Oracle® Enterprise Manager

Concepts Guide

Release 2.1

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Part No. A75684-01

The Oracle Enterprise Manager Concepts Guide provides an overview of the
Oracle Enterprise Manager system and explains general concepts of Oracle
Enterprise Manager.

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Oracle Enterprise Manager Concepts Guide, Release 2.1

Part No. A75684-01

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Oracle Enterprise Manager Concepts Guide, Release 2.1

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Preface

This preface describes the purpose and organization of the *Oracle Enterprise Manager Concepts Guide* and contains the following information:

Purpose of This Guide

This guide presents a general overview of Oracle® Enterprise Manager version 2.1. Oracle Enterprise Manager is a system management tool that provides an integrated solution for managing your heterogeneous environment. The product combines a graphical console, agents, common services, and tools to provide an integrated, comprehensive systems management platform for managing Oracle products.

Audience

This guide explains the general concepts of Oracle Enterprise Manager. You should already be familiar with Oracle and the administrative tasks you wish to perform.

For general information about the Oracle Server and how it works, see the *Oracle Server Concepts Guide.* For further information about database administration

procedures, see the rest of the Oracle Server documentation set. The Oracle Server documentation contains specific and thorough descriptions of the database administration tasks you can perform with Oracle Enterprise Manager tools and provides recommendations on how to administer your database optimally.

You should also be familiar with the operation of your specific Microsoft Windows or UNIX operating system. See the documentation for your Windows or UNIX system, if necessary.

How this Guide Is Organized

This guide is divided into the following chapters:

Chapters	Description
Chapter 1, "Overview of Oracle Enterprise Manager"	Chapter 1 describes the overall architecture and features of Oracle Enterprise Manager - the console, Oracle Management Server, and the common services.
Chapter 2, "The Console"	Chapter 2 describes the layout and use of the Oracle Enterprise Manager Console.
Chapter 3, "Job and Event Systems"	Chapter 3 describes the Job Scheduling and Event Management Systems, which execute jobs and monitor for occurrences on sites throughout the network.
Chapter 4, "DBA Management Pack"	Chapter 4 describes the DBA Management Pack, which is a set of administrative tools bundled with Oracle Enterprise Manager.
Chapter 5, "Oracle Management Packs and Integrated Applications"	Chapter 5 describes Oracle Enterprise Manager's integrated applications and the optional system management packs which extend Oracle Enterprise Manager's functionality.

Documentation

The following is a list of the Oracle Enterprise Manager documentation, including the documentation for the optional management packs:

Oracle Enterprise Manager Documentation

- The *Oracle Enterprise Manager Readme* provides important information regarding updates to the software and other late-breaking information.

- The *Oracle Enterprise Manager Administrator's Guide* explains how to use Oracle Enterprise Manager's console, common services, and database administration tools.

- The *Oracle Enterprise Manager Concepts Guide* provides an overview of Oracle Enterprise Manager, its architecture, and components.

- The *Oracle Enterprise Manager Configuration Guide* explains how to configure and start Oracle Enterprise Manager.

- The *Oracle Intelligent Agent User's Guide* describes how to use the Oracle Intelligent Agent with Oracle Enterprise Manager.

- The *Oracle SNMP Support Reference Guide* is intended for third-party developers of SNMP-based management applications. Database administrators who may be familiar with Oracle products, but who may be less familiar with SNMP may also find this guide useful.

- The *Oracle Enterprise Manager Messages Manual* lists the Oracle Enterprise Manager error messages and methods for diagnosing them.

Oracle Change Management Pack Documentation

- The *Oracle Enterprise Manager Change Management Pack Readme* provides important notes regarding the Oracle Change Management Pack on-line documentation, updates to the software, and other late-breaking information.

- The *Oracle Enterprise Manager Getting Started with Oracle Change Management Pack* manual provides an overview of the concepts and features of the Oracle Change Management Pack application.

- The *Oracle Change Management Installation* CD-ROM insert describes how to install the Oracle Change Management Pack.

Oracle Diagnostics Pack Documentation

- The *Oracle Enterprise Manager Diagnostics Pack Readme* provides important notes regarding the Oracle Diagnostics Pack on-line documentation, updates to the software, and other late-breaking information.

- The *Oracle Enterprise Manager Performance Monitoring and Planning Guide* explains how to monitor system performance with Oracle Diagnostics Pack.

- The *Oracle Enterprise Manager Oracle Trace User's Guide* explains how to use the Oracle Trace application to capture and use historical data to monitor Oracle databases.

- The *Oracle Enterprise Manager Oracle Trace Developer's Guide* explains how to instrument your application with Oracle Trace routines.

- The *Oracle Diagnostics Pack Installation* CD-ROM describes how to install the Oracle Diagnostics Pack.

Oracle Tuning Pack Documentation

- The *Oracle Enterprise Manager Tuning Pack Readme* provides important notes regarding the Tuning Pack on-line documentation, updates to the software, and other late-breaking information.

- The *Oracle Enterprise Manager Database Tuning With the Oracle Tuning Pack* guide provides information on how to tune your system optimally with Oracle Tuning Pack and its components.

- The *Oracle Tuning Pack Installation* CD-ROM describes how to install the Oracle Tuning Pack.

