Oracle® Database

Installation Guide

11*g* Release 1 (11.1) for Microsoft Windows

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Oracle Database Installation Guide 11*g* Release 1 (11.1) for Microsoft Windows

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Primary Author: Reema Khosla

Contributing Authors: Namrata Bhakthavatsalam, Sumit Jeloka, Chuck Murray, Pushpa Raghavachar, Sanjay Sharma, Terri Winters

Contributors: Eric Belden, Maitreyee Chaliha, Sudip Datta, Vinisha Dharamshi, Jim Emmond, David Friedman, Pat Huey, Alex Keh, Mark Kennedy, Peter LaQuerre, Rich Long, Anu Natarajan, Matt McKerley, Mohamed Nosseir, Bharat Paliwal, Sham Rao Pavan, Hanlin Qian, Christian Shay, Janelle Simmons, Helen Slattery, Sujatha Tolstoy, Michael Verheij, Sushil Kumar, Madhu Velukur, Ranjith Kundapur, Sergiusz Wolicki, Jason Straub, Anne Romano, Joel Kallman, Kuassi Mensah, Sue Mavris

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Preface

This guide provides instructions about installing and configuring Oracle Database for both Microsoft Windows (32-Bit) and Microsoft Windows (x64). Only the features of Oracle Database for Microsoft Windows (32-Bit) and Microsoft Windows (x64) software installed on Windows Server 2000, Windows Server 2003, Windows Server 2003 R2, Windows XP Professional, and Windows Vista are discussed in this guide.

This preface contains these topics:

- Audience
- Documentation Accessibility
- Related Documentation
- Conventions

Audience

Oracle Database Installation Guide for Microsoft Windows is intended for anyone installing Oracle Database on a single computer. Additional installation guides for Oracle Real Application Clusters, Oracle Clusterware, Oracle Database Examples, and Oracle Enterprise Manager Grid Control are available on the relevant installation media.

To use this document, you need the following:

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

  See Also:

  - *Oracle Database Quick Installation Guide for Microsoft Windows (32-Bit)* to install Oracle Database using the default settings
  - *Oracle Database Quick Installation Guide for Microsoft Windows (x64)* to install Oracle Database using the default settings

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

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Accessibility of Code Examples in Documentation

Screen readers 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, some screen readers may not always read a line of text that consists solely of a bracket or brace.

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TTY Access to Oracle Support Services

Oracle provides dedicated Text Telephone (TTY) access to Oracle Support Services within the United States of America 24 hours a day, 7 days a week. For TTY support, call 800.446.2398. Outside the United States, call +1.407.458.2479.

Related Documentation

For more information, see these Oracle resources:

- *Oracle Database Release Notes for Microsoft Windows*

- *Oracle Database Client Installation Guide for Microsoft Windows*

- *Oracle Database Examples Installation Guide*

- *Oracle Real Application Clusters Installation Guide for Microsoft Windows*

- *Oracle Clusterware Installation Guide for Microsoft Windows*

- *Oracle Database Storage Administrator's Guide*

- *Oracle Universal Installer and OPatch User's Guide*

- *Oracle Enterprise Manager Grid Control Installation and Basic Configuration*

- *Oracle Database Platform Guide for Microsoft Windows*

- *Oracle Database Upgrade Guide*

- *Oracle Database Concepts*

- *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 Database 11*g* Release 1 (11.1) Online Documentation Library, 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. For information on how these schemas were created and how you can use them yourself, see *Oracle Database Sample Schemas.*

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://www.oracle.com/technology/membership/

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

http://www.oracle.com/technology/documentation/

Conventions

The following text conventions are used in this document:

Convention	Meaning
boldface	Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.
italic	Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.
monospace	Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter.

What's New in Oracle Database 11*g*

The following is a list of new features or enhancements provided with Oracle Database 11*g*:

- New Components Available for Installation
- Changes in the Install Options
- Database Configuration Assistant
- Database Upgrade Assistant
- Active Directory Security Enhancements
- Automatic Storage Management Fast Mirror Resync
- Oracle Data Provider for .NET
- Oracle Volume Shadow Copy Service (VSS) Writer
- SYSASM Privilege for Automatic Storage Management Administration
- Automatic Maintenance Tasks Management
- Automatic Diagnostic Repository
- Enhanced Optimal Flexible Architecture
- Oracle Direct Network File System Client
- Windows Vista Support
- Deprecated Components in Oracle Database 11g Release 1 (11.1)

New Components Available for Installation

The following are the new components available while installing Oracle Database 11*g*:

- **Oracle Application Express**: This feature is installed with Oracle Database 11*g*. It was previously named HTML DB, and was available as a separate Companion CD component. Oracle Application Express is now installed by default with any Oracle Database 11*g* installation.

- **Oracle Configuration Manager**: This feature is offered during installation. It was previously named Customer Configuration repository (CCR). It is an optional component for database installation and can be installed with any Oracle Database 11*g* installation. Oracle Configuration Manager gathers and stores details relating to the configuration of the software stored in database Oracle home directories.

- **Oracle Database Vault**: This feature is installed with Oracle Database 11*g*. It is an optional component for database installation.

- **Oracle Real Application Testing**: This feature is installed by default with the Enterprise Edition installation type of Oracle Database 11*g*.

- **Oracle SQL Developer**: This feature is installed by default with template-based database installations, such as General Purpose/Transaction Processing, and Data Warehousing. It is also installed with database client Administrator, Runtime, and Custom installations.

- **Oracle Warehouse Builder**: This feature is installed with Oracle Database 11*g*.

> **Note:** With Standard Edition and Enterprise Edition of Oracle Database 11*g* Release 1, Oracle Warehouse Builder with basic features is installed. However, with Enterprise Edition, you can purchase options that extend Oracle Warehouse Builder.

> **See Also:** The following sections and guides for more information:
>
> - Chapter 2, "Oracle Database Preinstallation Requirements" for information about the preinstallation requirements
> - *Oracle Database Application Express User's Guide* for more information about Oracle Application Express
> - The "Preinstallation Requirements for Oracle Configuration Manager" section on page 2-8 for more information
> - *Oracle Database Vault Administrator's Guide* for more information about Oracle Database Vault
> - *Oracle Database Performance Tuning Guide* for more information about Oracle Real Application Testing
> - *Oracle Database SQL Developer User's Guide* for more information about Oracle SQL Developer
> - *Oracle Warehouse Builder User's Guide* for more information about Oracle Warehouse Builder

Changes in the Install Options

The following are install option changes for Oracle Database 11*g*:

- **Oracle Configuration Manager**: Oracle Configuration Manager is integrated with Oracle Universal Installer. However, it is an optional component for database installation and can be installed with any Oracle Database 11*g* installation.

- **Oracle Data Mining**: Enterprise Edition installation type selects Oracle Database Mining option by default. In Oracle Database 11*g*, the Data Mining metadata is created with `SYS` metadata when you select the **Create Database** option.

- **Oracle Database Vault**: Oracle Database Vault is integrated with Oracle Universal Installer. However, it is an optional component with database installation. To install this product, you have to select the Custom Installation.

  To install Oracle Database Vault with Enterprise Edition, complete the Enterprise Edition installation and then perform a custom installation. Select Oracle Label Security and Oracle Database Vault, and install these products on the same Enterprise Edition database.

- **Oracle HTTP Server**: Starting with Oracle Database 11*g*, Oracle HTTP Server is available on a separate media shipped with Oracle Database. In the previous releases, this product was available as a Companion CD component.

- **Oracle Ultra Search**: Starting with Oracle Database 11*g*, Oracle Ultra Search is integrated with Oracle Database. In the previous releases, this product was available as a Companion CD component.

- **Oracle XML DB**: Starting with Oracle Database 11*g*, Oracle XML DB is no longer an optional feature. Database Configuration Assistant installs and configures it for all database installations.

> **See Also:** The following sections and guides for more information:
>
> - Chapter 2, "Oracle Database Preinstallation Requirements" section on page 2-1 for more information
> - *Oracle Database SQL Language Reference* for more information about Oracle Database Mining
> - *Oracle Database Vault Administrator's Guide* for more information about Oracle Database Vault
> - *Oracle Fusion Middleware Administrator's Guide for Oracle HTTP Server* for more information about Oracle HTTP Server
> - *Oracle Ultra Search Administrator's Guide* for more information about Oracle Ultra Search
> - *Oracle XML DB Developer's Guide* for more information about Oracle XML DB

Database Configuration Assistant

The following additions and enhancements are made to Database Configuration Assistant:

- Added Support to Configure New Database Options
- Automatic Memory Management
- Oracle Base and Diagnostic Destination Configuration
- Oracle Data Mining
- Secure Database Configuration
- Switching a Database from Database Control to Grid Control Configuration

Added Support to Configure New Database Options

The following options in Oracle Database 11*g* can be configured using Database Configuration Assistant:

- Oracle Application Express
- Oracle Database Vault
- Oracle Warehouse Builder

Automatic Memory Management

This is a new initialization parameter in Oracle Database 11*g* to automate the memory allocation. By default, Database Configuration Assistant now uses `MEMORY_TARGET` instead of specifying individual values for `SGA_TARGET` and `PGA_AGGREGATE_`

TARGET. The Memory management page of Database Configuration Assistant has a new option to select automatic memory management.

> **See Also:** The "Using Automatic Memory Management" section of *Oracle Database Administrator's Guide*

Oracle Base and Diagnostic Destination Configuration

The directory that you specify when you are prompted for ORACLE_BASE by Oracle Universal Installer is stored in the Oracle home inventory. Database Configuration Assistant uses this value to derive the default database locations and the DIAGNOSTIC_DEST parameter. The diagnostic destination location contains all Automatic Diagnostic Repository directories (diagnostic files such as Alert logs and so on). Starting with Oracle Database Release 11*g*, the initialization parameter settings for background dump, user dump, and core dump destinations are replaced by the Diagnostic Destination.

> **See Also:** Appendix B, "Optimal Flexible Architecture" for more information on Oracle base and diagnostic destination configuration

Oracle Data Mining

In Oracle Database 11*g*, Data Mining metadata is created with the SYS metadata. It is created by the catproc.sql and other scripts that are run as the SYS user. You no longer configure the Data Mining option through the Database Features screen of Oracle Database Configuration Assistant.

> **See Also:** *Oracle Data Mining Concepts* for more information about Oracle Data Mining

Secure Database Configuration

Oracle Database 11*g* has new defaults for audit and password profiles. Database Configuration Assistant has a new screen to enable the new security settings during the database creation and existing database configuration.

If you install Oracle Database Vault when installing Oracle Database 11*g*, the database security settings are enabled by default.

> **See Also:** The "Database Security Options" section on page 3-8 for more information

Switching a Database from Database Control to Grid Control Configuration

In previous releases, Database Configuration Assistant contains the functionality to configure a database either with Database Control, or with Grid Control. You can configure a database either while creating it or later. However, reconfiguring a database from Database Control to Grid Control requires significant manual effort. With Oracle Database 11*g*, Database Configuration Assistant provides the Enterprise Manager Configuration plug-in, which automates the process to switch configuration of a database from Database Control to Grid Control.

> **See Also:** *Oracle Real Application Clusters Installation Guide for Microsoft Windows* for more information about configuring Grid Control

Database Upgrade Assistant

The following additions and enhancements are made to Database Configuration Assistant:

- Command Line Option to Auto Extend System Files
- Express Edition Upgrade
- Integration with Oracle Database 11g Pre-upgrade Tool
- Moving Data Files into ASM, SAN, and Other File Systems
- Oracle Base and Diagnostic Destination Configuration

Command Line Option to Auto Extend System Files

The command line option `AUTOEXTEND` facilitates auto extending of the data files as a part of the upgrade. This option automatically extends the data files during the upgrade and turns the autoextend back to its original settings after the upgrade. This option is useful if there is enough space on the disk, and if you do not need to add new data files or manually increase the size of the files.

> **See Also:** The "Altering a Bigfile Tablespace" section in *Oracle Database Administrator's Guide* for more information about the `AUTOEXTEND` clause

Express Edition Upgrade

For single-instance databases, Oracle Database Upgrade Assistant configuration utility enables you to upgrade from Oracle Database Express Edition (Oracle Database XE) to Oracle Database 11*g*. The XE database files reside under the path `ORACLE_BASE\oradata\XE`. These files must be copied to a new location as the user may remove the XE Home after upgrade.

Integration with Oracle Database 11*g* Pre-upgrade Tool

Database Upgrade Assistant uses the new pre-upgrade script for Oracle Database 11*g*. This script is used to estimate disk space, initialization parameters, statistics gathering, and providing feedback on possible problem areas.

Moving Data Files into ASM, SAN, and Other File Systems

You can move data files to ASM, OFS, or other storage devices, such as Storage Area Networks (SAN) and Network Area Storage (NAS), as part of the upgrade. If you move the database files during the upgrade, you can benefit from the typical downtime for this tablespace by rebalancing disks and moving files to a better storage device, such as SAN, NAS, or ASM.

> **See Also:** The "Preparing Disk Groups for an Automatic Storage Management Installation" on page 2-23 for more information about preparing disk groups for Automatic Storage Management

Oracle Base and Diagnostic Destination Configuration

The directory that you specify when you are prompted for `ORACLE_BASE` by Oracle Universal Installer is stored in the Oracle home inventory. Database Upgrade Assistant uses this value to derive the default database locations and the `DIAGNOSTIC_DEST` parameter. The diagnostic destination location contains all ADR directories (diagnostic files, such as the alert logs, trace files, and so on). This diagnostic destination directory is required while upgrading an earlier Oracle

Database release to Oracle Database 11*g* release of the database. If the Oracle base directory already exists, Oracle Database Upgrade Assistant automatically retrieves this information and populates its path. Starting with Oracle Database 11*g* Release 1, the initialization parameter settings for background dump (`BACKGROUND_DUMP_DEST`), user dump (`USER_DUMP_DEST`), and core dump (`CORE_DUMP_DEST`) destinations are replaced by the Diagnostic Destination (`DIAGNOSTIC_DEST`).

> **See Also:** Appendix B, "Optimal Flexible Architecture" for more information about Oracle base and diagnostic destination configuration

Active Directory Security Enhancements

In Oracle Database 11*g* Release 1, you have the option to secure the Net Services data in the Active Directory. This data is generally considered to be public, but sites with greater security needs may need to protect it. You can make the Net Services data read-protected, and allow only specified users to access the data. To enable meaningful access control, the Lightweight Directory Access Protocol (LDAP) naming adapter for 11*g* can be configured to the require clients to authenticate to the directory during name lookup.

If you are considering implementing the authenticated Lightweight Directory Access Protocol (LDAP) name lookup in the site, then you should be aware that clients of the earlier releases cannot access Net Services, because these clients are only capable of using anonymous binds for directory name lookup.

The following are the enhancements made to secure the directory:

- Read-Access Control on Net Services
- Authenticated Bind for LDAP Naming

Read-Access Control on Net Services

Directory administrators may want to eliminate anonymous access to the Active Directory, and (or) define specific groups of people who are allowed to read Net Service data during name lookup.

At present, there are no pre-defined groups or procedures in Oracle configuration tools for defining read-access restrictions on this data. Therefore, administrators need to use standard object management tools from their directory system to manually create any necessary groups and access control lists (ACLs).

Because the access definitions for objects are complex and may involve security properties, which are inherited from parent nodes in the Directory Information Tree (DIT), Oracle recommends that administrators refer to the relevant tools and documentation for the directory system they are using, and formulate or integrate access management for Net Service objects into a directory-wide policy and security implementation.

The `dsacls.exe` command line tool displays and changes permissions, access control entries, in the access control list (ACL) of objects in Active Directory. The `dsacls` command-line tool is included in Support Tools on the Oracle Database 11*g* product media.

Additionally, you can use `ADSI EDIT`. This GUI tool is a Microsoft Management Console (MMC) snap-in that acts as a low-level editor for Active Directory. Network administrators can use Active Directory Service Interfaces (ADSI) for common administrative tasks, such as adding, deleting, and moving objects with a directory

service. Attributes for each object viewed can be changed or deleted. `ADSI EDIT` can be installed from Support Tools on product media.

Authenticated Bind for LDAP Naming

Oracle Database clients 10*g* or earlier cannot access Net Services and you need to install Oracle Database client 11*g* or later for the authentic binds. Windows clients, which use Active Directory, can be configured for authenticated binds during LDAP name lookup by adding the following parameters to their `sqlnet.ora`:

```
names.ldap_authenticate_bind= 1
```

The client's identity is derived from the Windows operating system and used during the directory bind to authenticate.

> **See Also:** *Oracle Database Enterprise User Security Administrator's Guide* for more information about Active Directory security

Automatic Storage Management Fast Mirror Resync

Automatic Storage Management fast mirror resync quickly resynchronizes Automatic Storage Management disks within a disk group after transient disk path failures, as long as the disk drive media is not corrupted. Any failures that render a failure group temporarily unavailable are considered transient failures. Disk path malfunctions, such as cable disconnections, host bus adapter or controller failures, or disk power supply interruptions, can cause transient failures. The duration of a fast mirror resync depends on the duration of the outage. The duration of a resynchronization is typically much shorter than the amount of time required to completely rebuild an entire Automatic Storage Management disk group.

> **See Also:** The "Automatic Storage Management Fast Mirror Resync" section in *Oracle Database Storage Administrator's Guide* for more information about ASM fast mirror resync

Oracle Data Provider for .NET

The following enhancements have been made to Oracle Data Provider for .NET after Oracle Database 10*g* release 2 (10.2):

■ Performance Enhancements for Oracle Database 11*g* Release 1 (11.1)

The following performance enhancements have been made:

– ODP.NET Configuration

Developers can configure ODP.NET using configuration files, including the application config, `web.config`, or `machine.config` files. Settings in the `machine.config` file override the registry settings. The settings in the application config or the `web.config` file override the values in the machine.config.

– Improved Parameter Context Caching

This release enhances the existing caching infrastructure to cache ODP.NET parameter contexts. This enhancement is independent of database version and it is available for all the supported database versions. This feature provides significant performance improvement for the applications that execute the same statement repeatedly.

This enhancement is transparent to the developer. No code changes are needed to use this feature.

- Efficient LOB Retrieval With SecureFiles

  This release improves the performance of small-sized LOB retrieval by reducing the number of round-trips to the database. This enhancement is available only with Oracle 11*g* Release 1.0 or later database versions.

  This enhancement is transparent to the developer. No code changes are needed to use this feature.

- The following enhancements have been made to 10.2.0.3:

  - Starting 10.2.0.3, ODP.NET natively supports the 64-bit .NET Framework for the following 64-bit Windows platforms:

    * Windows x64 for AMD64 and Intel EM64T processors

    * 64-bit Windows for Intel Itanium

    64-bit systems enables more scalable and better performing ODP.NET applications.

  - Configuring `FetchSize` through the Windows registry is added to ODP.NET 10.2.0.3. This feature enables applications to specify the default result set fetch size through the registry.

  - Local Transaction Support for `System.Transactions` feature is added to ODP.NET 10.2.0.3. This feature enables `System.Transactions` to use local transactions rather than distributed transactions. This can be specified either through the registry or through a connection string attribute.

- Support for Microsoft ADO.NET 2.0 is added to ODP.NET release 10.2.0.2 and includes the following:

  - Provider Factory Classes and Base Classes

    Simplifies data access code to access multiple data sources with a provider generic API.

  - Connection String Builder

    Makes creating connections strings less error-prone and easier to manage.

  - Data Source Enumerator

    Enables the application to generically obtain a collection of the Oracle data sources that the application can connect to.

  - Support for Schema Discovery

    Permits application developers to find and return database schema information, such as tables, columns, and stored procedures.

  - `System.Transactions` Support

    ODP.NET supports implicit and explicit transactions using the `System.Transactions` namespace models.

  - Batch Processing Support

    Enables batch processing when the `OracleDataAdapter.Update` method is called.

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

Oracle Volume Shadow Copy Service (VSS) Writer

Volume Shadow Copy Service is an infrastructure on Windows 2003 platforms that enables the users to create snapshots called shadow copies. The infrastructure consists of the following components that participate in the creation of snapshots using COM interfaces:

- Requestors: These are the backup applications that initiate snapshot or restore operations, and coordinate these operations with the writers and providers.

- Writers: These are the Windows applications, such as Oracle Database, whose data composes the snapshot. Typically, writers ensure that their data is in a consistent state prior to the snapshot.

- Providers: These are the software or hardware providers, which perform the physical creation of the snapshots to disk. Providers can be software-based, such as a generic Windows filesystem provider, or hardware-based, which are specialized for a particular storage system.

The interoperability of Oracle Database as a writer with Volume Shadow Copy Service infrastructure enables frequent snapshots of the database files and their restoration with a choice of backup applications and storage systems.

When you install Oracle database 11*g* Release 1, Oracle Volume Shadow Copy Service Writer is installed automatically. You can also install the writer to use with the earlier releases of Oracle Database from the Oracle Database 11*g* Release 1 installation media.

> **See Also:**   The following for more information about Oracle Volume Shadow Copy Service:
>
> - *Oracle Database Backup and Recovery User's Guide*
>
> - Chapter 8, "Performing Database Backup and Recovery with VSS" of *Oracle Database Platform Guide for Microsoft Windows*
>
> - http://metalink.oracle.com for more information about using Oracle Volume Shadow Copy Service (VSS) Writer with earlier releases on Oracle Database

SYSASM Privilege for Automatic Storage Management Administration

Oracle Database 11*g* introduces an optional system privilege, SYSASM, to secure privileges to perform Automatic Storage Management administration tasks. Oracle recommends that you use SYSASM instead of SYSDBA for Automatic Storage Management administration, to separate Automatic Storage Management administration from database administration. In a future release, Oracle may restrict access to Automatic Storage Management only to operating system users that are members of the OSASM operating system group, and require the use of SYSASM to administer Automatic Storage Management.

> **See Also:**   The "Authentication for Accessing ASM Instances" section in *Oracle Database Storage Administrator's Guide* for more information about SYSASM privilege for Automatic Storage Management

Automatic Maintenance Tasks Management

This feature provides out-of-the-box management of scheduling and resource allocation, such as CPU time, among the various database maintenance tasks, such as Automatic Optimizer Statistics Collection and Automatic Segment Advisor.

Maintenance tasks are regulated to the extent that end-user activity gets the necessary resources to finish its work.

> **See Also:** Chapter 24, "Managing Automated Database Maintenance Tasks" of *Oracle Database Administrator's Guide* for more information about Automatic Maintenance task management

Automatic Diagnostic Repository

The Automatic Diagnostic Repository is a feature added to Oracle Database 11*g*. It is a new system managed repository for storing and organizing trace files and other error diagnostic data. The Automatic Diagnostic Repository provides a comprehensive view of the critical errors encountered by the database. This feature also enables you to maintain the relevant data needed for problem diagnostics and their eventual resolution. The Automatic Diagnostic Repository reduces the time to resolve errors and code defects. The repository is stored as a directory structure under the ADR base directory that contains the `diag` directory. The default location of the ADR base directory is set by `DIAGNOSTIC_DEST`. If the `ORACLE_BASE` variable is set, then the default value of `DIAGNOSTIC_DEST` is equal to the value of the `ORACLE_BASE` variable. If the value of the `ORACLE_BASE` variable is not set, then the default value of `DIAGNOSTIC_DEST` is set to *ORACLE_HOME\log.* However, this location can be changed by using the `DIAGNOSTIC_DEST` parameter of the `init.ora`.

> **See Also:** The "Automatic Diagnostic Repository (ADR)" section in *Oracle Database Administrator's Guide* for more information about the Automatic Diagnostic Repository

Enhanced Optimal Flexible Architecture

The following enhancements are made to the Optimal Flexible Architecture in Oracle Database 11*g*:

- Oracle Base and Oracle Home
- Flash Recovery Area and Data File Location

Oracle Base and Oracle Home

In Oracle Database 11*g*, Oracle Universal Installer prompts you to specify the Oracle base. You can share this Oracle base across all of the Oracle homes you create on the system. Oracle recommends that you share an Oracle base for all of the Oracle homes created by the same user.

Oracle Universal Installer has a list box where you can edit or select the Oracle base. The installer derives the default Oracle home from the Oracle base location you provide in the list box. However, you can change the default Oracle home by editing the location.

Oracle recommends that you create the flash recovery area and data file location under Oracle base in Oracle Database 11*g* to make it Optimal Flexible Architecture compliant.

> **See Also:** *Oracle Clusterware Installation Guide for Microsoft Windows* for more information about Oracle Clusterware home

Flash Recovery Area and Data File Location

In Oracle Database 10*g*, the default locations for the flash recovery area and data files are one level above the Oracle home directory. However, in Oracle database 11*g*, Oracle base is the starting point to set the default locations for flash recovery and data files. However, Oracle recommends that you keep the flash recovery area and data file location on separate disks. To mount the disks you can use the following mount points for flash recovery area and data file location respectively:

```
ORACLE_BASE\flash_recovery_area
ORACLE_BASE\oradata
```

> **Note:** To mount a disk under `ORACLE_BASE\flash_recovery_area` and `ORACLE_BASE\oradata`, you need to format the partition using NTFS. FAT32 file partitions do not allow arbitrary mount points like this. To assign a flash recovery area and data file locations on FAT32 file partitions, you can use one of the following:
>
> - Use `ORACLE_BASE\flash_recovery_area` and `ORACLE_BASE\oradata` directories for flash recovery and data file location. However, in this case, both the locations are in the same disk.
>
> - Use separate disks for flash recovery area and data files. In this case, these disks should be mounted elsewhere, either as separate drive letters or under a directory of an NTFS partition that does not contain `ORACLE_BASE`.

Oracle recommends you use separate disks for `oradata`, flash recovery, and the Oracle home.

If you install Oracle RAC, you must share flash recovery area and data file location among all the nodes.

> **See Also:** Appendix B, "Optimal Flexible Architecture" for more information about Optimal Flexible Architecture

Oracle Direct Network File System Client

This feature is implemented as a Direct Network File System (NFS) client as a part of Oracle Kernel in Oracle Disk Manager library. NAS-based storage systems use NFS to access data. In Oracle Database 10*g*, NAS storage devices are accessed using the operating system provided kernel NFS driver, which require specific configuration settings to ensure its efficient and correct usage with Oracle. The following are the major problems that arise in correctly specifying configuration parameters:

- NFS clients are very inconsistent across platforms and vary across operating system releases.

- The configuration parameters are difficult to tune. There are more than 20 NFS parameters and they have subtle differences across platforms.

- NFS client stack is designed for general purpose. Therefore, it contains features like file attribute management that are not required for Oracle.

- Oracle Direct NFS implements NFS version 3 protocol within the Oracle kernel.

The following are the main advantages of implementing Oracle Direct NFS client functionality in Oracle kernel:

- It enables complete control over input-output paths to network file servers, resulting in predictable performance, simplified configuration management, and superior diagnostics.

- Its operations avoid the kernel NFS layer bottlenecks and resource limitations. However, the kernel is still used for network communication modules.

- It provides a common NFS interface for Oracle for potential use on all host platforms and supported NFS servers.

- It enables improved performance through load balancing across multiple connections to NFS servers and deep pipelines of asynchronous input-output operations with improved concurrency.

> **See Also:** *Oracle Clusterware Installation Guide for Microsoft Windows* for more information about Network File System

Windows Vista Support

This release is supported on Windows Vista.

> **See Also:** The following sections for more information about Windows Vista requirements and components supported on it:
>
> - "Oracle Database Hardware Requirements" on page 2-1
> - "Oracle Database Software Requirements" on page 2-5
> - "Managing User Accounts with User Account Control on Windows Vista" on page 1-5
> - "Components Supported on Windows XP and Windows Vista (32-Bit)" on page 2-10

Deprecated Components in Oracle Database 11*g* Release 1 (11.1)

The following is a list of components that were part of Oracle Database 10*g* release 2 (10.2), and are not available for installation with Oracle Database 11*g*:

- *i*SQL*Plus
- Oracle Workflow
- Oracle Data Mining Scoring Engine
- Oracle Enterprise Manager Java console
- SQL*Plus Graphic User Interface

1

Overview of Oracle Database Installation

This chapter describes the different installation types of Oracle Database and issues to consider before you install Oracle Database:

- Planning Your Installation
- New Oracle Products Installed with This Release
- Installation Considerations
- Oracle Database Installation Methods
- Oracle Database Installation Types
- Database Configuration Options
- Database Storage Options
- Database Management Options
- Database Backup and Recovery Options
- E-mail Notification Options
- Upgrade Considerations

Planning Your Installation

The Oracle Database installation process consists of six steps:

1. **Read the release notes**: Read the Oracle Database 11*g* Release 1 (11.1) release notes before you begin the installation. The release notes are available with the platform-specific documentation. The latest version of the release notes is available on Oracle Technology Network at:

   http://www.oracle.com/technology/documentation

2. **Review the 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*

3. **Plan the installation**: This overview chapter describes the Oracle products that you can install and issues that you must consider before starting the installation.

You also may want to see Appendix G, which covers frequently asked questions about installing Oracle Database components, such as how to install Oracle Database if your site uses Oracle applications or if you need multiple Oracle Database client connections.

If you plan to perform multiple installations, see Appendix C for information about silent or noninteractive installations using response files, and cloning the Oracle home.

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

4. **Complete preinstallation tasks**: Chapter 2 describes tasks that you must complete before installing Oracle Database.

5. **Install the software**: Use the following sections to install Oracle Database:

   - Chapter 3 describes how to use Oracle Universal Installer to install Oracle Database and Automatic Storage Management, as well as how to clone an Oracle home.

   - Appendix C describes how to perform silent or noninteractive installations using response files, which you may want to use if you need to perform multiple installations of Oracle Database.

   - Appendix D describes how to install and use Oracle components in different languages.

   - Appendix F provides troubleshooting advice in case you encounter problems with the installation.

   - Chapter 6 describes how to remove Oracle Database software.

6. **Complete postinstallation tasks**: Chapter 4 describes postinstallation tasks.

7. **Get started using Oracle Database**: Use the following sections to get started using Oracle Database:

   - Chapter 5 describes how to check the contents of the installed Oracle Database, how to start the database and various other Oracle tools, and how to locate various files.

   - "Cloning an Oracle Home" on page 3-20 describes how you can clone an existing Oracle Database home.

   - 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.

   - Appendix E explains how to manage Oracle Database port numbers.

New Oracle Products Installed with This Release

The following products are new for Oracle Database 11*g* Release 1 and installed by default during a database installation:

- Oracle Application Express

- Oracle Warehouse Builder

- Oracle Configuration Manager

- Oracle SQL Developer

- Oracle Database Vault

Oracle Application Express

Oracle Application Express is a tool for rapid development and deployment of Web applications on an Oracle Database installation. It provides the productivity benefits of a desktop database, the security, reliability, and performance of Oracle Database. With little programming or scripting and only a Web browser, you can build reporting and data entry applications on existing tables, views, or data imported from spreadsheets.

Oracle Warehouse Builder

Oracle Warehouse Builder is the only enterprise business intelligence integration design tool that manages the full life-cycle of data and metadata for the Oracle Database. It provides an easy to use graphical environment to rapidly design, deploy, and manage business intelligence systems.

With the Standard and Enterprise Editions of Oracle Database, you can use Oracle Warehouse Builder which enables you to integrate and transform data into high quality information. When you install the Standard Edition or Enterprise Edition of Oracle Database 11*g*, that installation provides you with components necessary for Oracle Warehouse Builder, including an unpopulated schema, OWB_SYS. Unlock the OWB_SYS schema and install the Oracle Warehouse Builder software on a client computer, as described in *Oracle Warehouse Builder Installation and Configuration Guide*.

Oracle Configuration Manager

Oracle Configuration Manager is a utility that can be optionally configured when installing the Oracle Database. Oracle Configuration Manager is used to collect client configuration information and upload it to the Oracle repository. This information is uploaded to Oracle*MetaLink*, where Global Customer Support can retrieve the information to examine the customer Oracle Home and system setup. When the client configuration data is uploaded on a regular basis, customer support representatives can analyze this data and provide better service to the customers. For example, when a customer logs a service request, they can associate the configuration data directly with that service request. The customer support representative can then view the list of systems associated with the customer and solve problems accordingly.

Some of the benefits of using Oracle Configuration Manager are as follows:

- Reduces time for resolution of support issues

- Provides pro-active problem avoidance

- Improves access to best practices and the Oracle knowledge base

- Improves understanding of customer's business needs and provides consistent responses and services

Oracle SQL Developer

Oracle SQL Developer is a graphical version of SQL*Plus that gives database developers a convenient way to perform basic tasks. Following are the functions you can perform with Oracle SQL Developer:

- Browse, create, edit, and delete (drop) database objects

- Run SQL statements and scripts

- Create, edit, compile, and debug PL/SQL code

- Create, edit, and update data

- Import data, export data, and Data Definition Language (DDL)

- View and create reports

- View metadata and data of Microsoft Access, Microsoft SQL Server, and MySQL databases

Oracle Database Vault

Oracle Database Vault enables you to secure business data in ways that were not possible before. Database Vault uses a multifactored and multilayered approach to implementing database security. Before you plan the upgrade process, become familiar with the features of Oracle Database Vault. The *Oracle Database Vault Administrator's Guide* discusses the basic features of Oracle Database Vault. This product is installed with Enterprise Edition only. You need to do an Advanced install with Enterprise Edition.

> **Note:** You cannot remove or uninstall the Database Vault option. However, you can disable Oracle Database Vault. See *Oracle Database Vault Administrator's Guide* for more details.

See Also:

- "Disable Oracle Database Vault" and "Enable Oracle Database Vault" in *Oracle Database Upgrade Guide* for more information on Oracle Database Vault upgrades

- "Downgrade the Database" and "Enabling Oracle Database Vault" in *Oracle Database Upgrade Guide* for more information on Oracle Database Vault downgrades

Installation Considerations

This section contains information that you should consider before deciding how to install this product. It contains the following sections:

- Installation Differences Between Windows and UNIX Systems

- Managing User Accounts with User Account Control on Windows Vista

- Hardware and Software Certification

- Multiple Oracle Home Support

- Oracle Cluster Synchronization Services

- Using Network Attached Storage or NFS File Systems

- Oracle Universal Installer Overview

- Oracle Base Directory

- Oracle Home Directory

Installation Differences Between Windows and UNIX Systems

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

- Startup and shutdown services

  With Windows, Oracle Universal Installer creates and sets startup and shutdown services at installation time. With UNIX systems, administrators are responsible for creating these services.

- Environment variables

  With Windows, Oracle Universal Installer sets environment variables such as PATH, ORACLE_BASE, ORACLE_HOME, and ORACLE_SID in the registry. In UNIX systems, you must manually set these environment variables.

- DBA account for database administrators

  With Windows, Oracle Universal Installer creates the ORA_DBA group. In UNIX systems, you must create the DBA account manually.

- Account for running Oracle Universal Installer

  With Windows, you log in with Administrator privileges. You do not need a separate account. With UNIX systems, you must create this account manually.

  > **See Also:** "Oracle Database Windows/UNIX Differences" appendix in *Oracle Database Platform Guide for Microsoft Windows*

Managing User Accounts with User Account Control on Windows Vista

To ensure that only trusted applications run on your computer, Windows Vista provides User Account Control. If you have enabled this security feature, then, depending on how you have configured it, Oracle Universal Installer prompts you for either your consent or your credentials when installing Oracle Database. Provide either the consent or your Windows Administrator credentials as appropriate.

You must have Administrator privileges to run some Oracle tools, such as Database Configuration Assistant, Net Configuration Assistant, and OPatch, or to run any tool or application that writes to any directory within the Oracle home. If User Account Control is enabled, and you are logged in as the local Administrator, then you can successfully run each of these commands in the usual way. However, if you are logged in as "a member of the Administrator group," then you must explicitly invoke these tasks with Windows Administrator privileges. All the Oracle shortcuts which require Administrator privileges will be invoked as "Administrator" automatically when we click the shortcuts. However, if you run the above tools from a Windows command prompt, you need to run them from an admin command prompt. OPatch does not have a shortcut and has to be run from an admin command prompt. See "Starting Database Tools on Windows Vista" in *Oracle Database Platform Guide for Microsoft Windows* for more information.

To start a command prompt window with Windows Administrator privileges:

1. On your Windows Vista Desktop, create a shortcut for the command prompt window. An icon for that shortcut appears on the Desktop.

2. Right click the icon for the newly created shortcut, and specify "Run as administrator."

When you open this window, the title bar reads Administrator: Command Prompt. Commands run from within this window are run with Administrator privileges.

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:

https://metalink.oracle.com/

You must register online before using Oracle*MetaLink*. After logging in, click **Certify** from the top right-hand side of the screen. The Certifications page appears. Other options include **Product Availability**, **Desupport Notices**, and **Alerts**.

> **See Also:** "Windows Certification and Web Browser Support" on page 2-9

Third-Party Database Certification for SQL Developer

SQL Developer can be used to view metadata and data of several non-Oracle databases. The following table lists the third-party database certifications.

Database	Releases	Notes
Microsoft Access	Access 97 Access 2000 Access 2003	For any Access release: no JDBC driver needed, but you must ensure read access to the system tables in the `.mdb` file.
Microsoft SQL Server	SQL Server 7 SQL Server 2000 SQL Server 2005	For any Microsoft SQL Server release: JDBC driver `jtds-1.2.2.jar` required. This is included in the `jtds-1.2-dist.zip` available from `sourceforge.net`.
MySQL	MySQL 3.x MySQL 4.x MySQL 5.x	For any MySQL release: JDBC driver required. For MySQL 5.x: `mysql-connector-java-5.0.4-bin.jar` is required, which is included in `mysql-connector-java-5.0.4.zip`.

