In the Device Manager window, expand **Network adapters**. You should see **Microsoft Loopback Adapter**.

4. Right-click **Microsoft Loopback Adapter** and select **Uninstall**.

**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, use the following sections to configure 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**

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 1-13. 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 2-19.
- To use Automatic Storage Management for database or recovery file storage, see the "Configuring Disks for Automatic Storage Management" section on page 2-21.
- To use raw devices for database file storage, see the "Configuring Raw Logical Volumes or Raw Partitions" section on page 2-26.

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

- 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 Optimal Flexible Architecture 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 Automatic Storage Management 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.

  **See Also:** Oracle Backup and Recovery Basics for more information about the flash recovery area.

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:

<table>
<thead>
<tr>
<th>File Type</th>
<th>File System Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Datafiles</td>
<td>Choose either:</td>
</tr>
<tr>
<td></td>
<td>- A single file system with at least 1.2 GB of free disk space.</td>
</tr>
<tr>
<td></td>
<td>- Two or more file systems with at least 1.2 GB of free disk space in total.</td>
</tr>
<tr>
<td>Recovery files</td>
<td>Choose a file system with at least 2 GB of free disk space.</td>
</tr>
</tbody>
</table>

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 Automatic Storage Management 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 “Stopping Existing Oracle Services” section on page 2-28.

Configuring Disks for Automatic Storage Management

This section describes how to configure disks for use with Automatic Storage Management. 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 Automatic Storage Management
- Using an Existing Automatic Storage Management Disk Group
- Configuring Disks for Automatic Storage Management

Identifying Storage Requirements for Automatic Storage Management

To identify the storage requirements for using Automatic Storage Management, 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 Automatic Storage Management 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 Automatic Storage Management.

If you enable automated backups during the installation, you can choose Automatic Storage Management as the storage mechanism for recovery files by specifying an Automatic Storage Management disk group for the flash recovery area. Depending on 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 Automatic Storage Management 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 Automatic Storage Management disk group for datafiles and recovery files.

2. Choose the Automatic Storage Management redundancy level that you want to use for the Automatic Storage Management disk group.
The redundancy level that you choose for the Automatic Storage Management disk group determines how Automatic Storage Management 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 Automatic Storage Management 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, Automatic Storage Management 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 \( \frac{1}{2} \) 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, Automatic Storage Management 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 \( \frac{1}{3} \) 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:

<table>
<thead>
<tr>
<th>Redundancy Level</th>
<th>Minimum Number of Disks</th>
<th>Datafiles</th>
<th>Recovery Files</th>
<th>Both File Types</th>
</tr>
</thead>
<tbody>
<tr>
<td>External</td>
<td>1</td>
<td>1.15 GB</td>
<td>2.3 GB</td>
<td>3.45 GB</td>
</tr>
<tr>
<td>Normal</td>
<td>2</td>
<td>2.3 GB</td>
<td>4.6 GB</td>
<td>6.9 GB</td>
</tr>
<tr>
<td>High</td>
<td>3</td>
<td>3.45 GB</td>
<td>6.9 GB</td>
<td>10.35 GB</td>
</tr>
</tbody>
</table>

If an existing Automatic Storage Management 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 Automatic Storage Management disk group devices.
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:** 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 Automatic Storage Management 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. Automatic Storage Management expects each disk group device to be on a separate physical disk.
- Although you can specify a logical volume as a device in an Automatic Storage Management disk group, Oracle does not recommend their use. Logical volume managers can hide the physical disk architecture, preventing Automatic Storage Management from optimizing I/O across the physical devices.

**See Also:** "Configuring Disks for Automatic Storage Management" on page 2-24 for information about completing this task

**Using an Existing Automatic Storage Management Disk Group**

If you want to use Automatic Storage Management as the storage option for either database or recovery files, and an existing Automatic Storage Management 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.
Individual Component Requirements

- 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 Automatic Storage Management instance that manages the existing disk group can be running in a different Oracle home directory.

---

To determine whether an existing Automatic Storage Management 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 Automatic Storage Management instance that you want to use.

3. Connect to the Automatic Storage Management 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 Automatic Storage Management**

To use Automatic Storage Management 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 Automatic Storage Management, 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 Automatic Storage Management. Automatic Storage Management 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 Automatic Storage Management instance by specifying a name `\\ORCLDISKn`.

**See Also:** "Assigning Logical Names or Drive Letters, or Mounting Directories" on page 2-27 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 Automatic Storage Management.

To add or change disk stamps:

1. In the installation CD labeled Oracle Database 10g Release 1 (10.1) Disk 1 of 1, navigate to \ASM Tool and double-click `asmtoolg`.
   
   If Oracle Database is already installed, go to `ORACLE_BASE\ORACLE_HOME\bin` and 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 Automatic Storage Management disks as "Stamped ASM disk", and unstamped Automatic Storage Management 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 Automatic Storage Management disks.

3. On the **Stamp Disks** screen, select the disks to stamp.

   For ease of use, Automatic Storage Management 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 Automatic Storage Management link name is `ORCLDISKDATA0`.

   You can also specify the stamps of individual devices.

4. Optionally, select a disk to edit the individual stamp (Automatic Storage Management 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 Automatic Storage Management 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 for stamping disks. It has the following options:

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>-add</td>
<td>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 Automatic Storage Management stamp, then you must specify the -force option.</td>
<td>asmtool -add [-force] \Device\Harddisk1\Partition1 ORCLDISKASM0 \Device\Harddisk2\Partition1 ORCLDISKASM2...</td>
</tr>
<tr>
<td>-addprefix</td>
<td>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 Automatic Storage Management stamp, then you must specify the -force option.</td>
<td>asmtool -addprefix ORCLDISKASM [-force] \Device\Harddisk1\Partition1 \Device\Harddisk2\Partition1...</td>
</tr>
<tr>
<td>-list</td>
<td>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.</td>
<td>asmtool -list [-force]</td>
</tr>
<tr>
<td>-delete</td>
<td>Removes existing stamps from disks.</td>
<td>asmtool -delete ORCLDISKASM0 ORCLDISKASM1...</td>
</tr>
<tr>
<td>-create</td>
<td>Creates an empty file.</td>
<td>asmtool -create path_to_file size_in megabytes</td>
</tr>
</tbody>
</table>

**Note:** For -add, -addprefix, and -delete, asmtool will notify any Automatic Storage Management 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. Alternatively, from the Start menu, select Programs, then Administrative Tools, then 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. Alternatively, from the Start menu, select Programs, then Administrative Tools, then 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:** If you need 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.

<table>
<thead>
<tr>
<th>Number</th>
<th>Partition Size (MB)</th>
<th>Purpose and Sample Logical Volume Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>500</td>
<td>SYSTEM tablespace: <code>dbname_system_raw_500m</code></td>
</tr>
<tr>
<td>1</td>
<td>500</td>
<td>SYSAUX tablespace: <code>dbname_sysaux_raw_500m</code></td>
</tr>
<tr>
<td>1</td>
<td>500</td>
<td>UNDOTBS1 tablespace: <code>dbname_undotbs1_raw_500m</code></td>
</tr>
<tr>
<td>1</td>
<td>160</td>
<td>EXAMPLE tablespace: <code>dbname_example_raw_160m</code></td>
</tr>
<tr>
<td>1</td>
<td>120</td>
<td>USERS tablespace: <code>dbname_users_raw_120m</code></td>
</tr>
<tr>
<td>2</td>
<td>120</td>
<td>Two online redo log files (where m is the log number, 1 or 2): <code>dbname_redol_m_raw_120m</code></td>
</tr>
</tbody>
</table>
3. To create the other required logical volumes, using the command-line interface, enter a command similar to the following:

```plaintext
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:

```plaintext
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
```

### Stopping 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. Some Oracle Advanced Security components can use a Lightweight Directory Access Protocol (LDAP) directory such as Oracle Internet Directory.
Individual Component Requirements

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.

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.

Oracle Real Application Clusters

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

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.

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 2–4 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/

After you log in, select Certify & Availability from the left-hand column. From the Product Lifecycle page, select the Certifications button.

<table>
<thead>
<tr>
<th>Table 2–4 Supported Software for Oracle Transparent Gateway Components</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oracle Transparent Gateway</td>
</tr>
<tr>
<td>-----------------------------</td>
</tr>
<tr>
<td>Oracle Transparent Gateway for Microsoft SQL Server</td>
</tr>
<tr>
<td>Oracle Transparent Gateway for Sybase</td>
</tr>
<tr>
<td>Oracle Transparent Gateway for Teradata</td>
</tr>
<tr>
<td>Oracle Transparent Gateway for IBM DRDA</td>
</tr>
</tbody>
</table>

**Oracle Transparent Gateway System Requirements**
Table 2–5 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.

<table>
<thead>
<tr>
<th>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</th>
</tr>
</thead>
<tbody>
<tr>
<td>These guides are available on the Oracle Database installation media.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 2–5 System Requirements for Oracle Transparent Gateways</th>
</tr>
</thead>
<tbody>
<tr>
<td>Requirement</td>
</tr>
<tr>
<td>-----------------------------</td>
</tr>
<tr>
<td>Disk Space</td>
</tr>
</tbody>
</table>
Individual Component Requirements

Oracle Database Preinstallation Requirements

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

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.
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 noninteractive installations, without using the GUI.

This chapter contains these topics:

- Preinstallation Considerations Before Installing Oracle Database
- Reviewing Component-Specific Installation Guidelines
- Accessing the Installation Software
- Installing the Oracle Database Software

Preinstallation Considerations Before Installing Oracle Database

Review and satisfy the requirements described in Chapter 2, "Oracle Database Preinstallation Requirements" and "Reviewing Component-Specific Installation Guidelines" on page 3-3 before you begin the installation.

Next, consider the following issues:

- Performing Multiple Oracle Database Installations
- Installing onto Systems That Already Have Oracle Components
- Installing with Minimum Memory Requirements

Performing Multiple Oracle Database Installations

If you need to perform multiple installations of Oracle Database, you may want to use noninteractive mode. In noninteractive mode, at each node, you run Oracle Universal Installer from the command line using a response file. The response file is a text file containing the settings you normally enter in the Oracle Universal Installer GUI dialog boxes.

See Also:  "Installing Oracle Components in Noninteractive Mode" on page C-1 for instructions on performing noninteractive installations
Installing onto Systems That Already Have Oracle Components

See Also:
- "Upgrade Considerations" on page 1-18 before running Oracle Universal Installer
- "Pre-Installation Tasks for Installing Oracle Real Applications Clusters on Windows-Based Systems" in Oracle Real Application Clusters Installation and Configuration Guide before running Oracle Universal Installer

Follow these steps:

1. Log on as a member of the Administrators group to the computer on which to install Oracle components.
   If you are installing on a Primary Domain Controller (PDC) or a Backup Domain Controller (BDC), log on as a member of the Domain Administrators group.

2. 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. If you are installing in an existing Oracle Database 10g release 1 (10.1) home, 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

Installing with 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 cannot 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. If temporary files and the paging file are both stored on the same physical drive, the space requirements for one may limit the size of another. If your system has limited free space, 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 500 MB respectively, do not install the database. Follow these guidelines:
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**
  
  **See Also:** Oracle Real Application Clusters Installation and Configuration Guide for information on installing Oracle Real Application Clusters

  If Oracle Cluster Ready Services (CRS) and Oracle Real Application Clusters 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.
Accessing the Installation Software

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

Oracle Transparent Gateways
To install Oracle Transparent Gateway, 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.

Accessing the Installation Software
The Oracle Database Client software is available on compact disc (CD-ROM or DVD-ROM) or you can download it from the Oracle Technology Network (OTN) Web site. You can access and install Oracle Database Client by using the following scenarios:

- Installing from a Remote CD-ROM or DVD Drive
- Installing on Remote Computers Through Remote Access Software
- Downloading Oracle Software from the Oracle Technology Network Web Site
- Copying the Oracle Database Software to a Hard Disk

Installing from a Remote CD-ROM or DVD Drive
If the computer where you want to install Oracle Database does not have a CD-ROM or DVD drive, you can perform the installation from a remote CD-ROM or DVD drive. Complete the following steps:

- On the Remote Computer, Share the CD-ROM or DVD Drive
- On the Local Computer, Map the CD-ROM or DVD Drive

On the Remote Computer, Share the CD-ROM or DVD Drive
The remote CD-ROM or DVD drive that you want to use must allow shared access. To set this up, perform these steps on the remote computer that has the CD-ROM or DVD drive:

1. Log in to the remote computer as an Administrator user.
2. Start Windows Explorer.
4. Click the Sharing tab and do the following:
   a. Select Share this folder.
   b. In Share name, give it a share name such as cdrom or dvd. You will use this name when you map the CD-ROM or DVD drive on the local computer. See step d under step 1 of the next procedure.
   c. Click Permissions. You need at least "read" permission for the user who will be accessing it to install Oracle Database.
d. Click OK when you are finished.

5. For a CD-ROM, insert the CD labeled Oracle Database 10g Release 1 (10.1) Disk 1 of 1 into the CD-ROM drive.
   For a DVD, insert the Oracle Database DVD into the DVD drive.

On the Local Computer, Map the CD-ROM or DVD Drive
Perform these steps on the local computer to map a remote CD-ROM or DVD drive and to run Oracle Universal Installer from the mapped drive:

1. Map the remote CD-ROM or DVD drive.
   a. Start Windows Explorer on the local computer.
   b. From the Tools menu, select Map Network Drive to display the Map Network Drive dialog.
   c. Select a drive letter to use for the remote CD-ROM or DVD drive.
   d. In Folder, enter the location of the remote CD-ROM or DVD drive using the following format:

\remote_hostname\share_name

where:

- remote_hostname is the name of the remote computer with the CD-ROM or DVD drive.
- share_name is the share name that you entered in step 4 of the previous procedure. For example

\computer2\cdrom

e. If you need to connect to the remote computer as a different user:
   - Windows NT: Enter the username in Connect As.
   - Windows 2000: Click different user name, and enter the username.
   - Windows 2003 or Windows XP: Click different user name, and enter the username.

2. Run Oracle Universal Installer from the mapped CD-ROM or DVD drive.

3. Go to the "Installing the Oracle Database Software" section on page 3-7.

Installing on Remote Computers Through Remote Access Software
If you want to install and run Oracle Database on a remote computer (that is, the remote computer has the hard drive and will run Oracle Database components), but you do not have physical access to the computer, you still can perform the installation on the remote computer if it is running remote access software such as VNC or Symantec pcAnywhere. You also need the remote access software running on your local computer.

You can install Oracle Database on the remote computer in one of two ways:

- If you have copied the contents of the Oracle Database CD-ROM or DVD to a hard drive, you can install from the hard drive.
Accessing the Installation Software

- You can insert the CD-ROM or DVD into a drive on your local computer, and install from the CD-ROM or DVD.

**Installing from a Hard Drive**

If you have copied the contents of the Oracle Database CD-ROM or DVD to a hard drive, you can install from the hard drive.

The steps that you have to complete are:

1. Make sure that the remote access software is installed and running on the remote and local computers.
2. Share the hard drive that contains the Oracle Database CD-ROM or DVD.
3. On the remote computer, map a drive letter to the shared hard drive. You would use the remote access software to do this on the remote computer.
4. Through the remote access software, run Oracle Universal Installer on the remote computer. You access Oracle Universal Installer from the shared hard drive.
5. Go to the "Installing the Oracle Database Software" section on page 3-7.

**Installing from a Remote CD-ROM or DVD Drive**

You can insert the CD-ROM or DVD into a drive on your local computer, and install from the CD-ROM or DVD.

The steps that you need to complete are:

1. Make sure that the remote access software is installed and running on the remote and local computers.
2. On the local computer, share the CD-ROM or DVD drive.
   - On the remote computer, map a drive letter to the shared CD-ROM or DVD drive. You would use the remote access software to do this on the remote computer.
   - These steps are described in the "Installing from a Remote CD-ROM or DVD Drive" section on page 3-4.
3. Through the remote access software, run Oracle Universal Installer on the remote computer. You access Oracle Universal Installer from the shared CD-ROM or DVD drive.
4. Go to the "Installing the Oracle Database Software" section on page 3-7.

**Downloading Oracle Software from the Oracle Technology Network Web Site**

You can download the installation files from the Oracle Technology Network (OTN) and extract them on your hard disk.

To download the installation files:

1. Use any browser to access the Oracle Technology Network software download page:
   

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 Oracle Technology Network.

8. Extract the files in each directory that you just created.

9. After you have extracted the required installation files, go to the "Installing the Oracle Database Software" section on page 3-7.

**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. After you have copied all of the required installation files, go to the "Installing the Oracle Database Software" section on page 3-7.

**Installing the Oracle Database Software**

In most cases, you use the graphical user interface (GUI) provided by Oracle Universal Installer to install Oracle Database. However, you can also use Oracle Universal Installer to complete noninteractive installations, without using the GUI. This method is particularly useful if you need to perform multiple installations of Oracle Client.

**See Also:** Appendix C, "Oracle Database Advanced Installation Topics" for information on noninteractive installations and other advanced installation topics

To install the Oracle Database software:

1. Log on as a member of the Administrators group to the computer on which to install Oracle components.

   If you are installing on a Primary Domain Controller (PDC) or a Backup Domain Controller (BDC), log on as a member of the Domain Administrators group.

2. Insert the CD labeled Oracle Database 10g Release 1 (10.1) Disk 1 of 1 or navigate to the directory where you downloaded or copied the 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.

   Use the same installation media to install Oracle Database on all supported Windows platforms.

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

   a. From the Start menu, select Run.
b. Enter the following:

   DRIVE_LETTER:\autorun\autorun.exe

   In the Autorun screen, choose Install/Deinstall Products.

3. In the Welcome screen, select either Basic Installation or Advanced Installation, and then answer the prompts as needed.

   See Also: "Oracle Database Installation Methods" on page 1-6 for more information on the Basic and Advanced installation methods

The subsequent screens that appear, which are listed in Table 3–1 on page 3-9, depend on the installation method you have chosen.

4. Follow these guidelines to complete the installation:

   - Do not install Oracle Database 10g release 1 (10.1) software into an existing Oracle home that contains Oracle9i or earlier software.
   - If you install Oracle Database 10g release 1 (10.1) in an Oracle home directory that already contains Oracle Database 10g release 1 (10.1) client software, the listener is not created. To create the listener, install and run Oracle Net Configuration Assistant after the installation. If the Administrator client is installed before Oracle Database, Oracle Net Configuration Assistant is already installed.
   - Follow the instructions displayed in the Oracle Universal Installer screens. If you need additional information, click Help.
   - 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.
5. When all of the configuration tools have finished, click Exit, then click Yes to exit from Oracle Universal Installer.

6. 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.

7. Optionally, delete the \temp\OraInstall date_time directory if you want to remove the temporary files that were created during the installation process. The OraInstall date_time directory holds about 45 MB of files. Restarting your computer also removes the OraInstall date_time directory.

8. See Chapter 4, “Oracle Database Postinstallation Tasks” for information about tasks that you must complete after you have installed Oracle Database.

---

**Table 3–1 Oracle Universal Installer Screens**

<table>
<thead>
<tr>
<th>Screen</th>
<th>Recommended Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Welcome</td>
<td>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. Advanced Installation lets you perform more complex installations, such as creating individual passwords for different accounts, creating specific types of starter databases (for example, for transaction processing or data warehouse systems), using different language groups, specifying e-mail notifications, and so on. Click Next.</td>
</tr>
<tr>
<td>Specify File Locations</td>
<td>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.</td>
</tr>
<tr>
<td>Select Database Configuration</td>
<td>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.</td>
</tr>
</tbody>
</table>
### Table 3-1 (Cont.) Oracle Universal Installer Screens

<table>
<thead>
<tr>
<th>Screen</th>
<th>Recommended Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specify Database Configuration Options</td>
<td>Specify the following information, then click Next:</td>
</tr>
<tr>
<td></td>
<td><strong>Global Database Name</strong></td>
</tr>
<tr>
<td></td>
<td>Specify a name for the database, followed by the domain name of the system:</td>
</tr>
<tr>
<td></td>
<td><code>sales.your_domain.com</code></td>
</tr>
<tr>
<td></td>
<td>The value that you specify, up to the first period, is also used for the SID value.</td>
</tr>
<tr>
<td></td>
<td>Make sure that the name you give your database is no more than eight characters long.</td>
</tr>
<tr>
<td></td>
<td>- Alphabetic characters</td>
</tr>
<tr>
<td></td>
<td>- Numbers</td>
</tr>
<tr>
<td></td>
<td>- Underscores (_)</td>
</tr>
<tr>
<td></td>
<td>- Pound sign (#)</td>
</tr>
<tr>
<td></td>
<td>- Dollar sign ($)</td>
</tr>
<tr>
<td></td>
<td><strong>Select Database Character Set</strong></td>
</tr>
<tr>
<td></td>
<td>Accept the default value, which is based on your system locale, or if you need to</td>
</tr>
<tr>
<td></td>
<td>support more than one language, click Help for more information about the supported</td>
</tr>
<tr>
<td></td>
<td>character sets.</td>
</tr>
<tr>
<td></td>
<td><strong>Create database with example schemas</strong></td>
</tr>
<tr>
<td></td>
<td>Choose this option to create the <code>EXAMPLE</code> tablespace that contains the <code>Sample</code></td>
</tr>
<tr>
<td></td>
<td>Schemas (optional, but recommended).</td>
</tr>
<tr>
<td>Select Database Management Option</td>
<td>Accept the default values, then click Next.</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> You can enable e-mail notifications after you have installed the software.</td>
</tr>
<tr>
<td>Specify Database File Storage Option</td>
<td>Select the <strong>File System</strong> option and specify the database file location, then click Next.</td>
</tr>
<tr>
<td></td>
<td><strong>Specify database file location:</strong></td>
</tr>
<tr>
<td></td>
<td>Accept the default location or specify a new file location.</td>
</tr>
<tr>
<td>Specify Backup and Recovery Options</td>
<td>Accept the default values, then click Next.</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> You can enable automated backups after you have installed the software.</td>
</tr>
<tr>
<td>Specify Database Schema Passwords</td>
<td>Enter and confirm passwords for all of the privileged database accounts, then click Next.</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> Oracle recommends that you specify a different password for each account.</td>
</tr>
<tr>
<td></td>
<td>You must remember the passwords that you specify.</td>
</tr>
<tr>
<td>Summary</td>
<td>Review the information displayed, then click <strong>Install.</strong></td>
</tr>
</tbody>
</table>
### Table 3–1  (Cont.) Oracle Universal Installer Screens

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

You must configure many Oracle components and options before you can use them. 
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 Oracle Technology Network Web site.

This section contains these topics:

- Configuring Oracle Messaging Gateway
- Installing Natively Compiled Java Libraries for Oracle JVM and Oracle interMedia
- Configuring Oracle Administration Assistant for Windows
- Running Oracle Cluster Synchronization Services (CSS) from a Different Oracle 
  Home
- 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
Configuring Oracle Database to Communicate with Automatic Storage Management
Configuring Databases to Use Oracle Enterprise Manager Database Control
Using Oracle9i Language and Definition Files with Oracle Database 10g Release 1 (10.1)
Installing Oracle Database Components from the Companion CD

---

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

---

Configuring Oracle Messaging Gateway

Oracle Messaging Gateway, an Oracle Database Advanced Queuing feature, requires additional configuration after you install Oracle Database if you plan to use Oracle Database Advanced Queuing.

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 interMedia

If you plan to use Oracle Java Virtual Machine (JVM) or Oracle interMedia, 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 4-8 for more information about installing components from the Companion CD

---

Configuring Oracle Administration Assistant for Windows

Oracle Administration Assistant for Windows requires the Microsoft Management Console and HTML Help 1.2 or higher to run. Microsoft Management Console (MMC) is included with Windows 2000, but you must manually install it if you are using Windows NT 4.0. MMC version 1.2 or higher is required. Oracle recommends the latest MMC version available.

See Also: Microsoft documentation
http://www.microsoft.com/
Running Oracle Cluster Synchronization Services (CSS) from a Different Oracle Home

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 can 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.

See Also:
- Oracle Text Reference for information on creating and extending knowledge bases, such as extending the supplied knowledge bases to accommodate your requirements, or creating your own knowledge bases in languages other than English and French
- "Installing Oracle Database Components from the Companion CD” on page 4-8 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:

- Reinstalling 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

Configuring PL/SQL depends 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 10g release 1 (10.1) database, you need to manually configure them.

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

Configuring Shared Server Support

Configuring shared server support depends 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. From the Start menu, select Settings, then Control Panel, Administrative Tools, then 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. From the Start menu, select Programs, then Administrative Tools, then 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 exists 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**

### Configuring Oracle Database to Communicate with Automatic Storage Management

On Windows, Oracle Database installations that use Automatic Storage Management must use Windows native authentication. By default, Windows native authentication is enabled. To ensure that it is, check the `sqlnet.ora` file, by default located in `ORACLE_BASE\ORACLE_HOME\network\admin`, and make sure that it has NTS enabled. For example:

```
sqlnet.authentication_services=(NTS)
```

**See Also:** *Oracle Database Platform Guide for Windows* for more information about Windows native authentication

### Configuring Databases to Use Oracle Enterprise Manager Database Control

You have the option to configure Oracle Enterprise Manager Database Control automatically when creating a new database using Database Control Assistant. This allows you to administer your entire database using Enterprise Manager Database Control.

**See Also:** *Oracle Enterprise Manager Advanced Configuration* for information on configuring a database to use Database Control

### Using Oracle9i Language and Definition Files with Oracle Database 10g Release 1 (10.1)

You can use Oracle9i database language and territory definition files with Oracle Database 10g release 1 (10.1).

To enable this functionality:

1. Run the `cr9idata.pl` script, by default located in `ORACLE_BASE\ORACLE_HOME\nls\data\old`. Alternatively, before you install Oracle Database, you can run the Oracle Universal Installer `setup` command with the `b_cr9idata` variable set to `true`, as follows:

   ```
   setup.exe oracle.rsf.nlsrtl_rsf:b_cr9idata=true
   ```

2. Set the `ORA_NLS10` environment variable to point to the directory where you installed the new language and territory definition files, which by default are in `ORACLE_BASE\ORACLE_HOME\nls\data`. 

**See Also:** *Oracle Database Platform Guide for Windows* for more information about Windows native authentication
3. Restart Oracle Database.

See Also:

- Appendix C, "Oracle Database Advanced Installation Topics" for information on response files, in which you can set the b_cr9idata variable and then run the response file with Oracle Universal Installer
- Appendix D, "Oracle Database Globalization Support" for information on globalization support that is affected by this release of Oracle Database
- Oracle Database Globalization Support Guide for information about the NLS_LANG parameter and Globalization Support initialization parameters

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 interMedia
- Oracle Text

See Also: Oracle Database Companion CD Installation Guide, available on the Companion CD, for detailed installation information
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
- Reviewing User Accounts and Passwords
- Identifying Databases
- Locating the Server Parameter File
- Identifying Tablespaces and Datafiles
- Locating Redo Log Files
- Locating Control Files
- Understanding Oracle Database Services on Windows

**Accessing Enterprise Manager Database Control**

Oracle Enterprise Manager Database Control provides a Web-based user interface that you can use 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:** "Reviewing User Accounts and Passwords" 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.

### Reviewing User Accounts and Passwords

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
- 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

<table>
<thead>
<tr>
<th>Username</th>
<th>Description</th>
<th>See Also</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANONYMOUS</td>
<td>Allows HTTP access to Oracle XML DB.</td>
<td>Not applicable</td>
</tr>
<tr>
<td>BI</td>
<td>Owns the Business Intelligence schema included in the Oracle Sample Schemas.</td>
<td>Oracle Database Sample Schemas</td>
</tr>
<tr>
<td>CTXSYS</td>
<td>The Oracle Text account.</td>
<td>Oracle Text Reference</td>
</tr>
<tr>
<td>DBSNMP</td>
<td>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.</td>
<td>Oracle Enterprise Manager Grid Control Installation and Basic Configuration</td>
</tr>
<tr>
<td>DIP</td>
<td>Used by Directory Integration Platform (DIP) to synchronize the changes in Oracle Internet Directory with the applications in the database.</td>
<td>Oracle Internet Directory Administrator’s Guide</td>
</tr>
<tr>
<td>DMSYS</td>
<td>Performs data mining operations.</td>
<td>Oracle Spatial User’s Guide and Reference</td>
</tr>
<tr>
<td>EXFSYS</td>
<td>Owns the Expression Filter schema.</td>
<td>None</td>
</tr>
<tr>
<td>HR</td>
<td>Owns the Human Resources schema included in the Oracle Sample Schemas.</td>
<td>Oracle Database Sample Schemas</td>
</tr>
<tr>
<td>IX</td>
<td>Owns the Information Transport schema included in the Oracle Sample Schemas.</td>
<td>Oracle Database Sample Schemas</td>
</tr>
<tr>
<td>LBACSYS</td>
<td>The Oracle Label Security administrator account.</td>
<td>Oracle Label Security Administrator’s Guide</td>
</tr>
<tr>
<td>MDDATA</td>
<td>Used by Oracle Spatial for storing Geocoder and router data.</td>
<td>Oracle Spatial User’s Guide and Reference</td>
</tr>
<tr>
<td>MDSYS</td>
<td>The Oracle Spatial and Oracle Locator administrator account.</td>
<td>Oracle Spatial User’s Guide and Reference</td>
</tr>
<tr>
<td>MGMT_VIEW</td>
<td>Used by Oracle Enterprise Manager Database Control.</td>
<td>None</td>
</tr>
<tr>
<td>ODM</td>
<td>Performs data mining operations.</td>
<td>Oracle Data Mining Administrator’s Guide</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Oracle Data Mining Concepts</td>
</tr>
<tr>
<td>ODM_MTR</td>
<td>Associated with the data repository for Data Mining sample programs.</td>
<td>Oracle Data Mining Administrator’s Guide</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Oracle Data Mining Concepts</td>
</tr>
<tr>
<td>OE</td>
<td>Owns the Order Entry schema included in the Oracle Sample Schemas.</td>
<td>Oracle Database Sample Schemas</td>
</tr>
<tr>
<td>OLAPSYS</td>
<td>Owns the OLAP catalogs</td>
<td>Oracle OLAP Application Developer’s Guide</td>
</tr>
<tr>
<td>ORDPLUGINS</td>
<td>The Oracle interMedia Audio and Video account. Plug-ins supplied by Oracle and third party plug-ins are installed in this schema.</td>
<td>Oracle interMedia Reference</td>
</tr>
<tr>
<td>ORDSYS</td>
<td>The Oracle interMedia Audio, Video, Locator, and Image administrator account.</td>
<td>Oracle interMedia Reference</td>
</tr>
</tbody>
</table>
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 to Unlock and Change Passwords
- Using Enterprise Manager Database Control to Unlock and Change Passwords

**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 to Unlock and Change Passwords

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:
   ```sql
   C:\> sqlplus /NOLOG
   ```
2. Connect as SYSDBA:
   ```sql
   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
   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 Change Passwords