Oracle Standard Management Pack Documentation

- The *Oracle Standard Management Pack Readme* provides important notes regarding the Standard Management Pack documentation, updates to the software, and other late-breaking information.

- The *Getting Started With the Oracle Standard Management Pack* guide provides information about the concepts and features of Oracle Standard Management Pack.

- The *Oracle Standard Management Pack Installation* CD-ROM insert describes how to install the Oracle Standard Management Pack.

Oracle Management Pack for Oracle Applications Documentation

- The *Oracle Management Pack for Oracle Applications Readme* provides important notes regarding the Management Pack for Oracle Applications documentation, updates to the software, and other late-breaking information.

- The *Getting Started with Oracle Management Pack for Oracle Applications* guide provides information about the concepts and features of the Management Pack for Oracle Applications.

- The *Oracle Management Pack for Oracle Applications Installation* CD-ROM insert describes how to install the Management Pack for Oracle Applications.

Oracle Management Pack for SAP R/3 Documentation

- The *Oracle Management Pack for SAP R/3 Readme* provides important notes regarding the Management Pack for SAP R/3 documentation, updates to the software, and other late-breaking information.

- The *Oracle Enterprise Manager Getting Started with Oracle Management Pack for SAP R/3* guide provides information about the concepts and features of the Management Pack for SAP R/3.

- The *Oracle Management Pack for SAP R/3 Installation* CD-ROM insert describes how to install the Management Pack for SAP R/3.

Related Publications

The following publications contain related information:

- For general information about Oracle8*i* and how it works, see *Getting to Know Oracle8i* and *Oracle8i Concepts*.

- For information about administering Oracle8*i*, see the *Oracle8i Administrator's Guide*.

- For the procedures for migrating a previous version of Oracle, see *Oracle8i Migration*.

- For information on Oracle's SQL commands and functions, see *Oracle8i SQL Reference*.

- For information about utilities bundled with Oracle8*i*, refer to the *Oracle8i SQL Reference*.

- For information about Oracle messages and codes, refer to *Oracle8i Error Messages*.

- For information about the Oracle networking system, see your network-specific documentation.

- For information about Oracle8*i* on Windows NT, see the *Oracle8i Installation Guide for Windows NT*, the *Oracle8i Administrator's Guide for Windows NT*, and the *Release Notes*.

- For information on Oracle Parallel Server, refer to the *Oracle8i Parallel Server Setup and Configuration Guide*, which provides essential information for preparing Oracle8*i* for use with Oracle Parallel Server and Oracle Enterprise Manager. The "Introducing Oracle Parallel Server" chapter provides a conceptual and component overview of Oracle Parallel Server. This information will help you prepare and plan your Oracle Parallel Server installation and configuration in an Oracle8*i* environment.

Oracle Corporation also publishes several files that are available on your distribution media. These files are usually named README, RELNOTE, BUGHST, and RESTRICT and have extensions such as .WRI, .DOC, and .TXT. These files describe changes to the software or documentation that have not been described in the documentation.

Note: The exact names and locations of the files mentioned above may vary depending on your operating system.

1

Overview of Oracle Enterprise Manager

Oracle Enterprise Manager is a system management tool that provides an integrated solution for centrally managing your heterogeneous environment. Combining a graphical console, Oracle Management Servers, Oracle Intelligent Agents, common services, and administrative tools, Oracle Enterprise Manager provides a comprehensive systems management platform for managing Oracle products.

From the client interface, the Oracle Enterprise Manager Console, you can perform the following tasks:

- Centrally administer, diagnose, and tune multiple databases

- Manage Oracle products and services other than databases

- Effectively monitor and respond to the health of your Oracle family of products and third-party services 24 hours a day

- Schedule activities on multiple nodes at varying time intervals

- Monitor networked services for events

- Customize your display by organizing databases and other services into logical administrative groups

This chapter presents an overview of Oracle Enterprise Manager's benefits, architecture, and major components. The chapter is divided into the following sections:

Topic	See Page
Three-Tier Framework	1-2
Benefits of Oracle Enterprise Manager	1-8
The Basic Components	1-8

Three-Tier Framework

Oracle Enterprise Manager architecture consists of a three-tier framework. Unlike a two-tier client-server structure, where a client tier responsible for the presentation of information accesses data from a server, version 2 of Oracle Enterprise Manager utilizes a three-tier architecture which includes:

- Console and management applications - first tier

- Oracle Management Server(s) - second tier

- Managed nodes containing databases and other services - third tier

With Oracle Enterprise Manager, data-intensive business logic is moved off the client and is recast as shared services on one or more middle-tier Oracle Management Servers, providing reliability, scalability, and fault tolerance for enterprise environments.

Clients

The first tier of Oracle Enterprise Manager is comprised of clients such as consoles and management applications, which present graphical user interfaces to administrators for all management tasks. These client components can be installed locally or brought up with a web browser.

The first-tier clients depend on second-tier Oracle Management Servers for the bulk of their application logic. The consoles and management applications communicate with one or more Oracle Management Servers via standard CORBA interfaces and IIOP.