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. This allows flexibility in deployment and maintenance of the database software. For example, it allows you to run different versions of the database simultaneously on the same system, or it allows you to upgrade specific database or Automatic Storage Management instances on a system without affecting other running databases. However, when you have installed multiple Oracle Homes on a single system, there is also some added complexity introduced that you may need to take into account to allow these Oracle Homes to coexist.

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 Oracle Database 11*g* Release 1 (11.1) software into an existing Oracle9*i* Oracle home directory. If you attempt to install this

release into an Oracle home directory that contains software from an earlier Oracle release, the installation fails.

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

> **See Also:** Oracle*Metalink* Note 460054.1 for more details about multiple Oracle home environment issues

Oracle Cluster Synchronization Services

The Oracle Cluster Synchronization Services (CSS) service synchronizes an Automatic Storage Management instance and the database instances that rely on it for database file storage. By default, Oracle Universal Installer does not configure Oracle Cluster Synchronization Services; it only configures it if you select Automatic Storage Management as a storage or recovery option. Because Oracle Cluster Synchronization Services must be running before any Automatic Storage Management instance starts, Oracle Universal Installer configures it to start automatically when the system starts.

For Oracle RAC installations, Oracle Universal Installer installs the CSS service with Oracle Clusterware in a separate Oracle home directory (also called the Oracle Clusterware home directory). For single-instance installations (not Oracle RAC), you can install and run the CSS service from whichever home Automatic Storage Management runs from. Automatic Storage Management can run from either a separate Oracle home or from the same Oracle home as Oracle Database.

If you have installed Oracle Cluster Synchronization Services from the same Oracle home as Oracle Database, 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:

- "Automatic Storage Management" on page 1-13

- "Running Oracle Cluster Synchronization Services from a Different Oracle Home" on page 4-27

- "Removing Oracle Cluster Synchronization Services" on page 6-2

Using Network Attached Storage or NFS File Systems

Oracle Database 11*g* must be able to verify that *writes* to a disk are completed successfully. NFS file systems, including file systems on NAS devices, may not be able to guarantee that writes to a disk are completed successfully, and this may lead to possible data file corruption.

If a storage device is supported, then you can use it to store Oracle software files, Oracle database files, or both.

> **See Also:** "Configuring Oracle Direct NFS Client" for more information

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 silent or noninteractive installation of Oracle software using response files. See Appendix C, "Installing and Configuring Oracle Database Using Response Files" for more information.

You must use the Oracle Universal Installer 11*g* to install components into an Oracle Database 11*g* Release 1 (11.1) Oracle home directory.

Oracle Universal Installer automatically installs the Oracle version of the Java Runtime Environment (JRE). This version is required to run Oracle Universal Installer and several Oracle assistants. Do *not* modify the JRE, unless doing so with a patch provided by Oracle*MetaLink*. Visit the following site to find Oracle patches to download:

https://metalink.oracle.com/

When Oracle Universal Installer runs, it creates an *db_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 at the same directory level as *ORACLE_BASE\ORACLE_HOME*.

> **See Also:** *Oracle Universal Installer and OPatch User's Guide* is included in your Oracle Documentation Library and is automatically installed on your hard drive during installation. To access this guide, from the **Start** menu, select **Programs**, then **Oracle - *ORACLE_HOME***, then **Oracle Installation Products**, then **Universal Installer Concepts Guide**.

Oracle Base Directory

If you install Oracle Database 11*g* release 1 (11.1) 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 to install Oracle Database. You should install this release of Oracle Database into the same release used to create the existing Oracle base directory.

In a default Windows installation, the Oracle base directory appears as follows:

DRIVE_LETTER:\app*username*

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

Oracle Home Directory

This section covers the following topics:

- Contents of the Oracle Home Environment
- Multiple Oracle Home Components

Contents of the Oracle Home Environment

The Oracle home directory is located under the Oracle base directory. For example, in a default Windows installation, if you name the Oracle home directory `db_1`, it appears in the Oracle base directory as follows:

```
DRIVE_LETTER:\app\username\product\11.1.0\db_1
```

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

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

> **Note:** Oracle Objects for OLE is not supported on Windows x64.

Oracle Database Vault Default Audit Policy and Initialization Parameters

Oracle Database Vault installs a baseline database auditing policy. This policy covers the access control configuration information stored in Database Vault database tables, information stored in Oracle Catalog (rollback segments, tablespaces, and so on), the use of system privileges, and Oracle Label Security configuration. When you install Oracle Database Vault, the security specific database initialization parameters are initialized with default values.

> **See Also:** *Oracle Database Vault Administrator's Guide* for more
> information on the database audit policy

Oracle Database Installation Methods

You can choose different installation methods to install Oracle Database, which are as follows:

- Interactive Installation Methods

- Automated Installation Methods Using Response Files

Interactive Installation Methods

When you use the interactive method to install Oracle Database, Oracle Universal Installer displays a series of screens that enable you to specify all of the required information to install the Oracle Database software and optionally create a database.

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 window. 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 window 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 window, select **Custom**.

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

    - Install Oracle RAC.

    - 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 for database storage.

    - Specify different passwords for administrative schemas.

    - Configure automated backups or Oracle Enterprise Manager notifications.

    - Configure Oracle Configuration Manager.

Automated Installation Methods Using Response Files

By creating a response file and specifying this file when you start Oracle Universal Installer, you can automate some or all of the Oracle Database installation. These

automated installation methods are useful if you need to perform multiple installations on similarly configured systems.

When you use a response file, you can run Oracle Universal Installer in the following modes, depending on whether you specify all of the required information or not:

- **Silent Mode:** Oracle Universal Installer runs in silent mode if you use a response file that specifies all required information. None of the Oracle Universal Installer screens are displayed.

- **Suppressed Mode:** Oracle Universal Installer runs in suppressed mode if you do not specify all required information in the response file. Oracle Universal Installer displays only the screens that prompt for the information that you did not specify.

For more information about these modes and about how to complete an installation using response files, see Appendix C.

Oracle Database Installation Types

You can choose one of the following installation types when installing Oracle Database 11*g*:

- **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.

- **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 RAC is not installed with Personal Edition.

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

> **Note:** If you perform a Custom Installation, then ensure that you install only the components covered by your license. You can not install Standard Edition using Custom Installation.

> **See Also:**
>
> - *Oracle Database Client Installation Guide for Microsoft 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

> **Note:** The installation process is the same for all the installation types. Ensure that you install the products for which you have a valid license.

Database Configuration Options

You can create an Oracle database during the installation process. If you choose to create an Oracle database, Oracle Universal Installer uses Oracle Database Configuration Assistant to create it. You can 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.

This section describes the following database configuration options:

- Preconfigured Database Types
- Installation Choices that Affect Database Creation
- Creating a Database After Installation

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
- Advanced

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

Installation Choices that Affect Database Creation

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

- Noninteractive mode

  If you choose 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 Oracle 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 Oracle Database Configuration Assistant in interactive mode. Using the screens in Oracle 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 the **Help** button on any of the Oracle Database Configuration Assistant windows for a description of the information that you must specify on that window.

Creating a Database After Installation

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

> **See Also:** *Oracle Database 2 Day DBA* for more information about using Oracle 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 the following storage options for database files:

- File System
- Automatic Storage Management

File System

If you choose the file system option, Oracle 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 mounting 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 to 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

Automatic Storage Management is a high-performance storage management solution for Oracle database files that makes most manual I/O performance tuning tasks

unnecessary. It simplifies the management of a dynamic database environment, such as creating and laying out databases and managing disk space.

Automatic Storage Management works well with single database installations, multiple database installations, and in Oracle RAC environments. It can be used with databases created in Oracle Database 10*g* release 1 (10.1 and later); conversely, Oracle Database 11*g* Release 1 (11.1) databases can use Automatic Storage Management from Oracle Database 10*g* release 1 (10.1.0.3 and later). If your site has multiple single-instance databases, you can use Oracle Clusterware to consolidate multiple databases into a single clustered storage pool. Automatic Storage Management manages the storage of all database files, such as redo logs, control files, data pump export files, and so on. However, it does not manage the Oracle Database executable binary files.

In a nutshell, to use Automatic Storage Management, you allocate partitioned disks to Oracle with preferences for striping and mirroring. Automatic Storage Management manages the disk space for you, thus eliminating the need for traditional disk management tools such as logical volume managers (LVM), file systems, and the numerous commands necessary to manage both. The synchronization between Automatic Storage Management and the database instance is handled by Oracle Cluster Synchronization Services (CSS).

Automatic Storage Management Components

Automatic Storage Management uses the following components:

- Automatic Storage Management Disk Groups
- Automatic Storage Management Instance

Automatic Storage Management Disk Groups

 A disk group is a set of disk devices that Automatic Storage Management manages as a single unit. Each disk device can be an individual physical disk, a multiple disk device such as a RAID storage array or a logical volume, or a partition on a physical disk. However, in most cases, disk groups consist of one or more individual physical disks. To enable Automatic Storage Management to balance I/O and storage appropriately within the disk group, make sure that all devices in the disk group have similar, if not identical, storage capacity and performance.

You can set the redundancy and striping attributes of individual file types within a disk group by using Automatic Storage Management disk group templates. When you create a disk group, Automatic Storage Management creates a set of default templates for that disk group. Default template settings depend on the disk group type. For example, the default template for control files for a normal redundancy disk group sets three-way mirroring. All other file templates are two-way mirrored. For a high redundancy disk group, the default mirroring cannot be changed; that is, all files are always three-way mirrored in a high redundancy disk group. You can modify the default templates to suit the unique needs of your site. See *Oracle Database Administrator's Guide* for more information.

Automatic Storage Management spreads data evenly across all of the devices in the disk group to optimize performance and utilization. You can add or remove disk devices from a disk group without shutting down the database. When you add or remove disks, Automatic Storage Management rebalances the data files across the disk group. You can create multiple disk groups to handle specific tasks, such as backup and recovery operations, in addition to routine file storage activities.

When you add a device to a disk group, you can specify a failure group for that device. Failure groups identify disk devices that have common failure characteristics,

for example, devices that are attached to the same controller. If the controller fails, then all devices attached to it become unavailable. By default, each device also belongs to its own failure group. By using the failure groups you specify, Automatic Storage Management can distribute data among the devices in the disk group to help minimize the risk of data loss caused by component failures.

Automatic Storage Management Instance

The Automatic Storage Management instance is a special Oracle instance that manages Automatic Storage Management disk groups. It is recommended to have the Automatic Storage Management instance in the own Oracle home. It is also recommended that you run this instance before you start a database instance, which uses Automatic Storage Management. When you choose Automatic Storage Management as your database storage mechanism, this instance is created and started, if necessary. For a single-instance Oracle Database installation, you only need one Automatic Storage Management instance, regardless of the number of database instances on the computer. The Automatic Storage Management instance on any given node in a single cluster can handle any combination of disk group types.

General Steps for Installing Automatic Storage Management

To install Automatic Storage Management, you use Oracle Universal Installer. The following are the general steps for installing Automatic Storage Management:

1. Determine disk requirements for your site and if necessary, create one or more disk partitions for Automatic Storage Management.

   "Preparing Disk Groups for an Automatic Storage Management Installation" on page 2-23 provides guidelines on how to determine disk requirements for your site.

2. Run Oracle Universal Installer to install and create an Automatic Storage Management instance and to create one or more Automatic Storage Management disk groups that the Automatic Storage Management instance will manage.

   "Step 1: Reviewing Automatic Storage Management Installation Considerations" on page 3-15 provides advice on where to install Automatic Storage Management and other installation considerations. "Step 2: Creating the Automatic Storage Management Instance and Configuring Disk Groups" on page 3-15 describes how to create an Automatic Storage Management instance and disk groups.

   After you have created an Automatic Storage Management instance and its associated disk groups, subsequent databases that you create will be able to use Automatic Storage Management for file storage management. If you have databases that were created before you installed Automatic Storage Management, you can migrate them to Automatic Storage Management by using the Enterprise Manager Migrate Database wizard. This wizard is available in Enterprise Manager Grid Control or Database Control. Alternatively, you can use Oracle Database Recovery Manager (RMAN) to perform the migration.

3. Create the databases that will use Automatic Storage Management.

   "Step 3: Installing Oracle Database to Use Automatic Storage Management" on page 3-17 describes how to create and a database for Automatic Storage Management.

4. Test the Automatic Storage Management installation.

   "Step 4: Testing the Automatic Storage Management Installation" on page 3-19 provides a simple test to check that the Automatic Storage Management installation was successful.

"Managing Automatic Storage Management" on page 5-4 explains how to start and access Automatic Storage Management and which Oracle database tools you can use to manage it.

> **See Also:**
> - "Oracle Cluster Synchronization Services" on page 1-7
> - *Oracle Database 2 Day DBA* for a general overview, from a non-platform perspective, of Automatic Storage Management
> - *Oracle Database New Features Guide* for information on new features in this release of Automatic Storage Management
> - *Oracle Database Administrator's Guide* for a more detailed description of Automatic Storage Management
> - http://www.oracle.com/technology/products/database/asm for additional information on Automatic Storage Management from Oracle Technology Network

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:

- 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 11*g* Grid Control (or simply Grid Control).

  > **Note:** Oracle Enterprise Manager 11*g* is available separately on the Oracle Enterprise Manager Grid Control installation media.

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

  Oracle Enterprise Manager Database Control software is installed by default with every Oracle Database installation except Custom. During a Custom installation, you can choose not to install Oracle Enterprise Manager Database Control. However, Oracle recommends that you install it. This local installation provides a Web-based interface called Oracle Enterprise Manager Database Control. Database Control is similar in function to 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 database, or install Oracle Enterprise Manager 11*g* Grid Control.

  > **See Also:** *Oracle Enterprise Manager Concepts* and *Oracle Enterprise Manager Grid Control Installation and Basic Configuration* for more information about Oracle Enterprise Manager 11*g*

This section contains the following topics:

- Management Options for Preconfigured Databases
- Management Options for Custom Databases
- Features Provided by Oracle Enterprise Manager Database Control

Management Options for Preconfigured Databases

When you 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 use Database Control to manage the database. However, if you install Oracle Management Agent after you install Oracle Database, you can 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 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 Oracle Database Configuration Assistant in interactive mode. Use Oracle 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 Oracle 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, which is installed by default with Oracle Database, 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

Database Backup and Recovery Options

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

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.

This section covers the following topics:

- Enabling Automated Backups

- Backup Job Default Settings

> **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 User's Guide* for more detailed information about defining a backup strategy and backing up and recovering Oracle databases

Enabling Automated Backups

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

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

- The location of the flash recovery area

  You can 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 user name and password for the backup job

  Oracle Enterprise Manager uses the operating system credentials that you specify when running the backup job. The user name that you specify must belong to the Windows group that identifies database administrators (the ORA_DBA group). This user also needs to have Logon As A Batch Job privilege.

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 Oracle 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.

E-mail Notification Options

If you choose to use 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 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 can belong to an individual, or can be a shared e-mail account, or can be a distribution list.

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

Upgrade Considerations

Oracle recommends installing Oracle Database 11*g* release 1 (11.1) into a new Oracle home directory. If you must install Oracle Database 11*g* release 1 (11.1) into an Oracle home directory that contains previously installed Oracle8*i* or Oracle9*i* components, then use Oracle Universal Installer to remove these components before beginning a new installation.

See *Oracle Database Upgrade Guide* before deciding to upgrade an existing database. Supported upgrade paths and upgrade procedures 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 Client and Application Software Installations

- Downgrading a Database

AL24UTFFSS Character Set

> **Note:** The information in this section does *not* apply to an upgrade of a release 9.0.1 or later release of Oracle Database.

Before you upgrade an existing database that uses the AL24UTFFSS character set, you must upgrade the database character set to UTF8. 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.

> **Caution:** AL32UTF8 is the Oracle Database character set that is appropriate for XMLType data. It is equivalent to the IANA registered standard UTF-8 encoding, which supports all valid XML characters.
>
> Do not confuse Oracle Database database character set UTF8 (no hyphen) with database character set AL32UTF8 or with character encoding UTF-8. Database character set UTF8 has been superseded by AL32UTF8. Do not use UTF8 for XML data. UTF8 supports only Unicode version 3.0 and earlier; it does not support all valid XML characters. AL32UTF8 has no such limitation.
>
> Using database character set UTF8 for XML data could potentially cause a fatal error or affect security negatively. If a character that is not supported by the database character set appears in an input-document element name, a replacement character (usually a question mark) is substituted for it. This terminates parsing and raise an exception.

> **See Also:** *Oracle Database Globalization Support Guide* for more information about Character Set Support

Policies for Client and Application Software Installations

If you upgrade your Oracle database to 11*g* release 1 (11.1), then Oracle recommends that you upgrade the client software to Oracle Database 11*g* release 1 (11.1) 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.

Downgrading a Database

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

2

Oracle Database Preinstallation Requirements

This chapter describes the tasks that you must complete before you start Oracle Universal Installer. It includes information about the following tasks:

- Oracle Database Hardware Requirements
- Oracle Database Software Requirements
- Preinstallation Requirements for Oracle Configuration Manager
- Preinstallation Tasks for Oracle Application Express
- Windows Certification and Web Browser Support
- Oracle Database Network Topics
- Individual Component Requirements

Oracle Database Hardware Requirements

This section describes hardware component and hard disk space requirements.

- Hardware Component Requirements for Windows 32-Bit
- Hardware Component Requirements for Windows x64
- Hard Disk Space Requirements for Windows 32-Bit
- Hard Disk Space Requirements for Windows x64
- Verifying Hardware Requirements

Hardware Component Requirements for Windows 32-Bit

The following table lists the hardware components that are required for Oracle Database on Windows 32-Bit.

Table 2–1   Windows 32-Bit Hardware Requirements

Requirement	Value
Physical memory (RAM)	1 GB minimum
Virtual memory	Double the amount of RAM

Table 2–1   (Cont.) Windows 32-Bit Hardware Requirements

Requirement	Value
Disk space	Basic Installation Type total: 4.55 GB
	Advanced Installation Types total: 4.92 GB
	See Table 2–3 for details.
Processor	550 MHz minimum
	(On Windows Vista, 800 MHz minimum)
Video adapter	256 colors

See Also:

- "Configuring Disk Storage for Oracle Data Files and Recovery Files" on page 2-20

- "Creating Directories for Oracle Data Files or Recovery Files" on page 2-21

- "Preparing Disk Groups for an Automatic Storage Management Installation" on page 2-23

- "Installing with Minimum Memory Requirements" on page 3-3

Hardware Component Requirements for Windows x64

The following table lists the hardware components that are required for Oracle Database on Windows x64.

Table 2–2   Windows x64 Hardware Requirements

Requirement	Value
Physical memory (RAM)	1 GB minimum
Virtual memory	Double the amount of RAM
Disk space	Total: 5.1 GB
	See Table 2–3 for details.
Processor	AMD64, or Intel Extended memory (EM64T)
Video adapter	256 colors

See Also:

- "Configuring Disk Storage for Oracle Data Files and Recovery Files" on page 2-20

- "Creating Directories for Oracle Data Files or Recovery Files" on page 2-21

- "Preparing Disk Groups for an Automatic Storage Management Installation" on page 2-23

- "Installing with Minimum Memory Requirements" on page 3-3

Hard Disk Space Requirements for Windows 32-Bit

This section lists system requirements for Windows platforms that use the NT File System (NTFS). 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 window. The Summary window 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 2–3 lists the disk space requirements on NTFS. The starter database requires 1.55 GB of disk space. The figures in this table include the starter database. FAT32 space requirements are slightly higher.

Table 2–3   Windows 32-Bit Disk Space Requirements on NTFS

Installation Type	TEMP Space	SYSTEM_DRIVE:\ Program Files\Oracle	Oracle Home	Data Files *	Total
Basic Installation	200 MB	3.1 MB	2.95 GB	1.60 GB	4.55 GB
Advanced Installation: All Editions	200 MB	3.1 MB	2.96 GB **	1.96 GB **	4.92 GB **

* Refers to the contents of the `admin`, `cfgtoollogs`, `flash_recovery_area`, and `oradata` directories in the *ORACLE_BASE* directory.

** This size can be higher depending on the installation options selected, such as languages or additional components. If you choose to install Oracle Database with automated backups enabled, include at least 2 GB extra for data file disk space.

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

Hard Disk Space Requirements for Windows x64

This section lists system requirements for Windows platforms that use the NT File System (NTFS). 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 window. The Summary window 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 2–4 lists the disk space requirements on NTFS. The starter database requires 720 MB of disk space. The figures in this table include the starter database. FAT32 space requirements are slightly higher.

Table 2–4   Windows x64 Disk Space Requirements on NTFS

Installation Type	TEMP Space	SYSTEM_DRIVE:\ Program Files\Oracle	Oracle Home	Data Files *	Total
Basic Installation	125 MB	2 MB	3.5 GB	1.60 GB	5.1 GB
Advanced Installation: All Editions	125 MB	2 MB	3.5 GB **	1.6 GB **	5.1 GB **

* Refers to the contents of the `admin`, `cfgtoollogs`, `flash_recovery_area`, and `oradata` directories in the *ORACLE_BASE* directory.

** This size can be higher depending on the installation options selected, such as languages or additional components. If you choose to install Oracle Database with automated backups enabled, include at least 2 GB extra for data file disk space.

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

Verifying Hardware Requirements

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

1. Determine the physical RAM size. For example, on a Windows 2003 computer, double-click **System** in the Windows Control Panel and click the **General** tab. If the size of the physical RAM installed in the system is less than the required size, then you must install more memory before continuing.

2. Determine the size of the configured virtual memory (also known as paging file size). For example, on a Windows 2003 computer, double-click **System**, click the **Advanced** tab, and click **Settings** in the Performance section. Then click the **Advanced** tab. The virtual memory is listed in the Virtual Memory section.

   If necessary, see your operating system documentation for information about how to configure additional virtual memory.

3. Determine the amount of free disk space on the system. For example, on a Windows 2003 computer, double-click **My Computer**, right-click the drive where the Oracle software is to be installed, and select **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.

   On Windows 32-Bit, if there is less than 200 MB of disk space available in the `temp` directory, then delete all unnecessary files. If the temp disk space is still less than 200 MB, then set the `TEMP` or `TMP` environment variable to point to a different hard drive location.

   On Windows x64, if there is less than 125 MB of disk space available in the `temp` directory, then delete all unnecessary files. If the temp disk space is still less than 125 MB, then set the `TEMP` or `TMP` environment variable to point to a different hard drive location.

   For example, to change the environment variables on a Windows 2003 computer, double-click **System**, click the **Advanced** tab, and click **Environment Variables**.

Oracle Database Software Requirements

Table 2–5 lists the software requirements for Oracle Database on Windows 32-Bit.

Table 2–6 lists the software requirements for Oracle Database on Windows x64.

Table 2–5   Windows 32-Bit Software Requirements

Requirement	Value
System Architecture	Processor: Intel (x86), AMD64, and Intel EM64T
	Note: Oracle provides 32-bit (x86) and 64-bit (x64) versions of Oracle Database for Microsoft Windows. The 32-bit database version, which this installation guide describes, runs on the 32-bit version of Windows on either x86 or x64 hardware. Oracle provides limited certification for 32-bit Oracle Database Client on 64-bit Windows (x64). For additional information, visit Oracle*MetaLink* at:
	https://metalink.oracle.com
Operating System	Oracle Database for 32-bit Windows is supported on the following operating systems:
	■ Windows 2000 with Service Pack 1 or later. All editions, including Terminal Services and Microsoft Windows 2000 MultiLanguage Edition (MLE), are supported.
	■ Windows Server 2003 - all editions
	■ Windows Server 2003 R2 - all editions
	■ Windows XP Professional
	■ Windows Vista - Business, Enterprise, and Ultimate editions
	Windows NT is not supported.
	Windows Multilingual User Interface Pack is supported on Windows Server 2003, Windows Server 2003 R2, Windows XP Professional, and Windows Vista.
Compiler	Pro*Cobol has been tested and certified with Net Express 5.0.
	Object Oriented COBOL (OOCOBOL) specifications are not supported.
	Note: This version of Pro*Cobol has also been tested and certified on Windows x64 with Net Express 5.0.
	The following components are supported with the Microsoft Visual C++ .NET 2002 7.0 and Microsoft Visual C++ .NET 2003 7.1 compilers:
	■ Oracle Call Interface
	■ External callouts
	■ Pro*C/C++
	■ XDK
	Oracle C++ Call Interface is supported with
	■ Microsoft Visual C++ .NET 2003 7.1
	■ Microsoft Visual C++ .NET 2005 8.0 - OCCI libraries are installed under *ORACLE_BASE\ORACLE_ HOME*\oci\lib\msvc\vc8. When developing OCCI applications with MSVC++ 8.0, ensure that the OCCI libraries are correctly selected from this directory for linking and executing.

Table 2–5   (Cont.) Windows 32-Bit Software Requirements

Requirement	Value
Network Protocol	The **Oracle Net foundation layer** uses Oracle protocol support to communicate with the following industry-standard network protocols: ■ TCP/IP ■ TCP/IP with SSL ■ Named Pipes
Oracle Database Client	If you plan to connect to Oracle Database 11*g* release 1 (11.1) from a release of Oracle Database Client that is earlier than 11*g* release 1 (11.1), you will not be able to do so if the following conditions exist: ■ Oracle Database Client is running on the same computer as Oracle Database 11*g* Release 1 (11.1). ■ Microsoft Windows Terminal Services is not running on the same computer as Oracle Database Client. Typically, Terminal Services is installed and configured with Microsoft Windows 2003 and Windows Server 2003 R2, but on Microsoft Windows 2000, Windows XP, or Windows Vista, it may not be installed or enabled. ■ Oracle Database Client is version 8.0, 9.0–9.2.0.6, or 10.1–10.1.0.3. ■ Oracle Database Client is not running as Administrator. To remedy this problem, upgrade Oracle Database Client by using the latest Oracle Database Family patchset (9.2.0.8, or 10.1.0.5 or later). You can download the patchset from the Patches and Updates section of Oracle*MetaLink* at: https://metalink.oracle.com

See Also:

■ "Components Supported on Windows XP and Windows Vista (32-Bit)" on page 2-10

■ "Windows Telnet Services Support" on page 2-10

■ "Windows Terminal Services and Remote Desktop Support" on page 2-10

Table 2–6   Windows x64 Software Requirements

Requirement	Value
System Architecture	Processor: AMD64, or Intel EM64T
	Note: Oracle provides 32-bit (x86) and 64-bit (x64) versions of Oracle Database for Microsoft Windows. The 64-bit (x64) database version, which this installation guide describes, runs on the 64-bit version of Windows on AMD64 and EM64T hardware. Oracle provides limited certification for 32-bit Oracle Database Client on 64-bit Windows (x64). For additional information, visit Oracle*MetaLink* at: https://metalink.oracle.com

Table 2–6   (Cont.) Windows x64 Software Requirements

Requirement	Value
Operating System	Oracle Database for x64 Windows is supported on the following operating systems: ■ Windows Server 2003 - all x64 editions ■ Windows Server 2003 R2 - all x64 editions ■ Windows XP Professional x64 Edition ■ Windows Vista x64 - Business, Enterprise, and Ultimate editions Windows Multilingual User Interface Pack is supported on Windows Server 2003, Windows Server 2003 R2, Windows XP Professional, and Windows Vista.
Compiler	Pro*Cobol is supported with Net Express 5.0. The following components are supported with the Windows 2003 Microsoft Platform SDK (or later) and Intel compiler version 8.1: ■ Oracle C++ Call Interface ■ Oracle Call Interface ■ External callouts ■ Pro*C/C++ ■ XDK Microsoft Visual C++ 8 (Visual Studio 2005) is supported for Oracle C++ Call Interface. GNU Compiler Collection (GCC) and Object Oriented COBOL (OOCOBOL) specifications are not supported. OCCI libraries are installed under `ORACLE_BASE\ORACLE_HOME\oci\lib\msvc\vc8`. When developing OCCI applications with MSVC++ 8.0, ensure that the OCCI libraries are correctly selected from this directory for linking and executing.
Network Protocol	The **Oracle Net foundation layer** uses Oracle protocol support to communicate with the following industry-standard network protocols: ■ TCP/IP ■ TCP/IP with SSL ■ Named Pipes

Table 2–6   (Cont.) Windows x64 Software Requirements

Requirement	Value
Oracle Database Client	If you plan to connect to Oracle Database 11*g* release 1 (11.1) from a release of Oracle Database Client that is earlier than 11*g* release 1 (11.1), you will not be able to do so if the following conditions exist:
	■ Oracle Database Client is running on the same computer as Oracle Database 11*g* release 1 (11.1).
	■ Microsoft Windows Terminal Services is not running on the same computer as Oracle Database Client. Typically, Terminal Services is installed and configured with Microsoft Windows 2003, but on Windows XP it may not be installed or enabled.
	■ Oracle Database Client is version 8.*x*, 9.*x*, or 10.1.*x*.
	■ Oracle Database Client is not running as Administrator.
	To remedy this problem, upgrade Oracle Database Client by using the latest Oracle Database Family patchset (9.2.0.7 and 10.1.0.5). You can download the patchset from the Patches and Updates section of Oracle*MetaLink* at:
	https://metalink.oracle.com

> **See Also:**
>
> ■ "Unsupported Components on Windows x64" on page 2-11
>
> ■ "Windows Telnet Services Support" on page 2-10
>
> ■ "Windows Terminal Services and Remote Desktop Support" on page 2-10
>
> ■ 64-bit software and documentation on Oracle Technology Network:
>
> http://www.oracle.com/technology/documentation/

Preinstallation Requirements for Oracle Configuration Manager

During installation, you are prompted to provide information required to enable Oracle Configuration Manager. In the event that you need to place a service request with Oracle Support, the configuration information can help to provide a more rapid resolution to the service issue.

You can enable Oracle Configuration Manager during or after installation, or choose not to enable it. To enable it during installation, you must have the following information available:

■ Customer Support Identification Number (CSI) that identifies your organization

■ Oracle*MetaLink* user account name

■ Country code associated with your service agreement

See Oracle*MetaLink* (https://metalink.oracle.com) if you encounter registration failures and are uncertain that the correct country code has been specified. You can find the country associated with your Oracle*MetaLink* account in the Profile section under the Licenses link.

> **See Also:** *Oracle Configuration Manager Installation and Administration Guide* for further information.

Preinstallation Tasks for Oracle Application Express

This section describes the tasks that you need to take care of before you install the software:

- Browser Requirements
- Oracle XML DB Requirement
- Oracle Text Requirement
- PL/SQL Web Toolkit

Browser Requirements

To view or develop Oracle Application Express applications, Web browsers must support Java Script and the HTML 4.0, and CSS 1.0 standards. The following browsers meet this requirement:

- Microsoft Internet Explorer 6.0 or later version
- Firefox 1.0 or a later version

Oracle XML DB Requirement

Oracle XML DB must be installed in the Oracle database that you want to use. If you are using a preconfigured database created either during an installation or by Database Configuration Assistant (DBCA), then Oracle XML DB is already installed and configured.

> **See Also:** *Oracle XML DB Developer's Guide* for more information about manually adding Oracle XML DB to an existing database

Oracle Text Requirement

Oracle Text must be installed so that you can use the searchable online Help in Oracle Application Express. By default, Oracle Text is installed as part of Oracle Database.

> **See Also:** *Oracle Text Application Developer's Guide* for more information on Oracle Text

PL/SQL Web Toolkit

Oracle Application Express requires the PL/SQL Web Toolkit version 10.1.2.0.6 or later. For instructions on determining the current version of the PL/SQL Web Toolkit, and for instructions on installing version 10.1.2.0.6, please review the README.txt file contained in the directory apex/owa.

Windows Certification and Web Browser Support

The following sections provide certification information:

- Windows Telnet Services Support
- Windows Terminal Services and Remote Desktop Support
- Components Supported on Windows XP and Windows Vista (32-Bit)
- Unsupported Components on Windows x64
- Web Browser Support

Windows Telnet Services Support

Windows 2000, Windows 2003, Windows Server 2003 R2, Windows XP, and Windows Vista 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 on Windows 32-Bit and SQL*Plus, Export, Import, and SQL*Loader on Windows x64, 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 Windows **Services** utility.

Windows Terminal Services and Remote Desktop Support

Oracle supports installing, configuring, and running Oracle Database through Terminal Services on Windows 2000, Windows 2003, Windows Server 2003 R2, Windows XP, and Windows Vista. To install Oracle Database, Oracle recommends that you start all configuration tools from the Terminal Server 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 2003 and Windows Server 2003 R2**: You can configure Windows 2003 and Windows Server 2003 R2 to use Terminal Services in Remote Desktop for Administration Mode or Terminal Server Mode.

- **Windows XP and Windows Vista**: The Remote Desktop is only available in Single User Mode.

> **See Also:**
>
> - The Microsoft Web site for more information about terminal services
>
>   http://www.microsoft.com/
>
> - The Oracle*MetaLink* Web site for the latest Terminal Server certification information
>
>   https://metalink.oracle.com/

Components Supported on Windows XP and Windows Vista (32-Bit)

All Oracle Database components are supported on Windows XP and Windows Vista with the following exceptions:

- DCE Adapter Support

- Entrust PKI Support

- Oracle Messaging Gateway

- Oracle RAC, including Cluster File System and Server Management

- Oracle Clusterware

- nCipher Accelerator Support

- Oracle Services for Microsoft Transaction Server are not supported on Windows Vista. As a result, all Oracle Windows data access drivers on Windows Vista that use Oracle Services for Microsoft Transaction Server to enlist in Microsoft Distributed Transaction Coordinator (MSDTC) coordinated transactions cannot participate in those coordinated transactions. These data access drivers include Oracle Data Provider for .NET, Oracle Provider for OLE DB, Oracle Objects for OLE, and ODBC. Check Oracle*MetaLink* for up to date information on Oracle Services for Microsoft Transaction Server certification with Windows Vista.

- Oracle Fail Safe Server is not supported on Windows XP and Windows Vista. Oracle Fail Safe Manager Console is supported on Windows XP but not on Windows Vista.

- Oracle HTTP Server is not supported on Windows Vista.

Additional Components Supporting Windows Vista (32-Bit)

Oracle Developer Tools for Visual Studio .NET 10.2.0.2.20 or higher is certified for Microsoft Vista beginning with Oracle Data Access Components (ODAC) 10.2.0.2.21. Oracle Data Access Components bundle Windows data access products and tools together in a single installation and are available for download from Oracle Technology Network:

http://www.oracle.com/technology/software/tech/windows/odpnet/index.html

The tools provide support for Microsoft Visual Studio 2005 and Microsoft Visual Studio .NET 2003 users.

Unsupported Components on Windows x64

All Oracle Database components are supported on Windows x64 with the following exceptions:

- DCE Adapter

- GNU Compiler Collection (GCC)

- Oracle Developer Tools

- Oracle HTTP Server

- Business Components for Java (BC4J)

- CyberSafe Adapter Support

- Entrust PKI Support

- Java Server Pages

- nCipher Accelerator Support

- Oracle Messaging Gateway

- Oracle Fail Safe Manager Console

- Oracle Objects for OLE

- Oracle Services for Microsoft Transaction Server are not supported on Windows Vista. As a result, all Oracle Windows data access drivers on Windows Vista that use Oracle Services for Microsoft Transaction Server to enlist in Microsoft Distributed Transaction Coordinator (MSDTC) coordinated transactions cannot participate in those coordinated transactions. These data access drivers include Oracle Data Provider for .NET, Oracle Provider for OLE DB, Oracle Objects for

OLE, and ODBC. Check Oracle*MetaLink* for up to date information on Oracle Services for Microsoft Transaction Server certification with Windows Vista.

- Database Gateway for ODBC
- Oracle Database Gateway for APPC
- Oracle Database Gateway for WebSphere MQ
- Oracle Database Gateway for Informix
- Oracle Database Gateway for DRDA
- Oracle Database Gateway for IMS
- Oracle Database Gateway for VSAM
- Oracle Database Gateway for Adabas
- Oracle Database Gateway for Sybase
- Oracle Database Gateway for SQL Server
- Oracle Database Gateway for Teradata

Web Browser Support

The following Web browsers are supported for Oracle Enterprise Manager Database Control:

- Netscape Navigator 7.2
- Netscape Navigator 8.1
- Mozilla version 1.7
- Microsoft Internet Explorer 6.0 SP2
- Microsoft Internet Explorer 7.0 or later
- Firefox 1.0.4
- Firefox 1.5
- Firefox 2.0

> **Note:** Microsoft Internet Explorer 7.0 is the only web browser certified on Windows Vista.

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 media drive.

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

- Installing Oracle Database on DHCP Computers
- Installing Oracle Database on Computers with Multiple IP Addresses
- Installing Oracle Database on Computers with Multiple Aliases
- Installing Oracle Database on Non-Networked Computers
- Installing a Loopback Adapter

Installing Oracle Database 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 2-15

Installing Oracle Database on Computers with Multiple IP Addresses

You can install Oracle Database on a computer that has multiple IP addresses, also known as a multihomed computer. Typically, a multihomed computer has multiple network cards. Each IP address is associated with a host name; additionally, you can set up aliases for the host name. By default, Oracle Universal Installer uses the `ORACLE_HOSTNAME` environment variable setting to find the host name. If `ORACLE_HOSTNAME` is not set and you are installing on a computer that has multiple network cards, Oracle Universal Installer determines the host name by using the first name in the `hosts` file, typically located in *DRIVE_LETTER*:\ `WINDOWS\system32\drivers\etc` on Windows 2003, Windows Server 2003 R2, Windows XP, and Windows Vista or `DRIVE_ LETTER:\WINNT\system32\drivers\etc` on Windows 2000.