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.

---

**Identifying Databases**

The Oracle Database 10g 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.mycompany.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.mycompany.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.

---

**Locating the Server Parameter File**

The starter database contains one database initialization parameter file. The initialization parameter file, **init.ora.xxxxx**, must exist for an instance to start. The parameter file is a text file that contains a list of instance configuration parameters. The starter database init.ora file has preconfigured parameters. You do not need to edit this file 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 `spfileSID.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.
Identifying Tablespaces and Datafiles

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

Identifying Tablespaces and Datafiles

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.

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.

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

Table 5–2 Tablespaces and Datafiles

<table>
<thead>
<tr>
<th>Tablespace</th>
<th>Datafile</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXAMPLE</td>
<td>EXAMPLE01.DBF</td>
<td>Stores the Sample Schemas, if you included them.</td>
</tr>
<tr>
<td>SYSAUX</td>
<td>SYSAUX01.DBF</td>
<td>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.</td>
</tr>
<tr>
<td>SYSTEM</td>
<td>SYSTEM01.DBF</td>
<td>Stores the data dictionary, including definitions of tables, views, and stored procedures needed by the Oracle Database. Information in this area is maintained automatically.</td>
</tr>
<tr>
<td>TEMP</td>
<td>TEMP01.DBF</td>
<td>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.</td>
</tr>
</tbody>
</table>
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 Tablespace.

   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

### Locating Redo Log Files

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

---

### Table 5–2 (Cont.) Tablespaces and Datafiles

<table>
<thead>
<tr>
<th>Tablespace</th>
<th>Datafile</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>UNDOTBS</td>
<td>UNDOTBS01.DBF</td>
<td>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.</td>
</tr>
<tr>
<td>USERS</td>
<td>USERS01.DBF</td>
<td>Stores database objects created by database users.</td>
</tr>
</tbody>
</table>
2. Click \textit{Administration}.