Oracle Management Server

The second tier of the Oracle Enterprise Manager framework is comprised of one or more Oracle Management Servers, which process system management tasks sent by the console. The Oracle Management Server provides centralized intelligence and distributed control between the console (first tier) and the managed nodes (third tier).

The Oracle Management Server uses a repository to store all system data, application data, information about the state of managed nodes, and information about any system management packs. A repository is a set of database tables that can be located in any Oracle database accessible to the Oracle Management Server. If necessary, a large enterprise can use more than one Oracle Management Server in the middle tier. Multiple Oracle Management Servers share a repository and provide reliability and fault tolerance for one another.

One of the most important responsibilities of the Oracle Management Server is distributing tasks to the Oracle Intelligent Agents, which run on managed nodes in the third tier. The Intelligent Agents are responsible for the localized execution of tasks and the on-going monitoring of databases and other services on the managed nodes.

Figure 1–1   Three-tiered Architecture
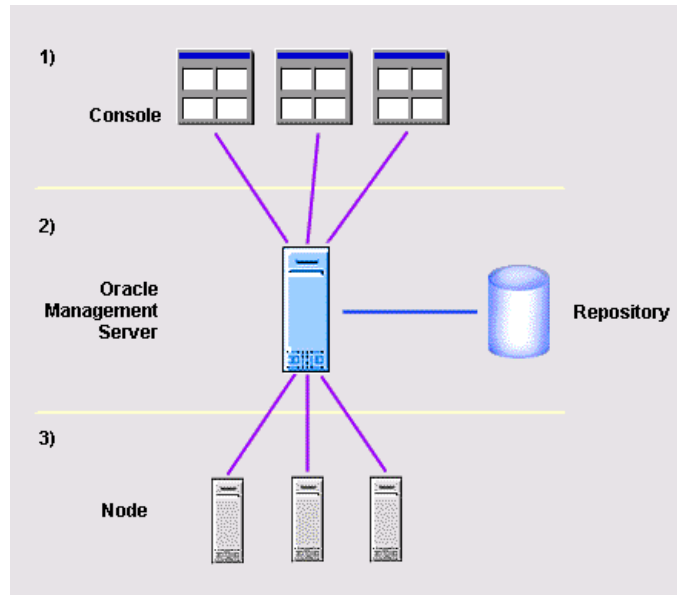
Managed Nodes

The third tier of the Oracle Enterprise Manager framework is comprised of managed nodes which contain databases and other managed services. Residing on each node is an Oracle Intelligent Agent, which communicates with the Oracle Management Server(s) and performs tasks sent by consoles and client applications.

Intelligent Agent

The Oracle Intelligent Agent monitors databases and other services in the node for registered events (potential problem occurrences) and scheduled jobs (activities), both sent by the client via the middle-tier Oracle Management Server(s).

Intelligent Agents function independently of the databases and other services they support, and also function independently of the console, management applications, and Oracle Management Servers. By running independently of other components, Intelligent Agents can perform such tasks as starting up and shutting down a database and staying operational if another part of the system is down.

Intelligent Agents support Simple Network Management Protocol (SNMP), enabling third-party applications to communicate with the agent and be managed along with Oracle services.

The Intelligent Agent also includes a data collection service that collects system performance data (for example, file I/O or CPU usage data) for Capacity Planner and Performance Manager, which are data-analysis applications in the optional Oracle Diagnostics Pack, Oracle Management Pack for Oracle Applications, and Oracle Management Pack for SAP R/3.

Note: For mored information about the Intelligent Agent, see the *Oracle Intelligent Agent Users Guide*. For more information about the Oracle Diagnostics Pack, Oracle Management Pack for Oracle Applications, and Oracle Management Pack for SAP R/3, see Chapter 5, "Oracle Management Packs and Integrated Applications". For more information about Oracle Enterprise Manager architecture, see the Oracle Enterprise Manager Quick Tour.

Benefits of Oracle Enterprise Manager

Oracle Enterprise Manager enables administrators to maintain the highest level of performance and availability while controlling system management costs. This section describes the major benefits of Oracle Enterprise Manager and its scalability, power, and reliability.

Topic	See Page
Single Point of Management	1-5
Multi-Administrator System	1-6
Scalability for Growing, Distributed Environments	1-6
Extensible Architecture	1-7
Automated Lights-out Administration	1-7
Autonomous Intelligent Agent	1-7
Ease of Use	1-8

Single Point of Management

From the Oracle Enterprise Manager Console, you can manage and administer all your distributed systems, databases, tools, and users from a central location. Through an intuitive graphical user interface that provides powerful and robust system management, the console gives you a central point of control for the Oracle

environment. The easy-to-use interface enables even junior systems administrators to be effective with minimal training.

With Oracle Enterprise Manager, a distributed enterprise can be managed as easily and effectively as a local workgroup, lowering the cost of system ownership. The Oracle Enterprise Manager framework allows the automation and delegation of routine, time-consuming tasks on multiple services. Jobs can be scheduled on multiple nodes simultaneously and groups of services can be monitored together.

Multi-Administrator System

In many enterprises, teams of database administrators must cooperate to manage numerous systems, often remotely. With Oracle Enterprise Manager, database management tasks can be organized and distributed in multi-administrator enterprises, and system data can be safely shared among administrators.