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

Setting the ORACLE_HOSTNAME Environment Variable

To set the `ORACLE_HOSTNAME` environment variable:

1. Display **System** in the Windows Control Panel.

2. In the System Properties dialog box, click **Advanced**.

3. In the **Advanced** tab, click **Environment Variables**.

4. In the Environment Variables dialog box, under System Variables, click New.

5. In the New System Variable dialog box, enter the following information:

    - **Variable name**: `ORACLE_HOSTNAME`

    - **Variable value**: The host name of the computer that you want to use.

6. Click **OK**, then in the Environment Variables dialog box, click **OK**.

7. Click **OK** in the Environment Variables dialog box, then in the System Properties dialog box, click **OK**.

Installing Oracle Database on Computers with Multiple Aliases

A computer with multiple aliases is registered with the naming service under a single IP address but with multiple aliases. The naming service resolves any of those aliases to the same computer. Before installing Oracle Database on such a computer, set the ORACLE_HOSTNAME environment variable to the computer whose host name you want to use.

Installing Oracle Database 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 address and host name.

    > **See Also:**

2. Ping the computer from itself, using only the host name and using the fully qualified name, which should be in the *DRIVE_ LETTER:*\system32\drivers\etc\hosts file.

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

    ```
    DRIVE_LETTER:\>ping mycomputer              Ping itself using just the
    hostname.
    Reply from 10.10.10.10                 Returns local IP.
    DRIVE_LETTER:\>ping mycomputer.mydomain.com  Ping using a fully qualified
    name.
    Reply from 10.10.10.10                 Returns local IP.
    ```

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

    If the ping command fails, contact your network administrator.

Connecting the Computer to the Network after Installation

If you connect the computer to a network after installation, the 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 address 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.

You can change the bind order for the adapters. You need not reinstall the loopback adapter.

A loopback adapter is required if:

- You are installing on a DHCP computer, or

  > **See Also:** "Installing Oracle Database on DHCP Computers" on page 2-13

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

  > **See Also:** "Installing Oracle Database on Non-Networked Computers" on page 2-14

This section covers the following topics:

- Checking if a Loopback Adapter Is Installed on Your Computer
- Installing a Loopback Adapter on Windows 2000
- Installing a Loopback Adapter on Windows 2003, Windows Server 2003 R2, or Windows XP
- Installing a Loopback Adapter on Windows Vista
- Removing a Loopback Adapter

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:

```
DRIVE_LETTER:\>ipconfig /all
```

> **Note:** Loopback Adapter installed on the computer should be made the Primary Network Adapter.

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:
Connection-specific DNS Suffix  . :
Description . . . . . . . . . . . : Microsoft Loopback Adapter
Physical Address. . . . . . . . . : 02-00-4C-4F-4F-50
DHCP Enabled. . . . . . . . . . . : No
IP Address. . . . . . . . . . . . : 169.254.25.129
Subnet Mask . . . . . . . . . . . : 255.255.0.0
```

Installing a Loopback Adapter on Windows 2000

Windows 2000 reports on the *first* 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** to start the Add/Remove Hardware wizard.

3. In the Welcome window, click **Next**.

4. In the Choose a Hardware Task window, select **Add/Troubleshoot a device**, and click **Next**.

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

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

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

8. In the Select Network Adapter window, do the following:

    a. **Manufacturers**: Select **Microsoft**.

    b. **Network Adapter**: Select **Microsoft Loopback Adapter**.

    c. Click **Next**.

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

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

11. Right-click **My Network Places** on the desktop and select **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". Select **Properties**.

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

14. In the Properties dialog box, click **Use the following IP address** and do the following:

    a. **IP Address**: Enter a non-routable IP address for the loopback adapter. Oracle recommends the following non-routable addresses:

       – `192.168.`*x.x* (*x* is any value between 0 and 255)

       – `10.10.10.10`

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

    c. Record the values you entered, which you will need later in this procedure.

    d. Leave all other fields empty.

    e. Click **OK**.

15. Close the Network Connections window.

16. Restart the computer.

17. Add a line to the *DRIVE_LETTER*`:\WINNT\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:

> **Note:** Domain name is optional.

a. Open **System** in the Control Panel, and select the **Network Identification** tab.

In **Full computer name**, make sure you see the host name and the domain name, for example, `sales.us.mycompany.com`.

b. Click **Properties**.

In **Computer name**, you should see the host name, and in **Full computer name**, you should see the host name and domain name. Using the previous example, the host name would be `sales` and the domain would be `us.mycompany.com`.

c. Click **More**. In **Primary DNS suffix of this computer**, the domain name, for example, `us.mycompany.com`, should appear.

d. Exit the **System** Control Panel item.

Installing a Loopback Adapter on Windows 2003, Windows Server 2003 R2, or Windows XP

To install a loopback adapter on Windows 2003, Windows Server 2003 R2, or Windows XP:

1. Open the Windows Control Panel.

2. Double-click **Add Hardware** to start the Add Hardware wizard.

3. In the Welcome window, click **Next**.

4. In the Is the hardware connected? window, select **Yes, I have already connected the hardware**, and click **Next**.

5. In the The following hardware is already installed on your computer window, in the list of installed hardware, select **Add a new hardware device**, and click **Next**.

6. In the The wizard can help you install other hardware window, select **Install the hardware that I manually select from a list**, and click **Next**.

7. From the list of common hardware types, select **Network adapters**, and click **Next**.

8. In the Select Network Adapter window, make the following selections:

- **Manufacturer**: Select **Microsoft**.

- **Network Adapter**: Select **Microsoft Loopback Adapter**.

9. Click **Next**.

10. In the The wizard is ready to install your hardware window, click **Next**.

11. In the Completing the Add Hardware Wizard window, 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 item.

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 box, click **Use the following IP address** 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 0 and 255)

       – `10.10.10.10`

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

    c. Record the values you entered, which you will need later in this procedure.

    d. Leave all other fields empty.

    e. Click **OK**.

17. Click **Close**.

18. Close **Network Connections**.

19. Restart the computer.

20. Add a line to the `DRIVE_LETTER:\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:

    > **Note:** Domain name is optional.

    a. Open **System** in the Control Panel, and select the **Computer Name** tab. In **Full computer name**, make sure you see the host name and the domain name, for example, `sales.us.mycompany.com`.

    b. Click **Change**. In **Computer name**, you should see the hostname, and in **Full computer name**, you should see the host name and domain name. Using the previous example, the host name would be `sales` and the domain would be `us.mycompany.com`.

    c. Click **More**. In **Primary DNS suffix of this computer**, you should see the domain name, for example, us.mycompany.com.

Installing a Loopback Adapter on Windows Vista

To install a loopback adapter on Windows Vista:

1. Open the Windows Control Panel.

2. Double-click **Add Hardware** to start the Add Hardware wizard.

3. In the Welcome window, click **Next**.

4. In the The wizard can help you install other hardware window, select **Install the hardware that I manually select from a list**, and click **Next**.

5. From the list of hardware types, select the type of hardware you are installing window, select **Network adapters**, and click **Next**.

6. In the Select Network Adapter window, make the following selections:

- **Manufacturer**: Select **Microsoft**.

- **Network Adapter**: Select **Microsoft Loopback Adapter**.

7. Click **Next**.

8. In the The wizard is ready to install your hardware window, click **Next**.

9. In the Completing the Add Hardware Wizard window, click **Finish**.

The remaining steps are same as given for Windows XP.

Removing a Loopback Adapter

To remove a loopback adapter:

1. Display **System** in the Windows Control Panel.

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**.

5. Click **OK**.

6. Restart the computer.

7. Remove the line from the

DRIVE_LETTER:\WINNT\system32\drivers\etc\hosts file, added after the localhost line while installing the loopback adapter on Windows 2000 and

DRIVE_LETTER:\WINDOWS\system32\drivers\etc\hosts file, added after the localhost line while installing the loopback adapter on other Windows operating systems.

Individual Component Requirements

This section contains these topics:

- Configuring Disk Storage for Oracle Data Files and Recovery Files

- Creating Directories for Oracle Data Files or Recovery Files

- Preparing Disk Groups for an Automatic Storage Management Installation

- Oracle Advanced Security Requirements

- Oracle Enterprise Manager Requirements

- Oracle-Managed Files Requirements

- Oracle Real Application Clusters (Oracle RAC)

- Oracle Volume Shadow Copy Service (VSS) Writer

- Recommended System Requirements for SQL Developer

Configuring Disk Storage for Oracle Data Files and Recovery Files

This section describes the storage options for storing Oracle data files 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:

- Choosing a Storage Option for Oracle Data Files

- Choosing a Storage Option for Oracle Database Recovery Files

- Configuring Disk Storage

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

Choosing a Storage Option for Oracle Data Files

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

- File system

- Automatic Storage Management

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 data files.

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 Data Files or Recovery Files" section on page 2-21.

- To use Automatic Storage Management for database or recovery file storage, see the "Preparing Disk Groups for an Automatic Storage Management Installation" section on page 2-23.

Creating Directories for Oracle Data Files 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 Data Files on a File System
- Guidelines for Placing Oracle Recovery Files on a File System
- Creating Required Directories

Guidelines for Placing Oracle Data Files on a File System

- You can choose either a single file system or more than one file system to store the data files:
  - 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 redundant array of independent disks (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 distribute physical I/O and create separate control files on different devices for increased reliability. It also enables full implementation of 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 950 MB of free disk space.

  For production databases, you must estimate the disk space requirement depending how you plan to use 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 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 data files and the recovery files unavailable, place the recovery files in a file system on a different physical disk from the data files.

> **Note:** Alternatively, for both data files and recovery files, use an Automatic Storage Management disk group.

- 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 Database Backup and Recovery User's Guide* for more information about the flash recovery area

- 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 from the Oracle base directory.

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

1. Use Windows Explorer to determine the free disk space on the file system.

2. From the display, identify the file systems that you want to use:

File Type	File System Requirements
Data files	Choose either: ■ A single file system with at least 950 MB of free disk space. ■ Two or more file systems with at least 950 MB of free disk space in total.
Recovery files	Choose a file system with at least 2 GB of free disk space.

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

3. Note the names of the directories for the file systems that you identified.

4. If you also want to use Automatic Storage Management, see "Preparing Disk Groups for an Automatic Storage Management Installation" on page 2-23 for instructions. Otherwise see the "Stopping Existing Oracle Services" section on page 2-31.

Preparing Disk Groups for an Automatic Storage Management Installation

If you plan to use Automatic Storage Management to manage database files for your databases, use the procedures in this section to prepare disk groups before you install an Automatic Storage Management instance.

This section covers the following topics:

- General Steps for Preparing Disk Groups for an Automatic Storage Management Installation
- Step 1: Identifying Storage Requirements for Automatic Storage Management
- Step 2 (Optional): Using an Existing Automatic Storage Management Disk Group
- Step 3: Creating DAS or SAN Disk Partitions for an Automatic Storage Management Instance
- Step 4: Manually Configuring Disks for Automatic Storage Management

General Steps for Preparing Disk Groups for an Automatic Storage Management Installation

You will follow these general steps to configure Automatic Storage Management:

1. Identify your site's storage requirements.

2. Optionally, use an existing Automatic Storage Management disk group.

3. If you are creating a new Automatic Storage Management disk group, create partitions for direct attached storage (DAS) or storage area network (SAN) disks.

4. Use one of the following methods to complete the Automatic Storage Management configuration:

   - If you plan to install Oracle Database using interactive mode, Oracle Universal Installer prompts you for the Automatic Storage Management disk configuration information during the installation.

   - If you plan to install Oracle Database using silent or noninteractive mode, you will need to manually configure the disks before performing the installation.

Step 1: 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 data files, recovery files, or both.

   > **Note:** You do not have to use the same storage mechanism for data file and recovery files. One storage mechanism can use the file system while the other uses Automatic Storage Management. If you plan to use Automatic Storage Management for both data files and recovery files, you should create separate Automatic Storage Management disk groups for the data files and the recovery files.

   If you plan to 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 how you choose to create a database during the installation, you have the following options:

- If you select an installation method that runs Oracle Database Configuration Assistant in interactive mode, by choosing the Advanced database configuration option for example, then you can decide whether you want to use the same Automatic Storage Management disk group for data files and recovery files, or you can choose to use different disk groups for each file type. Ideally, you should create separate Automatic Storage Management disk groups for data files and recovery files.

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

- If you select an installation type that runs Oracle Database Configuration Assistant in noninteractive mode, then you must use the same Automatic Storage Management disk group for data files and recovery files.

2. Decide on the Automatic Storage Management redundancy level that you want to use for each Automatic Storage Management disk group you will create.

    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. The redundancy levels are 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, by default Automatic Storage Management uses two-way mirroring for data files and three-way mirroring for control files, to increase performance and reliability. Alternatively, you can use two-way mirroring or no mirroring. A normal redundancy disk group requires a minimum of two failure groups (or two disk devices) if you are using two-way mirroring. The effective disk space in a normal redundancy disk group is *half* the sum of the disk space in all of its devices.

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

- High redundancy

    In a high redundancy disk group, 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 *one-third* the sum of the disk space in all of its devices.

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

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

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

Redundancy Level	Minimum Number of Disks	Data Files	Recovery Files	Both File Types
External	1	1.6 GB	2.95 GB	4.55 GB
Normal	2	3.2 GB	5.90 GB	9.10 GB
High	3	4.8 GB	8.85 GB	13.65 GB

If an Automatic Storage Management instance is already 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 step 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.

> **Note:** You need to complete this step only if you intend to use an installation method that runs Oracle 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 allow 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: "Step 4: Manually Configuring Disks for Automatic Storage Management" on page 2-29 for information about completing this task

Step 2 (Optional): 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 Oracle 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 Oracle Database Configuration Assistant after the installation to create a database.

- If you select an installation type that runs Oracle Database Configuration Assistant in noninteractive 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 Grid Control or Database Controlon Windows-32 Bit systems. You can use Oracle Enterprise Manager Database Control only on Windows x64 systems.. Alternatively, you can use the following procedure:

1. In the **Services** Control Panel, make sure that the `OracleASMService+ASM` service has started.

2. Open a Windows command prompt and temporarily set the `ORACLE_SID` environment variable to specify the appropriate value for the Automatic Storage Management instance that you want to use.

   For example, if the Automatic Storage Management SID, which is named `+ASM`, is located in the `asm` directory, you would enter the following setting:

   ```
   DRIVE_LETTER:\>set ORACLE_SID=+ASM
   ```

3. Connect to the Automatic Storage Management instance as the `SYS` user with the `SYSASM` privilege and start the instance if necessary:

   ```
   DRIVE_LETTER:\>sqlplus /nolog
   SQL> CONNECT SYS as SYSASM
   Enter password: SYS_password
   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.

Step 3: Creating DAS or SAN Disk Partitions for an Automatic Storage Management Instance

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.

> **Note:** You can use any physical disk for Automatic Storage Management, as long as it is partitioned. However, you cannot use NAS or Microsoft dynamic disks.

This section covers the following topics.

- Step 1: Enabling Disk Automounting for Windows Server 2003 or Windows Server 2003 R2
- Step 2: Creating the Disk Partitions

Step 1: Enabling Disk Automounting for Windows Server 2003 or Windows Server 2003 R2

Before you can configure partitions or logical drives on Windows Server 2003 or Windows Server 2003 R2, you must enable disk automounting. Enable disk automounting when using:

- Disk partitions on both single-instance and Oracle RAC installations
- Cluster file system for Oracle RAC
- Oracle Clusterware
- Raw partitions for a single-node database installation
- Primary or logical partitions for Automatic Storage Management

To enable automounting:

1. Enter the following commands at a command prompt:

```
DRIVE_LETTER:\> diskpart
DISKPART> automount enable
DISKPART> exit
```

2. Restart your computer.

Step 2: Creating the Disk Partitions

To create disk 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:

- The graphical user interface Disk Management snap-in to manage disks.

  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.

  On Windows Vista, create primary partitions and logical drives in extended partitions by selecting the **New Simple Volume** option. To create a raw device, assign a drive letter and remove the letter after the partition is created. For other Windows, there is no need to assign the drive letter. You must select **Do not format this partition** to specify raw partition. Do not use spanned volumes or striped volumes. These options will convert the volume to a dynamic disk. Automatic Storage Management does not support dynamic disks.

  For other Windows, create primary partitions by selecting the **New Partition** option. Create the logical drives by selecting the **New Logical Drive** option.

- The command line tool `diskpart.exe`, which lets you create primary partitions, extended partitions, and logical drives.

  `Diskpart.exe` is supported on Windows 2000, Windows 2003, Windows Server 2003 R2, Windows XP, and Windows Vista. This tool is not included with the Windows 2000 operating system. You can download it from the Microsoft Windows 2000 Resource Kit. The examples in this section use `diskpart.exe`.

  To access this tool, enter `diskpart.exe` at the command prompt. The syntax for using `diskpart.exe` for the procedures in this section is as follows:

  ```
  DRIVE_LETTER:\> diskpart
  DISKPART> select disk diskn
  DISKPART> create partition primary | extended | logical size=sizen
  DISKPART>
  ```

  where:

  - `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 MB.

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

You can enter the `diskpart.exe` commands directly at the command line; alternatively, you can enter the commands in a text file, and then run `diskpart /s` using this file as a script.

You cannot create more than four primary disk partitions per disk. If you need more, you can get around this limitation by creating three primary partitions and then creating the fourth partition as an extended partition with as many logical partitions within as you need.

For example, on Windows x86-based systems, to create the disk partitions on Disk 5 and assign them each a size:

```
DISKPART> select disk 5
DISKPART> create partition primary size=500
```

```
DISKPART> ...
DISKPART> create partition extended
DISKPART> create partition logical size=800
DISKPART> ...
DISKPART> create partition logical size=500

DISKPART> select disk 5
DISKPART> create partition primary size=500
DISKPART> ...
DISKPART> create partition primary size=800
```

If you prefer to use logical drives, you can create an extended partition and then assign the logical drives within it. For example:

```
DISKPART> create partition extended
DISKPART> create partition logical size=500
DISKPART> create partition logical size=700
```

Step 4: Manually 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. If you install Oracle Database in interactive mode, Oracle Universal Installer configures the disks' headers during the installation process. However, if you plan to install Oracle Database in noninteractive mode, you need to manually configure the disks before installation by using either `asmtoolg` (GUI version) or `asmtool` (command-line version). You can also use these tools to reconfigure the disks later on after installation. The `asmtoolg` and `asmtool` utilities only work on partitioned disks—you cannot use Automatic Storage Management on unpartitioned disks.

The `asmtoolg` and `asmtool` 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 that `asmtoolg` or `asmtool` creates make this easier than using Windows drive letters.

All disk names created by `asmtoolg` or `asmtool` begin with the prefix `ORCLDISK` followed by a user-defined prefix (the default is `DATA`) and a disk number for identification purposes.

Using the asmtoolg Tool (Graphical User Interface)

The `asmtoolg` tool 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 media labeled Oracle Database 11*g* Release 1 (11.1), from the media root, go to asmtool directory and double-click `asmtoolg`.

    If Oracle Database is already installed, go to *ORACLE_BASE\ORACLE_HOME*\bin and double-click `asmtoolg`.

    On Windows Vista, if UAC is enabled, then you need to create a desktop shortcut to a DOS command window. Open the command window through the **Run as Administrator**, right-click context menu, and launch `asmtoolg`.

2. Select the **Add or change label** option, then click **Next**.

    The `asmtoolg` tool will show the devices available on the system. Unrecognized disks are labeled as "Candidate device", 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 ASM disks.

If necessary, follow the steps under "Step 3: Creating DAS or SAN Disk Partitions for an Automatic Storage Management Instance" on page 2-27 to create a disk partition for the ASM instance.

3. In the Stamp Disks window, select the disks to stamp.

    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 window shows all stamped Automatic Storage Management disks.

2. In the Delete Stamps window, select the disks to unstamp.

3. Click **Next**.

4. Click **Finish**.

Using the asmtool Utility (Command Line)

The asmtool utility is a command-line interface for stamping disks. On Windows Vista, if UAC is enabled, then you need to create a desktop shortcut to a DOS command window. Open the command window through the **Run as Administrator**, right-click context menu, and launch asmtool. It has the following options:

Option	Description	Example

-add	Adds or changes stamps. You must specify the hard disk, partition, and new stamp name. If the disk is a raw device or has an existing Automatic Storage Management stamp, then you must specify the -force option. Also sets ASM instances to rescan the available disks.	`asmtool -add [-force]`
		`\Device\Harddisk1\Partition1 ORCLDISKASM0`
		`\Device\Harddisk2\Partition1 ORCLDISKASM2...`

	If you need to partition a disk, follow the procedures under "Step 3: Creating DAS or SAN Disk Partitions for an Automatic Storage Management Instance" on page 2-27.	

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

Stopping Existing Oracle Services

> **Note:** 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:**

Oracle Advanced Security Requirements

Satisfy hardware and software requirements so that you can 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.

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

Oracle Enterprise Manager Requirements

All Oracle Enterprise Manager products must be 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, are released on the Enterprise
> Manager Grid Control installation media. Enterprise Manager
> Database Control is available on the Oracle Database installation
> media.

> **See Also:** *Oracle Enterprise Manager Grid Control Installation and Basic
> Configuration* available on the Enterprise Manager Grid Control
> installation media for Oracle Database installation on Windows 32-bit
> -based systems

Oracle-Managed Files Requirements

If you choose the Custom installation type or the Advanced database creation option,
you can 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 to enable
Oracle Managed Files.

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

Oracle Real Application Clusters (Oracle RAC)

If you plan to install Oracle RAC, you must first install Oracle Clusterware.

> **See Also:** *Oracle Real Application Clusters Installation Guide for
> Microsoft Windows* and *Oracle Clusterware Installation Guide for Microsoft
> Windows*, available on the Oracle Clusterware installation media

Oracle Volume Shadow Copy Service (VSS) Writer

Oracle Volume Shadow Copy Service Writer is supported on Windows 2003 and
Windows Server 2003 R2. If user has only one database per system, it works with
Windows 2003 server even if Service Pack 1 is not installed. If user has more than one
Oracle database on a system, then Service Pack 1 is required.

> **See Also:** "Performing Database Backup and Recovery with VSS" in
> *Oracle Database Platform Guide for Microsoft Windows*

Recommended System Requirements for SQL Developer

Following are the recommended CPU, memory, and display requirements on the
supported systems for SQL Developer:

Resource	Recommended
Operating System	Windows 2000-Service Pack 4 (32-Bit only)
	Windows Server 2003 R2
	Windows XP-Service Pack 2
CPU Type and Speed	Pentium IV 2 GHz or faster
Memory	1 GB RAM

Resource	Recommended
Display	65536 colors, set to at least 1024 X 768 resolution
Java SDK	JDK 5.0 Update 6 or later

3

Installing Oracle Database

You can use 32-Bit media for installing Oracle Database on all supported operating systems. You can use 64-Bit media for installing Oracle Database on all supported operating systems. This guide is for both Windows 32-Bit and Windows x64. This chapter covers the following topics:

- Preinstallation Considerations for Installing Oracle Database
- Reviewing Component-Specific Installation Guidelines
- Accessing the Installation Software
- Database Security Options
- Installing the Oracle Database Software
- Installing Automatic Storage Management
- Cloning an Oracle Home

Preinstallation Considerations for Installing Oracle Database

The Oracle Database software is available on installation media 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 without the GUI by supplying a response file with silent or noninteractive mode.

> **Note:** Windows Vista requires Administrator privileges at the command prompt.

> **See Also:** "Managing User Accounts with User Account Control on Windows Vista"

Complete 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:

- Installation Consideration on Windows Vista
- Performing Multiple Oracle Database Installations
- Installing onto Systems That Already Have Oracle Components
- Installing with Minimum Memory Requirements

Installation Consideration on Windows Vista

The installation consideration on Windows Vista is to open a command prompt with Administrator privileges.

Performing Multiple Oracle Database Installations

If you need to perform multiple installations of Oracle Database, you may want to use either of the following methods to install Oracle Database:

- **Response files**: At each node, you run Oracle Universal Installer from the command line using silent or noninteractive mode and you supply a response file to provide information Oracle Universal Installer will need. The response file is a text file containing the settings you normally enter in the Oracle Universal Installer GUI dialog boxes.

    See Also: Appendix C, "Installing and Configuring Oracle Database Using Response Files"

- **Cloning the Oracle home of an existing Oracle Database installation**: With this method, you install one instance of Oracle Database, and then clone its Oracle home for each additional installation.

    See Also: "Cloning an Oracle Home" on page 3-20

Installing onto Systems That Already Have Oracle Components

See Also:

- "Upgrade Considerations" on page 1-19 before running Oracle Universal Installer
- "Pre-Installation Tasks for Installing Oracle Real Applications Clusters on Windows-Based Systems" in *Oracle Real Application Clusters Installation Guide for Microsoft Windows* before running Oracle Universal Installer

Follow these steps when other components exist on your computer:

1. Log on as a member of the Administrators group for the computer on which you want 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. See the 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.

3. Back up any databases you need to upgrade. Review "Upgrade Considerations" on page 1-19.

4. If you are installing in an existing Oracle Database 11*g* release 1 (11.1) home, stop all Oracle services making use of this Oracle home.

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 RAM and virtual memory lesser than the minimum required have the following limitations:

- Computers cannot run Oracle Database Upgrade Assistant, Oracle 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 Oracle Database Configuration Assistant.

Do not install the database on computer systems that barely meet the minimum memory and virtual memory requirements, 1 GB. Depending on the installation type you choose, follow these guidelines:

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

- Select **Advanced Installation**, select **Do not create a starter database** from the Select Database Configuration screen.

- Select **Advanced Installation**, select the **Custom** installation type from the Select Installation Type screen, and select **No** on the Create Database screen when prompted to create the database.

- Cancel Oracle Database Configuration Assistant from the Configuration Assistants screen.

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

- To create a new database, run Oracle Database Configuration Assistant. From the **Start** menu, select **Programs**, then **Oracle - *HOME_NAME***, then **Configuration and Migration Tools**, then **Database Configuration Assistant**.

- To upgrade an existing database, run Oracle Database Upgrade Assistant. From the **Start** menu, select **Programs**, then **Oracle - *HOME_NAME***, then **Configuration and Migration Tools**, then **Database Upgrade Assistant**.

Reviewing Component-Specific Installation Guidelines

Review the following guidelines before starting Oracle Universal Installer:

- Oracle Universal Installer

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

- Installations on a cluster

If Oracle Clusterware or Oracle RAC is 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 RAC.

> **See Also:** *Oracle Real Application Clusters Installation Guide for Microsoft Windows*, available on the Oracle Clusterware installation media

- Products not installed by default: select **Advanced Installation** and then the **Custom** installation type. These products are:
  - Oracle Label Security

    To configure Oracle Label Security to use Oracle Internet Directory, choose the Oracle Internet Directory option when running Oracle Database Configuration Assistant. If you are installing Oracle Label Security in an existing Oracle home, then shut down each database in the Oracle home.

  - Oracle Database Vault
  - Oracle Connection Manager
  - Oracle COM Automation feature
  - Oracle Windows Interfaces
  - Oracle Counters for Windows Performance Monitor
- 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 begin the reinstallation.

Selecting the Database Character Set

Oracle Database uses the database character set for:

- Data stored in SQL character datatypes (CHAR, VARCHAR2, CLOB, and LONG).
- Identifiers such as table names, column names, and PL/SQL variables.
- Stored SQL and PL/SQL source code, including text literals embedded in this code.

Once a database is created, changing its character set is usually very expensive in terms of time and resources. Such operation may require converting all character data by exporting the whole database and importing it back. Therefore, it is important that you carefully select the database character set already at installation time.

Oracle recommends Unicode AL32UTF8 as the database character set. Unicode is the universal character set that supports most of the currently spoken languages of the world. It also supports many historical scripts (alphabets). Unicode is the native encoding of many technologies, including Java, XML, XHTML, ECMAScript, LDAP. Unicode is ideally suited for databases supporting the Internet and the global economy.

As AL32UTF8 is a multibyte character set, database operations on character data may be slightly slower when compared to single-byte database character sets, such as WE8MSWIN1252. Storage space requirements for text in most languages that use characters outside of the ASCII repertoire are higher in AL32UTF8 compared to legacy character sets supporting the language. Note that the increase in storage space

concerns only character data and only data that is not in English. The universality and flexibility of Unicode usually outweighs these additional costs.

Legacy character sets should be considered when compatibility, storage requirements, or performance of text processing is critical and the database will ever support only a single group of languages. The database character set to be selected in such case is the character set of most clients connecting to this database.

The default character set suggested or used by Oracle Universal Installer and Database Configuration Assistant in this release is based on the language configuration of the operating system.

For most languages, the default character set is one of the Microsoft Windows character sets, for example WE8MSWIN1252. It is noteworthy that the same default is used by the database installation process on Unix-based platforms. This results from the assumption that most clients connecting to the database run under the Microsoft Windows operating system. As the database should be able to store all characters coming from the clients and Microsoft Windows character sets have richer character repertoire than the corresponding ISO 8859 character sets, the Microsoft Windows character sets are usually the better choice. For example, the EE8MSWIN1250 character set supports the Euro currency symbol and various smart quote characters, while the corresponding EE8ISO8859P2 character set does not support them. In any case, Oracle converts the data between the database character set and the client character sets, which are declared by the NLS_LANG settings.

The list of database character sets that is presented to you for selection by Oracle Universal Installer contains only the recommended character sets. Even though Oracle Database supports many more character sets, they are either deprecated or they are binary subsets of another recommended character set. For example, WE8DEC is a deprecated character set and US7ASCII and WE8ISO8859P1 are both binary subsets of WE8MSWIN1252.

If, for compatibility reasons, you need to create a database in one of the non-recommended character sets, choose the Custom installation type or choose the Advanced database configuration option. Database Configuration Assistant in the interactive mode will give you the opportunity to select any of the database character sets supported on Windows.

Accessing the Installation Software

The Oracle Database software is available on installation media, or you can download it from the Oracle Technology Network (OTN) Web site. You can access and install Oracle Database by using the following scenarios:

- Installing from a Remote 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 DVD Drive

If the computer where you want to install Oracle Database does not have a DVD drive, you can perform the installation from a remote DVD drive. You will need to complete the following steps:

- Step 1: On the Remote Computer, Share the DVD Drive

■   Step 2: On the Local Computer, Map the DVD Drive

Step 1: On the Remote Computer, Share the DVD Drive

The remote 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 DVD drive:

1.   Log in to the remote computer as an Administrator user.

2.   Start Windows Explorer.

3.   Right-click the DVD drive letter and select **Sharing** (or **Sharing and Security**).

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 dvd. You will use this name when you map the DVD drive on the local computer. Under "Step 2: On the Local Computer, Map the DVD Drive" on page 3-6 see Step d under Step 1.

   c.   Click **Permissions**. You need at least read permission for the user who will be accessing the drive to install Oracle Database.

   d.   Click **OK** when you are finished.

5.   Insert the Oracle Database installation media into the DVD drive.

Step 2: On the Local Computer, Map the DVD Drive

Perform these steps on the local computer to map a remote DVD drive and to run Oracle Universal Installer from the mapped drive:

1.   Map the remote 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 box.

   c.   Select a drive letter to use for the remote DVD drive.

   d.   In **Folder**, enter the location of the remote DVD drive using the following format:

   `\\`*remote_hostname*`\`*share_name*

   where:

   –   *remote_hostname* is the name of the remote computer with the DVD drive.

   –   *share_name* is the share name that you entered in Step 4 of the previous procedure. For example:

   `\\computer2\dvd`

   e.   If you need to connect to the remote computer as a different user, click **different user name**, and enter the user name.

   f.   Click **Finish**.

2.   Run Oracle Universal Installer from the mapped DVD drive.

3.   Go to the "Installing the Oracle Database Software" section on page 3-9.

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 DVD to a hard drive, you can install the software from the hard drive.

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

Installing on Remote Computers from a Hard Drive

If you have copied the contents of the Oracle Database DVD to a hard drive, you can install the software from the hard drive.

To install the software on a remote computer from a hard drive:

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 DVD.

3. On the remote computer, map a drive letter to the shared hard drive. You 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 3-9.

Installing on Remote Computers from a Remote DVD Drive

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

To install the software on a remote computer from a remote DVD drive:

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 DVD drive.

   On the remote computer, map a drive letter to the shared DVD drive. You use the remote access software to do this on the remote computer.

   These steps are described in the "Installing from a Remote DVD Drive" section on page 3-5.

3. Through the remote access software, run Oracle Universal Installer on the remote computer. You access Oracle Universal Installer from the shared DVD drive.

4. Go to the "Installing the Oracle Database Software" section on page 3-9.

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 a browser to access the Oracle Technology Network software download page:

   http://www.oracle.com/technology/software/

2. Navigate to each of the download pages for the product that you want to install.

3. On each download page, identify the required disk space by adding the file sizes for each required file. The file sizes are listed next to the file names.

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 `OraDB11g`, 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, see the "Installing the Oracle Database Software" section on page 3-9.

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:

   ```
   c:\> mkdir \install
   c:\> mkdir \install\database
   ```

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, see the "Installing the Oracle Database Software" section on page 3-9.

Database Security Options

During installation, you are prompted to select a database security configuration. The Secure Configuration option configures the database with database auditing options, and password policy and expiration settings.

For new database installations, the default configuration for Oracle Database 11*g* Release 1 (11.1) includes the Secure Configuration option. If you want to disable these enhanced security controls, then you can check the **Disable security settings** check box. Oracle Database is then installed with default options for Oracle Database 10*g* release 2. After installation, you can change security settings by starting DBCA and modifying security settings. You can enable or disable auditing or password security settings, or revert to a previous security setting.

For database upgrades, the upgraded database retains your existing database security configuration, to ensure compatibility with existing applications. After installation, you can use DBCA to enable or disable the Secure Configuration option for testing.

> **Note:**
>
> - Oracle strongly recommends configuring your database with the Secure Configuration option either during installation, or after installation using DBCA.
>
> - If Oracle Database Vault is installed with the database, there is no need to check for secure configuration as the database is secured.

Installing the Oracle Database Software

In most cases, you use the graphical user interface (GUI) provided by Oracle Universal Installer to install Oracle Database. The instructions in this section explain how to run the Oracle Universal Installer GUI to perform most database installations.

> **See Also:**
>
> - "Installing Automatic Storage Management" on page 3-14 if you want to install Oracle Database and use Automatic Storage Management
>
> - Appendix C, "Installing and Configuring Oracle Database Using Response Files" if you want to install Oracle Database using response files and silent or noninteractive mode, without the GUI. It also explains how to clone an existing Oracle home. These methods are useful if you need to perform multiple installations of Oracle Database.

To install the Oracle Database software:

1. Log on as a member of the Administrators group to the computer on which you want 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. If you are installing Oracle Database on a computer with multple Network Interface Cards or multiple aliases, use **System** in the Control Panel to create the `ORACLE_HOSTNAME` system environment variable. Set this variable to point to the host name of the computer on which you are installing Oracle Database.

   > **See Also:**
   >
   > - "Setting the ORACLE_HOSTNAME Environment Variable" on page 2-13
   >
   > - "Installing Oracle Database on Computers with Multiple IP Addresses" on page 2-13
   >
   > - "Installing Oracle Database on Computers with Multiple Aliases" on page 2-14

3. Insert Oracle Database installation media and navigate to the `database` directory. Alternatively, navigate to the directory where you downloaded or copied the installation files.

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

4. Double-click `setup.exe` to start Oracle Universal Installer.

5. On the Welcome screen, the **Basic Installation** is selected by default. If you want to perform an advanced installation, then select **Advanced Installation**, and then answer the prompts as needed.

> **See Also:** "Oracle Database Installation Methods" on page 1-10 for more information on the **Basic** and **Advanced** installation methods

The subsequent screens that appear, which are listed in Table 3–1 on page 3-11, depend on the installation method you have chosen. The order in which the screens appear depends on the options you select.

6. Follow these guidelines to complete the installation:

- Do not install Oracle Database 11*g* release 1 (11.1) software into an existing Oracle home.

- Follow the instructions displayed in the Oracle Universal Installer screens. If you need additional information, click **Help**.

  > **See Also:** "Unlocking and Changing Passwords" on page 5-9 for password guidelines

- 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 the software, see Appendix F for information about troubleshooting.

- If you chose an installation type that runs Oracle 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 Oracle Database Configuration Assistant or Oracle Net Configuration Assistant in interactive mode, click **Help** on any screen.

  > **Note:** If you chose a default installation, Oracle Database Configuration Assistant and Oracle Net Configuration Assistant do not run interactively.
  ---

7. After the configuration assistants have run, click **Exit**, then click **Yes** to exit from Oracle Universal Installer.

8. When Oracle Enterprise Manager Database Control opens in a Web browser, enter the user name and password you created during the installation.

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.