3. In the Storage section of the \textit{Administration} page, click \textit{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 \textit{View}.

   For more information about using Database Control to view, modify, and create tablespaces, click \textit{Help}.

\textbf{See Also:}

\begin{itemize}
  \item \textit{Oracle Database Backup and Recovery Basics}
  \item "Managing Archived Redo Logs" of \textit{Oracle Database Administrator’s Guide}
\end{itemize}

\section*{Locating Control Files}

The starter database and the custom database contain three control files located in the \texttt{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 \texttt{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.

\textbf{See Also:} \textit{"Accessing Enterprise Manager Database Control"} on page 5-1

2. Click \textit{Administration}.

3. In the Storage section of the \textit{Administration} page, click \textit{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 \textit{Help}.

\textbf{See Also:} \textit{"Managing Control Files"} of \textit{Oracle Database Administrator’s Guide} for information about setting this initialization parameter value.
Understanding Oracle Database Services on Windows

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

- **OracleServiceSID** (the Oracle Database service)
- **OracleHOME_NAME_TNSListener** (the Oracle Database listener service)

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

See Also:

- Oracle Real Application Clusters Installation and Configuration Guide for information about removing an Oracle Real Application Clusters 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, Oracle Universal Installer configures and starts a single-node version of the Oracle Cluster Synchronization Services (CSS) service. The CSS service enables 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 Automatic Storage Management as a storage mechanism for database files.

If you do not choose Automatic Storage Management 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 Also:** "Running Oracle Cluster Synchronization Services (CSS) from a Different Oracle Home" on page 4-4 for information on configuring the service to use a different Oracle home

Removing All Oracle Database 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. Manually Removing the Remaining Oracle Database Components

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

To stop Oracle services:
1. Open the Services control panel:
   a. On Windows NT: From the Start menu, select Settings, then Control Panel, then Services.
   b. On Windows 2000: From the Start menu, select Settings, then Control Panel, Administrative Tools, then 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 in interactive mode:

1. Ensure that you first follow the instructions in the "Stopping Oracle Services" section on page 6-3.

2. Start Oracle Universal Installer. From the Start menu, select Programs, then Oracle - HOME_NAME, then Oracle Installation Products, then 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.

11. After Oracle Universal Installer exits, go to the next section to remove the remaining Oracle Database components.

Manually Removing the Remaining Oracle Database Components

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 Automatic Storage Management Instance

2. Removing Oracle Keys from the Microsoft Registry Editor

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 Automatic Storage Management 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 Automatic Storage Management instance. For example:
   
   ```
   SET ORACLE_SID=+ASM
   ```

2. Start SQL*Plus and connect to the Automatic Storage Management 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 Automatic Storage Management instance:
   
   ```
   SQL> SELECT INSTANCE_NAME FROM V$ASM_CLIENT;
   ```

   This command lists all of the database instances that are using this Automatic Storage Management instance. This command only lists database instances that are running. It is possible that other instances are associated with the Automatic Storage Management 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 Automatic Storage Management instance is supporting
a database instance in another Oracle home, do not remove the Automatic Storage Management instance or the Oracle home.

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

   **Note:** Dropping the Automatic Storage Management disk group makes the disk device available for use with another Automatic Storage Management 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 Automatic Storage Management 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 Automatic Storage Management instance and exit SQL*Plus:

   SQL> SHUTDOWN
   SQL> EXIT

6. At the command prompt, enter the following command to remove the Automatic Storage Management service:

   ORADIM -DELETE -ASMSID +ASM

   **See Also:**
   - "Automatic Storage Management (ASM)" on page 1-14
   - "Configuring Disks for Automatic Storage Management" on page 2-21

**Removing Oracle Keys from the Microsoft Registry Editor**

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 Editor 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. From the Start menu, choose Run, and in the Open field, enter the following command:
   
   regedt32

4. Go to HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services and delete the OracleHOME_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:

1. Log in as a member of the Administrators group.
2. Ensure that you first follow the instructions in the "Stopping Oracle Services" section 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 the following:
   
   - EnumOraHomes
   - OracleConfig
   - OracleDatabase
   - OracleHome
   - OracleInProcServer
   - OracleProcess
   - ORADC
   - ORAMMCCFG10
   - ORAMMCPMON10
Removing All Oracle Database Components

- OraOLEDB
- OraPerfMon
- ORCLMMC
- 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. From the Start menu, select Settings, then Control Panel, then System, then Advanced tab, then 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.
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. It 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>
<thead>
<tr>
<th>Copy</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>\AccessBridge-1_0_4\installer\installerFiles\jaccess-1_4.jar</td>
<td>ORACLE_BASE\ORACLE_HOME\jre\1.4.2\lib\ext</td>
</tr>
<tr>
<td>\AccessBridge-1_0_4\installer\installerFiles\access-bridge.jar</td>
<td>ORACLE_BASE\ORACLE_HOME\jre\1.4.2\lib\ext</td>
</tr>
<tr>
<td>\AccessBridge-1_0_4\installer\installerFiles\JavaAccessBridge.dll</td>
<td>windows_directory\system32</td>
</tr>
<tr>
<td>\AccessBridge-1_0_4\installer\installerFiles\WindowsAccessBridge.dll</td>
<td>windows_directory\system32</td>
</tr>
<tr>
<td>\AccessBridge-1_0_4\installer\installerFiles\JAWTAccessBridge.dll</td>
<td>windows_directory\system32</td>
</tr>
<tr>
<td>\AccessBridge-1_0_4\installer\installerFiles\accessibility.properties</td>
<td>ORACLE_BASE\ORACLE_HOME\jre\1.4.2\lib</td>
</tr>
</tbody>
</table>

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:
   DRIVE_LETTER:\AccessBridge-1.0.4\doc
Configuring Oracle Components to Use Java Access Bridge

You can configure Oracle components to use Java 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 Java Access Bridge on Windows NT, follow these steps:

1. From the **Start** menu, select **Settings**, **Control Panel**, then **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 Java Access Bridge on Windows 2000, Windows XP, or Windows Server 2003, follow these steps:

1. From the **Start** menu, select **Settings**, **Control Panel**, then **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**.
Optimal Flexible Architecture

This appendix describes the Optimal Flexible Architecture (OFA) standard. The Optimal Flexible Architecture 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:

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

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 Optimal Flexible Architecture provides many advantages when administering large databases. The Optimal Flexible Architecture 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

You can think of Optimal Flexible Architecture 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 Optimal Flexible Architecture-compliant; that is, Oracle Universal Installer places Oracle components in directory locations that follow Optimal Flexible Architecture guidelines. Although using Optimal Flexible Architecture 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 Optimal Flexible Architecture 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 Optimal Flexible Architecture, 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 Optimal Flexible Architecture-Compliant Installation**

An Optimal Flexible Architecture-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.

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

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

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

For Oracle Database 10g release 1 (10.1), the Optimal Flexible Architecture recommended Oracle home path has changed. The Optimal Flexible Architecture 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

## Differences Between Directory Trees by Release

Optimal Flexible Architecture has necessitated changes to the Oracle Database directory tree. This section lists the differences.

### Top-Level Oracle Directory

When you install an Oracle8i 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 Oracle8i release 8.1.4 or later Optimal Flexible Architecture-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 X:\oracle\product\10.1.0, where X 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 Oracle8i release 8.1.3 and earlier releases, database files have the SID in the database filename. For example, the first control file is named ctllSID.ora.

Beginning with Oracle8i 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 Oracle8i release 8.1.3 and earlier releases, all database files have the same " .ORA " extension.

In an Optimal Flexible Architecture-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
Optimal Flexible Architecture Directory Naming Conventions

Optimal Flexible Architecture 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 Optimal Flexible Architecture-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 Optimal Flexible Architecture-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 under `X:\ORACLE_BASE`, where `X` is any hard drive, 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
- `CONTROL03.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 is set at database creation time. Its value is recorded in the parameter `DB_NAME` in the initialisation parameter file. You should not modify this file.

Optimal Flexible Architecture and Multiple Oracle Home Configurations

The following sections describe various Optimal Flexible Architecture and multiple Oracle homes configurations.