With Oracle Enterprise Manager, system data, application data, and the state of managed services is contained in the Oracle Management Server and a backend repository, which stores all administrative data. (If you are using more than one Oracle Management Server, they share a repository). The Oracle Management Server handles security and distributes notifications and management information to administrators based on the permissions that are set up for them in the repository. Each administrator has an account which provides access to the Oracle Management Server and the central data stored in the repository.

The Oracle Management Server filters information as it flows between different consoles and the services on the managed nodes. Because all administrative data is stored in a central repository, administrators can work together and see the activity of other administrators. This distribution of information reduces redundancy, which saves time and keeps administrative costs down.

Scalability for Growing, Distributed Environments

With its three-tier architecture, Oracle Enterprise Manager is more scalable than ever in maintaining performance and automating routine tasks in rapidly growing, distributed environments. As the number of nodes and managed services in your network increases, or if the current Oracle Management Server is overloaded, you can add more Oracle Management Servers to the middle tier to share and balance the workload. Balancing the workload in the middle tier rather than investing in additional systems management overhead, controls the cost of systems management.

Because multiple Oracle Management Servers share a repository as their back-end store, they provide fault tolerance for each other. If one Oracle Management Server goes down, the clients registered with it can immediately log in again and register with any of the other Oracle Management Servers running with that repository, and work continues seamlessly. Any clients registered with an Oracle Management Server other than the failed one are unaffected.

Extensible Architecture

Oracle Enterprise Manager's flexible architecture allows new products and additional modules to be written and added to the suite. Oracle Enterprise Manager's use of open standards (CORBA, IIOP, etc.) makes it possible to integrate third-party tools into the console.

Automated Lights-out Administration

In a large, distributed database environment, the proportion of managed nodes per administrator increases rapidly, requiring tools that can automate tasks. Oracle Enterprise Manager offers automated, "lights-out" task management and proactive service monitoring for pre-set events, which enables control of the enterprise without necessarily needing additional staff to meet increasing system responsibilities.

Using the Job Scheduling System, you can automate routine tasks such as database backups or running reports on a regular basis. Using the Event Management System, you can have remote databases and other services monitored for important occurrences (events) and set up "fixit" jobs that automatically execute in response to events. Monitoring of services for occurrences and automatic problem correction ensures that problems are dealt with before they noticeably impact end users.

Autonomous Intelligent Agent

Because jobs are executed locally at the managed nodes, they can be completed even when a crucial part of the network is down. Localized tasks are dependable because all jobs are processed by the Intelligent Agents on the individual managed nodes.

For example, if you schedule a job to run on a node, the job will be executed locally at the node at the specified time, and will run even if a network outage occurs between the node, the Oracle Management Server, and the console. If a service on the node is down, the agent stores any jobs to be performed on the service until the

service is back up. If the console is down, the agent stores any information about the status of the job until the console is back in service and can receive information.

Ease of Use

Oracle Enterprise Manager provides a complete user-friendly system management solution that allows administrators to manage distributed environments with a minimum of effort. With the ability to see operational data in remote managed services, an administrator can more easily make changes and execute commands. The Oracle Enterprise Manager framework is designed to offer high scalability without increasing complexity, allowing an administrator to manage more and more services, confident that the environment is under control.

In addition, all Oracle Enterprise Manager applications have a similar graphical user interface allowing the administrator to manage the Oracle enterprise using the same familiar front end with each application. This interface can be used by both beginning and advanced users, and also can serve as a training tool when used with the Oracle Enterprise Manager wizards and quick tours.

Additionally, the Oracle Management Servers and consoles require little or no configuration. Manual intervention from the administrator is reduced to an absolute minimum.

The Basic Components

This section describes in further detail the basic components of Oracle Enterprise Manager and contains the following sections:

Topic	See Page
Console	1-8
Oracle Management Server	1-9
Common Services	1-11
DBA Management Pack	1-16

Console

The Oracle Enterprise Manager Console is a client graphical user interface which provides menus, toolbars, and drawers allowing access to Oracle tools as well as utilities available through other vendors. The console is partitioned into four panes for different administrative purposes. These panes include:

- Navigator pane

- Group pane

- Jobs pane

- Events pane

Figure 1–2 shows the console screen.

Figure 1–2   Oracle Enterprise Manager Console
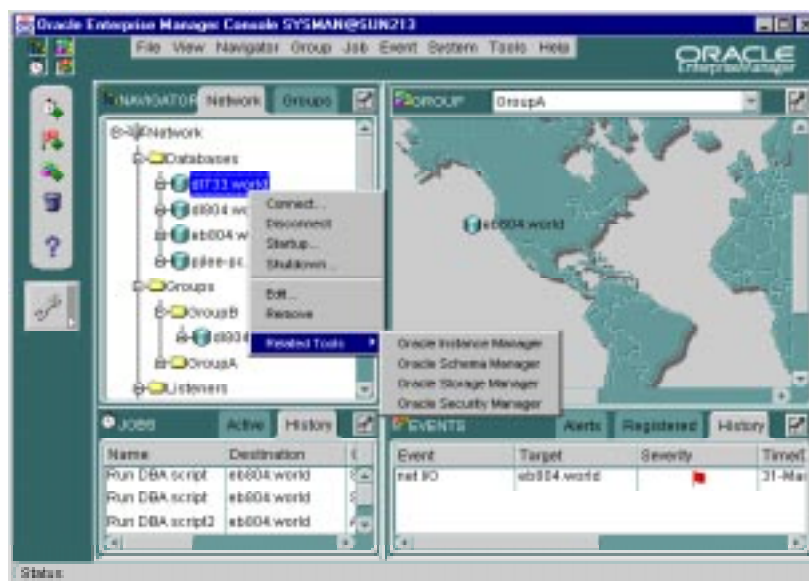
Note: See Chapter 2, "The Console" for descriptions of the basic components of the console and how they are organized. For information about the console menus, see the *Oracle Enterprise Manager Administrator's Guide.*