9. Optionally, delete the `OraInstalldate_time` directory if you want to remove the temporary files that were created during the installation process. The `OraInstalldate_time` directory holds about 45 MB of files. This directory is created in the location set by the `TEMP` environment variable setting.

Restarting your computer also removes the `OraInstalldate_time` directory.

10. 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 *Windows*

Window	Action
Select a Product to Install	This screen enables you to install any one for the following products: ■ Oracle Database 11*g* ■ Oracle Client ■ Oracle Clusterware Click **Next.**
Select Installation Method	Select one of the following, then click **Next**: ■ **Basic Installation**: This installation method, selected by default, lets you quickly install Oracle Database using minimal 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.
Select Installation Type	Select **Enterprise Edition**, **Standard Edition**, **Personal Edition,** or **Custom**. You can also specify language translations to be installed by clicking **Product Languages**. Click **Next.** **Note:** This screen is available only with Advanced Installation.
Install Location	The Oracle base path appears by default. You can change the path based on your requirement. In the **Software Location** section, accept the default values or enter the Oracle home name and directory path in which you want to install Oracle components. The directory path should not contain spaces. Click **Next**. **Note:** This screen is available only with Advanced Installation.
Available Product Components	If you selected Custom for the Installation Type, this screen is displayed. Select the components to be installed from the list and click **Next**. To learn more about each component, place the mouse over the component name. **Note:** This screen is available only with Advanced Installation.
Product-specific Prerequisite Checks	This screen checks that the system meets the minimum requirements for the installation. Correct any errors that Oracle Universal Installer may have found, and then click **Next**.
Upgrade an Existing Database	This screen is displayed if you have a previous updatable version of Oracle Database or Automatic Storage Management installed. For in-place database installations where Automatic Storage Management is running, Automatic Storage Management is upgraded automatically. Click **Yes** if you want to upgrade or **No** if not. If you click **Yes**, the Summary screen is displayed. For more information about upgrades, see *Oracle Database Upgrade Guide*.

Table 3–1 (Cont.) Oracle Universal Installer *Windows*

Window	Action
Select Configuration Option	Select one of the following: ■ Create a database: Select this option if you are creating a database of the following types: General purpose, Transaction processing, and Data warehousing. The Advanced option lets you perform a custom installation. ■ Configure Automatic Storage Management: Select this option to create an Automatic Storage Management instance only. To create an Automatic Storage Management instance, you must provide an Automatic Storage Management SYS Password. After you provide this password, Oracle Universal Installer lets you create an Automatic Storage Management disk group. After you complete this Oracle Universal Installer session, you can run it again to install and configure one or more Oracle databases that will use Automatic Storage Management. ■ Install database Software only: Select this option to install the database software only, but not create a database or configure Automatic Storage Management.
Select Automatic Storage Management Option	If you selected Configure Automatic Storage Management from the Select Configuration Option screen, and if you have Oracle Enterprise Manager 11*g* Grid Control installed, then this screen is displayed. Select **Yes** or **No**, depending on the requirement to use Grid Control to manage Automatic Storage Management. If you select **Yes**, then select from the list of Enterprise Management agents to use.
Configure Automatic Storage Management	If you selected Configure Automatic Storage Management from the Select Configuration Option screen, this screen is displayed. Enter the disk group name. The disk group list shows both candidate and member disks; you can click **Show Candidates** or **Show All** to filter their display. Then, select the redundancy level and member disks for the disk group. For Redundancy Level, choose one of the following options. If you do not choose a redundancy level, the disk group defaults to normal redundancy. ■ High: With this option, the contents of the disk group are three-way mirrored by default. To create a disk group with high redundancy, you must specify at least three failure groups (a minimum of three devices). ■ Normal: In a normal redundancy level, by default, the data files of the disk group are two-way mirrored and the control files are three-way mirrored. You can choose to create certain files that are three-way mirrored or not mirrored. To create a disk group with normal redundancy, you must specify at least two failure groups (a minimum of two devices) for two-way mirroring. ■ External: If you select this option, Automatic Storage Management does not mirror the contents of the disk group. Choose this redundancy level when the disk group contains devices, such as RAID devices, that provide their own data protection; or the use of the database does not require uninterrupted access to data, for example, in a development environment where you have a suitable backup strategy.
Select Database Configuration	Select the database configuration that best meets the requirements: General Purpose / Transaction Processing, Data Warehouse, or Advanced. See the online Help provided by either Oracle Universal Installer or Oracle Database Configuration Assistant for a description of these preconfigured database types. Click **Next**.

Table 3–1   (Cont.) Oracle Universal Installer *Windows*

Window	Action

Specify Database Configuration Options	Specify the following information, then click **Next**:
	
	Database Naming
	
	Specify the Global Database Name using the following syntax:
	
	`database_name.domain`
	
	where:
	
	■ `database_name` is the name of the database. It can contain no more than 30 characters (alphanumeric, underscore (_), dollar ($) , and pound (#)).
	
	■ `domain` is the domain used for the database. It can contain no more than 128 characters (alphanumeric, underscore (_), and pound (#)), inclusive of all periods.
	
	For example:
	
	`sales.us.mycompany.com`
	
	When you enter the Global Database Name, Oracle Universal Installer automatically populates the SID field with the database name, but you can change this SID to another name. The SID can have no more than 64 characters (alphanumeric, dollar ($), and pound (#)).

Specify Database Config Details	Specify the following configuration details, then click **Next.** **Memory**: Specify the amount of physical memory (RAM) you want to allocate in the **Percentage** field. If you install the database software only, then you can click **Show Memory Distribution** to check the memory usage by the various processes running on the system. **Character Set**: Determine how character data is encoded in the database. The default is based on the operating system language. Select Unicode (AL32UTF8) to store multiple languages. **See Also:** ■ "Selecting the Database Character Set" ■ *Oracle Database Globalization Support Guide* for information on choosing a character set. **Security** To disable the default enhanced security controls, you can check the Disable security settings check box. Oracle Database is then installed with default options for Oracle Database 10*g* release 2. **Sample Schema** You can specify if you want to create Oracle Database with or without sample schemas.
Select Database Management Option	Select one of the following, then click **Next**: ■ Use Grid Control for Database Management if you have Oracle Enterprise Manager installed. ■ Use Database Control for Database Management. Optionally, select **Enable Email Notifications** and then enter the outgoing SMTP server and e-mail address.
Specify Database Storage Option	Select one of the following, then click **Next**. ■ File System: Specify the database file location. ■ Automatic Storage Management

Table 3–1   (Cont.) Oracle Universal Installer *Windows*

Window	Action
Specify Backup and Recovery Options	Select one of the following, then click **Next**. ■ Do not enable Automated backups. ■ Enable Automated Backups: Specify the recovery area storage location and backup job credentials.
Specify Database Schema Passwords	Enter and confirm passwords for the privileged database accounts, then click **Next**. **Note:** Optionally, you can use the same password for all accounts. However, Oracle recommends that you specify a different password for each account. You must remember the passwords that you specify. See "Unlocking and Changing Passwords" on page 5-9 for information on password guidelines.
Privileged Operating System Groups	This screen is displayed only during the first installation of Oracle products on a system. The groups are selected by default. Click **Next**.
Oracle Configuration Manager Registration	Enter the Customer Identification Number, Oracle*MetaLink* User Name, Country code and Click **Next**. The new screen prompts you to accept the license agreement. Click **Accept License Agreement** to accept the agreement. If you decline this agreement, then consider Oracle Configuration Manager is installed but not configured.
Summary	Review the information displayed on this screen. Click **Install.**
Install	This screen displays status information while the product is being installed.
Configuration Assistants	This screen displays status information for the configuration assistants that configure the software and create a database. When the message is displayed at the end of Database Configuration Assistant process, click **OK** to continue.
End of Installation	The configuration assistants configure several Web-based applications, including Oracle Enterprise Manager Database Control. This screen displays the URLs configured for these applications. Make a note of the URLs used. The port numbers used in these URLs are recorded in the following file: `ORACLE_BASE\ORACLE_HOME\install\portlist.ini` To exit from Oracle Universal Installer, click **Exit**, then click **Yes**. Oracle Enterprise Manager Database Control displays in a Web browser.

Installing Automatic Storage Management

Follow the procedures in this section to install and configure Automatic Storage Management, and to install Oracle Database so that it can use Automatic Storage Management. If you do not plan to use Automatic Storage Management, use the procedure in "Installing the Oracle Database Software" on page 3-9 to install Oracle Database.

This section covers the following topics:

■ Step 1: Reviewing Automatic Storage Management Installation Considerations

■ Step 2: Creating the Automatic Storage Management Instance and Configuring Disk Groups

■ Step 3: Installing Oracle Database to Use Automatic Storage Management

■ Step 4: Testing the Automatic Storage Management Installation

Step 1: Reviewing Automatic Storage Management Installation Considerations

When you install Automatic Storage Management, follow these guidelines:

- Before you begin the installation, make sure that you have completed the steps in "Preparing Disk Groups for an Automatic Storage Management Installation" on page 2-23 to prepare a disk partition to use for the Automatic Storage Management disk groups.

- Oracle recommends that you install Automatic Storage Management into its own Oracle home, regardless of whether you plan to have one or multiple database instances. Installing Automatic Storage Management into its own Oracle home helps ensure higher availability and manageability.

  With separate Oracle homes, you can upgrade Automatic Storage Management and databases independently, and you can deinstall database software without impacting the Automatic Storage Management instance.

  If an Automatic Storage Management instance does not already exist and you select the Oracle Universal Installer option to install and configure Automatic Storage Management only, Oracle Universal Installer installs Automatic Storage Management in its own Oracle home.

- Each computer that has one or more Oracle Database instances that will use Automatic Storage Management must have one Automatic Storage Management instance. For example, if a computer has two Oracle Database instances that use Automatic Storage Management, you only need one Automatic Storage Management instance for that computer, to manage the two database instances that use Automatic Storage Management.

- When you install Automatic Storage Management, Oracle Database Configuration Assistant creates a separate server parameter file (SPFILE) and password file for the Automatic Storage Management instance.

Step 2: Creating the Automatic Storage Management Instance and Configuring Disk Groups

The following steps explain how to create an Automatic Storage Management instance and a disk group for storing the Oracle database files. You can create multiple disk groups for the Automatic Storage Management instance to manage, if you want. If you plan to use Automatic Storage Management for backup and recovery operations, Oracle recommends that you create a separate disk group for this purpose.

To install an Automatic Storage Management instance and configure its disk groups:

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 Oracle Database installation media and navigate to the database directory. Alternatively, navigate to the directory where you downloaded or copied the installation files. Double-click setup.exe to start Oracle Universal Installer.

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

3. The Select a Product to Install screen enables you to install any one of the following products:

   - Oracle Database 11*g*

- Oracle Client

- Oracle Clusterware

    See Also: " Oracle Universal Installer Windows" on page 3-11 for a detailed description of the screens used in this procedure

4. On the Select Installation Method screen, select **Advanced Installation** and then click **Next**.

5. On the Select Installation Type screen, select either **Enterprise Edition**, **Standard Edition**, **Personal Edition,** or **Custom** and then click **Next**.

6. On the Install Location screen, the Oracle base path appears by default. You can change the path based on your requirement. In the **Software Location** section, accept the default values or enter an Automatic Storage Management-specific name and directory location for the Automatic Storage Management instance and Click **Next**.

    For example, you could change name to `OraDB11g+ASM` and the directory location to the following:

    ```
    DRIVE LETTER:\oracle\product\11.1.0\asm
    ```

7. In the Product-Specific Prerequisite Checks screen, check that the requirements have been met and then click **Next**.

8. On the Select Configuration Option screen, select **Configure Automatic Storage Management (ASM)** and then specify and confirm the Automatic Storage Management SYS password. Then, click **Next**.

9. On the Configure Automatic Storage Management screen, enter the following settings:

    > **Note:** This screen lets you create the disk groups to use with the Automatic Storage Management instance. You must have an available partition in order to create disk groups.

    - Disk Group Name: Enter a name for the disk group.

    - Redundancy: Select one of the following choices to set the redundancy level for the disks within the disk group. If you do not specify a redundancy level, the disk group defaults to normal redundancy.

        - High: With this option, the contents of the disk group are three-way mirrored by default. To create a disk group with high redundancy, you must specify at least three failure groups (a minimum of three devices).

        - Normal: In a normal redundancy level, by default the data files of the disk group are two-way mirrored and the control files are three-way mirrored. You can choose to create certain files that are three-way mirrored or not mirrored. To create a disk group with normal redundancy, you must specify at least two failure groups (a minimum of two devices) for two-way mirroring.

        - External: : Automatic Storage Management does not mirror the contents of the disk group. Choose this redundancy level when 1) the disk group contains devices, such as RAID devices, that provide their own data protection; or 2) the use of the database does not require uninterrupted

access to data, for example, in a development environment where you have a suitable backup strategy.

- Add Disks: Click **Stamp Disks** to start the `asmtoolg` GUI tool. In the asmtool operation dialog box, select **Add or change label**, and then click **Next**. From the list, select the disks that you want to use for the disk group. To select multiple disks, hold down the **Control** key and click to pick individual disks, or hold down the **Shift** key to select disks in a group. To use a specific prefix for this disk group, select **Generate stamps with this prefix** and enter a name. Click **Next**, and in the next window, click **Finish**.

  After you click **Finish**, the Configure Automatic Storage Management window returns, with the disks you selected in the Add Disks list. From this list, select the disks you want to include in the disk group. To filter the display of disks, you can select **Change Disk Discovery Path** and enter a wildcard subset. For example, to list all disks ending with `ORCLDISKDATA` from `0` to `3`, you enter `\\.\ORCLDISKDATA[0-3]`.

10. Click **Next**.

11. On the Install screen, check the installed contents, and then click **Install**.

12. To create another disk group for this instance, run Oracle Database Configuration Assistant from the *ORACLE_BASE\ORACLE_HOME*\bin directory manually, and select the **Configure Automatic Storage Management** option.

At this stage, subsequent databases that you create are able to use Automatic Storage Management. If you have databases that were created before you installed Automatic Storage Management, you now can migrate them to Automatic Storage Management by using the Enterprise Manager Migrate Database wizard. This wizard is available in Enterprise Manager Grid Control or Database Control. Alternatively, you can use Oracle Database Recovery Manager (RMAN) to perform the migration.

> **See Also:**
>
> - Enterprise Manager Migrate Database wizard online Help instructions on how to migrate an existing Oracle database to Automatic Storage Management
>
> - *Oracle Database Backup and Recovery User's Guide* for information on migrating an existing Oracle database to Automatic Storage Management using Oracle Database Recovery Manager.

Step 3: Installing Oracle Database to Use Automatic Storage Management

After you have created the Automatic Storage Management instance and Automatic Storage Management disk groups, you are ready to create a database instance that can use Automatic Storage Management.

To create a database instance to use with Automatic Storage Management:

1. Log on as a member of the Administrators group to the computer 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. If you are installing Oracle Database on a computer with multi-homed or multiple aliases, use **System** in the Control Panel to create the `ORACLE_HOSTNAME` system environment variable. Set this variable to point to the host name of the computer on which you are installing Oracle Database.

See Also:

- "Setting the ORACLE_HOSTNAME Environment Variable" on page 2-13

- "Installing Oracle Database on Computers with Multiple IP Addresses" on page 2-13

- "Installing Oracle Database on Computers with Multiple Aliases" on page 2-14

3. Start Oracle Universal Installer.

4. The Select a Product to Install screen enables you to install any one of the following products:

   - Oracle Database 11*g*

   - Oracle Client

   - Oracle Clusterware

5. On the Select Installation Type screen, select one of the installation types (**Enterprise Edition**, **Standard Edition**, **Personal Edition,** or **Custom**), and then click **Next**.

6. On the Install location screen, the Oracle base path appears by default. You can change the path based on your requirement. In the **Software Location** section, accept the default values or select a different Oracle home from the home used for Automatic Storage Management.

7. If you selected the Custom installation type, then select from the products to install.

8. On the Product-Specific Prerequisite Checks screen, check that the requirements have been met and then click **Next**.

9. On the Select Configuration Option screen, select **Create a Database**.

10. On the Select Database Configuration screen, select from the database types displayed and click **Next**.

11. On the Specify Database Configuration Options screen, enter the following settings and then click **Next**.

    - Specify the Global Database Name using the following syntax:

      database_name.domain

      where:

      – *database_name* with no more than 30 characters (alphanumeric, underscore (_), dollar ($), and pound (#)).

      – *domain* name with no more than 128 characters (alphanumeric, underscore (_), and pound (#)), inclusive of all periods.

    - Specify the SID with no more than 64 characters (alphanumeric, dollar ($), and pound (#)).

12. On the Specify Database Config Details screen, enter the following configuration details, then click **Next**:

    - Memory

    - Character Sets

- Security

- Sample Schema

    See Also: " Oracle Universal Installer Windows" on page 11 for further information about these fields.

13. On the Select Database Management Option screen, select either **Use Grid Control for Database Management** if you have Oracle Enterprise Manager installed, or if you do not have Enterprise Manager, select **Use Database Control for Database Management**. Optionally, select **Enable Email Notifications** and then enter the outgoing SMTP server and e-mail address. Then, click **Next**.

    After you complete the installation, you can use either of these utilities to manage the Automatic Storage Management instance.

14. On the Specify Database Storage Option screen, select **Automatic Storage Management (ASM)** and click **Next**.

15. On the Specify Backup and Recovery Options screen, select the following:

    - **Enable Automated Backups**: Select this option, and then select **Automatic Storage Management**.

    - **Backup Job Credentials**: Enter the user name and password of the person responsible for managing backups.

16. Click **Next**.

17. On the Select Automatic Storage Management Disk Group screen, select the Automatic Storage Management disk group that you created in "Step 2: Creating the Automatic Storage Management Instance and Configuring Disk Groups" on page 3-15 for recovery and backups.

    If the Automatic Storage Management disks that you selected do not provide enough space, the Configure Storage Management screen is displayed so that you can select additional disks as needed. As you select the disks, the Required Storage Space area adjusts the sizes displayed. Ideally, the **Additional Space Needed** value should be a negative number.

18. Click **Next**.

19. On the Specify Database Schema Passwords screen, enter and confirm passwords for the privileged database accounts, then click **Next**.

20. On the Oracle Configuration Manager Registration screen, enter the Customer Identification Number, Oracle*MetaLink* User Name, Country code, and click **Next**. The new screen prompts you to accept the license agreement. Click **Accept license Agreement** to accept the agreement. However, if you decline this agreement, then Oracle Configuration Manager is installed but not configured.

21. On the Summary screen, check that the contents to be installed are correct, and then click **Install**.

Step 4: Testing the Automatic Storage Management Installation

To test the Automatic Storage Management installation, try logging on to the Automatic Storage Management instance by using SQL*Plus.

Follow these steps:

1. In the **Services** Control Panel, make sure that the `OracleASMService+ASM` service has started.

2. Open a Windows command prompt and temporarily set the `ORACLE_HOME` and `ORACLE_SID` to point to your Automatic Storage Management instance.

For example, if the Automatic Storage Management SID, which is named `+ASM`, is located in the `asm` directory under the `ORACLE_BASE` directory, you would enter commands similar to the following:

```
DRIVE_LETTER:\> set ORACLE_SID=+ASM
DRIVE_LETTER:\> set ORACLE_HOME=ORACLE_BASE\product\11.1.0\asm
```

3. From the same Windows command prompt session, connect to the Automatic Storage Management instance as the `SYS` user with `SYSASM` privilege and start the instance if necessary:

```
DRIVE_LETTER:\> sqlplus /nolog
SQL> CONNECT SYS as SYSASM
Enter password: SYS_password
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;
```

> **See Also:**
>
> - *Oracle Database Utilities* for more information about the `asmcmd` utility
>
> - "Managing Automatic Storage Management" on page 5-4 for other tools that you can use to manage Automatic Storage Management
>
> - *Oracle Database Administrator's Guide* for a more detailed description of Automatic Storage Management

Cloning an Oracle Home

You can copy an existing Oracle home and then configure it for a new environment. This process is called cloning. If you are performing multiple Oracle Database installations, you may want to use this method to create each new Oracle home, because copying files from an existing Oracle Database installation takes less time than creating a new version of them. This method is also useful if the Oracle home that you are cloning has patches applied to it. When you clone an Oracle home, the new Oracle home will have the patch updates.

> **Note:** In addition to cloning an Oracle home, you can clone individual Oracle databases, by using Enterprise Manager Database Control. *Oracle Database Administrator's Guide* covers cloning Oracle databases in detail, as well as cloning Oracle homes.

To clone an Oracle home:

1. Ensure that the Oracle Database installation whose home you want to clone has been successful.

You can check the success of the installation by reviewing the `installActionsdate_time.log` file for the installation session, which is normally located in the `c:\Program Files\Oracle\Inventory\logs` directory.

If you have installed patches, you can check their status by running the following commands at a command prompt:

```
c:\ORACLE_BASE\ORACLE_HOME\OPatch> set ORACLE_HOME=ORACLE_HOME_using_patch
c:\ORACLE_BASE\ORACLE_HOME\OPatch> opatch lsinventory
```

2. Stop the Oracle-related services on this computer.

   You can stop Oracle services by using one of the following methods:

   - **Oracle Administration Assistant for Windows**: From the **Start** menu, select **Programs**, then **Oracle - *HOME_NAME***, then **Configuration and Migration Tools**, then **Administrative Assistant for Windows**, then **Oracle Managed Objects**, then **Computers**, and then ***machine-name***. Select Databases, then right-click ***global database name***, select **Stop Service**.

     > **Note:** Choose Startup/Shutdown Options to control whether a database instance should be stopped along with the service.

   - **Microsoft Windows Services utility**: From the **Start** menu, select **Control Panel**, then **Administrative Tools**, then **Services**. Right-click any service that begins with **Oracle**, and then from the menu, select **Stop**.

3. Create a ZIP file with the Oracle home (but not Oracle base) directory, selecting the **Save full path info** option.

   For example, if the source Oracle installation is in `c:\app\`*`username`*`\product\11.1.0\db_1`, you would zip the `db_1` directory, leaving out the `admin`, `flash_recovery_area`, and `oradata` directories that are under `11.1.0`. These directories will be created in the target installation later on when you create a new database there.

4. Copy the ZIP file to the root directory of the target computer.

5. Extract the ZIP file contents, selecting the **Use folder names** option.

6. Repeat Steps 4 and 5 for each computer where you want to clone the Oracle home, unless the Oracle home is on a shared storage device.

7. In the source Oracle home, restart the services that you stopped in Step 2.

8. On the target computer, `cd` to the unzipped Oracle home directory, and perform the following steps:

   a. Remove the `*.ora` files that are present in unzipped *ORACLE_BASE*`\`*ORACLE_HOME*`\network\admin` directory, such as `listener.ora`, `sqlnet.ora`, and `tnsnames.ora`.

   b. From the `oui\bin` directory, run Oracle Universal Installer in clone mode for the unzipped Oracle home. Use the following syntax:

   ```
   c:\ORACLE_BASE\ORACLE_HOME\oui\bin> setup.exe -silent -clone ORACLE_
   BASE="target location" ORACLE_HOME="target location"
   ORACLE_HOME_NAME="unique_name_on node" [-responseFile full_directory_path]
   ```

   For example:

   ```
   c:\ORACLE_BASE\ORACLE_HOME\oui\bin> setup.exe -silent -clone ORACLE_
   BASE="c:\app\username"
   ORACLE_HOME="c:\app\username\product\11.1.0\db_1" ORACLE_HOME_NAME="db_1"
   ```

The -responseFile parameter is optional. You can supply clone-time parameters on the command line or by using the response file named on the command line.

Oracle Universal Installer starts, and then records the cloning actions in the cloneActions*timestamp*.log file. This log file is normally located in c:\Program Files\Oracle\Inventory\logs.

9. To configure connection information for the new database, run Net Configuration Assistant.

   To start Net Configuration Assistant, select **Start**, then **Programs**, then **Oracle - *HOME_NAME***, then **Configuration and Migration Tools**, and then **Net Configuration Assistant**.

10. To create a new database for the newly cloned Oracle home, run Oracle Database Configuration Assistant.

   To start Oracle Database Configuration Assistant, select **Start**, then **Programs**, then **Oracle - *HOME_NAME***, then **Configuration and Migration Tools**, and then **Database Configuration Assistant**.

   > **See Also:**
   >
   > - *Oracle Database Administrator's Guide* for information about cloning Oracle homes and Oracle databases
   >
   > - *Oracle Universal Installer and OPatch User's Guide* for additional information about cloning an Oracle home

Use the following steps to configure Oracle Configuration Manager for a cloned Oracle home:

1. Run the emSnapshotEnv script from bin directory as follows:

   ORACLE_HOME\ccr\bin\emSnapshotEnv.bat

2. Copy the core.jar into pending directory as follows:

   copy ccr\inventory\core.jar *ORACLE_HOME*\ccr\inventory\pending

3. Use the following command to remove the previous state files:

   del *ORACLE_HOME*\ccr\state*.ll

4. If you have removed the state files, then you must relink the core functions with the following command:

   ORACLE_HOME\ccr\bin\deployPackages

5. Use the following command to rerun Oracle Configuration Manager:

   ORACLE_HOME\ccr\bin\configCCR

4

Oracle Database Postinstallation Tasks

This chapter describes the following postinstallation configuration tasks:

- Installing the Latest Patch Set Release
- Validating Invalid PL/SQL Modules
- Configuring Secure Sockets Layer
- Postinstallation Tasks for SQL Developer
- Postinstallation Tasks for Oracle Application Express
- Postinstallation Database Configuration for Oracle Configuration Manager
- Configuring Oracle Components

Installing the Latest Patch Set Release

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 the **Patches and Updates** tab from the top of the screen.

To find and download patches:

1. Go to the Oracle*MetaLink* Web site at

   https://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 and Updates** on the main Oracle*MetaLink* page.

4. Select **Simple Search**.

5. Specify the following information, then click **Go**:

   - In the **Search By** field, select **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 file 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 file 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 performance 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:

   ```
   DRIVE_LETTER:\> sqlplus /nolog
   ```

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

   ```
   SQL> CONNECT SYS AS SYSDBA
   Enter password: SYS_password
   ```

3. Start the database (if necessary):

   ```
   SQL> STARTUP
   ```

4. Run the `utlrp.sql` script, which by default is located in *ORACLE_BASE\ORACLE_HOME*\rdbms\admin\utlrp.sql. For example:

   ```
   SQL> @?/rdbms/admin/utlrp.sql
   ```

Configuring Secure Sockets Layer

Oracle highly recommends you configure and use a Secure Sockets Layer (SSL) to ensure that passwords and other sensitive data are not transmitted in clear text in HTTP requests.

See Also:

- "Using SSL" and "Enabling SSL" in *Oracle Database Advanced Security Administrator's Guide* for more information on configuring and using SSL

- "SSL Usage Issues" in *Oracle Database Advanced Security Administrator's Guide* for more information on SSL usage issues

Postinstallation Tasks for SQL Developer

This section describes tasks that you need to complete after you install the software:

- Migrating User Settings from Release 1.0

- Migrating Information from Previous Releases

- Location of User-Related Information

Migrating User Settings from Release 1.0

The first time you start SQL Developer after installing it or after adding any extensions, you are asked if you want to migrate your user settings from a previous release. (This occurs regardless of whether there was a previous release on your system.)

> **Note:** Migration of user settings is supported only from SQL Developer release 1.0 to release 1.1. It is *not* supported for migration from a pre-release version of 1.1 to release 1.1.

These settings refer to database connections, reports, and certain SQL Developer user preferences that you set in a previous version by clicking **Tools** and then **Preferences**. However, some user preferences are not saved, and you must re-specify these using the new release.

To migrate user settings from SQL Developer release 1.0:

1. Install Oracle SQL Developer.

2. When you start SQL Developer release 1.1, click **Yes** when asked if you want to migrate settings from a previous release.

3. In the dialog box that is displayed, do *not* accept the default location for the settings. Instead, specify the location of your release 1.0 settings, which might be a folder whose path ends with `sqldeveloper\jdev\system`.

Migrating Information from Previous Releases

If you have used a previous release of SQL Developer or a pre-release version of the current release, you may want to preserve database connections that you have been using. To preserve database connections, save your existing database connections in an XML file. To save the connections, right-click the Connections node in the Connections Navigator and select **Export Connections**. After you complete the installation described in this guide, you can use those connections by right-clicking the Connections node in the Connections Navigator and selecting **Import Connections**

If you want to use any user-defined reports or the SQL history from a previous version, see "Location of User-Related Information" on page 4-4 for information about where these are located. If you want to use any user-defined reports or the SQL history

from release 1.0 with both releases 1.0 and 1.1, you must save them before using release 1.1, because release 1.1 modifies the files to a format that is incompatible with release 1.0.

SQL Developer preferences (specified by clicking Tools and then Preferences) from a pre-release version of the current release cannot currently be saved and reused; you must re-specify any desired preferences.

Location of User-Related Information

SQL Developer stores user-related information in several places, with the specific location depending on the operating system and certain environment specifications. User-related information includes user-defined reports, user-defined snippets, SQL Worksheet history, and SQL Developer user preferences.

SQL Developer user preferences are stored under the installation directory. To preserve preferences when upgrading to a more recent version of the same SQL Developer release, but *not* to upgrade from release 1.0 to 1.1, use the Check for Updates feature (click **Help,** then **Check for Updates**) to upgrade your system.

This user-related information is stored in or under the HOME environment variable location, if defined; otherwise the SQLDEVELOPER_USER_DIR location, if defined; otherwise as indicated in the following table.

The table shows the typical default locations (under a directory or in a file) for specific types of resources on different operating systems. (Note the period in the name of any directory or folder named .sqldeveloper.)

Table 4–1   Default Locations for User-Related Information

Resource Type	Windows Systems
User-defined reports	C:\Documents and Settings\<user-name>\.sqldeveloper\UserReports.xml
User-defined snippets	C:\Documents and Settings\<user-name>\.sqldeveloper\UserReports.xml
SQL history	C:\Documents and Settings\<user-name>\.sqldeveloper\SqlHistory.xml
SQL Worksheet archive files	C:\Documents and Settings\<user-name>\.sqldeveloper\tmp\
SQL Developer user preferences	<sqldeveloper_install>\sqldeveloper\sqldeveloper\system\

SQL Worksheet archive files contain SQL statements that you have entered. These files begin with *sqldev* and then have a random number (for example, sqldev14356.sql). If you close SQL Developer with a SQL Worksheet open that contains statements, then you will be prompted to save these files.

To specify a non-default SQLDEVELOPER_USER_DIR location, do either of the following:

- Set the SQLDEVELOPER_USER_DIR environment variable to specify another directory path.

- Edit the *<sqldeveloper_ install>*\sqldeveloper\sqldeveloper\bin\sqldeveloper.conf file and substitute the desired directory path for SQLDEVELOPER_USER_DIR in the following line:

```
SetUserHomeVariable SQLDEVELOPER_USER_DIR
```
If you want to prevent other users from accessing your user-specific SQL Developer information, you must ensure that the appropriate permissions are set on the directory where that information is stored or on a directory above it in the path hierarchy. For example, you may want to ensure that the `sqldeveloper` folder and the `<user-name>\.sqldeveloper` folder under `Documents and Settings` are not shareable.

Postinstallation Tasks for Oracle Application Express

This section describes tasks that you need to complete after you install the software

- [Restarting Processes](#)
- [Choosing an HTTP Server](#)
- [Configuring the Embedded PL/SQL Gateway](#)
- [Configuring Oracle HTTP Server in a New Installation](#)
- [Copying the Images Directory](#)
- [Enabling Network Services in Oracle Database 11g](#)
- [About Running Oracle Application Express in Other Languages](#)
- [Managing JOB_QUEUE_PROCESSES](#)
- [Obfuscating PlsqlDatabasePassword Parameter](#)
- [Logging In to Oracle Application Express](#)
- [Patching Oracle Application Express 3.0](#)

> **Note:** Within the context of this document, the Oracle home directory (`ORACLE_HTTPSERVER_HOME`) is the location where Oracle HTTP Server is installed.

Restarting Processes

After you install Oracle Application Express, you need to restart the processes that you stopped before you began the installation, such as listener and other processes. In addition, restart Oracle HTTP Server.

Choosing an HTTP Server

In order to run, Oracle Application Express must have access to either the embedded PL/SQL gateway or Oracle HTTP Server and `mod_plsql`.

Topics in this section include:

- [About the Embedded PL/SQL Gateway](#)
- [About Oracle HTTP Server and mod_plsql](#)
- [About Password Security](#)

About the Embedded PL/SQL Gateway

The embedded PL/SQL gateway installs with Oracle Database 11*g*. It provides the Oracle database with a Web server and also the necessary infrastructure to create dynamic applications. The embedded PL/SQL gateway runs in the Oracle XML DB

HTTP server in the Oracle database and includes the core features of `mod_plsql`. The following graphic illustrates the Oracle Application Expressarchitecture using the embedded PL/SQL gateway.
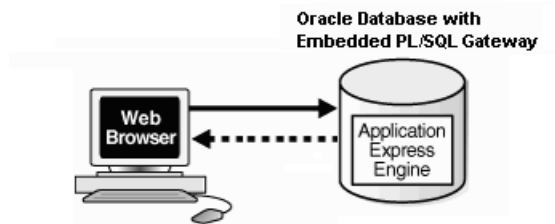
As shown in the previous graphic, the embedded PL/SQL gateway offers a simple two tier architecture: a Web browser and an Oracle database, containing the embedded PL/SQL and Oracle Application Express.

> **See Also:** "Configuring the Embedded PL/SQL Gateway" on page 4-6

About Oracle HTTP Server and mod_plsql

Oracle HTTP Server uses the `mod_plsql` plug-in to communicate to the Oracle Application Express engine within the Oracle database. It functions as communication broker between the Web server and the Oracle Application Express objects in the Oracle database. More specifically, it maps browser requests into database stored procedure calls over a `SQL*Net` connection. The following graphic illustrates the Oracle Application Express architecture using Oracle HTTP Server and `mod_plsql`.
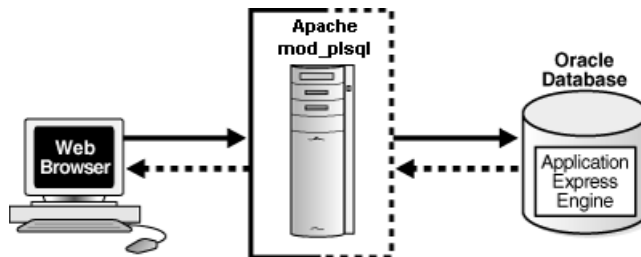
> **See Also:** "Configuring Oracle HTTP Server in a New Installation" on page 4-8

Note that this configuration consists of three tier architecture: a Web browser, Oracle HTTP Server (Apache) with `mod_plsql`, and an Oracle database containing Oracle Application Express.

About Password Security

If SSL is not used, then passwords could potentially be exposed, compromising the security of your Oracle Application Express instance.

See "Configuring Secure Sockets Layer" on page 2 for more information.

Configuring the Embedded PL/SQL Gateway

Although the embedded PL/SQL gateway installs with the Oracle database, you must configure it before you can use it with Oracle Application Express. To accomplish, you run a configuration file and unlock the ANONYMOUS account.

Topics in this section include:

- Configuring the Embedded PL/SQL Gateway in New Installation or When Upgrading Database

- Disabling and Enabling the Oracle XML DB HTTP Server

    > **See Also:**   "Choosing an HTTP Server" on page 4-5 and "About the Embedded PL/SQL Gateway" on page 4-5

Configuring the Embedded PL/SQL Gateway in New Installation or When Upgrading Database

In a new installation or when upgrading the database, you configure the embedded PL/SQL gateway by running the configuration script `apxconf.sql`. Running this script enables you to configure the port for Oracle XML DB HTTP server and to specify a password for the Application Express `ADMIN` account. Then, you unlock the `ANONYMOUS` account.

To configure the embedded PL/SQL gateway:

1. Change your working directory to `ORACLE_BASE\ORACLE_HOME\apex` or whatever convention used to indicate the Oracle home.

2. Start SQL*Plus and connect to the database where Oracle Application Express is installed as `SYS`. For example:

    ```
    DRIVE_LETTER:\> sqlplus /nolog
    SQL> CONNECT SYS as SYSDBA
    Enter password: SYS_password
    ```

3. Run `apxconf.sql` as shown in the following example:

    ```
    @apxconf
    ```

4. When prompted, enter a password for the Application Express Admin account.

    Be sure to make a note of the password you enter. You will use this password to log in to Oracle Application Express Administration Services.

5. When prompted, enter the port for the Oracle XML DB HTTP server. The default port number is 8080.

6. Enter the following statement to unlock the ANONYMOUS account:

    ```
    ALTER USER ANONYMOUS ACCOUNT UNLOCK;
    ```

Disabling and Enabling the Oracle XML DB HTTP Server

The embedded PL/SQL gateway runs in the Oracle XML DB HTTP server in the Oracle database. This section describes how to enable or disable the Oracle XML DB HTTP server.