Specifying an ORACLE_HOME Directory

To install an Optimal Flexible Architecture-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\product\10.1.0\ORACLE_HOME
```

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
- `ORACLE_HOME` is the name of the Oracle home

The following are examples of Optimal Flexible Architecture-compliant Oracle home directories:

- `C:\test\oracle\product\10.1.0\db_1`
- `D:\oracle\product\10.1.0\db_1`
Installing a Default Optimal Flexible Architecture Database: Example

This example shows how to create all Oracle homes within one Oracle base.

1. Install any Oracle Database that supports Optimal Flexible Architecture (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\ora8i`).

2. Install any Oracle Database (for example, Oracle Database) in a second Oracle home accepting the default settings.

Table B–1 shows the default Optimal Flexible Architecture database settings.

<table>
<thead>
<tr>
<th>Setting</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>ORACLE_BASE</td>
<td>C:\oracle\product\10.1.0 (same for all Oracle homes)</td>
</tr>
<tr>
<td>Oracle home 1</td>
<td>C:\oracle\product\10.1.0\db_1</td>
</tr>
<tr>
<td>Oracle home 2</td>
<td>C:\oracle\product\10.1.0\db_2</td>
</tr>
</tbody>
</table>

Installing a Nondefault Optimal Flexible Architecture Database: Example 1

In this example, you install Oracle Database so that each Oracle home has its own Oracle base.

1. Install any Oracle Database that supports Optimal Flexible Architecture (Oracle Database 8.1.6 or later) on a computer with no other Oracle software installed and change the default Oracle Universal Installer settings for the first Oracle home (for example, from `C:\oracle\ora8i` to `X:\xyz`).

2. Install any Oracle Database (for example, Oracle Database 10g release 1 (10.1)) in a second Oracle home and change the default Oracle Universal Installer settings for the second Oracle home (for example, from `X:\xyz` to `Y:\abc`).

Table B–2 shows the nondefault Optimal Flexible Architecture database settings for example 1.

<table>
<thead>
<tr>
<th>Directory</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>ORACLE_BASE</td>
<td>X:\xyz for first Oracle home; Y:\abc for second Oracle home</td>
</tr>
<tr>
<td>Oracle home 1</td>
<td>X:\xyz</td>
</tr>
<tr>
<td>Oracle home 2</td>
<td>Y:\abc</td>
</tr>
</tbody>
</table>

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
```

---

Table B–1 Default Optimal Flexible Architecture Database Settings

<table>
<thead>
<tr>
<th>Setting</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>ORACLE_BASE</td>
<td>C:\oracle\product\10.1.0 (same for all Oracle homes)</td>
</tr>
<tr>
<td>Oracle home 1</td>
<td>C:\oracle\product\10.1.0\db_1</td>
</tr>
<tr>
<td>Oracle home 2</td>
<td>C:\oracle\product\10.1.0\db_2</td>
</tr>
</tbody>
</table>

Table B–2 Nondefault Optimal Flexible Architecture Database Settings: Example 1

<table>
<thead>
<tr>
<th>Directory</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>ORACLE_BASE</td>
<td>X:\xyz for first Oracle home; Y:\abc for second Oracle home</td>
</tr>
<tr>
<td>Oracle home 1</td>
<td>X:\xyz</td>
</tr>
<tr>
<td>Oracle home 2</td>
<td>Y:\abc</td>
</tr>
</tbody>
</table>
Installing a Nondefault Optimal Flexible Architecture Database: Example 2

In this example, you install each Oracle home into its own directory, but they all share the same Oracle base.

1. Install any Oracle Database that supports Optimal Flexible Architecture (Oracle Database 8.1.6 or later) on a computer with no other Oracle software installed and change the 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 the 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 Optimal Flexible Architecture database settings for example 2.

<table>
<thead>
<tr>
<th>Setting</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>ORACLE_BASE</td>
<td>X:\xyz\oracle</td>
</tr>
<tr>
<td></td>
<td>(same for both Oracle homes)</td>
</tr>
<tr>
<td>Oracle home 1</td>
<td>X:\xyz\oracle\abc</td>
</tr>
<tr>
<td>Oracle home 2</td>
<td>X:\pqr</td>
</tr>
</tbody>
</table>

The resulting directory tree would look similar to this:

X:\pqr
  \bin
  \network

--Oracle home 2
Increasing Reliability and Performance

One of the goals of Optimal Flexible Architecture 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

You can separate and treat Oracle Database log files and database files 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 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.

You can configure some controllers 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. Multiple CPUs can access data randomly in such a file 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 percent to 10 percent 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 Optimal Flexible Architecture on Windows and UNIX

You implement Optimal Flexible Architecture 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 Optimal Flexible Architecture on UNIX
Directory Naming