Oracle Management Server

The Oracle Management Server is the middle tier in the Oracle Enterprise Manager framework and provides centralized intelligence and controlled distribution between console clients and managed nodes. A central engine for notification, the Oracle Management Server processes all system management tasks and administers the distribution of these tasks to Intelligent Agents on managed nodes across the

enterprise. When multiple Oracle Management Servers are used, they share and balance the workload, ensuring high performance and scalability.

Common Services

Oracle Enterprise Manager is made up of common services that help you manage the Oracle environment.

These common services include:

- Repository
- Service Discovery
- Job Scheduling System
- Event Management System
- Notification System and Filtering
- Paging/Email Blackouts
- Security

Repository

A repository is a set of tables in an Oracle database and is used as a back-end store by the Oracle Management Server(s). The Repository contains state information for the managed environment, including the management packs, and is created when you set up an Oracle Management Server using the Oracle Enterprise Manager Configuration Assistant. The repository tables can be installed in any database accessible to the Oracle Management Server.

Whatever the administrator sees on the console when connected to the Oracle Management Server is determined by the administrator's permissions data stored in the repository.

Service Discovery

Oracle Enterprise Manager automatically discovers (locates) all the databases and other services running on the managed nodes once the nodes are identified. During the discovery process, Intelligent Agents search for services on the nodes they manage, then communicate their findings to the Oracle Management Server. Discovered services are then displayed in a hierarchical tree view in the Navigator window of the console, displaying a big-picture view of all discovered nodes and their respective services.

Job Scheduling System

The Job Scheduling System enables the automation of standard and repetitive administrative tasks. With the Job Scheduling System, you can create and manage jobs, schedule their execution, and view and share information about defined jobs with other administrators connected to the repository. Upon job completion or failure, the system automatically notifies you and/or other administrators through console alert (with view permissions), e-mail, or page.

Because a job is an administrative entity (object) within the Oracle Enterprise Manager framework, an owner is always specified for the job as well as basic security parameters, which prevent or allow viewing and modifications by other administrators.

Note: For more information about the Job Scheduling System, see Chapter 3, "Job and Event Systems".

Event Management System

The Event Management System allows the Oracle environment to be monitored for operational occurrences and borderline conditions such as loss of service, shortage of storage, and resource problems such as high CPU usage. These critical occurrences, called "events", are each made up of one or more "tests" which an Intelligent Agent makes towards a managed service when an event is registered against it. When you register an event through the console, you define the event condition by selecting one or more tests.

When an event occurs and is detected by an Intelligent Agent, specified administrators are notified by console alert, e-mail, or page, depending on their permissions and preferred credentials. You can also set up a "fixit" job to run automatically in response to an event.

As in the Job Scheduling System, you can share event information with other administrators connected to the repository. Events are also objects within the Oracle Enterprise Manager framework and are assigned owners and security parameters.

Note: For more information about the Event Management System, see Chapter 3, "Job and Event Systems".

Notification System and Filtering

Administrators can be notified of the status of jobs and events by console alert, e-mail, or page. When scheduling a job or registering an event, you set up notification procedures and choose which administrators to have notified of job completion or failure or event occurrence. You can also filter e-mail and pages sent to administrators according to job status or event severity level.

Paging/Email Blackouts

Oracle Enterprise Manager has a paging and email blackout feature, which prevents administrators from being flooded with emails and pages if a managed service is brought down. For example, if a service is brought down on a regular basis for scheduled maintenance, you can specify paging and email "blackouts" for the services during those periods. During a specified blackout, enhanced notification (paging/e-mail) is deactivated while the service is down.

Security

Security parameters in Oracle Enterprise Manager are defined for services, objects, and administrators. All administrator accounts are defined by a Super Administrator who creates and defines the permissions of all the repository's administrators. A Super Administrator can access any object and control its security parameters, including objects owned by other administrators. Security parameters are set up in the Preferences dialog box, shown in Figure 1–3:

Figure 1–3   Preferences Dialog Box
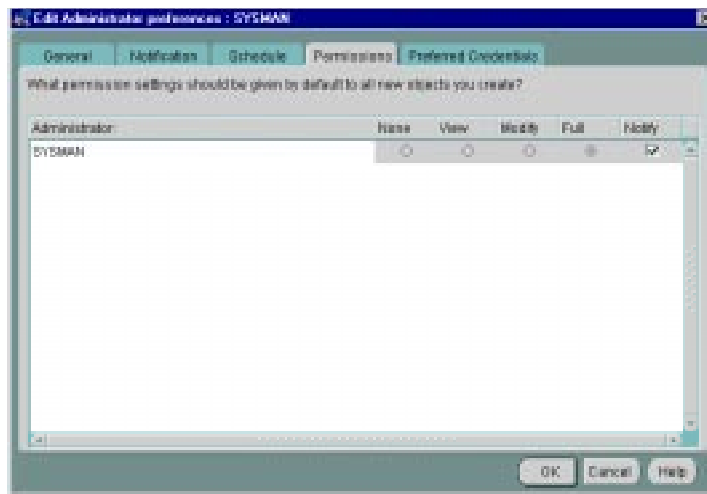
The following table describes the options available in each tab of the Preferences dialog box.