Topics in this section include:

- Disabling Oracle XML DB HTTP Server

- Enabling Oracle XML DB HTTP Server

    > **See Also:**   "Configuring the Embedded PL/SQL Gateway in New Installation or When Upgrading Database" on page 4-7

Disabling Oracle XML DB HTTP Server

To disable Oracle XML DB HTTP server:

1. Start SQL*Plus and connect to the database where Oracle Application Express is installed as SYS. For example:

```
DRIVE_LETTER:\> sqlplus /nolog
SQL> CONNECT SYS as SYSDBA
Enter password: SYS_password
```

2. Run the following statements:

```
EXEC DBMS_XDB.SETHTTPPORT(0);
COMMIT;
```

Enabling Oracle XML DB HTTP Server

To enable Oracle XML DB HTTP server:

1. Start SQL*Plus and connect to the database where Oracle Application Express is installed as SYS. For example:

```
DRIVE_LETTER:\> sqlplus /nolog
SQL> CONNECT SYS as SYSDBA
Enter password: SYS_password
```

2. Run the following statements:

```
EXEC DBMS_XDB.SETHTTPPORT(port);
COMMIT;
```

For example:

```
EXEC DBMS_XDB.SETHTTPPORT(8080);
COMMIT;
```

> **Note:** Port numbers less than 1024 are reserved for use by privileged processes on many operating systems. To enable the XML DB HTTP listener on a port less than 1024, such as 80, review the following documentation:
>
> - "Using Protocols to Access the Repository" and "Using HTTP(S) on Nonstandard Ports" in *Oracle XML DB Developer's Guide*.
> - "Protocol Address Configuration" and "Port Number Limitations" in *Oracle Database Net Services Reference*.

Configuring Oracle HTTP Server in a New Installation

This section describes how to configure Oracle HTTP Server with `mod_plsql` in a new installation.

Topics in this section include:

- Configuring Oracle HTTP Server Release 9.0.3 in a New Installation
- Configuring Oracle HTTP Server Distributed with Oracle Database 11g or Oracle Application Server 10g in a New Installation

Configuring Oracle HTTP Server Release 9.0.3 in a New Installation

In Oracle HTTP Server release 9.0.3, the `wdbsvr.app` file contains information about the DAD to access Oracle Application Express. A DAD is a set of values that specify how the Oracle HTTP Server component `modplsql` connects to the database server to fulfill an HTTP request.

Topics in this section include:

- Changing the Password for the ADMIN Account
- Changing the Password for the APEX_PUBLIC_USER Database User
- Modifying the wdbsvr.app File in a New Installation
- Modifying the Oracle9i httpd.conf

Changing the Password for the ADMIN Account

To change the password for the `ADMIN` account:

First, change the password for the Oracle Application Express `ADMIN` account.

1. Start SQL*Plus and connect to the database where Oracle Application Express is installed as SYS. For example:

   ```
   DRIVE_LETTER:\> sqlplus /nolog
   SQL> CONNECT SYS as SYSDBA
   Enter password: SYS_password
   ```

2. Run `apxxepwd.sql`. For example:

   ```
   @apxxepwd.sql
   ```

   When prompted enter a password for the ADMIN account.

3. Enter the following command followed by the new password.

   ```
   @apxxepwd.sql password
   ```

   For example to change the password to `apex`, you would enter:

   ```
   @apxxepwd.sql apex
   ```

Changing the Password for the APEX_PUBLIC_USER Database User

In order to specify the password in the `DAD` file, you have to change the password for the database user `APEX_PUBLIC_USER`. Please use the following steps to change the password for the `APEX_PUBLIC_USER` database user:

1. Start SQL*Plus and connect to the database where Oracle Application Express is installed as SYS. For example:

   ```
   DRIVE_LETTER:\> sqlplus /nolog
   SQL> CONNECT SYS as SYSDBA
   Enter password: SYS_password
   ```

2. Run the following statement:

   ```
   SQL> PASSWORD APEX_PUBLIC_USER
   Changing password for APEX_PUBLIC_USER
   New password: password
   Retype new password: password
   ```

Modifying the wdbsvr.app File in a New Installation

To create the DAD, you modify the `wdbsvr.app` file and add an entry for Oracle Application Express.

To modify the `wdbsvr.app` file:

1. Use a text editor and open the `wdbsvr.app` file:

   ORACLE_BASE\ORACLE_HTTPSERVER_HOME\Apache\modplsql\cfg\wdbsvr.app

2. Add an entry for Oracle Application Express using the following syntax. Only change the settings indicated in italics.

   ```
   [DAD_apex]
    connect_string = localhost:1521:orcl
    password = apex
    username = apex_public_user
    default_page = apex
    document_table = wwv_flow_file_objects$
    document_path = docs
    document_proc = wwv_flow_file_mgr.process_download
    reuse = Yes
    enablesso = No
    stateful = STATELESS_RESET
    nls_lang = American_America.AL32UTF8
   ```

   Where:

   - `connect_string` refers to the host ID, port number, and Oracle9*i* database where Oracle Application Express was installed. Use the format `host:port:sid`.

     If the Oracle9*i* version of Oracle HTTP Server you want to use is installed in the same Oracle home as the database you specified for use with Oracle Application Express, leave this parameter blank.

   - `password` is the password you specified in the section Changing the Password for the APEX_PUBLIC_USER Database User.

   - `nls_lang` determines the language setting of the DAD. The character set portion of the `nls_lang` value must always be set to `AL32UTF8`, regardless of whether or not the database character set is `AL32UTF8`.

     If either the territory portion or the language portion of the NLS settings contains a space, you must wrap the value in double quotes as shown in the following example:

     ```
     nls_lang = "ENGLISH_UNITED KINGDOM.AL32UTF8"
     ```

     You can find information about your database's NLS settings by querying the view `NLS_DATABASE_PARAMETERS` as shown in the following example:

     ```
     SELECT parameter,value
     FROM nls_database_parameters
     WHERE PARAMETER IN ('NLS_CHARACTERSET','NLS_LANGUAGE','NLS_TERRITORY');
     ```

3. Leave the remaining settings, including the user name setting, as they appear in the previous example.

4. Save and exit the `wdbsvr.app` file.

Modifying the Oracle9*i* httpd.conf

You need to modify the `httpd.conf` file to include an alias that points to the file system path where you copied the images directory. You may also need to modify the `httpd.conf` file to add two new MIME types to support SQL Workshop.

> **See Also:** "Copying the Images Directory After an Upgrade" on page 4-14

To modify `httpd.conf` file:

1. Use a text editor and open the `httpd.conf` file

   ORACLE_BASE*ORACLE_HTTPSERVER_HOME*\Apache\Apache\conf\httpd.conf

2. Add an alias entry that points to the file system path where you copied the images directory.

   ```
   Alias /i/ "C:\oracle\ora92\Apache\Apache\images/"
   ```

   Note you must include the forward slash (/) at the end of the path.

3. Next, add two new MIME types to support SQL Workshop:

   ■ Add the following line if it does not currently exist:

   ```
   AddType text/xml          xbl
   ```

   ■ Add the following line if it does not currently exist:

   ```
   AddType text/x-component    htc
   ```

4. Save and exit the `httpd.conf` file.

5. Stop and restart Oracle HTTP Server.

   – Stop Oracle HTTP Server - From the **Start** menu, select **Programs, Oracle - OraHome**, **Oracle HTTP Server**, and **Stop HTTP Server**.

   – Restart Oracle HTTP Server - From the **Start** menu, select **Programs**, **Oracle - OraHome**, **Oracle HTTP Server**, and **Start HTTP Server**.

   > **See Also:** *Oracle Fusion Middleware Administrator's Guide for Oracle HTTP Server*

Configuring Oracle HTTP Server Distributed with Oracle Database 11*g* or Oracle Application Server 10*g* in a New Installation

Perform the following post-installation steps if:

■ This is a new installation of Oracle Application Express (that is, you are not upgrading from a previous release)

■ You are running Oracle HTTP Server distributed with Oracle Database 11*g* or Oracle Application Server 10*g*.

■ Oracle HTTP Server is installed in an Oracle home.

Topics in this section include:

■ Changing the Password for the ADMIN Account

■ Unlocking the APEX_PUBLIC_USER Database User

■ Changing the Password for the APEX_PUBLIC_USER Database User

- Edit the dads.conf File

- Stop and Restart Oracle HTTP Server

Note that instructions do not apply if you are running Oracle HTTP Server release 9.0.3. To learn more, see "Configuring Oracle HTTP Server Release 9.0.3 in a New Installation" on page 4-9.

> **Note:** Within the context of this section, the Oracle home directory (ORACLE_HTTPSERVER_HOME) is the location where Oracle HTTP Server is installed.

Changing the Password for the ADMIN Account

First, change the password for the Oracle Application Express ADMIN account.

To change the password for the ADMIN account:

1. Change your working directory to *ORACLE_BASE\ORACLE_HOME*\apex or whatever convention used to indicate the Oracle home.

2. Start SQL*Plus and connect to the database where Oracle Application Express is installed as SYS. For example:

```
DRIVE_LETTER:\> sqlplus /nolog
SQL> CONNECT SYS as SYSDBA
Enter password: SYS_password
```

3. Run apxxepwd.sql. For example:

```
@apxxepwd.sql
```

When prompted enter a password for the ADMIN account.

4. Enter the following command followed by the new password.

```
@apxxepwd.sql password
```

For example to change the password to apex, you would enter:

```
@apxxepwd.sql apex
```

Unlocking the APEX_PUBLIC_USER Database User

When configuring Oracle HTTP Server for Oracle Application Express in a new installation, the database user APEX_PUBLIC_USER must be an unlocked account. To unlock the account for database user APEX_PUBLIC_USER, execute the following steps:

1. Start SQL*Plus and connect to the database where Oracle Application Express is installed as SYS. For example:

```
DRIVE_LETTER:\> sqlplus /nolog
SQL> CONNECT SYS as SYSDBA
Enter password: SYS_password
```

2. Run the following statement:

```
ALTER USER APEX_PUBLIC_USER ACCOUNT UNLOCK
```

Changing the Password for the APEX_PUBLIC_USER Database User

In order to specify the password in the DAD file, you have to change the password for the database user APEX_PUBLIC_USER. Please use the following steps to change the password for the APEX_PUBLIC_USER database user:

1. Start SQL*Plus and connect to the database where Oracle Application Express is installed as SYS. For example:

```
DRIVE_LETTER:\> sqlplus /nolog
SQL> CONNECT SYS as SYSDBA
Enter password: SYS_password
```

2. Run the following statement:

```
SQL> PASSWORD APEX_PUBLIC_USER
Changing password for APEX_PUBLIC_USER
New password: password
Retype new password: password
```

Edit the dads.conf File

If this is a new installation of Oracle Application Express, you need to edit the dads.conf file. The dads.conf file contains the information about the DAD to access Oracle Application Express.

To edit the dads.conf file:

1. Use a text editor and open the dads.conf:

   - Oracle Application Server 10*g:*

     ```
     ORACLE_BASE\ORACLE_HTTPSERVER_HOME\Apache\modplsql\conf\dads.conf
     ```

   - Oracle HTTP Server distributed with Oracle Database 11*g:*

     ```
     ORACLE_BASE\ORACLE_HTTPSERVER_HOME\ohs\modplsql\conf\dads.conf
     ```

2. Copy the following into the dads.conf file. Replace ORACLE_HTTPSERVER_ HOME, host, port, service_name, and apex_public_user_password with values appropriate for your environment. Note that apex_public_user_ password is the password you defined in "Changing the Password for the APEX_ PUBLIC_USER Database User" on page 4-9.

   Note that the path listed is only an example. The path in the dads.conf file should reference the file system path described in Copying the Images Directory.

```
Alias /i/ "ORACLE_BASE\ORACLE_HTTPSERVER_HOME\images/"
AddType text/xml        xbl
AddType text/x-component        htc

<Location /pls/apex>
 Order deny,allow
 PlsqlDocumentPath docs
 AllowOverride None
 PlsqlDocumentProcedure      wwv_flow_file_mgr.process_download
 PlsqlDatabaseConnectString  host:port:service_name ServiceNameFormat
 PlsqlNLSLanguage            AMERICAN_AMERICA.AL32UTF8
 PlsqlAuthenticationMode     Basic
 SetHandler                  pls_handler
 PlsqlDocumentTablename      wwv_flow_file_objects$
 PlsqlDatabaseUsername       APEX_PUBLIC_USER
 PlsqlDefaultPage            apex
```

```
 PlsqlDatabasePassword         apex_public_user_password
 Allow from all
</Location>
```

3. Locate the line containing `PlsqlNLSLanguage`.

   The `PlsqlNLSLanguage` setting determines the language setting of the DAD. The character set portion of the `PlsqlNLSLanguage` value must be set to `AL32UTF8`, regardless of whether or not the database character set is `AL32UTF8`. For example:

   ```
   ...
   PlsqlNLSLanguage          AMERICAN_AMERICA.AL32UTF8
   ...
   ```

4. Save and exit the `dads.conf` file.

Stop and Restart Oracle HTTP Server

To stop and restart Oracle HTTP Server:

```
ORACLE_BASE\ORACLE_HTTPSERVER_HOME\opmn\bin\opmnctl stopproc ias-component=HTTP_
Server
ORACLE_BASE\ORACLE_HTTPSERVER_HOME\opmn\bin\opmnctl startproc ias-component=HTTP_
Server
```

Copying the Images Directory

Whether you are loading a new installation or upgrading from a previous release, you must copy the images directory from the top level of the *ORACLE_BASE\ORACLE_ HOME*\apex directory to the location on the file system containing the Oracle home for Oracle HTTP Server.

> **Note:** This section is relevant only if you choose Oracle HTTP Server with mod_plsql. However, if you choose Oracle XML DB HTTP Server with the embedded PL/SQL gateway, then these steps can be ignored.

Topics in this section include:

- Copying the Images Directory After an Upgrade
- Copying the Images Directory in a New Installation

Copying the Images Directory After an Upgrade

During an upgrade, you must overwrite your existing `images` directory. Before you begin the upgrade, to ensure that you can revert to the previous version, Oracle recommends that you create a copy of your existing `images` directory for Oracle Application Express, indicating the release number of the images (for example, `images_2_0`).

To locate the `images` directory on the file system, review the following files for the text alias `/i/`:

- Oracle9*i* HTTP Server Release 2—see the `httpd.conf` file.
- Oracle HTTP Server distributed with Oracle Database 11*g*—see the `dads.conf` file.

■ Oracle Application Server 10g—see the `marvel.conf` file.

When you locate the `images` directory path, Oracle recommends that you copy the existing `images` directory to a backup location. Doing this allows you to revert to the previous release, if that becomes necessary.

After you copy the existing `images` directory, use the following command syntax to copy the `apex\images` directory from the 11*g* Oracle database home to the existing `images` directory path, overwriting the existing images:

■ Oracle Application Server 10*g:*

```
DRIVE_LETTER:\> xcopy /E /I ORACLE_HOME\apex\images ORACLE_HTTPSERVER_
HOME\Apache\images
```

■ Oracle HTTP Server distributed with Oracle Database 11*g:*

```
DRIVE_LETTER:\> xcopy /E /I ORACLE_HOME\apex\images ORACLE_HTTPSERVER_
HOME\ohs\images
```

In the preceding syntax example:

■ *ORACLE_HOME* is the Oracle Database 11*g* Oracle home

■ `ORACLE_HTTPSERVER_HOME` is the existing Oracle Application Server or Oracle HTTP Server Oracle home

Copying the Images Directory in a New Installation

After installation, copy the directory `apex/images`.

You can copy the `images` directory using Windows Explorer, or running a command from a command prompt similar to the following:

```
DRIVE_LETTER:\> xcopy /E /I ORACLE_HOME\apex\images ORACLE_HTTPSERVER_
HOME\ohs\images
```

In the preceding syntax example:

■ *ORACLE_HOME* is the Oracle Database 11*g* Oracle home

■ `ORACLE_HTTPSERVER_HOME` is the existing Oracle Application Server or Oracle HTTP Server Oracle home

Enabling Network Services in Oracle Database 11*g*

By default, the ability to interact with network services is disabled in Oracle Database 11*g* Release 1 (11.1). Therefore, if you are running Oracle Application Express with Oracle Database 11*g* Release 1 (11.1), you need to use the new `DBMS_NETWORK_ACL_ADMIN` package to grant connect privilege to any host for the `FLOWS_030000` database user. Failing to grant these privileges results in issues with:

■ Sending outbound mail in Oracle Application Express.

Users can call methods from the `APEX_MAIL` package, but issues arise when sending outbound email.

■ Using Web services in Oracle Application Express.

■ PDF/report printing.

■ Searching for content in online Help (that is, using the Find link).

Granting Connect Privileges

The following example demonstrates how to grant connect privileges to any host for the `FLOWS_030000` database user.

In order to run the examples, the compatible initialization parameter of the database must be set to at least 11.1.0.0.0. In an 11*g* database, the parameter is already set by default. However, you will have to set this parameter in case of a database upgrade to 11*g* from a prior version.

> **See Also:** "Creating and Configuring an Oracle Database" in the *Oracle Database Administrator's Guide* for information about changing database compatible initialization parameters

```
DECLARE
  ACL_PATH  VARCHAR2(4000);
  ACL_ID    RAW(16);
BEGIN
  -- Look for the ACL currently assigned to '*' and give FLOWS_030000
  -- the "connect" privilege if FLOWS_030000 does not have the privilege yet.

  SELECT ACL INTO ACL_PATH FROM DBA_NETWORK_ACLS
   WHERE HOST = '*' AND LOWER_PORT IS NULL AND UPPER_PORT IS NULL;

  -- Before checking the privilege, make sure that the ACL is valid
  -- (for example, does not contain stale references to dropped users).
  -- If it does, the following exception will be raised:
  --
  -- ORA-44416: Invalid ACL: Unresolved principal 'FLOWS_030000'
  -- ORA-06512: at "XDB.DBMS_XDBZ", line ...
  --
  SELECT SYS_OP_R2O(extractValue(P.RES, '/Resource/XMLRef')) INTO ACL_ID
    FROM XDB.XDB$ACL A, PATH_VIEW P
   WHERE extractValue(P.RES, '/Resource/XMLRef') = REF(A) AND
         EQUALS_PATH(P.RES, ACL_PATH) = 1;

  DBMS_XDBZ.ValidateACL(ACL_ID);
   IF DBMS_NETWORK_ACL_ADMIN.CHECK_PRIVILEGE(ACL_PATH, 'FLOWS_030000',
     'connect') IS NULL THEN
      DBMS_NETWORK_ACL_ADMIN.ADD_PRIVILEGE(ACL_PATH,
     'FLOWS_030000', TRUE, 'connect');
  END IF;

EXCEPTION
  -- When no ACL has been assigned to '*'.
  WHEN NO_DATA_FOUND THEN
  DBMS_NETWORK_ACL_ADMIN.CREATE_ACL('power_users.xml',
    'ACL that lets power users to connect to everywhere',
    'FLOWS_030000', TRUE, 'connect');
  DBMS_NETWORK_ACL_ADMIN.ASSIGN_ACL('power_users.xml','*');
END;
/
COMMIT;
```

Troubleshooting an Invalid ACL Error

If you receive an `ORA-44416: Invalid ACL` error after running the previous script, use the following query to identify the invalid ACL:

```
REM Show the dangling references to dropped users in the ACL that is assigned
```

```
REM to '*'.

SELECT ACL, PRINCIPAL
  FROM DBA_NETWORK_ACLS NACL, XDS_ACE ACE
 WHERE HOST = '*' AND LOWER_PORT IS NULL AND UPPER_PORT IS NULL AND
       NACL.ACLID = ACE.ACLID AND
       NOT EXISTS (SELECT NULL FROM ALL_USERS WHERE USERNAME = PRINCIPAL);
```

Next, run the following code to fix the ACL:

```
DECLARE
  ACL_ID   RAW(16);
  CNT      NUMBER;
BEGIN
  -- Look for the object ID of the ACL currently assigned to '*'
  SELECT ACLID INTO ACL_ID FROM DBA_NETWORK_ACLS
   WHERE HOST = '*' AND LOWER_PORT IS NULL AND UPPER_PORT IS NULL;

  -- If just some users referenced in the ACL are invalid, remove just those
  -- users in the ACL. Otherwise, drop the ACL completely.
  SELECT COUNT(PRINCIPAL) INTO CNT FROM XDS_ACE
   WHERE ACLID = ACL_ID AND
         EXISTS (SELECT NULL FROM ALL_USERS WHERE USERNAME = PRINCIPAL);

  IF (CNT > 0) THEN

    FOR R IN (SELECT PRINCIPAL FROM XDS_ACE
                WHERE ACLID = ACL_ID AND
                      NOT EXISTS (SELECT NULL FROM ALL_USERS
                                    WHERE USERNAME = PRINCIPAL)) LOOP
      UPDATE XDB.XDB$ACL
         SET OBJECT_VALUE =
               DELETEXML(OBJECT_VALUE,
                         '/ACL/ACE[PRINCIPAL="'||R.PRINCIPAL||'"]')
       WHERE OBJECT_ID = ACL_ID;
    END LOOP;

  ELSE
    DELETE FROM XDB.XDB$ACL WHERE OBJECT_ID = ACL_ID;
  END IF;

END;
/

REM commit the changes.

COMMIT;
```

Once the ACL has been fixed, you need to run the first script in this section to apply the ACL to the FLOWS_030000 user. See "Granting Connect Privileges" on page 4-16.

About Running Oracle Application Express in Other Languages

The Oracle Application Express interface is translated into German, Spanish, French, Italian, Japanese, Korean, Brazilian Portuguese, Simplified Chinese, and Traditional Chinese. A single instance of Oracle Application Express can be installed with one or more of these translated versions. At runtime, each user's Web browser language settings determine the specific language version.

The translated version of Oracle Application Express should be loaded into a database that does not support the character encoding of the language, the installation may fail or the translated Oracle Application Express instance may appear corrupt when run. The database character set `AL32UTF8` supports all the translated versions of Oracle Application Express.

You can manually install translated versions of Oracle Application Express using SQL*Plus. The installation files are encoded in `AL32UTF8`.

> **Note:** Regardless of the target database character set, to install a translated version of Oracle Application Express, you must set the character set value of the `NLS_LANG` environment variable to `AL32UTF8` prior to starting SQL*Plus.

The following examples illustrate valid `NLS_LANG` settings for loading Oracle Application Express translations:

```
American_America.AL32UTF8
Japanese_Japan.AL32UTF8
```

Installing a Translated Version of Oracle Application Express

Whether you are installing for the first time or upgrading from a previous release, you must run the `load_lang.sql` script to run a translated version of Oracle Application Express.

The installation scripts are located in subdirectories identified by a language code in the unzipped distribution `apex/builder`. For example, the German version is located in `apex/builder/de` and the Japanese version is located in `apex/builder/ja`. Within each of directory, there is a language loading script identified by the language code (for example, `load_de.sql` or `load_ja.sql`).

To install a translated version of Oracle Application Express:

1. Set the `NLS_LANG` environment variable, making sure that the character set is `AL32UTF8`. For example:

   ```
   set NLS_LANG=American_America.AL32UTF8
   ```

2. Start SQL*Plus and connect to the target database as `SYS`. For example:

   ```
   DRIVE_LETTER:\> sqlplus /nolog
   connect sys as sysdba
   ```

   When prompted, enter the appropriate password.

3. Execute the following statement:

   ```
   ALTER SESSION SET CURRENT_SCHEMA = FLOWS_030000;
   ```

4. Execute the appropriate language specific script. For example:

   ```
   @load_lang.sql
   ```

   Where `lang` is the specific language (for example, `load_de.sql` for German or `load_ja.sql` for Japanese).

Managing JOB_QUEUE_PROCESSES

JOB_QUEUE_PROCESSES determine the maximum number of concurrently running jobs. In Oracle Application Express release 3.0, transactional support and SQL scripts require jobs. If JOB_QUEUE_PROCESSES is not enabled and working properly, you cannot successfully execute a script.

Topics in this section include:

- Viewing the Number of JOB_QUEUE_PROCESSES
- Changing the Number of JOB_QUEUE_PROCESSES

Viewing the Number of JOB_QUEUE_PROCESSES

There are currently three ways to view the number of number of JOB_QUEUE_PROCESSES:

- In the installation log file
- On the About Application Express page in Oracle Application Express
- From SQL*Plus

Viewing JOB_QUEUE_PROCESSES in the Installation Log File

After installing or upgrading Oracle Application Express to release 3.0, you can view the number of JOB_QUEUE_PROCESSES in the installation log files. See "Reviewing the Log of an Installation Session" on page F-2.

Viewing JOB_QUEUE_PROCESSES in Oracle Application Express

You can also view the number of JOB_QUEUE_PROCESSES on the About Oracle Application Express page.

To view the About Oracle Application Express page:

1. Log in to Oracle Application Express. See "Logging In to Oracle Application Express" on page 4-20.

2. On the Administration list, click **About Oracle Application Express**.

   The current number JOB_QUEUE_PROCESSES displays at the bottom of the page.

Viewing JOB_QUEUE_PROCESSES from SQL*Plus

Users can also view the number of JOB_QUEUE_PROCESSES from SQL*Plus by running the following SQL statement:

```
SELECT VALUE FROM v$parameter WHERE NAME = 'job_queue_processes'
```

Changing the Number of JOB_QUEUE_PROCESSES

You can change the number of JOB_QUEUE_PROCESSES by running a SQL statement in SQL*Plus:

To update the number of JOB_QUEUE_PROCESSES:

1. Log in to the database as SYSDBA using SQL*Plus.

2. In SQL*Plus run the following SQL statement:

   ```
   ALTER SYSTEM SET JOB_QUEUE_PROCESSES = <number>
   ```

For example, running the statement `ALTER SYSTEM SET JOB_QUEUE_PROCESSES = 20` sets `JOB_QUEUE_PROCESSES` to 20.

Obfuscating PlsqlDatabasePassword Parameter

The `PlsqlDatabasePassword` parameter specifies the password for logging in to the database. You can use the `dadTool.pl` utility to obfuscate passwords in the `dads.conf` file.

You can find the `dadTool.pl` utility in the following directory:

- Oracle Application Server 10*g:*

  ORACLE_BASE*ORACLE_HTTPSERVER_HOME*\Apache\modplsql\conf

- Oracle HTTP Server 11g:

  ORACLE_BASE\ORACLE_HTTPSERVER_HOME\ohs\modplsql\conf

Obfuscating Passwords

To obfuscate passwords, run dadTool.pl by following the instructions in the dadTool.README file.

Logging In to Oracle Application Express

You access the Oracle Application Express home page in a Web browser. To view or develop Oracle Application Express applications, the Web browser must support JavaScript and the HTML 4.0 and CSS 1.0 standards. See "Browser Requirements" on page 2-9.

Topics in this section include:

- Oracle Application Express User Roles
- Setting Up Your Local Environment

Oracle Application Express User Roles

In the Oracle Application Express development environment, users log in to a shared work area called a **workspace**. Users are divided into four primary roles:

- **Workspace administrators** are users who perform administrator tasks specific to a workspace such as managing user accounts, monitoring workspace activity, and viewing log files.

- **Developers** are users who create and edit applications. Developers can have their own workspace or share a workspace.

- **End users** have no development privileges. You define end users so that they can access applications that do not use an external authentication scheme.

- **Oracle Application Express administrators** are superusers that manage an entire hosted instance using the Application Express Administration Services application.

Setting Up Your Local Environment

How you set up Oracle Application Express depends upon your user role. If you are a **developer** accessing a hosted development environment, an administrator must grant you access to a workspace. If you are an Oracle Application Express **administrator**, you must perform the following steps:

1. **Log in to** Oracle Application Express **Administration Services.** Oracle Application Express Administration Services is a separate application for managing an entire Oracle Application Express instance. You log in using the `ADMIN` account and password created or reset during the installation process.

2. **Specify a provisioning mode.** In Oracle Application Express Administration Services, you need to determine how the process of creating (or provisioning) a workspace will work in your development environment.

3. **Create a Workspace.** A **workspace** is a virtual private database allowing multiple users to work within the same Oracle Application Express installation while keeping their objects, data and applications private. Each workspace has a unique ID and name. An Oracle Application Express administrator can create a workspace manually or have users submit requests.

4. **Log in to a Workspace.** Once you create a workspace in Oracle Application Express Administration Services, return to the Oracle Application Express Login page and log in to that workspace.

> **See Also:** *Oracle Database 2 Day + Application Express Developer's Guide* or "Quick Start" in *Oracle Database Application Express User's Guide*

Patching Oracle Application Express 3.0

If you are already running Oracle Application Express 3.0, then check the Oracle Application Express page on the Oracle Technology Network (OTN) at the following URL for information about patch set releases or later versions of Oracle Application Express:

http://www.oracle.com/technology/products/database/application_express/index.html

Upgrading to Oracle Database 11*g* will not patch an Oracle Application Express 3.0 instance to Oracle Application Express 3.0.1.

Postinstallation Database Configuration for Oracle Configuration Manager

If you have installed Oracle Configuration Manager in a home that contains a database, you must run a script to create a database account to collect database configuration collections. You must create this account in both **Connected** and **Disconnected** modes:

- **Connected Mode**: This mode is recommended if your server has direct connection to the Internet or connection through a proxy server. In this mode, configuration data is automatically collected and uploaded to the Oracle system. Updates to Oracle Configuration Manager occur automatically.

- **Disconnected Mode**: This mode is recommended if your server does not have a connection to Internet. In this mode, you can collect configuration data manually by using the **emCCR collect** command. When you run this command, the collected configuration data is stored in the `ORACLE_HOME`\ccr\state\upload\ocmconfig.jar file. You can then upload this file to the Oracle server.

  In this mode, the only commands supported are `emCCR collect`, `emCCR status`, `emCCR enable_target`, `emCCR disable_target`, `emCCR update_components`, `configCCR`, and `emCCR help`.

You can switch between **Connected** and **Disconnected** modes by using the **configCCR** command.

The database account stores the PL/SQL procedures that collect the configuration information, and the account owns the database management system (DBMS) job that performs the collection. After the account has been set up, as login privileges are no longer required, the account is locked.

> **Note:**
>
> - Because the collected configuration data is not stored in the database, additional disk space is not required for the database.
>
> - Because database configuration collections are performed using the database jobs, the `job_queue_process` initialization parameter must have a value greater than 0 for pre-10*g* databases only.

Preparing Pre-9.2 Databases

Before running the `installCCRSQL.exe` script to prepare the database for configuration collection, you must perform the following steps for pre 9.2 databases:

1. Edit the `init<sid>.ora` file where `sid` is the database system identifier, and set the `UTL_FILE_DIR` parameter to include *ORACLE_BASE\ORACLE_HOME*`\ccr\state` as one of the directories.

   If a server parameter file (`spfile`) is used, alter the `UTL_FILE_DIR` parameter using the following SQL*Plus command:

   ```
   SQL> alter system set utl_file_dir=<value> scope=spfile
   ```

   where `value` is equal to *ORACLE_BASE\ORACLE_HOME*`\ccr\state`

2. Restart the database.

Equipping the Database for Configuration Collections

If Oracle Configuration Manager has been installed but not configured, then perform the following steps:

- Run the following command to create the `admin` directory

  DRIVE_LETTER`:\>` *ORACLE_BASE\ORACLE_HOME*`\ccr\bin\setupCCR`

- Run the following script, to configure the database for configuration collection:

  DRIVE_LETTER`:\>` *ORACLE_BASE\ORACLE_HOME*`\ccr\admin\scripts\installCCRSQL.exe collectconfig -s SID -r` *SYSDBA-USER* `-p` *SYSDBA-PASSWORD*

The `installCCRSQL.exe` script creates an Oracle Configuration Manager user and loads the PL/SQL procedure into the database defined by the `ORACLE_SID`. You can also specify the database `<SID>` by using the `-s` option in the command line as in the following example where the `<SID>` is `orcl`:

DRIVE_LETTER`:\>` *ORACLE_BASE\ORACLE_HOME*`\ccr\admin\scripts\installCCRSQL.exe collectconfig -s orcl`

By default, the connection to the database is through operating system authentication, "/as sysdba." To specify a different user and password, you can use these options:

-r SYSDBA-USER: The login name for the user with a SYSDBA role

-p SYSDBA-PASSWORD: The password for the user with a SYSDBA role

> **Note:**
>
> - If you specify the user without specifying the password, you will be prompted to enter the password.
>
> - If you specify only the password without specifying the user name, the user SYS is used by default.
>
> - If the Oracle Configuration Manager account already exists, when you run the installCCRSQL.exe script, it will be dropped and re-created.
>
> - If you are upgrading from a 9.x database version to a 10.x version, you must run the installCCRSQL.exe script again to record the upgraded version.

Additional Step for E-Business Suites

If the database is used as a repository for an Oracle E-Business Suite, you must also run the following script from the ORACLE_HOME in which the E-Business database has been hosted:

```
DRIVE_LETTER:\> ORACLE_BASE\ORACLE_HOME\ccr\admin\scripts\installCCRSQL.exe ebs_
collectconfig -u Oracle_Applications_User
```

The -u parameter is mandatory. If you do not specify this parameter, the application prompts you for the Oracle Applications User. If the -u parameter is specified, you will be prompted for the Oracle Applications Password.

If you want to automate the install, you can run the installCCRSQL.exe script with an additional -w option to specify the Oracle Applications Password. For example:

```
ORACLE_BASE\ORACLE_HOME\ccr\admin\scripts\installCCRSQL.exe ebs_
collectconfig -u Oracle_Applications_User -w Oracle_Applications_
Password
```

You can add the -s SID command to specify the SID of the Oracle Applications Database instance.

If you are not using operating system authentication to connect to the database, you must use the -r and -p parameters to specify the following:

-r SYSDBA-USER: The login name of the SYSDBA user

-p SYSDBA-PASSWORD: The password for the SYSDBA user

If the -r parameter is specified, the -p parameter is optional and will be prompted for.

Additional Step for Oracle Enterprise Manager Grid Control

If the database is used as a repository for Oracle Enterprise Manager Grid Control, you must also run the following script:

```
DRIVE_LETTER:\> ORACLE_BASE\ORACLE_
HOME\ccr\admin\scripts\installCCRSQL.exe collectemrep
```

When you run this command, then the application prompts you for the SYSMAN password. If you want to automate the install, you can run the installCCRSQL.exe script to specify the SYSMAN password. For example:

DRIVE_LETTER:\> *ORACLE_BASE**ORACLE_ HOME*\ccr\admin\scripts\installCCRSQL.exe collectemrep -e *SYSMAN PASSWORD*

You can add the -s SID command to specify the SID of the Oracle Enterprise Manager Grid Control Database instance. You must run this script from the ORACLE_ HOME in which the Oracle Enterprise Manager Grid Control database has been hosted.

If you are not using operating system authentication to connect to the database, you must use the -r and -p parameters to specify the following:

-r SYSDBA-USER: The login name of the SYSDBA user

-p SYSDBA-PASSWORD: The password for the SYSDBA user

If the -r parameter is specified, the -p parameter is optional and will be prompted for.

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 Database 11*g* Release 1 (11.1) Online Documentation Library and the Oracle Technology Network Web site.

This section contains these topics:

- Configuring Oracle Direct NFS Client
- Configuring Oracle Messaging Gateway
- Configuring Oracle Administration Assistant for Windows
- Running Oracle Cluster Synchronization Services from a Different Oracle Home
- Configuring Oracle Counters for Windows Performance Monitor
- Configuring Oracle Label Security
- Configuring Oracle Database Vault
- Configuring Oracle Net Services
- 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 to Work with Enterprise Manager
- Configuring Oracle Database to Communicate with Automatic Storage Management
- Configuring Databases to Use Oracle Enterprise Manager Database Control
- Installing Oracle Database Examples

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

Configuring Oracle Direct NFS Client

Many network-attached storage (NAS) systems use NFS to access data. You can store data files on a supported NFS system.

With Oracle Database 11*g*, you can configure Oracle Database to access NFS V3 servers directly using an Oracle internal Direct NFS client.

If Oracle Database is unable to open an NFS server using Direct NFS, then an error message will be logged into the Oracle alert and trace files indicating that Direct NFS could not be established.

The Oracle files resident on the NFS server that are served by the Direct NFS Client can be accessed through a third party NFS client. The usual considerations for maintaining integrity of the Oracle files apply in this situation. The database files accessed through Direct NFS Client should also be mounted using other means, such as, Common Internet File System (CIFS), Samba, or NFS. This ensures that the kernel input output interface is able to access these files.

Some NFS file servers require NFS clients to connect using reserved ports. If your filer is running with reserved port checking, then you must disable it for Direct NFS to operate. To disable reserved port checking, consult your NFS file server documentation.

Direct NFS can use up to four network paths defined for an NFS server. The Direct NFS client performs load balancing across all specified paths. If a specified path fails, then Direct NFS reissues I/Os over any remaining paths.

Use the following views for Direct NFS management:

- **v$dnfs_servers:** Shows a table of servers accessed using Direct NFS.

- **v$dnfs_files:** Shows a table of files currently open using Direct NFS.

- **v$dnfs_channels:** Shows a table of open network paths (or channels) to servers for which Direct NFS is providing files.

- **v$dnfs_stats:** Shows a table of performance statistics for Direct NFS.

Enable Direct NFS Client

To enable Direct NFS Client, a new Oracle specific file `oranfstab` can be added to `ORACLE_BASE\ORACLE_HOME`\dbs. When `oranfstab` is placed in `ORACLE_BASE\ORACLE_HOME`\dbs, its entries are specific to a single database.

Direct NFS Client looks for the mount point entries in `oranfstab.` It uses the first matched entry as the mount point.

Complete the following procedure to enable Direct NFS:

1. Create an `oranfstab` file with the following attributes for each NFS server to be accessed using Direct NFS:

   - **Server:** The NFS server name.