Top-level names of the Optimal Flexible Architecture 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 Optimal Flexible Architecture 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 Optimal Flexible Architecture 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
```
Comparison Between Optimal Flexible Architecture on Windows and UNIX

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
This appendix describes advanced installation topics.

This appendix contains these topics:

- Installing Oracle Components in Noninteractive Mode
- Installing and Using Oracle Components in Different Languages

## Installing Oracle Components in Noninteractive Mode

Typically, Oracle Universal Installer runs in interactive mode, which means it prompts you to provide information in graphical user interface (GUI) screens. Alternatively, you can run Oracle Universal Installer in noninteractive mode. Noninteractive mode is also referred to as silent mode, or silent installation.

You may want to use noninteractive mode to install Oracle Database in the following scenarios:

- You need to deploy Oracle Database to multiple nodes in an unattended manner. You can schedule the noninteractive installation mode from the operating system scheduler or other job subsystem that your site normally uses. This method is particularly useful for large sites that require many Oracle Database installations.

- No interaction with the user is intended.

- A graphical facility to run Oracle Universal Installer in interactive mode is not available. (Oracle Universal Installer is always available on Windows, but not on UNIX systems.)

This section covers the following topics on how you can use response files to run Oracle Universal Installer in noninteractive mode:

- Using Response Files to Install Oracle Components in Noninteractive Mode
- Customizing a Sample Response File
- Creating a New Response File
- Running Oracle Universal Installer and Specifying a Response File

## Using Response Files to Install Oracle Components in Noninteractive Mode

To use noninteractive mode, you run Oracle Universal Installer with a response file. A response file is a text file that contains variables and values that Oracle Universal Installer uses during the installation process. Oracle provides a set of sample response
files that you can customize, or you can create your own response file by recording your installation selections.

**See Also:** *Oracle Universal Installer Concepts Guide* for more information about response file formats.

### Customizing a Sample Response File

Table C-1 lists the available sample response files in the \Response directory on the CD labeled Oracle Database 10g Release 1 (10.1) Disk 1 of 1:

<table>
<thead>
<tr>
<th>Response File Name</th>
<th>This File Silently Runs The...</th>
</tr>
</thead>
<tbody>
<tr>
<td>enterprise.rsp</td>
<td>Enterprise Edition installation type of Oracle Database</td>
</tr>
<tr>
<td>standard.rsp</td>
<td>Standard Edition installation type of Oracle Database</td>
</tr>
<tr>
<td>personal.rsp</td>
<td>Personal Edition installation type of Oracle Database</td>
</tr>
<tr>
<td>custom.rsp</td>
<td>Custom installation type of Oracle Database</td>
</tr>
<tr>
<td>dbca.rsp</td>
<td>Database Configuration Assistant</td>
</tr>
<tr>
<td>netca.rsp</td>
<td>Oracle Net Configuration Assistant</td>
</tr>
</tbody>
</table>

To copy and modify a response file:

1. Copy the appropriate response files from the \Response directory on the CD labeled Oracle Database 10g Release 1 (10.1) Disk 1 of 1 to your hard drive.

2. From the Start menu, select Programs, then Oracle - HOME_NAME, then Oracle Installation Products, then 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*.

4. Run the response file by following the instructions in the "Running Oracle Universal Installer and Specifying a Response File" section on page C-3.

### Creating a New Response File

When you run Oracle Universal Installer in interactive mode, you can record your installation selections into a response file. You do this by running Oracle Universal Installer in Record mode. Oracle Universal Installer generates the response file immediately after you complete the Summary page, so you do not need to actually install Oracle Database to create the response file.

If you want to use Record mode during a noninteractive installation, Oracle Universal Installer records the variable values that were specified in the original source response file into the new response file.

**Note:** You cannot use Record mode to create a response file based on the Basic installation type.

To create a new response file:

1. Make sure that the computer on which you are creating the response file has met the requirements described in Chapter 2.
2. At the command prompt, use the cd command to change to the directory that contains the Oracle Universal Installer setup.exe executable.

On the installation CD-ROM or DVD, setup.exe is located on Disk 1. If you want to run Oracle Universal Installer from an existing Oracle Database installation, you can find setup.exe in ORACLE_BASE\ORACLE_HOME\oui\bin.

3. Enter the following command:

   `setup -record -destinationFile response_file_name`

Replace `response_file_name` with the complete path for the new response file. For example:

   `setup -record -destinationFile C:\response_files\install_oracle10g`

4. After Oracle Universal Installer launches, enter the installation settings, which will be recorded into the response file.

5. When the Summary page appears, do one of the following:

   - Click **Install** to continue with the installation.
   - Click **Cancel** if you only want to create the response file but not continue with the installation. The installation will stop, but the settings you have entered will be recorded to the response file.

   Afterwards, Oracle Universal Installer saves your new response file using the path and file name you specified on the command line.

6. If necessary, make any environment-specific changes to the response file for the computer on which you will run it.

7. Run the response file by following the instructions in the "Running Oracle Universal Installer and Specifying a Response File" section, next.

### Running Oracle Universal Installer and Specifying a Response File

You run Oracle Universal Installer at the command line, specifying a response file. The Oracle Universal Installer executable, setup.exe, provides several options. For help information on the full set of these options, run setup.exe with the -help option, for example:

   `C:\ORACLE_BASE\ORACLE_HOME\oui\bin> setup.exe -help`

To run Oracle Universal Installer and specify a response file:

1. Launch a command prompt.

2. Go to the directory where Oracle Universal Installer is installed.

3. From the command line, run Oracle Universal Installer with the appropriate response file. For example:

   `C:\ORACLE_BASE\ORACLE_HOME\oui\bin> setup.exe [-silent] [-nowelcome] [-nowait] -responseFile filename`

<table>
<thead>
<tr>
<th>Where...</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>filename</td>
<td>Identifies the full path of the response file.</td>
</tr>
<tr>
<td>-silent</td>
<td>Runs Oracle Universal Installer in silent mode and suppresses the Welcome screen. If you use -silent,-nowelcome is not necessary.</td>
</tr>
<tr>
<td>-nowelcome</td>
<td>Suppresses the Welcome screen that appears during installation.</td>
</tr>
</tbody>
</table>
Installing and Using 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. You can run Oracle Universal Installer in the following additional 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. From the Start menu, select Settings, then Control Panel, then Regional Options.
   b. In the Settings for the current user and the Language settings for the system areas, select a language from the preceding list.
   c. Click OK.
2. Run Oracle Universal Installer by following the instructions in the "Installing the Oracle Database Software" section on page 3-7.

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

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 3-7 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 click **OK**.

5. Select appropriate products for installation and click **Next**.
   After installation is complete, the dialog box wording, messages, and online help for the installed components display in the language you selected.
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, Oracle Universal Installer sets the NLS_LANG parameter in the registry.

The locale setting of your operating system determines the value of the NLS_LANG parameter at installation. Table D-1 on page D-2 lists the operating system locale and NLS_LANG value mappings.

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:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LANGUAGE</td>
<td>Specifies the language and conventions for displaying messages, day name, and month name.</td>
</tr>
<tr>
<td>TERRITORY</td>
<td>Specifies the territory and conventions for calculating week and day numbers.</td>
</tr>
<tr>
<td>CHARACTER_SET</td>
<td>Controls the character set used for displaying messages.</td>
</tr>
</tbody>
</table>

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>
<thead>
<tr>
<th>Operating System Locale</th>
<th>NLS_LANG Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arabic (U.A.E.)</td>
<td>ARABIC_UNITED_ARAB_EMIRATES.AR8MSWIN1256</td>
</tr>
<tr>
<td>Bulgarian</td>
<td>BULGARIAN_BULGARIA.CL8MSWIN1251</td>
</tr>
<tr>
<td>Catalan</td>
<td>CATALAN_CATALONIA.WE8MSWIN1252</td>
</tr>
<tr>
<td>Chinese (PRC)</td>
<td>SIMPLIFIED_CHINESE_CHINA.ZHS16GBK</td>
</tr>
<tr>
<td>Chinese (Taiwan)</td>
<td>TRADITIONAL_CHINESE_TAIWAN.ZHT16MSWIN950</td>
</tr>
<tr>
<td>Croatian</td>
<td>CROATIAN_CROATIA.EE8MSWIN1250</td>
</tr>
<tr>
<td>Czech</td>
<td>CZECH_CZECH_REPUBLIC.EE8MSWIN1250</td>
</tr>
<tr>
<td>Danish</td>
<td>DANISH_DENMARK.WE8MSWIN1252</td>
</tr>
<tr>
<td>Dutch (Netherlands)</td>
<td>DUTCH_THE_NETHERLANDS.WE8MSWIN1252</td>
</tr>
<tr>
<td>English (United Kingdom)</td>
<td>ENGLISH_UNITED_KINGDOM.WE8MSWIN1252</td>
</tr>
<tr>
<td>English (United States)</td>
<td>AMERICAN_AMERICA.WE8MSWIN1252</td>
</tr>
<tr>
<td>Estonian</td>
<td>ESTONIAN_ESTONIA.BLT8MSWIN1257</td>
</tr>
<tr>
<td>Finnish</td>
<td>FINNISH_FINLAND.WE8MSWIN1252</td>
</tr>
<tr>
<td>French (Canada)</td>
<td>CANADIAN_FRENCH_CANADA.WE8MSWIN1252</td>
</tr>
<tr>
<td>French (France)</td>
<td>FRENCH_FRANCE.WE8MSWIN1252</td>
</tr>
<tr>
<td>German (Germany)</td>
<td>GERMAN_GERMANY.WE8MSWIN1252</td>
</tr>
<tr>
<td>Greek</td>
<td>GREEK_GREECE.EL8MSWIN1253</td>
</tr>
<tr>
<td>Hebrew</td>
<td>HEBREW_ISRAEL.IW8MSWIN1255</td>
</tr>
<tr>
<td>Hungarian</td>
<td>HUNGARIAN_HUNGARY.EE8MSWIN1250</td>
</tr>
<tr>
<td>Icelandic</td>
<td>ICELANDIC_ICELAND.WE8MSWIN1252</td>
</tr>
<tr>
<td>Indonesian</td>
<td>INDONESIAN_INDONESIA.WE8MSWIN1252</td>
</tr>
<tr>
<td>Italian (Italy)</td>
<td>ITALIAN_ITALY.WE8MSWIN1252</td>
</tr>
<tr>
<td>Japanese</td>
<td>JAPANESE_JAPAN.JA16SJIS</td>
</tr>
<tr>
<td>Korean</td>
<td>KOREAN_KOREA.KO16MSWIN949</td>
</tr>
<tr>
<td>Latvian</td>
<td>LATVIAN_LATVIA.BLT8MSWIN1257</td>
</tr>
<tr>
<td>Lithuanian</td>
<td>LITHUANIAN_LITHUANIA.BLT8MSWIN1257</td>
</tr>
<tr>
<td>Norwegian</td>
<td>NORWEGIAN_NORWAY.WE8MSWIN1252</td>
</tr>
<tr>
<td>Polish</td>
<td>POLISH_POLAND.EE8MSWIN1250</td>
</tr>
<tr>
<td>Portuguese (Brazil)</td>
<td>BRAZILIAN_PORTUGUESE_BRAZIL.WE8MSWIN1252</td>
</tr>
<tr>
<td>Portuguese (Portugal)</td>
<td>PORTUGUESE_PORTUGAL.WE8MSWIN1252</td>
</tr>
<tr>
<td>Romanian</td>
<td>ROMANIAN_ROMANIA.EE8MSWIN1250</td>
</tr>
<tr>
<td>Russian</td>
<td>RUSSIAN_CIS.CL8MSWIN1251</td>
</tr>
<tr>
<td>Slovak</td>
<td>SLOVAK_SLOVAKIA.EE8MSWIN1250</td>
</tr>
<tr>
<td>Spanish (Spain)</td>
<td>SPANISH_SPAIN.WE8MSWIN1252</td>
</tr>
</tbody>
</table>
Before you can use Oracle utilities such as SQL*Plus, SQL Loader, Import, and Export in MS-DOS mode, make sure that you have set the character set field of the `NLS_LANG` parameter for the session 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 you do not set the `NLS_LANG` parameter for the MS-DOS mode session correctly, incorrect character conversion can corrupt error messages and data.

For Japanese, Korean, Simplified Chinese, and Traditional Chinese, the MS-DOS code-page is identical to the ANSI code-page. In this case, you do not 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>
<thead>
<tr>
<th>Operating System Locale</th>
<th>Character Set</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arabic</td>
<td>AR8ASMO8X</td>
</tr>
<tr>
<td>Catalan</td>
<td>WE8PC850</td>
</tr>
<tr>
<td>Chinese (PRC)</td>
<td>ZHS16GBK</td>
</tr>
<tr>
<td>Chinese (Taiwan)</td>
<td>ZHT16MSWIN950</td>
</tr>
<tr>
<td>Czech</td>
<td>EE8PC852</td>
</tr>
<tr>
<td>Danish</td>
<td>WE8PC850</td>
</tr>
<tr>
<td>Dutch</td>
<td>WE8PC850</td>
</tr>
<tr>
<td>English (United Kingdom)</td>
<td>WE8PC850</td>
</tr>
<tr>
<td>English (United States)</td>
<td>US8PC437</td>
</tr>
<tr>
<td>Finnish</td>
<td>WE8PC850</td>
</tr>
<tr>
<td>French</td>
<td>WE8PC850</td>
</tr>
<tr>
<td>German</td>
<td>WE8PC850</td>
</tr>
<tr>
<td>Greek</td>
<td>EL8PC737</td>
</tr>
</tbody>
</table>
### Table D–2 (Cont.) Oracle Character Sets for Operating System Locales

<table>
<thead>
<tr>
<th>Operating System Locale</th>
<th>Character Set</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hungarian</td>
<td>EE8PC852</td>
</tr>
<tr>
<td>Italian</td>
<td>WE8PC850</td>
</tr>
<tr>
<td>Japanese</td>
<td>JA16SJIS</td>
</tr>
<tr>
<td>Korean</td>
<td>KO16MSWIN949</td>
</tr>
<tr>
<td>Norwegian</td>
<td>WE8PC850</td>
</tr>
<tr>
<td>Polish</td>
<td>EE8PC852</td>
</tr>
<tr>
<td>Portuguese</td>
<td>WE8PC850</td>
</tr>
<tr>
<td>Romanian</td>
<td>EE8PC852</td>
</tr>
<tr>
<td>Russian</td>
<td>RU8PC866</td>
</tr>
<tr>
<td>Slovak</td>
<td>EE8PC852</td>
</tr>
<tr>
<td>Slovenian</td>
<td>EE8PC852</td>
</tr>
<tr>
<td>Spanish</td>
<td>WE8PC850</td>
</tr>
<tr>
<td>Swedish</td>
<td>WE8PC850</td>
</tr>
<tr>
<td>Turkish</td>
<td>TR8PC857</td>
</tr>
</tbody>
</table>

**See Also:** "Globalization Support in the Directory" in *Oracle Internet Directory Administrator’s Guide* for Oracle Internet Directory. Globalization Support issues and required `NLS_LANG` environment variables for the various components and tools in an Oracle Internet Directory environment.
Managing Oracle Database 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 Oracle Enterprise Management Agent HTTP Port
- Changing the Oracle 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.

<table>
<thead>
<tr>
<th>Component</th>
<th>Port Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oracle Enterprise Management Agent</td>
<td>HTTP: 1830–1849</td>
</tr>
<tr>
<td>Oracle Enterprise Manager Database Control</td>
<td>HTTP: 5500–5519</td>
</tr>
<tr>
<td></td>
<td>RMI: 5520–5539</td>
</tr>
<tr>
<td></td>
<td>JMS: 5540–5559</td>
</tr>
<tr>
<td>iSQL*Plus</td>
<td>HTTP: 5560–5579</td>
</tr>
<tr>
<td></td>
<td>RMI: 5580–5599</td>
</tr>
<tr>
<td></td>
<td>JMS: 5600–5619</td>
</tr>
<tr>
<td>Oracle Services for Microsoft Transaction Server</td>
<td>HTTP: 2030–2049</td>
</tr>
<tr>
<td>Oracle Ultra Search</td>
<td>HTTP: 5620–5639</td>
</tr>
<tr>
<td></td>
<td>RMI: 5640–5659</td>
</tr>
<tr>
<td></td>
<td>JMS: 5660–5679</td>
</tr>
</tbody>
</table>
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 Oracle Enterprise Management Agent HTTP Port

To change the Oracle Enterprise Management 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 Oracle 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 iSQL*Plus Ports

The following sections describe how to change the iSQL*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:
  ```xml```
  <web-site port="5560" ...>
  ```xml```

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:

```xml```
<rmi-server port="5580"...>
```xml```

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:

```xml```
<jms-server port="5600"...>
```xml```

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:

```xml```
<web-site port="5620"...>
```xml```

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:

```xml```
<rmi-server port="5640"...>
```xml```

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:

```xml```
<jms-server port="5660"...>
```xml```

Managing Oracle Database Port Numbers E-3
Oracle Database Troubleshooting

This appendix contains information about troubleshooting. It includes information about the following topics:

- Verifying Requirements
- What to Do if an Installation Error Occurs
- Reviewing the Log of an Installation Session
- Troubleshooting Configuration Assistants
- Noninteractive Installation Response File Error Handling
- Cleaning Up After a Failed Installation

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

Verifying Requirements

Before you try any of the troubleshooting steps in this appendix, do the following:

- Check Chapter 2, "Oracle Database Preinstallation Requirements" to ensure that the system meets the requirements and that you have completed all of the preinstallation tasks.

- Read the release notes for the product on your platform before installing it. The release notes are available on the Oracle Database Client installation media. You can find the latest version of the release notes on the Oracle Technology Network 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.
Reviewing the Log of an Installation Session

During an installation, Oracle Universal Installer records all 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.

SYSTEM_DRIVE:\Program Files\Oracle\Inventory\logs

During this first installation and all subsequent installations, Oracle Universal Installer records all of the actions that it performs in a log file in this directory. If you encounter problems during the installation, review the log file for information about possible causes of the problem.

Log filenames take the form:
installActions\date_time.log

For example, if the installation occurred at 9:00:56 A.M. on May 14, 2004, the log file would be named:
installActions2004-05-14_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-3 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:

<table>
<thead>
<tr>
<th>Status</th>
<th>Result Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Configuration assistant succeeded</td>
<td>0</td>
</tr>
</tbody>
</table>
Cleaning Up After a Failed Installation

<table>
<thead>
<tr>
<th>Status</th>
<th>Result Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Configuration assistant failed</td>
<td>1</td>
</tr>
<tr>
<td>Configuration assistant cancelled</td>
<td>-1</td>
</tr>
</tbody>
</table>

Fatal Errors

If you receive a fatal error while a configuration assistant is running:

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.

Noninteractive Installation Response File Error Handling

To determine whether a noninteractive installation succeeds or fails, check the `installActionsdate_time.log` file, located in `DRIVE_LETTER: \Program Files\Oracle\Inventory\logs`.

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 a configuration assistant validates the response file at runtime. If the validation fails, the noninteractive 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. Follow the instructions in Chapter 6, "Removing Oracle Database Software" to run Oracle Universal Installer to deinstall Oracle Database, manually remove the Oracle directory, and remove Oracle from the Registry Editor keys. Afterwards, reinstall the software.
Automatic 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 Oracle 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.

external procedures
Procedure or function written in the C programming language and stored in a shared library. An Oracle server can call external procedures or functions using PL/SQL routines. For 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.mycompany.com
```

where **sales** is the name you want to call your database and **us.mycompany.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
Process associated with a running 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
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 that client applications use 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 10g 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 10g 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 that 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$
Acronym for operating system specific. 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$ 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. See also Oracle home.

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, `C:\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. See also ORACLE_HOME, Oracle home name.
**Oracle home name**
The name of the current Oracle home, for example, `Db_1`. 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 10g Release 1 (10.1) Disk 1 of 1 and are available on OTN.

**Oracle Net foundation layer**
A networking communication layer that establishes and maintains 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, and to 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 an administrator can use the redo log files 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 databases on your computer. The SID automatically defaults to the database name portion of the global database name (**sales** in the example **sales.us.mycompany.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 logical storage unit within a database. Tablespaces are divided into logical units of storage called segments, which are further divided into extents.
Terminal Server
A Microsoft Windows thin-client terminal server, which 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 tablespace that 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)
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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