Preference	Description
General	The General tab is for editing your name and password and enabling or disabling Advanced Mode, which displays advanced DBA features.
Notification	The Notification tab is for setting up paging and e-mail preferences, including notification filtering, and can also be used to send test pages and e-mails.
Schedule	The Schedule tab is for choosing how you want to be notified when an event or job condition occurs, and what hours of the day and week you are available to be notified.
Default Permissions	The Default Permissions tab is for choosing the default permissions settings for objects that you create (jobs, events, and groups). These permissions affect whether other administrators can access the objects you create, and if they can, whether they have modify permissions or just view permissions. You can also choose whether to have other administrators notified of event and job status. Overriding your default permissions when creating an object is also possible. For example, your default permissions will automatically be applied when you create a job, but you can override these permissions during job creation if you prefer.
Preferred Credentials	The Preferred Credentials tab is for setting up names, passwords, and roles for nodes, listeners, databases, and other services that you administer in the network. With your credentials for these services pre-set, you only need to log into the console once, and then are transparently logged into a service when you select it anywhere in the console.

If you try to access an object or service for which your preferred credentials are not set up, the service will try using your console login information.

DBA Management Pack

Bundled with Oracle Enterprise Manager is the DBA Management Pack, which is an integrated set of standard database administration tools to help automate and simplify the common daily tasks of administrators. These supplemental tools focus on specific areas of database administration, helping administrators with their daily and routine tasks of managing databases and other services and keeping them operational.

Oracle Enterprise Manager also contains integrated applications for help in managing the Oracle Environment.

Note: For an overview of the database tools, see Chapter 4, "DBA Management Pack" or the Oracle Enterprise Manager online help. For information on the integrated applications, see Chapter 5, "Oracle Management Packs and Integrated Applications".

2

The Console

The console is a client interface in the first tier of the Oracle Enterprise Manager framework and is used to centrally manage and administer multiple databases and other services and your entire Oracle environment. This chapter describes the basic components of the console and how they are organized, and is divided into the following sections:

Topic	See Page
Console Graphical User Interface	2-1
Console Panes	2-3

Console Graphical User Interface

The Oracle Enterprise Manager Console is an easy-to-use, customizable graphical user interface that provides a single point of access to your entire network environment. The console has four panes: the Navigator, Group, Jobs, and Events panes.

The console's four panes provide a general view of the Oracle environment being managed and are an interface to the Oracle Enterprise Manager common services (repository, service discovery, Job Scheduling System, Event Management System, notification, filtering, blackouts, and security parameters). Each pane can be resized or hidden to enhance or diminish views of objects.

Figure 2–1   Oracle Enterprise Manager Console
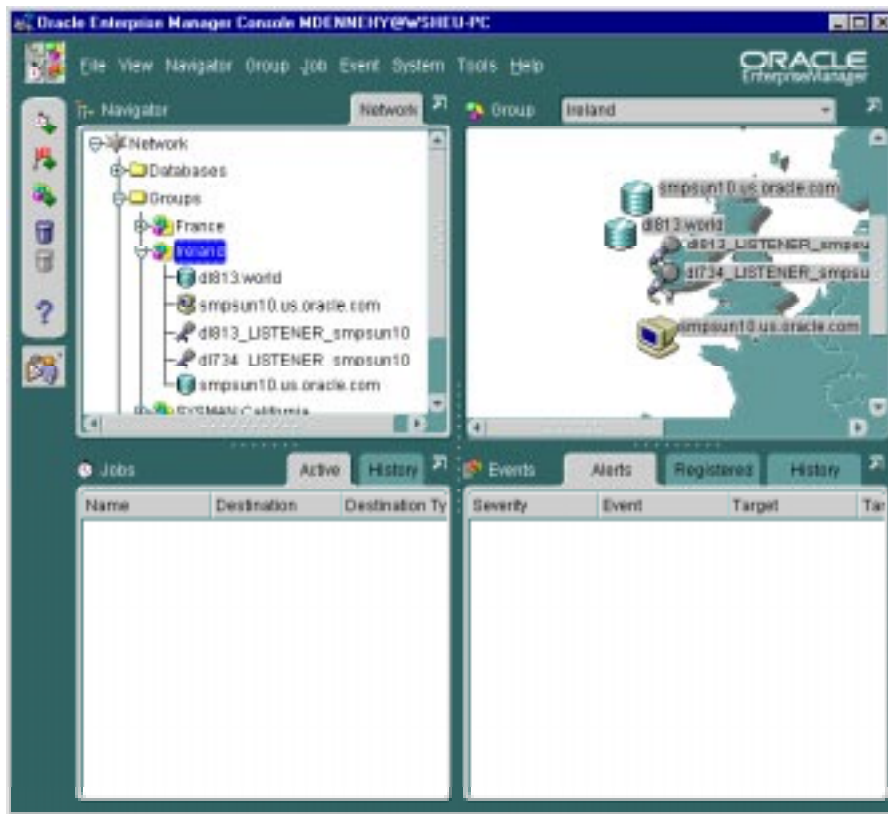
Oracle Management Packs can be accessed from the console from "drawer" icons representing each management pack installed and containing the tools included in each pack. If additional management packs are installed (Oracle Tuning Pack, Oracle Diagnostics Pack, Oracle Change Management Pack, etc.), a separate drawer appears for each pack. There is also a drawer containing features in DBA Management Pack, which is a set of tools bundled with Oracle Enterprise Manager.