   - **Path:** Up to four network paths to the NFS server, specified either by IP address, or by name, as displayed using the ifconfig command.

   - **Export:** The exported path from the NFS server. Use UNIX-style path.

- **Mount:** The local mount point for the NFS server. Use WINDOWS-style path.

The following is an example of an oranfstab file with two NFS server entries:

```
server: MyDataServer1
path: 132.34.35.12
path: 132.34.35.13
export: /vol/oradata1 mount: C:\APP\ORACLE\ORADATA\ORCL

server: MyDataServer2
path: NfsPath1
path: NfsPath2
path: NfsPath3
path: NfsPath4
export: /vol/oradata2 mount: C:\APP\ORACLE\ORADATA\ORCL2
export: /vol/oradata3 mount: C:\APP\ORACLE\ORADATA\ORCL3
```

As a rule, a mount point specified in `oranfstab` file will represent local path where the database files would have resided normally, that is, without dnfs being enabled. For example, if a no-dnfs database instance would have kept its files in `c:\app\oracle\oradata\orcl` directory, then `c:\app\oracle\oradata\orcl` should be specified as a virtual mount point in the corresponding `oranfstab` file.

Note: On Windows platforms, two optional parameters can be specified in oranfstab file:

- `uid:` UNIX User ID to be used by Direct NFS
- `gid:` UNIX Group ID to be used by Direct NFS

The Direct NFS Client uses the `uid` or `gid` value to access all NFS servers listed in `oranfstab`. Direct NFS ignores `uid` or `gid` value of `0`. If neither `uid` nor `gid` is specified, then a default of `uid:65534, gid:65534` is used by the Direct NFS Client. The default value often corresponds to `user:nobody` and `group:nogroup` on the NFS server.

Note: The exported path from the NFS server must be accessible for read, write, and execute operations by the user with the `uid, gid` specified in `oranfstab`. If neither uid nor gid is listed, then the exported path must be accessible by the user with the `uid:65534, gid:65534`.

---

2. Oracle Database uses an ODM library, `oranfsodm11.dll`, to enable Direct NFS. To replace the standard ODM library, `oraodm11.dll`, with the ODM NFS library, `oranfsodm11.dll`, complete the following steps:

   1. Change directory to *ORACLE_BASE\ORACLE_HOME*\bin.

   2. Shutdown Oracle

   3. Enter the following commands:

      ```
      DRIVE_LETTER:\> copy oraodm11.dll oraodm11.dll.stub
      DRIVE_LETTER:\> copy /Y oranfsodm11.dll oraodm11.dll
      ```

Disable Direct NFS Client

Use one of the following methods to disable the Direct NFS client:

- Remove the `oranfstab` file.

- Restore the stub `oraodm11.dll` file by reversing the process you completed in "Enable Direct NFS Client".

- Remove the specific NFS server or export paths in the `oranfstab` file.

NFS Buffer Size

Direct NFS requires an NFS server supporting NFS read/write buffers of at least 16384 bytes.

Direct NFS will issue writes at wtmax granularity to the NFS server. Direct NFS will not serve an NFS server with a wtmax less than 16384. Oracle recommends that you use the value 32768.

> **Note:** See your storage vendor documentation for additional information about NFS Buffer Size.

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*

> **Note:** Oracle Messaging Gateway is not supported on Windows x64.

Configuring Oracle Administration Assistant for Windows

Oracle Administration Assistant for Windows requires the Microsoft Management Console and HTML Help 1.2 or later to run. Microsoft Management Console (MMC) 1.2 is included with Windows 2000; version 2.0 of MMC ships with Windows 2003 and Windows XP; version 3.0 of MMC is available with Windows Vista. Oracle recommends the latest MMC version available.

> **See Also:** Microsoft documentation at
>
> http://www.microsoft.com/

Running Oracle Cluster Synchronization Services 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:

```
DRIVE_LETTER:\> 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" 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 the Operfcfg.exe executable located in the *ORACLE_BASE\ORACLE_HOME*\bin directory.

To set the system password, enter the following:

```
DRIVE_LETTER:\> ORACLE_BASE\ORACLE_HOME\bin\operfcfg.exe -U SYSTEM -P password -D
TNS_Alias_for_database
```

> **See Also:** *Oracle Database Platform Guide for Microsoft 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 Database Vault

If you installed Oracle Database Vault, you must register it in a database and create the Database Vault Owner and, optionally, Database Vault Account Manager administrative accounts before you can use it.

> **See Also:** *Oracle Database Vault Administrator's Guide* for more information on registering Oracle Database Vault

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.

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 Examples media.

> **See Also:** *Oracle Text Reference* for information about 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

Configuring or Reinstalling Oracle XML DB

See *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 11*g* Release 1 (11.1) database, you need to manually configure them.

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

Configuring Shared Server Support

The default setup for using Shared Server mode depends on how the software has been 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 Oracle 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 Microsoft Windows*

Setting Credentials for the Job System to Work with Enterprise Manager

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, such as stopping or starting the database, the operating system 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.

1. Start the **Local Security Policy** tool:

   - **Windows 2000:** From the **Start** menu, select **Control Panel**, **Administrative Tools**, then **Local Security Policy**.

   - **Windows 2003:** From the **Start** menu, select **Administrative Tools**, then **Local Security Policy**.

   - **Windows XP:** From the **Start** menu, select **Control Panel**, **Administrative Tools**, then **Local Security Policy**.

   - **Windows Vista:** From the **Start** menu, select **Programs**, **Administrative Tools,** then **Local Security Policy.**

2. Under the Security Settings list, expand the list to **Local Policies**.

3. Under Local Policies, double-click **User Rights Assignment**.

4. Under Policy, search for the **Log on as a batch job** policy.

   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, you must grant the "Windows service" user the following three privileges:

   - **Act as part of the operating system**

   - **Adjust memory quotas for a process** (This setting is named **Increase memory quotas** on Windows 2000.)

   - **Replace a process level token**

     The service under the "Windows service" user runs at the operating system level.

5. With each policy, perform the following steps:

   a. Double-click the policy name.

   b. In the Properties dialog box, click **Add User or Group**.

c. In the Select Users or Groups dialog box, enter the name of the user (for example, `jsmith`, `administrator`, and so on.)

> **Note:** On Windows Vista, the name of the dialog box is Select Users, Computers, or Groups.

d. Click **Check Names** to check that you have entered the name correctly.

e. Click **OK**.

6. Click **OK** to exit the Properties dialog box, then exit Local Security Settings and Administrative Tools.

7. Restart your computer.

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

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 Microsoft 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 lets you 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

Installing Oracle Database Examples

If you plan to use the following products or features, then download and install the products from the Oracle Database Examples media:

- Oracle Database Examples (formerly Oracle Demos)
- Oracle JDBC Development Drivers
- Oracle Context Companion

> **See Also:** *Oracle Database Examples Installation Guide* for detailed information on various Oracle product demonstrations.

5

Getting Started with Oracle Database

This chapter describes where to go after you have completed an Oracle Database installation, such as how to check the installed contents, start various tools, and identify and locate various files. It covers these topics:

- Checking the Installed Oracle Database Contents and Directory Location
- Logging in to Enterprise Manager Database Control
- Starting and Stopping an Oracle Database
- Managing Automatic Storage Management
- Accessing Oracle Database with SQL*Plus
- Reviewing User Accounts and Passwords
- Identifying Databases
- Locating the Server Parameter File
- Identifying Tablespaces and Data Files
- Locating Redo Log Files
- Locating Control Files
- Understanding Oracle Database Services on Windows

Checking the Installed Oracle Database Contents and Directory Location

Use Oracle Universal Installer to check the contents and directory location of your Oracle Database installation.

Follow these steps:

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

2. In the Welcome window, click **Installed Products** to display the Inventory dialog box.

3. To check the installed contents, find the Oracle Database product in the list.

   To find additional information about an installed product, click **Details**.

4. To check the directory location of the installed contents, click the **Environment** tab.

5. Click **Close** to exit the Inventory dialog box.

6. Click **Cancel** to exit Oracle Universal Installer, then click **Yes** to confirm.

Logging in to 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, including Automatic Storage Management.

To log in to Oracle Enterprise Manager Database Control:

1. Open your Web browser and enter the following URL

   ```
   https://hostname:port/em
   ```

   In a default installation, the port number is 1158. 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
   ```

   > **Note:** The portlist.ini file if not updated if you change a port number after you install Oracle Database. "Changing the Oracle Enterprise Manager Database Console Ports" on page E-3 explains how to find the Oracle Enterprise Manager Database Control port number in this situation

   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 user name SYSTEM and connect as SYSDBA. Enterprise Manager displays the Database Home page.

   Use the password that you specified for the SYSTEM account during the installation.

   > **Note:** You can also log in to the Database Control using the SYSTEM or SYSMAN accounts or you can grant login privileges to other database users.

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:** "Logging in to Enterprise Manager Database Control" on page 5-2

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 user name 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 **Review**.

7. On the properties page, 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.

To enable a nonadministrative user to log in to Database Control, the user must be granted the SELECT ANY DICTIONARY system privilege.

Starting and Stopping an Oracle Database

You can start and stop an Oracle database by using any of the following methods:

- Starting and Stopping the Database with Oracle Enterprise Manager Database Control

- Starting and Stopping the Database with Oracle Administration Assistant for Windows

- Starting and Stopping the Database from the Microsoft Windows Services Utility

Starting and Stopping the Database with Oracle Enterprise Manager Database Control

To start or stop the database:

1. From a Web browser, start Enterprise Manager Database Control and log in, for example:

   ```
   http://myserver:1158/em
   ```

   > **See Also:** "Logging in to Enterprise Manager Database Control" on page 5-2

2. Click **Home** to go to the home page.

3. Under General, click **Start** to start the database or click **Shutdown** to shut it down.

Starting and Stopping the Database with Oracle Administration Assistant for Windows

Oracle Administration Assistant is available from the Custom installation type.

To start or stop the database:

1. From the **Start** menu, select **Programs**, then **Oracle - *HOME_NAME***, then **Configuration and Migration Tools**, and then **Administrative Assistant for Windows**.

2. In the console window, expand the Oracle Administration Assistant for Windows tree structure.

3. Under Databases, right-click the name of the database that you want, and from the menu, select from the following options:

   - **Connect Database**

- **Start Service**

- **Disconnect Database**

- **Stop Service**

- **Startup/Shutdown Options**

Starting and Stopping the Database from the Microsoft Windows Services Utility

To start or stop the database:

1. From the **Start** menu, select **Programs**, then **Administrative Tools**, and then **Services**.

2. In the Services dialog box, locate the name of the database you want to start or stop.

3. Right-click the name of the database, and from the menu, select either **Start**, **Stop**, or **Pause**.

   To set its startup properties, right-click **Properties**, and in the dialog box, select either **Automatic**, **Manual**, or **Disabled**.

Managing Automatic Storage Management

This section covers the following topics:

- Starting and Stopping Automatic Storage Management

- Automatic Storage Management Utilities

Starting and Stopping Automatic Storage Management

To start and stop Automatic Storage Management, in addition to using SQL*Plus, you can use the Windows **Services** utility.

To start Automatic Storage Management using the **Services** utility:

1. From the **Start** menu, select **Programs**, then **Administrative Tools**, and then **Services**.

2. In the Services dialog box, start the following services by right-clicking their names and in the menu, select **Start**:

   - `OracleCSService`

   - `OracleASMService+ASM`

   To set the startup properties for these services, right-click **Properties**, and in the Properties dialog box, under Startup Type, select **Automatic**, **Manual**, or **Disabled**.

3. Exit **Services**.

To stop Automatic Storage Management using the **Services** utility:

1. From the **Start** menu, select **Programs**, then **Administrative Tools**, then **Services**.

2. In the Services dialog box, Shut down any databases that use Automatic Storage Management. Names of Oracle databases are preceded with `OracleService`.

3. Right-click the `OracleCSService` and `Oracle ASMService+ASM` services and from the menu, select **Stop**.

4. Exit **Services**.

> **See Also:** *Oracle Database Administrator's Guide* for information on starting and stopping Automatic Storage Management instances by using SQL*Plus

Automatic Storage Management Utilities

To manage Automatic Storage Management, you can use the following tools:

- **asmcmd**: This command-line tool lets you manage Automatic Storage Management disk group files and directories.

- **Oracle Enterprise Manager Grid Control**: If you have Oracle Enterprise Manager installed, you can use Grid Control to manage Automatic Storage Management functions such as migrating an existing database to Automatic Storage Management, checking the status of the Automatic Storage Management instance, checking the performance of the Automatic Storage Management disk groups, creating or dropping Automatic Storage Management disk groups, and so on.

- **Oracle Enterprise Manager Database Control**: This utility lets you perform functions similar to Grid Control.

- **SQL*Plus**: You can use Automatic Storage Management-specific commands from this tool. To connect to the Automatic Storage Management instance, you use the same methods that you use to connect to an Oracle Database instance.

> **See Also:**
>
> - "Logging in to Enterprise Manager Database Control" on page 5-2
>
> - *Oracle Database Administrator's Guide* for more information about managing Automatic Storage Management
>
> - *Oracle Database Utilities* for more information about the `asmcmd` utility

Accessing Oracle Database with SQL*Plus

To issue SQL and PL/SQL statements to Oracle Database, you can use SQL*Plus. This tool enables you to perform the same database management operations, as well as to query, insert, update, or delete data directly in the database.

To start SQL*Plus:

1. From the **Start** menu, select **Programs**, then **Oracle -** *HOME_NAME*, then **Application Development**, and then **SQL Plus**.

2. In the Log On dialog box, enter the user name, password, and for the host string, the name of the database to which you want to connect.

Alternatively, at the command line, you can enter the following command at a Windows command prompt:

```
c:\> sqlplus /nolog
SQL> CONNECT user_name
Enter password: password
```

For example, to log on as SYSTEM using the password *password*, you enter:

```
c:\> sqlplus /nolog
SQL> CONNECT SYSTEM
Enter password: password
```

If you are logging on as SYS, you would need to connect as SYSDBA:

```
c:\> sqlplus /nolog
SQL> CONNECT SYS AS SYSDBA
Enter password: password
```

> **See Also:**
>
> - *SQL*Plus User's Guide and Reference*
> - *SQL*Plus Quick Reference*

Accessing Oracle Database with SQL Developer

To issue SQL and PL/SQL statements to Oracle Database, you can use SQL Developer. All SQL and PL/SQL commands are supported as they are passed directly from the SQL Worksheet to the Oracle Database.

To start SQL Developer:

1. From the **Start** menu, select **Programs**, then **Oracle - *HOME_NAME***, then **Application Development**, and then **SQL Developer**.

2. Right-Click **Connections.** In the dialog box, enter a Connection name, username, password, and for the host string, the name of the database to which you want to connect and click **Connect.**

Once connected, you can view, create, modify, and delete the database objects using the Connection Navigator or issue any SQL or PL/SQL command using a SQL Worksheet (From the **Tools** menu, select **SQL Worksheet**).

SQL*Plus commands have to be interpreted by the SQL Worksheet before being passed to the database. The SQL Worksheet currently supports a number of SQL*Plus commands. SQL*Plus commands which are not supported by the SQL Worksheet are ignored and are not sent to the Oracle Database.

> **See Also:** "SQL*Plus Statements Supported and Not Supported in SQL Worksheet" in *Oracle Database SQL Developer User's Guide*

Reviewing User Accounts and Passwords

All databases created by Oracle 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 describes these accounts, listing their user names and passwords.

See Also:

- "Unlocking and Changing Passwords" on page 5-9 for information about using Oracle Enterprise Manager Database Control to view a complete list of the user accounts defined for your database

- "Modifying Oracle Counters for Windows Performance Monitor Parameters" in *Oracle Database Platform Guide for Microsoft Windows* for instructions on how to change the password for Oracle Counters for Windows Performance Monitor

- *Oracle Database Administrator's Guide* for information about Oracle security procedures and security best practices

Reviewing Administrative Accounts

Table 5–1 describes the administrative user names.

Table 5–1   Administrative Accounts

User Name	Description	See Also
ANONYMOUS	Allows HTTP access to Oracle XML DB.	Not applicable
BI	Owns the Business Intelligence schema included in the Oracle Sample Schemas. It is only available if you loaded the Sample Schemas.	*Oracle Database Sample Schemas*
CTXSYS	The Oracle Text account.	*Oracle Text Reference*
DBSNMP	Used by Management Agent of Oracle Enterprise Manager to monitor and manage the database. This account is created only if you configure the database to use Database Control.	*Oracle Enterprise Manager Grid Control Installation and Basic Configuration*
DIP	Used by Directory Integration Platform (DIP) to synchronize the changes in Oracle Internet Directory with the applications in the database.	None
EXFSYS	Owns the Expression Filter schema.	None
FLOWS_030000	The account owns the Oracle Application Express schema and metadata.	*Oracle Database Application Express User's Guide*
FLOWS_FILES	The account owns the Oracle Application Express uploaded files.	*Oracle Database Application Express User's Guide*
APEX_PUBLIC_USER	The minimally privileged account used for Oracle Application Express configuration with Oracle HTTP Server and mod_plsql.	*Oracle Database Application Express User's Guide*
HR	Owns the Human Resources schema included in the Oracle Sample Schemas. It is available only if you loaded the Sample Schemas.	*Oracle Database Sample Schemas*
IX	Owns the Information Transport schema included in the Oracle Sample Schemas. This account is available only if you loaded the Sample Schemas.	*Oracle Database Sample Schemas*
LBACSYS	The Oracle Label Security administrator account.	*Oracle Label Security Administrator's Guide*
MDDATA	Used by Oracle Spatial for storing Geocoder and router data.	*Oracle Spatial Developer's Guide*
MDSYS	The Oracle Spatial and Oracle Multimedia Locator administrator account.	*Oracle Spatial Developer's Guide*

Table 5–1 (Cont.) Administrative Accounts

User Name	Description	See Also
MGMT_VIEW	Used by Oracle Enterprise Manager Database Control.	None
OE	Owns the Order Entry schema included in the Oracle Sample Schemas. This account is available only if you loaded the Sample Schemas.	*Oracle Database Sample Schemas*
ORDPLUGINS	The Oracle Multimedia user. Plug-ins supplied by Oracle and third party plug-ins are installed in this schema.	*Oracle Multimedia Reference*
ORDSYS	The Oracle Multimedia administrator account.	*Oracle Multimedia Reference*
OUTLN	Centrally manages metadata associated with stored outlines. Supports plan stability, which enables maintenance of the same execution plans for the same SQL statements.	*Oracle Database Performance Tuning Guide*
ORACLE_OCM	This account contains the instrumentation for configuration collection used by the Oracle Configuration Manager.	*Oracle Configuration Manager Installation and Administration Guide*
OWBSYS	The account used by Oracle Warehouse Builder as its default repository. You must unlock this account subsequent to installing the Oracle Database and prior to launching the Warehouse Builder Repository Assistant.	*Oracle Warehouse Builder Installation and Administration Guide*
PM	Owns the Product Media schema included in the Oracle Sample Schemas. This account is created only if you loaded the Sample Schemas.	*Oracle Database Sample Schemas*
SCOTT	An account used by Oracle sample programs and examples.	*Oracle Database Administrator's Guide*
SH	Owns the Sales History schema included in the Oracle Sample Schemas. This account is available only if you loaded the Sample Schemas during an Enterprise Edition installation	*Oracle Database Sample Schemas*
SI_INFORMTN_ SCHEMA	Stores the information views for the SQL/MM Still Image Standard.	*Oracle Multimedia Reference*
SYS	Used for performing database administration tasks.	*Oracle Database Administrator's Guide*
SYSMAN	The account used to perform Oracle Enterprise Manager database administration tasks.This account is created only if you configure the database to use the Database Control.	*Oracle Enterprise Manager Grid Control Installation and Basic Configuration*
SYSTEM	Used for performing database administration tasks.	*Oracle Database Administrator's Guide*
WMSYS	The account used to store the metadata information for Oracle Workspace Manager.	*Oracle Database Workspace Manager Developer's Guide*
WKPROXY	The Ultra Search proxy user.	*Oracle Ultra Search Administrator's Guide*
WK_TEST	The default Ultra Search instance schema.	*Oracle Ultra Search Administrator's Guide*

Table 5–1 (Cont.) Administrative Accounts

User Name	Description	See Also
WKSYS	The account used to store Ultra Search system dictionaries and PL/SQL packages.	*Oracle Ultra Search Administrator's Guide*
XDB	Used for storing Oracle XML DB data and metadata.	*Oracle XML DB Developer's Guide*
DVSYS	There are two roles associated with this account. Database Vault owner role manages the Database Vault roles and configurations. The Database Vault Account Manager is used to manage database user accounts. **Note:** Part of Oracle Database Vault user interface text is stored in database tables in the DVSYS schema. By default, only the English language is loaded into these tables. You can use Oracle Database Vault Configuration Assistant to add more languages to Oracle Database Vault. For the necessary steps, see Appendix C in *Oracle Database Vault Administrator's Guide*	*Oracle Database Vault Administrator's Guide*

See Also:

- "Database Users and Schemas" of *Oracle Database Concepts*

- "Database Administrator Usernames" of *Oracle Database Administrator's Guide*

- "Administering External Users and Roles on Windows" of *Oracle Database Platform Guide for Microsoft Windows*

Unlocking and Changing Passwords

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

When prompted for a password, follow these guidelines:

- Make the password between 8 and 30 characters long.

- Use the database character set for the password's characters, which can include the underscore (_), dollar ($), and pound sign (#) characters.

- Do not start passwords with a numeral.

- Do not use a user name for a password.

- Do not use Oracle reserved words for the password.

- Do not use change_on_install for the SYS account password.

- Do not use manager for the SYSTEM account password.

- Do not use sysman for the SYSMAN account password.

- Do not use dbsnmp for the DBSNMP account password.

- If you choose to use the same password for all the accounts, do not use change_on_install, manager, sysman, or dbsnmp as a password.

- Have the password include at least 1 alphabetic, 1 numeric, and 1 punctuation mark character
- Do not use simple or obvious words, such as welcome, account, database, and user for the password.

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:

   ```
   c:\> sqlplus /nolog
   ```

2. Connect as SYSDBA:

   ```
   SQL> CONNECT SYS AS SYSDBA
   Enter password: SYS_password
   ```

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> PASSWORD account UNLOCK;
   Changing password for account
   New password: password
   Retype new password: password
   ```

   In this example, the *account* UNLOCK clause unlocks the account.

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:** "Logging in to Enterprise Manager Database Control" on page 5-2

2. Click **Schema**.

3. In the Users and Privileges section of the Schema 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 11*g* 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 when using Oracle 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 30 characters that can contain alphanumeric, underscore (_), dollar ($), 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. A 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 file name 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.

   See Also: "Logging in to Enterprise Manager Database Control" on page 5-2

2. Click **Server**.

3. In the Database Configuration section of the Server 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 Microsoft 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 Data Files

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

> **Note:** The SYSAUX and SYSTEM tablespaces must be present in all Oracle Database 11*g* Release 1 (11.1) databases.

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

Table 5–2   Tablespaces and Data Files

Tablespace	Data File	Description
EXAMPLE	EXAMPLE01.DBF	Stores the Sample Schemas, if you included them.
SYSAUX	SYSAUX01.DBF	Serves as an auxiliary tablespace to the SYSTEM tablespace. Some products and options that previously used the SYSTEM tablespace now use the SYSAUX tablespace to reduce the load on the SYSTEM tablespace.
SYSTEM	SYSTEM01.DBF	Stores the data dictionary, including definitions of tables, views, and stored procedures needed by the Oracle Database. Information in this area is maintained automatically.

Table 5–2   (Cont.) Tablespaces and Data Files

Tablespace	Data File	Description
TEMP	TEMP01.DBF	Stores temporary tables and indexes created during the processing of your SQL statement. If you are running a SQL statement that involves a lot of sorting, such as the constructs GROUP BY, ORDER BY, or DISTINCT, then you may need to expand this tablespace.
UNDOTBS	UNDOTBS01.DBF	Stores undo information. The **undo tablespace** contains one or more undo segments that maintain transaction history that is used to roll back, or undo, changes to the database. All starter databases are configured to run in automatic undo management mode.
USERS	USERS01.DBF	Stores database objects created by database users.

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

1. Log in to Database Control.

    See Also: "Logging in to Enterprise Manager Database Control" on page 5-2

2. Click **Server**.

3. In the Storage section of the Server page, click **Datafiles**.

    Enterprise Manager displays a table listing each data file, and the tablespace with which it is associated. For more information about using Database Control to view, modify, and create tablespaces, click **Help**.

    See Also:

    - "Tablespaces, Data Files, and Control Files" of *Oracle Database Concepts*

    - "Managing Tablespaces" and "Managing Data Files 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 data files 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: "Logging in to Enterprise Manager Database Control" on page 5-2

2. Click **Server**.

3. In the Storage section of the Server page, click **Redo Log Groups**.

    Enterprise Manager displays a table containing the control files currently defined for this database instance.

4. To view the name and location of the redo log file associated with a particular group, select that group then click **View**.

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

    See Also:

    - *Oracle Database Backup and Recovery User's Guide*

    - "Managing Archived Redo Logs" in *Oracle Database Administrator's Guide*

Locating Control Files

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

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

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

1. Log in to Database Control.

    See Also: "Logging in to Enterprise Manager Database Control" on page 5-2

2. Click **Server.**

3. In the Storage section of the Server page, click **Control files**.

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

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

Understanding Oracle Database Services on Windows

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

- `OracleService`*`SID`* (Oracle Database service)

- `Oracle`*`HOME_NAME`*`TNSListener` (Oracle Database listener service)

If you installed Oracle Enterprise Manager Database Control, then the `OracleDBConsole`*`SID`* service is automatically started. In you configured Automatic Storage Management, the `OracleCSService` and `OracleASMService+ASM` services are listed as well. However, other services for networking or other individual components may not automatically start.

6

Removing Oracle Database Software

This chapter describes how to remove Oracle databases, instances, and software:

- Uninstalling Oracle Configuration Manager
- Removing Oracle Cluster Synchronization Services
- Removing Oracle Application Express from the Database
- Removing All Oracle Database Components

> **Note:** Always use Oracle Universal Installer to remove Oracle components. To avoid installation and configuration problems with new Oracle installations, follow the instructions in this chapter.

> **See Also:**
>
> - *Oracle Real Application Clusters Installation Guide for Microsoft Windows* for information about removing an Oracle RAC installation
> - Component-specific documentation for individual requirements and restrictions

Uninstalling Oracle Configuration Manager

To uninstall Oracle Configuration Manager, follow these steps:

1. If the `ORACLE_BASE\ORACLE_HOME` directory contains a database, remove the Oracle Configuration Manager user and the associated objects from the database by running the following script:

   ```
   SQL> ORACLE_BASE\ORACLE_HOME\ccr\admin\scripts\dropocm.sql
   ```

2. If the database is a repository for the Oracle E-Business Suite, log in to the database as an `SYSDBA` user and remove the additional objects from the database by running the following script:

   ```
   ORACLE_BASE\ORACLE_HOME\ccr\admin\scripts\ebs_dropccr.sql Oracle_Applications_
   User
   ```

3. If the database is a repository for Oracle Grid Control, log in to the database as the `SYSMAN` user and remove the additional objects from the database by running the following script:

   ```
   ORACLE_BASE\ORACLE_HOME\ccr\admin\scripts\dropemrep_collect.sql
   ```

4. To stop the Scheduler and remove the service or the `crontab` entry, enter the following command:

```
ORACLE_BASE\ORACLE_HOME\ccr\bin\deployPackages -d ORACLE_BASE\ORACLE_
HOME\ccr\inventory\core.jar
```

5. Delete the `ccr` directory by entering the following command:

```
DRIVE_LETTER:\rmdir /s/q ORACLE_BASE\ORACLE_HOME\ccr
```

Oracle Configuration Manager is successfully uninstalled.

Removing Oracle Cluster Synchronization Services

The first time you install Oracle Database, if you selected Automatic Storage Management as a storage and recovery option, Oracle Universal Installer configures and starts a single-instance version of the Oracle Cluster Synchronization Services (CSS) service.

If you did not choose Automatic Storage Management as a storage or recovery option, you can delete the `OracleCSService` service. 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:\app\username\product\11.1.0\db_1
```

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

```
DRIVE_LETTER:\app\username\product\11.1.0\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 from a Different Oracle Home" on page 4-27

Removing Oracle Application Express from the Database

This section describes how to remove the Oracle Application Express 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 Application Express from its Oracle home, you can remove Oracle HTML DB components from the database. Perform the following steps:

> **Note:** You should not follow these steps if you have upgraded your database from a prior release, and still want to use the prior release of Oracle Application Express.

1. Use SQL*Plus to connect to the database as the privileged user SYS, for example:

```
DRIVE_LETTER:\sqlplus /nolog
SQL> CONNECT SYS AS SYSDBA
Enter password: SYS_password
```

2. Execute the following commands:

```
SQL> ALTER SESSION SET CURRENT_SCHEMA = flows_030000;
SQL> EXEC wwv_flow_upgrade.drop_public_synonyms;
SQL> ALTER SESSION SET CURRENT_SCHEMA = SYS;
SQL> DROP USER flows_030000 CASCADE;
SQL> DROP USER flows_files CASCADE;
SQL> DROP USER apex_public_user CASCADE;
```

Removing All Oracle Database Components

Use Oracle Universal Installer to remove Oracle components from the inventory on the computer. Afterward, 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 Oracle Database Configuration Assistant to remove an instance and related services. For information about Oracle Database Configuration Assistant, see "Installing Oracle Database 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.

Follow these steps:

1. Open the Windows **Services** utility: From the **Start** menu, select **Programs**, then then **Administrative Tools**, and 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. Exit **Services**.

> **See Also:** The 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**, and then **Universal Installer**.

   The Welcome window for Oracle Universal Installer appears.

3. Click the **Deinstall Products** button.

   The Inventory window 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 window appears.

7. In the Confirmation dialog box, click **Yes** to remove the selected components.

   > **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 window appears without the removed components.

8. Click **Close** to close the Inventory window.

9. Click **Cancel** to exit Oracle Universal Installer.

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

    > **Note:** You cannot perform an Oracle database installation from the same Oracle Universal Installer session in which you perform a deinstallation of Oracle database. In other words, if you deinstall Oracle database with Oracle Universal Installer and want to perform another Oracle database installation. then you must start a new Oracle Universal Installer session.

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 environment variables, **Start** menu options, and directories.

This section covers the following topics:

- Removing an Automatic Storage Management Instance
- Updating the System Variable Path
- Removing Oracle from the Start Menu

■   [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 instance running in the Oracle home after the database has been removed, perform the following steps:

1. At the Windows command prompt, set the `ORACLE_SID` environment variable to the SID for the Automatic Storage Management instance. For example:

```
DRIVE_LETTER:\set ORACLE_SID=+ASM
```

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

```
DRIVE_LETTER:\sqlplus /nolog
SQL> CONNECT SYS AS SYSASM
Enter password: SYS_password
```

3. Enter the following command to determine whether any Oracle database instances are 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" on page 1-13
> - "Preparing Disk Groups for an Automatic Storage Management Installation" on page 2-23

Updating the System Variable Path

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

1. Open **System** from the Control Panel.

2. In the System Properties dialog box, click the **Advanced** tab, then click the **Environment Variables** button.

3. 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:\app\username\product\11.1.0\db_1\bin;C:\app\username\product\11.1.0\db_
   1\jre\1.5\bin\client;C:\app\username\products\11.1.0\db_1\jre\1.5\bin
   ```

   If the JRE path was installed by Oracle, remove it.

4. If there is a `CLASSPATH` variable that was set for Oracle, delete it.

5. If there are any other Oracle variables set, remove them: `ORACLE_HOME`, `ORACLE_SID`, `TNS_ADMIN`, `JSERV`, or `WV_GATEWAY_CFG`.

6. Save your changes and then exit the Control Panel.

Removing Oracle from the Start Menu

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

Follow these steps:

1. Select **Start**, then **Programs**, and then **Oracle - *HOME_NAME***.

2. Right-click **Oracle - *HOME_NAME***, and from the menu, select **Delete**.

You can also remove Oracle menu entries by using the following method:

1. Right-click the **Start** button to display the pop-up menu.

2. Select the **Explore All Users** option.

3. Under Documents and Settings, expand the `\Start Menu\Programs` folder.

4. Right-click and 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.

Use My Computer or Windows Explorer to delete the following directories:

1. Delete the *SYSTEM_DRIVE*:\Program Files\Oracle directory.

2. Delete all *ORACLE_BASE* directories on your hard drive.

3. If Oracle Universal Installer was installed in a location other than the default, delete this directory.

4. Remove any Oracle temporary directory files from *DRIVE_LETTER*:\Documents and Settings*user_name*\Local Settings\Temp.

A

Installing Java Access Bridge

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

- Overview of Java Access Bridge
- Setup for JRE 1.5
- Setup for Oracle Installed Components

> **Note:** Java Access Bridge is not supported on Windows x64.

Overview of Java Access Bridge

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 installation media contain the Java Runtime Environment (JRE) 1.5, 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 1.5

To set up Java Access Bridge with JRE 1.5, stop your assistive technology, then run the following batch file on the Oracle Database installation media prior to install:

```
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. Go to the Sun Microsystem's Web site and download Java Access Bridge:

   http://java.sun.com/products/accessbridge/

2. Select the `accessbridge-2_0_1-manual_install.zip` file and extract its files to the system where you plan to install Java Access Bridge. For example:

   DRIVE_LETTER:\AccessBridge-2_0_1

3. Copy the Java Access Bridge files listed in Table A–1 into the JRE 1.5 directory used by Oracle components. If the files already exist, overwrite them. By default, the JRE installation used by Oracle components is installed in:

   ORACLE_BASE*ORACLE_HOME*\jdk\jre\1.5

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

Table A–1 Copy Files to JRE Directory

Copy	To
DRIVE_LETTER:\AccessBridge-2_0_1\installerFiles\jaccess-1_4.jar	*ORACLE_BASE**ORACLE_HOME*\jdk\jre\1.5\lib\ext
DRIVE_LETTER:\AccessBridge-2_0_1\installerFiles\access-bridge.jar	*ORACLE_BASE**ORACLE_HOME*\jdk\jre\1.5\lib\ext
DRIVE_LETTER:\AccessBridge-2_0_1\installerFiles\JavaAccessBridge.dll	*windows_directory*\system32
DRIVE_LETTER:\AccessBridge-2_0_1\installerFiles\WindowsAccessBridge.dll	*windows_directory*\system32
DRIVE_LETTER:\AccessBridge-2_0_1\installerFiles\JAWTAccessBridge.dll	*windows_directory*\system32
DRIVE_LETTER:\AccessBridge-2_0_1\installerFiles\accessibility.properties	*ORACLE_BASE**ORACLE_HOME*\jdk\jre\1.5\lib\ext

4. You can access Java Access Bridge documentation located at

   DRIVE_LETTER:\AccessBridge-2_0_1\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.

Follow these steps:

1. From the **Start** menu, select **Settings**, **Control Panel**, and 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 box appears.

5. In the **Variable Name** field, enter `ORACLE_OEM_CLASSPATH`.

6. In the **Variable Value** field, enter the full path to the `jaccess.jar` and `access-bridge.jar`.

Use a semicolon to separate the two paths. Do not use quotation marks or character spaces. For example, if JRE 1.5 is installed in the default location, the setting is:

```
ORACLE_BASE\ORACLE_HOME\jdk\jre\1.5\lib\ext\jaccess.jar;ORACLE_BASE\ORACLE_
HOME\jdk\jre\1.5\lib\ext\access-bridge.jar
```

7. Click **OK**.

B

Optimal Flexible Architecture

This appendix describes the Optimal Flexible Architecture standard. It includes information about the following topics:

- Overview of the Optimal Flexible Architecture Standard
- Changes to the Optimal Flexible Architecture for Oracle Database 11g
- Directory Tree Differences by Release
- Optimal Flexible Architecture Directory Naming Conventions
- Optimal Flexible Architecture and Multiple Oracle Home Configurations
- Comparison Between Optimal Flexible Architecture on Windows and UNIX

Overview of the Optimal Flexible Architecture Standard

The Optimal Flexible Architecture standard is a set of file naming and configuration guidelines created to ensure well organized Oracle installations that are easier to maintain.

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 goal 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`. 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 as successful, you can remove the old Oracle home directory and reclaim space, because the database does not reside there.

Changes to the Optimal Flexible Architecture for Oracle Database 11*g*

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

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

In Oracle Database 11*g* Release 1 (11.1), the Optimal Flexible Architecture recommended Oracle home path changed. The Optimal Flexible Architecture recommended path is now similar to the following:

```
c:\app\username\product\11.1.0\db_1
```

The *ORACLE_BASE* default does not contain version information but the default *ORACLE_HOME* does.

Directory Tree Differences by Release

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

- Top-Level Oracle Directory
- Database File Names
- Database File Name Extensions

Top-Level Oracle Directory

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

When you install an Oracle Database 11*g* Release 1, Optimal Flexible Architecture-compliant database, all subdirectories are no longer under a top-level *ORACLE_HOME* directory. There is now a new top-level Oracle base directory of the form *DRIVE_LETTER*:\app*username*, where *DRIVE_LETTER* is any hard drive.

The Oracle base directory contains *ORACLE_HOME* directories, \oradata directories (for database files), \flash_recovery_area (for recovery operations), and \admin directories (for database administration files).

Database File Names

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

Beginning with Oracle8*i* release 8.1.4, database files no longer have the SID in the database file name. For example, the first control file is named control01.ctl. There is no need for the presence of the SID in the file name, 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 File Name Extensions

In Oracle8*i* 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

- `.dbf` for data 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

- FLASH_RECOVERY_AREA 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 default settings, then *ORACLE_BASE* is *DRIVE_LETTER*:\app*username.*

If you are installing Oracle Database for Microsoft Windows on a computer with no other Oracle software installed, then you can change the *ORACLE_BASE* directory 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 about editing environment variables

ORACLE_HOME Directory

The *ORACLE_HOME* directory is located under *DRIVE_LETTER:\ORACLE_BASE*, where `DRIVE_LETTER:\`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 name directory that you create is called `\db_1`.

ADMIN Directory

Database administration files are stored in subdirectories of *ORACLE_BASE* `\admin\`*DB_NAME*.

In Oracle Database 11*g*, Automatic Diagnostic Repository (ADR) directories replace the bdump, cdump, and udump directories for the database. The ADR diagnostic data will go into the *ORACLE_BASE*`\diag\`rdbms`\`*DB_NAME*`\`*instance_name*

Names and brief descriptions of some of these subdirectories are:

```
\create    --database creation files
\exp       --database export files
\pfile     --initialization parameter files
```

ORADATA Directory

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

```
CONTROL01.CTL    --control file 1
CONTROL02.CTL    --control file 2
CONTROL02.CTL    --control file 3
EXAMPLE01.DBF    --EXAMPLE tablespace data files
SYSAUX01.DBF     --SYSAUX tablespace data files
SYSTEM01.DBF     --SYSTEM tablespace data file
TEMP01.DBF       --TEMP tablespace data file
USERS01.DBF      --USERS tablespace data file
*.dbf            --data files 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-7.