Console Panes

This section describes each of the four panes in the console.

Topic	See Page
Navigator Pane	2-3
Group Pane	2-6
Jobs Pane	2-7
Events Pane	2-9

Navigator Pane

The Navigator pane displays a hierarchical tree view of all discovered objects in the network, giving an administrator a big picture of the relationships among the objects. The Navigator pane displays folders for databases, groups, listeners, nodes, as well as folders for any other types of services as they are discovered.

When you select a folder or object in the Navigator tree, its lower-level objects or folders appear in drill-down views. Objects listed in the tree include nodes and their respective listeners, databases and other services; users and their roles and profiles; and groups.

Figure 2–2   Navigator Pane's Drill-down Tree View of Network Objects
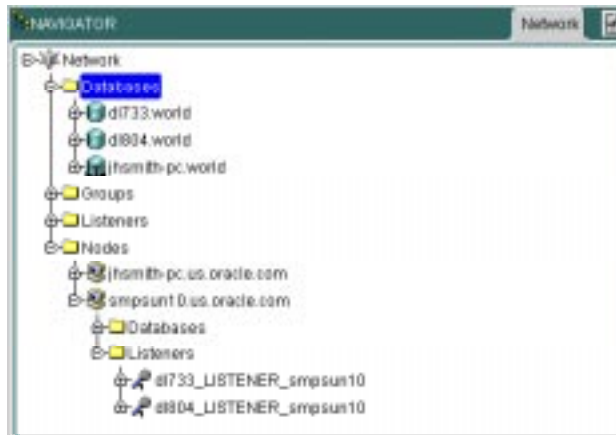
From the Navigator pane, you can select objects and perform administrative tasks on them, drag and drop objects into the Group pane to create administrative groups, and launch integrated applications using the menus or right-mouse button.

Navigator Split View

The Navigator pane contains a Split View option for viewing an object in one pane and the object's contents in a second pane. Figure shows the Navigator pane *before* using the Split View option.

Figure 2–3   Navigator Pane Before Using the Split View Option
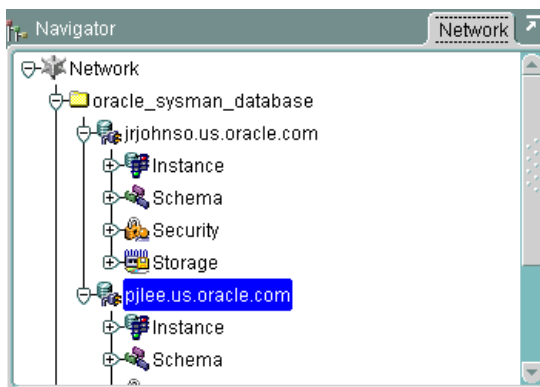
Figure 2–4 shows the Navigator pane using the Split View option. By selecting the Databases folder and using the Split View option, you can see all the objects in the Databases folder in a separate pane. Using a split view, you can navigate through a long list of objects while still maintaining the original pane for reference, adding additional split views for other folders and objects as needed.

Figure 2–4   Navigator Pane With a Split View
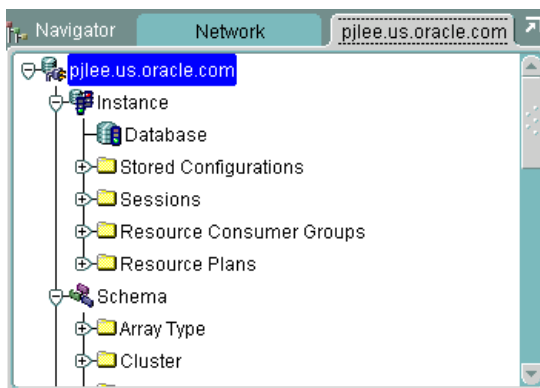
Note: For more information on the Navigator pane, see the *Oracle Enterprise Manager Administrator's Guide.*

Group Pane

The Group pane allows you to graphically view and construct logical administrative groups of objects for more efficient management and administration. Objects can be grouped together based on any criteria such as function, department, geographical location, or number of administrators. The Group pane is especially useful for managing environments with large numbers of databases and other services, or seeing the relative location of managed services.