FLASH_RECOVERY_AREA Directory

The flash_recovery_area directory stores and manages files related to backup and recovery. It contains a subdirectory for each database on the system. A flash recovery area is an optional disk location that you can use to store recovery-related files such as control files and online redo log copies, archived logs, flashback logs, and Oracle Database Recovery Manager (RMAN) backups. Oracle and RMAN manage the files in the flash recovery area automatically.

> **See Also:**   *Oracle Database Backup and Recovery User's Guide* to learn how to create and use a flash recovery area

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:

DRIVE_LETTER:\app*username*\product\11.1.0\db_1

where:

- *DRIVE_LETTER:*\ is any hard drive. For example, c:\

- \app*username* is the *ORACLE_BASE* before performing the installation.

- db_1 is the name of the Oracle home.

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

- `c:\app\test1\product\11.1.0\db_1`

- `d:\app\test2\product\11.1.0\db_1`

Installing a Default Optimal Flexible Architecture Database: Example

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

1. Install any Oracle Database that supports Optimal Flexible Architecture (Oracle Database release 8.1.6 or later) on a computer with no other Oracle software installed and make sure that you accept the default settings for the Oracle home (for example, `c:\app\`*username*`\product\11.1.0\db_1`).

2. Install any Oracle Database in a second Oracle home accepting the default settings.

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

Table B–1   Default Optimal Flexible Architecture Database Settings

Setting	Value
ORACLE_BASE	`c:\app\`*username* (same for all Oracle homes)
Oracle home 1	`c:\app\`*username*`\product\11.1.0\db_1`
Oracle home 2	`c:\app\`*username*`\product\11.1.0\db_2`

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–2 shows the nondefault Optimal Flexible Architecture database settings for this example.

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

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

The resulting directory tree would look similar to this:

```
X:\pqr                        --Oracle home 2
  \bin
  \network
X:\xyz
```

```
\oracle                --ORACLE_BASE for both Oracle homes
  \abc                  --Oracle home 1
    \bin
    \network
  \admin
    \DB_NAME1
      \adhoc
      \create
      \exp
      \pfile
    \DB_NAME2
      \...
  \oradata
    \DB_NAME1
      CONTROL01.CTL
      CONTROL02.CTL
      CONTROL03.CTL
      EXAMPLE01.DBF
      SYSAUX01.DBF
      SYSTEM01.DBF
      TEMP01.DBF
      USERS01.DBF
      REDO01.LOG
      REDO02.LOG
      REDO03.LOG
    \DB_NAME2
```

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 names and file names 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 data files will not show up under a single directory as with UNIX. Instead, you may have `oradata` directories on multiple drives, with data files in each one. This way, you get Optimal Flexible Architecture benefits, even though data files 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. The `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. The `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:\app\username\product\11.1.0   --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
        \create          --Database creation files
        \exp             --Database export files
        \pfile           --Initialization parameter file

f:\app\username\product\11.1.0   --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:\app\username\product\11.1.0   --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 data files
        SYSAUX01.DBF     --SYSAUX tablespace data files
        SYSTEM01.DBF     --System tablespace data file
        TEMP01.DBF       --Temporary tablespace data file
```

```
                USERS01.DBF          --Users tablespace data file

        h:\app\username\product\11.1.0   --Fourth logical drive
            \oradata                 --Subtree for Oracle Database files
             \prod                   --Subtree for prod database files
               CONTROL02.CTL       --Control file 2
```

C

Installing and Configuring Oracle Database Using Response Files

This appendix describes how to use response files to perform silent or noninteractive installations, configure network connections, and configure or start an Oracle database. It covers the following topics:

- How Response Files Work
- Preparing a Response File
- Running Oracle Universal Installer Using the Response File
- Running Net Configuration Assistant Using a Response File
- Running Oracle Database Configuration Assistant Using a Response File

How Response Files Work

You can automate the installation and configuration of Oracle software, either fully or partially, by specifying a response file when you start Oracle Universal Installer. Oracle Universal Installer uses the values in the response file to provide answers to some or all of the Oracle Universal Installer prompts.

Typically, Oracle Universal Installer runs in interactive mode, which means that it prompts you to provide information in graphical user interface (GUI) screens. When you use response files to provide this information, you run Oracle Universal Installer at a command prompt using either of the following modes:

- **Silent mode**: Oracle Universal Installer does not display any screens. Instead it displays progress information in the command window where you started it. To use silent mode, you run `setup.exe` with the `-silent` parameter and include a response file, which contains responses to the Oracle Universal Installer prompts.

- **Noninteractive (or suppressed) mode**: Oracle Universal Installer only displays screens for which you did not supply information in the response file. You can use variables in the response file or command-line prompts to suppress other Oracle Universal Installer screens, such as Welcome and Summary, that do not prompt for information. To use noninteractive mode, run `setup.exe` without the `-silent` parameter, but include the response file or any other parameters that apply.

You define the settings for a silent or noninteractive installation by entering values for the variables listed in the response file. For instance, to specify the Oracle home name, you would supply the appropriate value for the `ORACLE_HOME_NAME` variable, as in the following example:

```
ORACLE_HOME_NAME="OraDBHome1"
```

Another way of specifying the response file's variable settings is to pass them as command line arguments when you run Oracle Universal Installer. For example:

```
DRIVE_LETTER:\setup.exe_location> setup -silent "ORACLE_HOME_NAME=OraDBHome1" ...
```

This method is particularly useful if you do not want to embed sensitive information, such as passwords, in the response file. For example:

```
DRIVE_LETTER:\setup.exe_location> setup -silent "s_dlgRBOPassword=binks342" ...
```

Ensure that you enclose the variable and its setting in quotes.

> **See Also:** *Oracle Universal Installer and OPatch User's Guide* for more information about response file formats.

Reasons for Using Silent Mode or Noninteractive Mode

Table C–1describes several reasons why you might want to run Oracle Universal Installer in silent mode or noninteractive mode.

Table C–1   Reasons for Using Silent Mode or Noninteractive Mode

Mode	Uses
Silent	Use silent mode if you want to:
	■ Complete an unattended installation
	■ Complete several similar installations on multiple systems without user interaction
	Oracle Universal Installer displays progress information in the window that you used to start it, but it does not display the Oracle Universal Installer screens.
Noninteractive	Use noninteractive mode if you want to complete similar Oracle software installations on more than one system, providing default answers to some, but not all, of Oracle Universal Installer prompts.
	If you do not specify information required for a particular Installer screen in the response file, Oracle Universal Installer displays that screen. It suppresses screens for which you have provided all of the required information.

General Procedure for Using Response Files

You follow these general steps to install Oracle Database using response files:

1. If you plan to use Automatic Storage Management and need to configure new disks, you need to perform the following steps:

    a. Create partitions for DAS or SAN disks.

    b. Manually configure the disks using the `asmtoolg` or `asmtool` utility.

    > **See Also:**
    >
    > ■ "Step 3: Creating DAS or SAN Disk Partitions for an Automatic Storage Management Instance" on page 2-27
    >
    > ■ "Step 4: Manually Configuring Disks for Automatic Storage Management" on page 2-29

2. Customize or create a response file for the installation settings that you need.

You can create the response file by using one of the following methods:

- Modify one of the sample response files that is provided with the installation.

- Run Oracle Universal Installer at a command prompt using record mode.

"Preparing a Response File" on page C-3 explains how to customize or create the response file.

3. Run Oracle Universal Installer from a command prompt, specifying the response file, using either silent or noninteractive mode.

> **Note:** Windows Vista requires Administrator privileges at the command prompt.

"Running Oracle Universal Installer Using the Response File" on page C-5 explains how to run Oracle Universal Installer with a response file.

Preparing a Response File

This section describes the methods that you can use to prepare a response file for use during silent-mode or noninteractive-mode installations:

- Editing a Response File Template

- Recording a Response File

Editing a Response File Template

Oracle provides response file templates for each product and installation type, and for each configuration tool. These files are located in the `database\response` directory on the Oracle Database installation media.

Creating a response file using a response file template is most useful for the Enterprise Edition or Standard Edition installation types.

Table C–2 lists the available sample response files:

Table C–2   Response Files

Response File Name	This File Silently Runs The...
enterprise.rsp	Enterprise Edition installation type of Oracle Database
standard.rsp	Standard Edition installation type of Oracle Database
personal.rsp	Personal Edition installation type of Oracle Database
custom.rsp	Custom installation type of Oracle Database
dbca.rsp	Oracle Database Configuration Assistant
netca.rsp	Oracle Net Configuration Assistant

To copy and modify a response file:

1. Copy the appropriate response files from the `database\response` directory on the Oracle Database media to your hard drive.

2. Modify the response files with a text file editor.

   In addition to editing settings specific to the Oracle Database installation, check that the `FROM_LOCATION` path is correct and points to the `products.xml` file in the `stage` directory in the installation media. You may want to set this variable to point to an absolute path, for example:

   ```
   FROM_LOCATION="\\myserver\database\stage\products.xml"
   ```

   Remember that you can specify sensitive information, such as passwords, at the command line rather than within the response file. "How Response Files Work" on page C-1 explains this method.

   > **See Also:** *Oracle Universal Installer and OPatch User's Guide* for detailed information on creating response files. In an installed Oracle Database, select **Start**, then **Programs**, then **Oracle - *HOME_NAME***, then **Oracle Installation Products**, then **Universal Installer Concepts Guide**. It appears in HTML format.

3. Run the response file by following the instructions in the "Running Oracle Universal Installer Using the Response File" section on page C-5.

Recording a Response File

You can create a response file by running Oracle Universal Installer in interactive mode using record mode. This method is most useful for custom or software-only installations.

Recording the response file generates the response file immediately after you complete the Summary window, so you do not need to install Oracle Database to create the response file. After you create the response file in this manner, you can customize it to meet your needs.

If you want to use record mode during a noninteractive mode 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 record a response file:

1. Ensure 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.

> **Note:** Windows Vista requires Administrator privileges at the command prompt.

On the installation DVD, `setup.exe` is located in the `database` directory. Alternatively, navigate to the directory where you downloaded or copied the installation files.

3. Enter the following command:

   DRIVE_LETTER:*setup.exe_location*> setup -record -destinationFile *response_file_name*

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

   DRIVE_LETTER:*setup.exe_location*> setup -record -destinationFile c:\response_files\install_oracle11_1.rsp

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

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

   - Click **Install** to create the response file and 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 in 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. Edit the new response file to have any environment-specific changes for the computer on which you will run it.

   In addition to editing settings specific to the Oracle Database installation, check that the FROM_LOCATION path is correct and points to the `products.xml` file in the `stage` directory in the installation media. You may want to set this variable to point to an absolute path, for example:

   FROM_LOCATION="\\myserver\database\response\stage\products.xml"

   Remember that you can specify sensitive information, such as passwords, at the command line rather than within the response file. "How Response Files Work" on page C-1 explains this method.

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

Running Oracle Universal Installer Using the Response File

At this stage, you are ready to run Oracle Universal Installer at the command line, specifying the response file you created, to perform the installation. On Windows Vista, you must open the command prompt with Administrator privileges. The Oracle Universal Installer executable, `setup.exe`, provides several options. For help information about the full set of these options, run `setup.exe` with the `-help` option, for example:

DRIVE_LETTER:*setup.exe_location*> setup -help

A new command window appears, with the "Preparing to launch..." message. In a moment, the help information appears in that window.

To run Oracle Universal Installer and specify a response file:

1. Place the response file on the computer where you want to install Oracle Database.

2. At a command prompt, run Oracle Universal Installer with the appropriate response file. On Windows Vista, you must open the command prompt with Administrator privileges.For example:

```
DRIVE_LETTER:\setup.exe_location> setup [-silent] "variable=setting"
[-nowelcome] [-noconfig] [-nowait] -responseFile filename
```

where:

- `filename`: Identifies the full path of the response file.

- `-silent`: Runs Oracle Universal Installer in silent mode and suppresses the Welcome window. When you use `-silent`, then the `-nowelcome` option is not necessary.

- `"variable=setting"` refers to a variable within the response file that you may prefer to run at the command line rather than set in the response file. Enclose the variable and its setting in quotes.

- `-nowelcome`: Suppresses the Welcome window that appears during installation.

- `-noconfig`: Suppresses running the configuration assistants during installation, performing a software-only installation instead.

- `-nowait`: Closes the console window when the silent installation completes.

   See Also:

   - "Installing Oracle Products" in *Oracle Universal Installer and OPatch User's Guide* for more information about installing using response files

   - "Deinstalling Products" in *Oracle Universal Installer and OPatch User's Guide* for more information about deinstalling using response files

Running Net Configuration Assistant Using a Response File

When you run Net Configuration Assistant with a response file, you run it in silent mode. This lets you configure and start an Oracle Net listener on the system, configure naming methods, and configure Oracle Net service names. To run NetCA in silent mode, use the `netca.rsp` response file.

On Windows Vista, you must open the command prompt with Administrator privileges.

To create a Net Configuration Assistant response file:

1. Copy the `netca.rsp` response file template from the response file directory to a directory on your system.

   The `netca.rsp` is located in the `database\response` directory on the Oracle Database installation media.

2. Open the response file in a text editor.

3. Edit the file, following the instructions in the file.

   Net Configuration Assistant fails if you do not correctly configure the `netca.rsp` response file.

To run Net Configuration Assistant using the response file you just created:

1. At a command prompt, set the `ORACLE_HOME` environment variable to specify the correct Oracle home directory, for example:

   ```
   c:\> set ORACLE_HOME = c:\app\username\product\11.1.0\db_1
   ```

2. Run Net Configuration Assistant in silent mode as follows, replacing *local_dir* with the directory where you placed your version of the `netca.rsp` response file:

   ```
   c:\> ORACLE_BASE\ORACLE_HOME\bin> netca /silent /responsefile /local_
   dir\netca.rsp
   ```

   For example:

   ```
   c:\> ORACLE_BASE\ORACLE_HOME\bin> netca /silent /responsefile /c:\oracle_
   response_files\mynetca.rsp
   ```

Running Oracle Database Configuration Assistant Using a Response File

You can run Oracle Database Configuration Assistant in silent or noninteractive mode to configure and start an Oracle database on your system. To run Oracle Database Configuration Assistant in silent or noninteractive mode, use the `dbca.rsp` response file.

On Windows Vista, you must open the command prompt with Administrator privileges.

To create a Oracle Database Configuration Assistant response file:

1. Copy the `dbca.rsp` response file template from the response file directory to a directory on your system.

   The `dbca.rsp` response file is located in the `database\response` directory on the Oracle Database installation media.

2. Open the `dbca.rsp` response file in a text editor.

3. Edit the `dbca.rsp` file, following the instructions in the file.

   Oracle Database Configuration Assistant fails if you do not correctly configure the `dbca.rsp` response file.

To run Oracle Database Configuration Assistant using the response file you just created:

1. At a command prompt, set the `ORACLE_HOME` environment variable to specify the correct Oracle home directory, for example:

   ```
   c:\> set ORACLE_HOME = c:\app\username\product\11.1.0\db_1
   ```

2. Run Oracle Database Configuration Assistant in silent or noninteractive mode using the following syntax:

   ```
   c:\ORACLE_BASE\ORACLE_HOME\bin> dbca {-progressOnly | -silent} [-cloneTemplate]
   \[-datafileDestination /datafilepath] -responseFile /local_dir/dbca.rsp
   ```

   where:

   - `-silent` runs Oracle Database Configuration Assistant in silent mode

   - `-progressOnly` runs Oracle Database Configuration Assistant in noninteractive mode

   - `-cloneTemplate` lets you create one of the following preconfigured databases:

- General purpose
- Transaction processing
- Data warehouse

- `-datafileDestination` specifies the parent directory where you want to create the database files. By default, this directory is *ORACLE_BASE\ORACLE_HOME*\oradata.

- `/local_dir` is the full path of the directory where you copied the `dbca.rsp` response file template.

For example:

```
c:\> ORACLE_BASE\ORACLE_HOME\bin> dbca -progressOnly -cloneTemplate -responseFile
        /c:\oracle_response_files\mydbca.rsp
```

As an alternative to creating a database using a response file, you can run `dbca` at the command line by specifying all the required information as command line options. For information about the list of options supported, enter the following command:

```
c:\> ORACLE_BASE\ORACLE_HOME\bin\dbca -help
```

D

Configuring Oracle Database Globalization Support

This appendix describes the following Globalization Support topics:

- Installing and Using Oracle Components in Different Languages
- Running Oracle Universal Installer in Different Languages

Installing and Using Oracle Components in Different Languages

This section describes the following procedures:

- Configuring Oracle Components to Run in Different Languages
- Installing Translation Resources

Configuring Oracle Components to Run in Different Languages

You can specify the language and the territory, or locale, in which you want to use Oracle components. The locale setting of a component determines the language of the user interface of the component and the globalization behavior, such as date and number formatting. Depending on the Oracle component, the locale of the component is either inherited from the operating system session that started the component, or is defined by the `NLS_LANG` environment variable.

The operating system locale usually influences Oracle components that are based on Java technology. The `NLS_LANG` environment variable usually influences Oracle components that use Oracle Client libraries such as OCI.

> **Note:** The user interface of an Oracle component will be displayed in a selected language only if the appropriate translation is available and has been installed. Otherwise, the user interface will be displayed in English.

Determining the Operating System Locale

The locale setting of your operating system session determines the language of the user interface and the globalization behavior for components such as Oracle Universal Installer, Oracle Net Configuration Assistant, and Oracle Database Configuration Assistant. It also determines the globalization behavior of Oracle Database sessions created by a user application through Oracle JDBC driver, unless overridden by the application.

Open the Control Panel from the Start menu to modify the operating system locale settings. On Windows 2000, click Regional Options. On Windows XP and Windows 2003, click Regional and Language Options.

To set locale for the current operating system user on Windows 2000, select the desired locale from the pop-up list in "Settings for the current user" area on the General tab. On Windows XP and Windows 2003, select the desired locale from the pop-up list in "Standards and formats" area on the Regional Options tab.

Some of the locales may be unavailable until you install required operating system support files. On Windows 2000, make sure that the relevant language group is selected in "Language settings for the system" area on the General tab. On Windows XP and Windows 2003, make sure the relevant check boxes are checked in "Supplemental language support" area on Languages tab.

Some Oracle components, such as SQL*Plus, require that also the Windows System Locale is set to the language in which the components are to be run. System Locale is called "Language for non-Unicode programs" on Windows XP and Windows 2003. To set the System Locale on Windows 2000, click the "Set default..." button on the General tab and select the locale from the displayed pop-up list. On Windows XP and Windows 2003, select the locale from the pop-up list in the "Language for non-Unicode programs" area on the Advanced tab.

> **Note:** The operating system must be restarted after the System Locale is changed.

> **Note:** See the operating system documentation for further information about Windows locale settings.

Configuring Locale and Character Sets with the NLS_LANG Environment Variable

The `NLS_LANG` environment variable determines the language of the user interface and the globalization behavior for components such as SQL*Plus, exp, and imp. It sets the language and territory used by the client application and the database. It also declares the character set for entering and displaying data by the client application.

The `NLS_LANG` environment variable uses the following format:

```
NLS_LANG=language_territory.characterset
```

In this format:

- *language* specifies the language used for displaying user interface, error messages, sorting, day names, and month names

- *territory* specifies the conventions for default date, monetary and numeric formats

- *characterset* specifies the encoding of the database client, which is the character set for data entered or displayed by a client program

   In most cases, this is the Oracle character set that corresponds to the Windows ANSI Code Page as determined by the System Locale.

The *NLS_LANG* parameter on Windows can be set

- in Registry under the subkey corresponding to a given Oracle home,

- as an environment variable.

When you install Oracle Database components and the *NLS_LANG* parameter is not yet set in the Registry subkey of the target Oracle home, Oracle Universal Installer sets the *NLS_LANG* parameter to a default value derived from the operating system locale for the current user. See the following table.

> **Caution:**   AL32UTF8 is the Oracle Database character set that is appropriate for XMLType data. It is equivalent to the IANA registered standard UTF-8 encoding, which supports all valid XML characters.
>
> Do not confuse Oracle Database database character set UTF8 (no hyphen) with database character set AL32UTF8 or with character encoding UTF-8. Database character set UTF8 has been superseded by AL32UTF8. Do not use UTF8 for XML data. UTF8 supports only Unicode version 3.0 and earlier; it does not support all valid XML characters. AL32UTF8 has no such limitation.
>
> Using database character set UTF8 for XML data could cause a fatal error or affect security negatively. If a character that is not supported by the database character set appears in an input-document element name, a replacement character (usually a question mark) is substituted for it. This will terminate parsing and raise an exception.

> **See Also:**
>
> - *Oracle Database Platform Guide for Microsoft 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

Table D–1 lists the default NLS_LANG values for various Windows locales.

Table D–1   NLS_LANG Parameter Values

Operating System Locale	NLS_LANG Value
Arabic (U.A.E.)	ARABIC_UNITED ARAB EMIRATES.AR8MSWIN1256
Bulgarian	BULGARIAN_BULGARIA.CL8MSWIN1251
Catalan	CATALAN_CATALONIA.WE8MSWIN1252
Chinese (PRC)	SIMPLIFIED CHINESE_CHINA.ZHS16GBK
Chinese (Taiwan)	TRADITIONAL CHINESE_TAIWAN.ZHT16MSWIN950
Croatian	CROATIAN_CROATIA.EE8MSWIN1250
Czech	CZECH_CZECH REPUBLIC.EE8MSWIN1250
Danish	DANISH_DENMARK.WE8MSWIN1252
Dutch (Netherlands)	DUTCH_THE NETHERLANDS.WE8MSWIN1252
English (United Kingdom)	ENGLISH_UNITED KINGDOM.WE8MSWIN1252
English (United States)	AMERICAN_AMERICA.WE8MSWIN1252
Estonian	ESTONIAN_ESTONIA.BLT8MSWIN1257
Finnish	FINNISH_FINLAND.WE8MSWIN1252
French (Canada)	CANADIAN FRENCH_CANADA.WE8MSWIN1252

Table D–1   (Cont.) NLS_LANG Parameter Values

Operating System Locale	NLS_LANG Value
French (France)	`FRENCH_FRANCE.WE8MSWIN1252`
German (Germany)	`GERMAN_GERMANY.WE8MSWIN1252`
Greek	`GREEK_GREECE.EL8MSWIN1253`
Hebrew	`HEBREW_ISRAEL.IW8MSWIN1255`
Hungarian	`HUNGARIAN_HUNGARY.EE8MSWIN1250`
Icelandic	`ICELANDIC_ICELAND.WE8MSWIN1252`
Indonesian	`INDONESIAN_INDONESIA.WE8MSWIN1252`
Italian (Italy)	`ITALIAN_ITALY.WE8MSWIN1252`
Japanese	`JAPANESE_JAPAN.JA16SJISTILDE`
Korean	`KOREAN_KOREA.KO16MSWIN949`
Latvian	`LATVIAN_LATVIA.BLT8MSWIN1257`
Lithuanian	`LITHUANIAN_LITHUANIA.BLT8MSWIN1257`
Norwegian	`NORWEGIAN_NORWAY.WE8MSWIN1252`
Polish	`POLISH_POLAND.EE8MSWIN1250`
Portuguese (Brazil)	`BRAZILIAN PORTUGUESE_BRAZIL.WE8MSWIN1252`
Portuguese (Portugal)	`PORTUGUESE_PORTUGAL.WE8MSWIN1252`
Romanian	`ROMANIAN_ROMANIA.EE8MSWIN1250`
Russian	`RUSSIAN_RUSSIA.CL8MSWIN1251`
Slovak	`SLOVAK_SLOVAKIA.EE8MSWIN1250`
Spanish (Spain)	`SPANISH_SPAIN.WE8MSWIN1252`
Swedish	`SWEDISH_SWEDEN.WE8MSWIN1252`
Thai	`THAI_THAILAND.TH8TISASCII`
Spanish (Mexico)	`MEXICAN SPANISH_MEXICO.WE8MSWIN1252`
Spanish (Venezuela)	`LATIN AMERICAN SPANISH_VENEZUELA.WE8MSWIN1252`
Turkish	`TURKISH_TURKEY.TR8MSWIN1254`
Ukrainian	`UKRAINIAN_UKRAINE.CL8MSWIN1251`
Vietnamese	`VIETNAMESE_VIETNAM.VN8MSWIN1258`

NLS_LANG Settings in Console Mode and Batch Mode

Before you can use Oracle utilities such as SQL*Plus, SQL Loader, Import, and Export from the Command Prompt window, you may have to set the character set field of the NLS_LANG parameter to a value different than the one set in Registry.

This is required because programs running in console mode use, with a few exceptions, a different code page (character set) from programs running in GUI mode. The default Oracle home NLS_LANG parameter in the Registry is always set to the appropriate GUI code page. If you do not set the NLS_LANG parameter for the console mode session correctly, incorrect character conversion can corrupt error messages and data.

For Japanese, Korean, Simplified Chinese, Traditional Chinese, Thai, and Vietnamese, the console (OEM) code page is identical to the GUI (ANSI) code page. In this case,

you do not need to set the `NLS_LANG` parameter. For other languages, set the correct character set value of `NLS_LANG` by issuing a `SET NLS_LANG` command in the same Command Prompt window in which you want to start the affected utility.

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.

To find the current console code page, issue the `CHCP` command in the Command Prompt window. Use the reported code page number to look up the corresponding Oracle character set name in Table D–2.

Table D–2 lists the Oracle character sets that correspond to the console mode code pages.

Table D–2   Oracle Character Sets for Console Mode (OEM) Code Pages

OEM Code Page	Oracle Character Set for Console Mode
437 (US)	US8PC437
737 (Greek)	EL8PC737
775 (Baltic)	BLT8PC775
850 (Multilingual Latin I)	WE8PC850
852 (Latin II)	EE8PC852
855 (Cyrillic)	RU8PC855
857 (Turkish)	TR8PC857
858 (Multilingual Latin I + Euro)	WE8PC858
866 (Russian)	RU8PC866
874 (Thai)	TH8TISASCII
932 (Japanese Shift-JIS)	JA16SJISTILDE
936 (Simplified Chinese GBK)	ZHS16GBK
949 (Korean)	KO16MSWIN949
950 (Traditional Chinese Big5)	ZHT16MSWIN950
1258 (Vietnam)	VN8MSWIN1258

Installing Translation Resources

To view the user interface of Oracle components in different languages, you must install the appropriate language translations along with the component. To select the translation resources that you want to install:

> **Note:**   Part of Oracle Database Vault user interface text is stored in database tables in the DVSYS schema. By default, only the English language is loaded into these tables. You can use Oracle Database Vault Configuration Assistant to add more languages to Oracle Database Vault. For the necessary steps, see Appendix C in *Oracle Database Vault Administrator's Guide*

1. Start Oracle Universal Installer.

2. On the Select Installation Method screen, select Advanced Installation and click **Next**.

3. On the Select Installation Type screen, click **Product Languages**.

4. On the Language Selection screen, select the language in which you want to use Oracle components from the Available Languages field.

> **Note:** The Available Languages field lists all languages supported by Oracle globalization libraries. The set of languages for which a translation is actually available is usually smaller and depends on a particular component. The scope of translation for a given component may differ between languages. For example, some translations may include all user interface text, while others may include only error messages and no help files.

5. Use the > arrow to move the selected language to the Selected Languages field, and then click **OK**.

> **Note:** Oracle Universal Installer will ignore languages in the Selected Languages field for which no translation is available.

6. Select the products you want, and then click **Next**.

> **Note:** To install additional languages for a component, you will have to reinstall this component.

Running Oracle Universal Installer in Different Languages

The operating system locale determines the language in which Oracle Universal Installer runs. Oracle Universal Installer may run in one of the following languages:

- Brazilian Portuguese
- English
- French
- German
- Italian
- Japanese
- Korean
- Simplified Chinese
- Spanish
- Traditional Chinese

To run Oracle Universal Installer in a desired language

1. Change the locale for the operating system user and the System Locale as described in the "Determining the Operating System Locale" section.

2. Run Oracle Universal Installer by following the instructions in the "Installing the Oracle Database Software" section.

If the selected language is not one of the listed earlier, Oracle Universal Installer runs in English.

E

Managing Oracle Database Port Numbers

This appendix lists the default port numbers and describes how to change the assigned port after installation:

- About Managing Ports
- Viewing Port Numbers and Access URLS
- Port Numbers and Protocols of Oracle Components
- Changing the Oracle Enterprise Management Agent Port
- Changing the Oracle Enterprise Manager Database Console Ports
- Changing the Oracle XML DB Ports

About Managing Ports

During installation, Oracle Universal Installer assigns port numbers to components from a set of default port numbers. Many Oracle Database components and services use ports. As an administrator, it is important to know the port numbers used by these services, and to make sure that the same port number is not used by two services on your host.

Most port numbers are assigned during installation. Every component and service has an allotted port range, which is the set of port numbers Oracle Database attempts to use when assigning a port. Oracle Database starts with the lowest number in the range and performs the following checks:

- Is the port used by another Oracle Database installation on the host?

  The installation may be up or down at the time; Oracle Database can still detect if the port is used.

- Is the port used by a process that is currently running?

  This could be any process on the host, even a non-Oracle Database process.

If the answer to any of the preceding questions is yes, Oracle Database moves to the next highest port in the allotted port range, and continues checking until it finds a free port.

Viewing Port Numbers and Access URLS

In most cases, the port number of the Oracle Database component is listed in the tool used to configure the port. In addition, ports for some Oracle Database applications are listed in the `portlist.ini` file. This file is located in the *ORACLE_BASE\ORACLE_HOME*\install directory.

If you change a port number, it is not updated in the `portlist.ini` file, so you can only rely on this file immediately after installation. To find or change a port number, use the methods described in this appendix.

Port Numbers and Protocols of Oracle Components

Table E–1 lists the port numbers and protocols 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 E–1   Ports Used in Oracle Components

Component and Description	Default Port Number	Port Range	Protocol
Oracle SQL*Net Listener Allows Oracle client connections to the database over the Oracle SQL*Net protocol. You can configure this port number during installation. To reconfigure this port, use Net Configuration Assistant.	1521	1521	TCP
Oracle Data Guard Shares the SQL*Net port and is configured during installation. To reconfigure this port, use Net Configuration Assistant to reconfigure the Oracle SQL*Net listener.	1521 (same value as the listener)	1521	TCP
Connection Manager Listening port for Oracle client connections. It is not configured during installation, but can be configured using Net Configuration Assistant.	1630	1630	TCP
Oracle Management Agent HTTP port for Oracle Management Agent, which is part of Oracle Enterprise Manager. It is configured during installation. "Changing the Oracle Enterprise Management Agent Port" on page E-3 explains how to modify its port number	3938	1830–1849	HTTP
Oracle Enterprise Manager Database Control HTTP port for Enterprise Manager Database Control. It is configured during installation. "Changing the Oracle Enterprise Manager Database Console Ports" on page E-3 explains how to modify its port number.	1158	5500–5519	TCP/HTTP
Oracle Enterprise Manager Database Console RMI port for Enterprise Manager Database Control. It is configured during installation."Changing the Oracle Enterprise Manager Database Console Ports" on page E-3 explains how to modify its port number.	5520	5520–5539	TCP
Enterprise Manager Database Console JMS port for Enterprise Manager Database Control. It is configured during installation. "Changing the Oracle Enterprise Manager Database Console Ports" on page E-3 explains how to modify its port number.	5540	5540–5559	TCP
Oracle Ultra Search JMS port for Oracle Ultra Search. Its port number is assigned automatically when you install Oracle Ultra Search, by using the Custom installation type. "Changing the Oracle Ultra Search Ports" on page E-4 explains how to change its port number.	5660	5660–5679	TCP

Table E–1   (Cont.) Ports Used in Oracle Components

Component and Description	Default Port Number	Port Range	Protocol
Oracle XML DB The Oracle XML DB HTTP port is used if Web-based applications need to access an Oracle database from an HTTP listener. It is configured during installation, but you cannot view it afterward. "Changing the Oracle XML DB Ports" on page E-5 explains how to change its port number.	Dynamic	Dynamic	HTTP
Oracle XML DB The Oracle XML DB FTP is used when applications need to access an Oracle database from an FTP listener. It is configured during installation, but you cannot view it afterward. "Changing the Oracle XML DB Ports" on page E-5 explains how to change its port number.	Dynamic	Dynamic	FTP
Oracle Clusterware Oracle Clusterware Daemon internode connection. The port number is assigned automatically during installation. You cannot view or modify it afterward.	49896	49896	TCP
Cluster Synchronization Service (CSS) CSS daemon internode connection for the GM layer. The port number is assigned automatically during installation. You cannot view or modify it afterward.	49895	49895	TCP
Oracle Cluster Registry The port number is assigned automatically during installation. You cannot view or modify it afterward.	Dynamic	Dynamic	TCP
Oracle Services for Microsoft Transaction Server The port number for Microsoft Transaction Server is configured when you enter its value in Oracle Universal Installer during a Custom installation the first time you install it on a particular computer. If you install it in multiple Oracle homes on the same computer, Oracle Universal Installer uses the same port number that you specified during the first installation. In most cases, you do not need to reconfigure the port number. If you need to, you can edit its value in the `HKEY_LOCAL_MACHINE\SOFTWARE\ORACLE\OracleMTSRecoveryService\Protid_0` Registry Editor key.	2030	2030	TCP

Changing the Oracle Enterprise Management Agent Port

To find the current setting for the Oracle Management Agent port, search for `EMD_URL` in the `ORACLE_BASE\ORACLE_HOME\host_sid\sysman\config\emd.properties` file.

To change the Oracle Management Agent HTTP port, use the `emca -reconfig` ports command:

```
emca -reconfig ports -AGENT_PORT 1831
```

Changing the Oracle Enterprise Manager Database Console Ports

To find the current HTTP, RMI, and JMS port settings, search in the following files:

- **HTTP port**: Search for `REPOSITORY_URL` in the *ORACLE_BASE\ORACLE_HOME\host_sid*`\sysman\config\emd.properties` file.

- **RMI port**: Search for the `port` attribute in the `rmi-server` tag in the *ORACLE_BASE\ORACLE_HOME*`\oc4j\j2ee\OC4J_DBConsole_`*host_sid*`\config\rmi.xml` file.

- **JMS port**: Search for the `port` attribute in the `jms-server` tag in the *ORACLE_BASE\ORACLE_HOME*`\oc4j\j2ee\OC4J_DBConsole_`*host_sid*`\config\jms.xml` file.

To change the Oracle Enterprise Manager Database Console ports, use the `emca -reconfig` ports command:

```
ORACLE_BASE\ORACLE_HOME\bin> emca -reconfig ports option setting
```

where *option* can be:

- `DBCONTROL_HTTP_PORT`: Sets the HTTP port, for example:

  ```
  emca -reconfig ports -DBCONTROL_HTTP_PORT 1820
  ```

- `RMI_PORT`: Sets the RMI port, for example:

  ```
  emca -reconfig ports -RMI_PORT 5520
  ```

- `JMS_PORT`: Sets the JMS port, for example:

  ```
  emca -reconfig ports -JMS_PORT 5521
  ```

You can enter multiple `-reconfig port` settings in one line, for example:

```
emca -reconfig ports -DBCONTROL_HTTP_PORT 1820 -AGENT_PORT 1821 -RMI_PORT 5520
```

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_HOME/oc4j/j2ee/OC4J_SEARCH/config/http-web-site.xml` file:

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

Changing the RMI Port

To change the RMI port, modify the `port` attribute of the `rmi-server` element in the `$ORACLE_HOME/oc4j/j2ee/OC4J_SEARCH/config/rmi.xml` file:

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

Changing the JMS Port

To change the JMS port, modify the `port` attribute of the `jms-server` element in the `$ORACLE_HOME/oc4j/j2ee/OC4J_SEARCH/config/jms.xml` file:

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

Changing the Oracle XML DB Ports

To change the Oracle XML DB FTP and HTTP ports, you need to run the `catxdbdbca.sql` script, which in a default installation is located in *ORACLE_BASE**ORACLE_HOME*\rdbms\admin.

To change the Oracle XML DB ports:

1. Check that the Oracle listener is running. To do so, in the Windows **Services** utility, make sure that the Oracle TNS Listener service (for example, `OracleOraDb11g_home1TNSListener`) is set to **Started**.

   If you cannot start the listener, see *Oracle Database Net Services Administrator's Guide*.

2. Log in to SQL*Plus as `SYS` or `XDB` using the `SYSDBA` role.

   For example, to log in to SQL*Plus as `SYS` using the password *password*:

   ```
   DRIVE_LETTER:\sqlplus /nolog
   SQL> CONNECT SYS AS SYSDBA
   Enter password: password
   ```

3. Run the `catxdbdbca.sql` script.

   For example, to use `2200` for the FTP port and `8200` for the HTTP port, and assuming your Oracle home is in the following location, enter the following command:

   ```
   SQL> @c:\app\username\product\11.1.0\db_1\rdbms\admin\catxdbdbca.sql 2200 8200
   ```

4. Exit SQL*Plus.

F

Troubleshooting the Oracle Database Installation

This appendix contains the following information about troubleshooting:

- Verifying Requirements
- Encountering Installation Errors
- Reviewing the Log of an Installation Session
- Silent or Noninteractive Installation Response File Error Handling
- Troubleshooting Hostname Changes and CSS
- Troubleshooting Oracle Configuration Manager
- Troubleshooting Configuration Assistants
- 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 make sure 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 installation media. You can find the latest version of the release notes on the Oracle Technology Network Web site:

  http://www.oracle.com/technology/index.html

Encountering Installation Errors

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 windows, click **Back** to return to the window and correct the information.

- If you encounter an error while Oracle Universal Installer is copying or linking files, see "Reviewing the Log of an Installation Session" on page F-2 for interactive

installations or "Silent or Noninteractive Installation Response File Error Handling" on page F-2 for more information.

- If you encounter an error while a configuration assistant is running, see the "Troubleshooting Configuration Assistants" section on page F-5.

- If you cannot resolve the problem, remove the failed installation by following the steps listed in the "Cleaning Up After a Failed Installation" section on page F-6.

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. By default, the log files are located in the following directory:

```
SYSTEM_DRIVE:\Program Files\Oracle\Inventory\logs
```

Log filenames from interactive installations take the form:

```
installActionsdate_time.log
```

For example, if an interactive installation occurred at 9:00:56 a.m. on October 14, 2005, the log file would be named:

```
installActions2006-10-14_09-00-56AM.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.

> **See Also:** Silent or Noninteractive Installation Response File Error Handling on page F-2

Silent or Noninteractive Installation Response File Error Handling

To determine whether a silent or noninteractive installation succeeds or fails, check the `silentInstallActionsdate_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 or noninteractive installation fails if:

- You do not specify a response file.

- You specify an incorrect or incomplete response file.

  For example, a common problem is that while all the product-specific data is filled out correctly, the staging area location may be incorrect. If this is the case, check the `FROM_LOCATION` variable and make sure that it points to the `products.xml` file in the installation media. In the installation media, this `products.xml` is in `database\stage`.

- 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 silent or 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.

> **See Also:** "Reviewing the Log of an Installation Session" on page F-2 for information about interactive installation log files

Troubleshooting Hostname Changes and CSS

If you change the hostname for ASM, then the Oracle CSS daemon will not start. In order to counter this problem, use the following steps:

- Log in as the `root` user.

- Run `localconfig delete` to deconfigure CSS. This will remove any configuration related files on the system that referenced the old hostname.

- Run localconfig add to reconfigure CSS using the new hostname.

  For example:

  ```
  C:\> ORACLE_BASE\ORACLE_HOME\bin\localconfig [add] [delete]
  [reset destination_Oracle_home] [-silent]
  [-paramfile Complete_path_of_file_specifying_parameter_values]
  ```

Troubleshooting Oracle Configuration Manager

This section lists some of the errors that may occur while using Oracle Configuration Manager and provides tips to troubleshoot these errors.

- **Insufficient Privileges While Running installCCRSQL collectconfig**

  When you run the `installCCRSQL.exe` script, it creates the `ORACLE_OCM` user and sets up a job to collect database configuration information. The `ORACLE_OCM` user requires `EXECUTE` privileges on `UTL_FILE` and `DBMS_SCHEDULER` for database versions 10*g* or later, and on the `DBMS_JOB` for pre-10*g* databases. If these privileges are granted to `PUBLIC`, the `ORACLE_OCM` user inherits these privileges, otherwise these privileges are explicitly granted when the `installCCRSQL.exe` script is executed. If the inherited privileges are revoked, the following errors indicating the lack of privileges will be logged in the `alert_log`:

  ```
  ORA-12012: error on auto execute of job 52
  ORA-04068: existing state of packages has been discarded
  ORA-04063: package body "ORACLE_OCM.package_name" has errors
  ORA-06508: PL/SQL: could not find program unit being called
  ```

  To resolve these errors, you must grant the missing `EXECUTE` privilege to the `ORACLE_OCM` user.

  – For database versions 10*g* and later, grant `EXECUTE` privileges on the `UTL_FILE` and `DBMS_SCHEDULER` packages to the `ORACLE_OCM` user by entering the following `SQL*PLUS` commands:

  ```
  SQL> grant execute on UTL_FILE to oracle_ocm;
  SQL> grant execute on DBMS_SCHEDULER to oracle_ocm;
  SQL> ALTER PACKAGE oracle_ocm.MGMT_DB_LL_METRICS compile;
  SQL> ALTER PACKAGE oracle_ocm.mgmt_config compile;
  ```

  – For pre-10*g* databases, grant `EXECUTE` privileges on the `DBMS_JOB` package to the `ORACLE_OCM` user by entering the following `SQL*PLUS` commands:

```
SQL> grant execute on UTL_FILE to oracle_ocm;
SQL> grant execute on DBMS_JOB to oracle_ocm;
SQL> ALTER PACKAGE oracle_ocm.MGMT_DB_LL_METRICS compile;
SQL> ALTER PACKAGE oracle_ocm.mgmt_config compile;
```

- **ORA-04021 Error**

  There may be cases when the ORACLE_OCM user needs to be granted the required privileges during installation. While granting the privileges, the following error may occur in the ORACLE_BASE\ORACLE_HOME\ccr\log\collectconfig*SID*.log:

  ```
  ORA-04021: timeout occurred while waiting to lock object SYS.<package like UTL_
  FILE>
  ```

  This error may occur if another procedure is using the package for which the privileges are being granted. To resolve this error, retry the install when the package is not being used. This error may occur while granting privileges on UTL_FILE, DBMS_SCHEDULER, or DBMS_JOB.

- **ORA-01925 Error While Running installCCRSQL**

  This error may occur if the value of the MAX_ENABLED_ROLES initialization parameter has been exceeded. To resolve this error, you must increase the value of the MAX_ENABLED_ROLES parameter and restart the database as follows:

  1. Edit the init*sid*.ora file where *sid* is the database system identifier and increase the value of MAX_ENABLED_ROLES. If a server parameter (spfile) has been used, alter the MAX_ENABLED_ROLES parameter by using the following SQL*PLus command:

     ```
     SQL>alter system set MAX_ENABLED_ROLES=value scope=spfile
     ```

  2. Restart the database.

  Once the database has been restarted, re-run the installCCRSQL.exe script.

- **Incorrectly configured hostnames are displayed on MetaLink with only the short names**.

  To ensure that hostnames are displayed with their fully qualified names on Oracle*MetaLink*, the windir\system32\drivers\etc\hosts file must contain an entry that includes both the hostname and the domain in the following format:

  ```
  IP-Address  Full-HostName  Short-HostName
  ```

  For example:

  ```
  10.10.10.10  myhost.mydomain  myhost
  ```

  If the hosts file has not been correctly configured, only the short name is displayed on Oracle*MetaLink*.

- **Oracle Configuration Manager Synchronization Messages**: Oracle Configuration Manager does not allow you to run multiple commands simultaneously. If you attempt to do so, the following messages may be displayed:

  - Message: **Another operation is in progress. Please wait...**

    Description: There are several Oracle Configuration Manager commands that cannot run concurrently. If you try to run one of these commands while another command is in progress, the second command will not be executed until the first command is completed. A message indicating that another

command is in progress is displayed. The second command will automatically be run when the first command is completed.

Commands: `emCCR collect`, `emCCR getupdates`, `emCCR update_ components`, and `emCCR upload`

Action: Initially, take no action, the second command will be executed when the first command is completed. But if the command execution takes too long, a timeout will occur. If a timeout occurs, ensure there is no Oracle Configuration Manager activity by executing `emCCR stop` command. Delete the `ccr/state/collector.lock` file and restart the **Scheduler** by running the `emCCR start` command. If you are running the command in **Disconnected** mode, ensure that no collection or update is taking place and then delete the `ccr/state/collector.lock` file.

– Message: **Operation blocked, waiting...**

Description: You cannot run the `emCCR update_components` command if any other `emCCR` command is running. If you try to run the command, it will be blocked. You also cannot run any `emCCR` command while `emCCR update_ components` is running as all other commands will be blocked.

Commands: `configCCR` and most of the `emCCR` commands

Action: Initially, take no action, the command will get executed when the current command is completed. If a timeout occurs, ensure that there is no Oracle Configuration Manager activity by executing `emCCR stop`. Delete the `ccr/state/semaphore.op*` and `ccr/state/semaphore.update*` files, and restart Oracle Configuration Manager by running `emCCR start`. If running the command in **Disconnected** mode, ensure no collection or update is taking place and delete the `ccr/state/semaphore.op*` and the `ccr/state/semaphore.update*` files.

– **Message: The Scheduler is down for upgrade.**

Description: While upgrading Oracle Configuration Manager, you cannot run any of the `emCCR` commands.

Commands: All `emCCR` commands

Action: Retry the commands later.

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*\cfgtoollogs directory. Try to fix the issue that caused the error.

Note: Make sure that there is no space in the path.

- If you see the Fatal Error. Reinstall message, look for the cause of the problem by reviewing the log files. See "Fatal Errors" on page F-6 for more information.

Configuration Assistant Failures

Oracle configuration assistant failures are noted at the bottom of the installation window. The configuration assistant interface displays additional information, if available. The configuration assistant execution status is stored in the installActions*date_time*.log file.

The execution status codes are listed in the following table:

Status	Result Code
Configuration assistant succeeded	0
Configuration assistant failed	1
Configuration assistant canceled	-1

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-6.

2. Correct the cause of the fatal error.

3. Reinstall the Oracle software.

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 "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. Afterward, reinstall the software.

Images Displaying Incorrectly in Oracle Application Express

In "Configuring Oracle HTTP Server in a New Installation" on page 4-8, you added an alias entry that points to the file system path where you copied the images directory. If images in Oracle Application Express do not display correctly, you may have more than one definition of the /i/ alias. To address this issue:

■ If possible, rename the first instance of /i/ to a different alias name.

■ Alternatively, copy the images from the ORACLE_BASE\ORACLE_ HOME\apex\images directory to the directory defined by the first /i/ alias.

Online Help Not Working

If users are accessing Oracle Application Express through a Virtual Host, online Help will not work. Consider the following example:

■ The hostname of the Oracle HTTP Server where the Oracle Application Express DAD resides is internal.server.com and the port is 7777.

■ Users access Oracle Application Express through a Virtual Host. In their Web browsers, users see external.server.com and port 80.

In this example, Oracle Application Express online Help will not work if the users cannot access internal.server.com. To resolve this issue, add the following lines

to the Oracle Application Express Database Access Descriptor (DAD) to override the CGI environment variables SERVER_NAME and SERVER_PORT:

```
PlsqlCGIEnvironmentList SERVER_NAME=external.server.com
PlsqlCGIEnvironmentList SERVER_PORT=80
```

> **See Also:** *Oracle HTTP Server mod_plsql User's Guide* for information on overriding the CGI environment variables and "Oracle Text Requirement" on page 2-9

G

Frequently Asked Questions About Installation

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 Heterogeneous Connectivity Tools (Gateways)

Installing Oracle Database or Oracle Database Client

The following are frequently asked questions with respect to installing Oracle database:

- I only need one instance of Oracle Database or I just want to install a test database to get familiar with the product. How do I install Oracle Database for these situations?
- How can I create an Oracle database that can handle transaction-heavy or data warehousing applications?
- What's the best way to install multiple Oracle databases?
- How do I configure client connections to an Oracle database?
- What is the best way to install Oracle Database Client if my client nodes have limited disk space?
- How do I upgrade Oracle Database?
- The computers at my site have been configured to run as a cluster. How should I install Oracle Database?
- How do I migrate my non-Oracle databases to Oracle Database?

I only need one instance of Oracle Database or I just want to install a test database to get familiar with the product. How do I install Oracle Database for these situations?

- If you want a quick installation using the default installation settings, then see the platform-specific *Oracle Database Quick Installation Guide*.
- If your site has special requirements, then see this guide for more information.

How can I create an Oracle database that can handle transaction-heavy or data warehousing applications?

If you want to create a starter database designed for transaction-heavy or data warehousing applications, then see to this guide for more details. Select the **Advanced Installation** method, and then select the database type you want on the Select Database Configuration screen.

> **See Also:** *Oracle Database Data Warehousing Guide* after installation

Alternatively, you can install Oracle OLAP during the Oracle Database installation. Oracle OLAP provides optimal support for database environments that must meet OLAP requirements. To do so, select **Advanced Installation**, then **Custom**, and on the Available Product Components screen, select **Oracle OLAP**.

> **See Also:**
>
> - *Oracle OLAP User's Guide*
> - *Oracle OLAP DML Reference*
> - *Oracle OLAP Java API Reference*

What's the best way to install multiple Oracle databases?

Use this guide to install Oracle Database using either of the following methods:

- **Installing with response files**: This method lets you run Oracle Universal Installer at a command line using a response file that contains settings specific to each computer.

- **Cloning an existing Oracle home**: Install Oracle Database in one computer using interactive mode. Afterwards, you can clone its existing Oracle home in each location and then create a new database from there. You can also clone databases, which is described in *Oracle Database Administrator's Guide*.

How do I configure client connections to an Oracle database?

1. Install Oracle Database on a server by using this guide for more information.

2. Use platform-specific *Oracle Database Client 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 staging the software centrally, mapping the drive, and running Oracle Universal Installer in the noninteractive mode.

    If the client nodes only require a default installation into a new Oracle home directory, consider using this guide for more information.

What is the best way to install Oracle Database Client if my client nodes have limited disk space?

1. Install Oracle Database onto a server by using this guide for more details.

2. Use platform-specific *Oracle Database Client Installation Guide* to install Oracle Database Client on each client node, and select the Instant Client installation type.

    If you have many client nodes, then consider running Oracle Universal Installer in noninteractive mode.

How do I upgrade Oracle Database?

See *Oracle Database Upgrade Guide*.

> **See Also:** *Oracle Database Administrator's Guide* if you want to use software cloning to upgrade Oracle Database

The computers at my site have been configured to run as a cluster. How should I install Oracle Database?

Use any of the following installation scenarios:

- If you want to run a single-instance Oracle Database in a clustered environment, then install Oracle Clusterware either before or after you install Oracle Database.

- If you want a consolidated pool of storage for all databases in a cluster, then install Oracle Clusterware first and use Automatic Storage Management to manage this storage. Afterwards, install Oracle Database (which can be either single instance or Real Application Clusters).

- If you plan to use Oracle Real Application Clusters, first install Oracle Clusterware, and then install Oracle Real Application Clusters.

See platform-specific *Oracle Clusterware Installation Guide*and*Oracle Real Application Clusters Installation Guide for Microsoft Windows* for the platform to install Oracle Clusterware or Oracle Real Application Clusters. Oracle Clusterware is available on the Oracle Clusterware installation media. See this guide which explains how to install Automatic Storage Management as well as Oracle Database.

Oracle Clusterware is a key component required by Oracle Real Application Clusters installations. Oracle Clusterware is an integrated cluster management solution that can bind multiple servers together to act as a single system. This is referred to as a cluster. It performs workload management and component restart. For example, when an instance supporting a particular service fails, Oracle Clusterware restarts the service on the next available instance that you have configured for that service. Oracle Clusterware can monitor non-Oracle programs, as long as they are defined within the Oracle Clusterware environment using the High Availability API.

How do I migrate my non-Oracle databases to Oracle Database?

Use Oracle Migration Workbench to migrate your non-Oracle databases and applications to Oracle. Oracle Migration Workbench software and documentation are available at:

http://www.oracle.com/technology/tech/migration/index.html

Installing Oracle Database Tools

The following are frequently asked questions with respect to installing Oracle database tools:

- How do I install Oracle Application Server?

- How can I administer and monitor my Oracle Database products?

- How do I manage security for my Oracle Database products?

- How do I use Oracle Database to manage my XML data?

- Does Oracle Database provide OLAP tools so that I can analyze data such as trends and time series in my database?

- Does Oracle Database provide data mining tools that I can use to discover hidden meaning in my data and predict likely outcomes based on my data?

- How do I perform backup and recovery operations for Oracle Database?

- Is Oracle Workflow included with Oracle Database 11g?

- Is there a migration plan for customers that have built solutions using Oracle Workflow?

How do I 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, then 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 to run.

- If you want Oracle Application Server to use an existing Oracle Database, then 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*.

How can I 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 this guide to install Oracle Database.

2. From Oracle Database, use Database Configuration Assistant to manage your databases.

   You can also administer and monitor the database with Oracle Enterprise Manager Grid Control, which is installed by default with Oracle Database. Oracle Enterprise Manager Grid Control 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

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 this guide to install Oracle Database.

   If you plan to use Oracle Real Application Clusters, then install Oracle Database by using platform-specific *Oracle Clusterware Installation Guide* and *Oracle Real Application Clusters Installation Guide for Microsoft Windows* .

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*.

How do I manage security for my Oracle Database products?

Oracle provides a wide range of security solutions for your enterprise environment, including centralized administration and security features integrated with Oracle Internet Directory. The set of Oracle security services called Oracle Platform Security integrates the security features built into Oracle Database, Oracle Application Server, and the Oracle Identity Management infrastructure. Combined, these features enable the development and deployment of secure e-business applications.

Oracle Identity Management includes Oracle Internet Directory, a centralized repository that simplifies administration of users and applications in the Oracle environment by means of the following components:

- Oracle Internet Directory client tools, including LDAP command-line tools, the Oracle Internet Directory SDK, and Oracle Directory Manager.

- Oracle Internet Directory server components, including the directory server, the directory replication server, the directory integration server, and various tools for starting and stopping them.

Oracle Database includes the Oracle Internet Directory client tools, but not the Oracle Internet Directory server components. To install the Oracle Internet Directory server components, run Oracle Universal Installer from an Oracle 10*g* Application Server installation.

> **See Also:**
>
> - *Oracle Application Server Installation Guide* (to install Oracle Identity Management)
>
> - *Oracle Database Security Guide*
>
> - *Oracle Database Advanced Security Administrator's Guide*
>
> - *Oracle Database Enterprise User Security Administrator's Guide*
>
> - *Oracle Label Security Administrator's Guide*
>
> - *Oracle Application Server Security Guide*
>
> - Oracle Technology Network topics on database security http://www.oracle.com/technology/deploy/security/index.html

How do I use Oracle Database to manage my XML data?

Use Oracle XML DB, which is installed as part of Oracle Database. Oracle XML DB enables you to efficiently store, generate, retrieve, query, and manage XML data on your site. Oracle XML DB provides all the advantages of a relational database, for example, allowing you to control the referential integrity of XML data with constraints and triggers. It works well with large amounts of XML data by storing it in a parsed, relational form, which improves access performance.

Oracle XML DB supports XML Type, which is a native data type for XML data, for which you can choose various storage options depending on your needs. In addition, Oracle XML DB supports XML Schema processing, structured and unstructured storage, a content repository that you can access by using common protocols (FTP, HTTP(S), and WebDAV), and SQL/XML, which is a standard for SQL with XML. For Oracle Database 11*g* Release 1 (11.1), Oracle XML DB introduced support for the XQuery language for querying, transforming, and constructing XML; the ability for users to define their own metadata for schema-based XML; a set of new SQL functions for DML operations on XML data; and more.

You can use Oracle XML DB in conjunction with Oracle XML Developer's Kit (XDK) to build applications that run on either Oracle Database or Oracle Application Server.

> **See Also:**
>
> - *Oracle XML DB Developer's Guide*
> - *Oracle XML Developer's Kit Programmer's Guide*

Does Oracle Database provide OLAP tools so that I can analyze data such as trends and time series in my database?

Yes, install Oracle OLAP, which is provided in the Oracle Database installation. Oracle OLAP provides optimal support for database environments that must meet OLAP requirements.

Use either of the following methods in *Oracle Database Installation Guide* to install Oracle OLAP:

- When you run Oracle Universal Installer, select the **Custom** installation type, and in the Available Product Components screen, select **Oracle OLAP**.

    > **See Also:**
    >
    > - *Oracle OLAP User's Guide*
    > - *Oracle OLAP DML Reference*
    > - *Oracle OLAP Java API Reference*

- Select the **Enterprise Edition** installation type, and then on the Select Database Configuration screen, select the **Data Warehouse** configuration.

    > **See Also:** *Oracle Database Data Warehousing Guide* after installation

Does Oracle Database provide data mining tools that I can use to discover hidden meaning in my data and predict likely outcomes based on my data?

Yes. Install Oracle Data Mining, which is provided in the Oracle Database installation. With the Oracle Data Mining option, you can create and execute predictive and descriptive data mining models that use a variety of algorithms.

Use the following method in this guide to install Oracle Data Mining:

1. When you run Oracle Universal Installer, select the **Enterprise Edition** installation type.

2. In the Select Database Configuration screen, select the **General Purpose/Transaction Processing** configuration.

    > **See Also:**   The following manuals after you have installed Oracle Data Mining:
    >
    > - *Oracle Data Mining Concepts*
    > - *Oracle Data Mining Administrator's Guide*
    > - *Oracle Data Mining Application Developer's Guide*
    > - *Oracle Data Mining Java API Reference*
    > - *Oracle Database PL/SQL Packages and Types Reference* (search for Data Mining)

How do I perform backup and recovery operations for Oracle Database?

Use Oracle Database Recovery Manager (RMAN), which is a backup and recovery tool integrated into Oracle Database. This tool satisfies the pressing demands of high-performance, manageable backup, and recovery. Recovery Manager is native to the database server, automatically tracks database structure changes, and optimizes operations accordingly. In addition, Recovery Manager is integrated with leading tape media management products, so that Oracle database backups can be integrated with your existing networked data protection infrastructure.

> **See Also:**
>
> - *Oracle Database Backup and Recovery User's Guide*
>
> - *Oracle Database Backup and Recovery Reference*

Is Oracle Workflow included with Oracle Database 11*g*?

Starting with Oracle Database 11*g*, Oracle Workflow is no longer released with the database. Oracle Workflow will be available with the Oracle E-Business Suite releases.

> **See Also:** Oracle Workflow statement of direction http://www.oracle.com/technology/products/ias /workflow/workflow_sod.html

Is there a migration plan for customers that have built solutions using Oracle Workflow?

Starting January 2006, customers are encouraged to re-create and implement workflows using Oracle BPEL Process Manager. Oracle is in the process of creating a technical migration guide that will provide detailed recommendations for migrating Oracle Workflow processes to Oracle BPEL Process Manager.

> **See Also:** Oracle Workflow statement of direction http://www.oracle.com/technology/products/ias /workflow/workflow_sod.html

Installing Oracle Database with Oracle Applications

The following are frequently asked questions with respect to installing Oracle database with Oracle applications:

- How do I install my Oracle applications with Oracle Database?

- How can I create Web applications that communicate with Oracle Database?

- Which Web server can my Oracle applications use?

- How can I migrate my non-Oracle applications to Oracle?

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 Installation Guide for Microsoft Windows,* and platform-specific *Oracle Clusterware Installation Guide*.

How can I create Web applications that communicate with Oracle Database?

Install Oracle Application Express and a web server:

Use this guide to install Oracle Database. Oracle Application Express is automatically installed, when you install Oracle database.

Which Web server can my Oracle applications use?

Install Oracle HTTP Server:

Use this guide   to install Oracle Database.

How can I migrate my non-Oracle applications to Oracle?

Use Oracle Migration Workbench to migrate your non-Oracle applications to Oracle. Oracle Migration Workbench software and documentation are available at:

http://www.oracle.com/technology/tech/migration/index.html

Installing Oracle Database Heterogeneous Connectivity Tools (Gateways)

The following section discusses about Gateway products:

How can my Oracle applications access data in a non-Oracle database system?

How can my Oracle applications access data in a non-Oracle database system?

You can use Oracle Database Gateway as the connectivity tool to enable Oracle applications to access data in non-Oracle databases. The following are the functions of Oracle Database Gateway:

- Integrates a non-Oracle database into your Oracle Database environment.

- Enables Oracle PL/SQL applications to integrate with APPC-enabled transactions, or access messages in IBM Websphere MQ.

You can install the Gateway product on a computer independent of the Oracle application, Oracle database, and non-Oracle database.

For example, suppose you have the following scenario:

- Oracle Database is installed on a Linux computer.

- The Oracle application is installed on a Microsoft Windows computer and accesses data from the Oracle database on the Linux computer.

- The Oracle application needs to join data in a DB2 database on Solaris Operating System and an Oracle Database on Linux.

You have the option of installing the Database Gateway for DRDA on the Solaris computer where DB2 is running, on Linux where Oracle is running, or on a third computer.

Table G–1 lists the non-Oracle database systems that you can access from Oracle applications, and the Gateways products that are available for those systems.

Table G–1   Oracle Gateway Products

Non-Oracle Database	Oracle Gateway Products and Documentation
IBM DB2 Universal Database (UDB)	Oracle Database Gateway for DRDA. Use *Oracle Database Gateway Installation and Configuration Guide for Microsoft Windows* and *Oracle Database Gateway for DRDA User's Guide*.
IBM DB2 z/OS	Oracle Database Gateway for DRDA. Use *Oracle Database Gateway Installation and Configuration Guide for Microsoft Windows* and *Oracle Database Gateway for DRDA User's Guide*.
IBM DB2/400	Oracle Database Gateway for DRDA. Use *Oracle Database Gateway Installation and Configuration Guide for Microsoft Windows* and *Oracle Database Gateway for DRDA User's Guide*.
WebSphere MQ	Oracle Database Gateway for WebSphere MQ. *Oracle Database Gateway for WebSphere MQ Installation and User's Guide*.
CICS/TS IMSTM	Oracle Database Gateway for APPC. Use *Oracle Database Gateway for APPC Installation and Configuration Guide for Microsoft Windows*
SQL Server	Oracle Database Gateway for SQL Server. Use *Oracle Database Gateway Installation and Configuration Guide for Microsoft Windows* and *Oracle Database Gateway for SQL Server User's Guide*.
Sybase Adaptive Server	Oracle Database Gateway for Sybase. Use *Oracle Database Gateway Installation and Configuration Guide for Microsoft Windows* and *Oracle Database Gateway for Sybase User's Guide*.
Teradata	Oracle Database Gateway for Teradata. Use *Oracle Database Gateway Installation and Configuration Guide for Microsoft Windows* and *Oracle Database Gateway for Teradata User's Guide*.
Informix Server	Oracle Database Gateway for Informix. Use *Oracle Database Gateway Installation and Configuration Guide for Microsoft Windows* and *Oracle Database Gateway for Informix User's Guide*.
IMS	Oracle Database Gateway for IMS. Use *Oracle Database Gateway for IMS, VSAM, and Adabas Installation and Configuration Guide for Microsoft Windows*, *Oracle Database Gateway for IMS User's Guide*, and *Oracle Connect for IMS, VSAM, and Adabas Gateways Installation and Configuration Guide for IBM z/OS*
VSAM	Oracle Database Gateway for VSAM. Use *Oracle Database Gateway for IMS, VSAM, and Adabas Installation and Configuration Guide for Microsoft Windows*, *Oracle Database Gateway for VSAM User's Guide*, and *Oracle Connect for IMS, VSAM, and Adabas Gateways Installation and Configuration Guide for IBM z/OS*.
Adabas	Oracle Database Gateway for Adabas. Use *Oracle Database Gateway for IMS, VSAM, and Adabas Installation and Configuration Guide for Microsoft Windows*, *Oracle Database Gateway for Adabas User's Guide*, and *Oracle Connect for IMS, VSAM, and Adabas Gateways Installation and Configuration Guide for IBM z/OS*.

H

Country Codes

This appendix contains a list of valid country codes that can be used while installing Oracle Configuration Manager.

H.1 Valid Country Codes

Table H–1 contains a list of countries and their short names (codes.)

Table H–1   Country Codes

Country	Short Name (Code)
African Other	AA
Andorra	AD
United Arab Emirates	AE
Afghanistan	AS
Antigua and Barbuda	AM
Anguilla	AI
Albania	AL
Armenia	AM
Netherlands Antilles	AN
Angola	AO
Antarctica	AQ
Argentina	AR
American Samoa	AS
Austria	AT
Australia	AU
Aruba	AW
Azerbaijan	AZ
Bosnia-Herzegovina	BA
Barbados	BB
Bangladesh	BD
Belgium	BE
Burkina Faso	BF

Table H–1   (Cont.) Country Codes

Country	Short Name (Code)
Bulgaria	BG
Bahrain	BH
Burundi	BI
Benin	BJ
Bermuda	BM
Brunei Darussalam	BN
Bolivia	BO
Brazil	BR
Bahamas	BS
Bhutan	BT
Bouvet Island	BV
Botswana	BW
Belarus	BY
Belize	BZ
Canada	CA
Cocos (Keeling) Islands	CC
Central African Republic	CF
Congo	CG
Switzerland	CH
Cote D'Ivoire	CI
Cook Islands	CK
Chile	CL
Cameroon	CM
China	CN
Columbia	CO
Costa Rica	CR
Cuba	CU
Cape Verde	CV
Christmas Island	CX
Cyprus	CY
Czech Republic	CZ
Germany	DE
Djibouti	DJ
Denmark and Iceland	DK
Dominica	DM
Dominican Republic	DO
Algeria	DZ

Table H–1   (Cont.) Country Codes

Country	Short Name (Code)
Ecuador	EC
Estonia	EE
Egypt	EG
Western Sahara	EH
Eritrea	ER
Spain	ES
Ethiopia	ET
Finland	FI
Fiji	FJ
Falkland Islands (Malvinas)	FK
Micronesia (Federated States Of)	FM
Faroe Islands	FO
France	FR
France - Overseas Territories	FX
Gabon	GA
United Kingdom	GB
Grenada	GD
Georgia	GE
French Guiana	GF
Ghana	GH
Gibraltar	GI
Greenland	GL
Gambia	GM
Guinea	GN
Guadeloupe	GP
Equatorial Guinea	GQ
Greece	GR
South Georgia and South Sandwich Island	GS
Guatemala	GT
Guam	GU
Guinea - Bissau	GW
Guyana	GY
Hong Kong	HK
Heard Island and McDonald Islands	HM
Honduras	HN
Croatia	HR
Haiti	HT

Table H–1   (Cont.) Country Codes

Country	Short Name (Code)
Hungary	HU
Indonesia	ID
Ireland	IE
Israel	IL
India	IN
British Indian Ocean Territory	IO
Iraq	IQ
Iran (Islamic Republic of)	IR
Iceland	IS
Italy	IT
Jamaica	JM
Jordan	JO
Japan	JP
Kenya	KE
Kyrgyzstan	KG
Cambodia	KH
Kiribati	KI
Comoros	KM
Saint Kitts and Nevis	KN
Democratic People's Republic of Korea	KP
Republic of Korea	KR
Kuwait	KW
Cayman Islands	KY
Kazakhstan	KZ
Lao People's Democratic Republic	LA
Lebanon	LB
Saint Lucia	LC
Liechtenstein	LI
Sri Lanka	LK
Liberia	LR
Lesotho	LS
Lithuania	LT
Luxembourg	LU
Latvia	LV
Libyan Arab Jamahiriya	LY
Morocco	MA
Monaco	MC

Table H–1   (Cont.) Country Codes

Country	Short Name (Code)
Republic of Moldova	MD
Madagascar	MG
Marshall Islands	MH
Macedonia	MK
Mali	ML
Myanmar	MM
Mongolia	MM
Macau	MO
Northern Mariana Islands	MP
Martinique	MQ
Mauritania	MR
Montserrat	MS
Malta	MT
Mauritius	MU
Malawi	MW
Mexico	MX
Malyasia	MY
Mozambique	MZ
Namibia	NA
New Caledonia	NC
Niger	NE
Norfolk Island	NF
Nigeria	NG
Nicaragua	NI
Netherlands	NL
Norway	NO
Nepal	NP
Narau	NR
Niue	NU
New Zealand	NZ
Oman	OM
Panama	PA
Peru	PE
French Polynesia	PF
Papua New Guinea	PG
Philippines	PH
Pakistan	PK

Table H–1   (Cont.) Country Codes

Country	Short Name (Code)
Poland	PL
Saint Pierre and Miquelon	PM
Pitcairn	PN
Puerto Rico	PR
Portugal	PT
Palau	PW
Paraguay	PY
Qatar	QA
Reunion	RE
Romania	RO
CIS-Comm. of Indep. States	RU
Rwanda	RW
Saudi Arabia	SA
Solomon Islands	SB
Seychelles	SC
Sudan	SD
Sweden	SE
Singapore	SG
Saint Helena	SH
Slovenia	SI
Svalbard and Jan Mayen Islands	SJ
Slovakia	SK
Sierra Leone	SL
San Marino	SM
Senegal	SN
Somalia	SO
Suriname	SR
Sao Tome and Principe	ST
El Salvador	SV
South Asia Growth Economies	SX
Syrian Arab Republic	SY
Swaziland	SZ
Turks and Caicos Islands	TC
Chad	TD
French Southern Territories	TF
Togo	TG
Thailand	TH

Table H–1   (Cont.) Country Codes

Country	Short Name (Code)
Tajikistan	TJ
Tokelau	TK
Turkmenistan	TM
Tunisia	TN
Tonga	TO
East Timor	TP
Turkey	TR
Trinidad and Tobago	TT
Tuvalu	TV
Taiwan - Republic of China	TW
United Republic of Tanzania	TZ
Ukraine	UA
Uganda	UG
United States Minor Outlying Islands	UM
United States	US
Uruguay	UY
Uzbekistan	UZ
Vatican City State (Holy See)	VA
Saint Vincent and the Grenadines	VC
Venezuala	VE
Virgin Islands (British)	VI
Vietnam	VN
Vanuatu	VU
Wallis and Futuna Islands	WF
Samoa	WS
Yemen	YE
Mayotte	YT
Serbia and Montenegro	YU
South Africa	ZA
Zambia	ZM
Zaire	ZR
Zimbabwe	ZW

Glossary

Automatic Storage Management disk group

A set of disk devices that **Automatic Storage Management** manages as a single unit. Each disk device can be an individual physical disk, a multiple disk device such as a RAID storage array or logical volume, or even a partition on a physical disk. You can create the Automatic Storage Management disk group when you create the **Automatic Storage Management instance**, or with Oracle Database Configuration Assistant.

Automatic Storage Management instance

The Oracle instance that manages Automatic Storage Management disk groups **Automatic Storage Management disk group**s. It is created automatically when you install and configure **Automatic Storage Management**. See also Oracle system identifier (**SID**).

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 11.1 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 user name and password along with a connect identifier in a connect string for the service to which they want to connect, for example:

```
SQL> CONNECT user_name@connect_identifier
Enter password: password
```

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 1-11 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 11*g* Release 1 (11.1) does not require identification of the database service because of service registration. However, static service configuration is required for an Oracle Database 11*g* Release 1 (11.1) 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 user name and password along with a net service name in a connect string for the service to which they want to connect:

```
SQL> CONNECT user_name
Enter password: password
SQL> @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)

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 user name with Oracle user names 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. The Oracle Base directory is the top level directory that you can use to install the various oracle software products. You can use the same Oracle base directory for more than one installation. If you install an OFA-compliant database using Oracle Universal Installer defaults, then `ORACLE_BASE` is `X:\oracle\product\11.1.0` where `X` is any hard drive (for example, `C:\oracle\product\11.1.0`).

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 home

The directory path to install Oracle components (for example, `C:\app\oracle\product\11.1.0\db_n`). You are prompted to enter an Oracle home in the Path field of the Specify File Locations window. 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 window.

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 Microsoft Windows*. These documents are included on the media labeled Oracle Database 11*g* Release 1 (11.1) and are available on Oracle Technology Network (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.

The SID can also see an Automatic Storage Management instance SID, available when you install **Automatic Storage Management**.

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`.

Secure Sockets Layer (SSL)

An industry standard protocol designed by Netscape Communications Corporation for securing network connections. SSL provides authentication, encryption, and data integrity using public key infrastructure (PKI).

SSL

See **Secure Sockets Layer (SSL)**.

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.

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.

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.

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