Problems detected by the Event Management System can be visually represented in the Group pane, and icons representing services in a group change to reflect the status of events.

When an event occurs that was registered against a group, a colored flag appears on the group's icon. The flag's color represents the severity level of the event. If several events are registered against a group, and more than one event occurs, the flag appears in the color representing the most severe event condition in the group. With this event roll-up feature, an administrator can see first hand the highest level of event severity in a group. (If no flag appears, then no event has occurred).

Figure 2–5   Group Pane
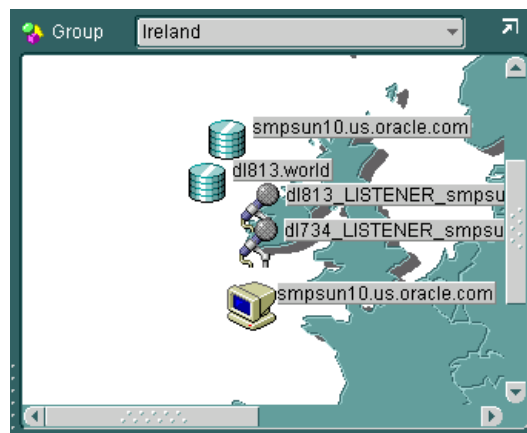
With the Group System, you can create, save, modify, and recall multiple varied views of the network. Groups are created by first naming and registering a group in the Group pane, then dragging objects that you want to manage as a unit from the Navigator pane and dropping them into the Group pane. (An object can be in more than one group.)

The Group pane can be customized with a graphical background to reflect your operational environment, making it easy to locate, diagnose, and act on encountered conditions. For example, if you are responsible for several systems in Europe, you could use a background map of Europe and place each system icon in the country where the system resides. If an event occurs on any of the systems, a flag appears on the system's icon in the Group pane.

Jobs and events registered to a group are registered against all valid services of the same type within the group. Like other objects, a group is granted permissions such as which administrators can view the group or alter it, and who is to be notified if certain conditions in the group occur.

Note: For more information about the Group pane, see the *Oracle Enterprise Manager Administrator's Guide.*

Jobs Pane

The Jobs pane is the user interface to the Job Scheduling System, which enables you to automate repetitive administrative tasks, providing the kind of "lights out" management which is vital in a large, distributed environment.

Figure 2–6   Jobs Pane

The Jobs pane contains two tabbed pages, described in the following table:

Page	Function
Active	The Active page contains a summary of active jobs on the network. These are jobs that have been submitted to the job system and have not yet been completed. A job listed in the Active Jobs page is currently scheduled or running.
History	The History page contains a list of previous job activities, such as multiple runs of a job. These are jobs that have been submitted to an agent and have run successfully or unsuccessfully, or cancelled.

The Active and History pages automatically refresh when toggling between tabs.

A job is made up of one or more tasks. You select these tasks when you schedule a job to be run on the databases or other services that you are administering. Jobs can be executed immediately, set for future execution, or scheduled to be performed at regular intervals.

Administrators can use any of the pre-defined job tasks offered with the base system, or define their own tasks using SQL or OS commands. Any tasks can be grouped together to create a job.

Tasks within a job can be set to be executed based on the success or failure of previous tasks in the job. For example, if an administrator wants users to be notified before a system shuts down, but the notification fails, the system-shutdown task in the job can be halted to avoid unnecessary negative impact on the uninformed users. Depending on the success or failure of a previous task in a job, an administrator can choose to have certain tasks in the job performed or have the entire job halt midway.

Because jobs are executed by the nodes' Intelligent Agents - which function independently of the console, management applications, Oracle Management Server, and the services residing on the nodes - jobs can be scheduled on multiple services and groups of services at once.

Once a job has been successfully performed, or if a job failure occurs, designated administrators are notified by console alert (if they have view permissions), page, or e-mail. Jobs that have been scheduled and have not yet been completed can be viewed, altered, or cancelled in the Active Jobs page. Jobs that have been successfully or unsuccessfully completed are stored in the Job History page, which keeps a historical record of jobs scheduled in your network. Jobs can also be saved in the Job Library to be scheduled at a future time.

Like other objects, a job is granted permissions such as which administrators can view the job or alter it, and who is to be notified if certain conditions occur.

Note: For more information on the Job Scheduling System, see Chapter 3, "Job and Event Systems". For detailed information on the Jobs pane, see the *Oracle Enterprise Manager Administrator's Guide.*

Events Pane

The Events pane is the interface to the Event Management System and enables you to monitor your network for problem occurrences. An event is made of up one or more tests which an Intelligent Agent checks against one or more of its managed services in monitoring for critical occurrences.

To register an event, an administrator specifies one or more tests in the Events pane and then registers the event against one or more managed services or groups of services. When the Intelligent Agent(s) detects a critical occurrence by performing tests on the service(s), it notifies the Oracle Management Server, which then notifies the appropriate administrator console based on the permissions that are set for the event.

Like Jobs, Events have assigned permissions such as which administrators can view or modify the event and who is to be notified when the event occurs. After registering an event, the Events pane can be used to modify, cancel, or check the status of the event and see information about past events.

The Events pane contains the following tabbed pages:

Page	Function
Alerts	This page displays events that have occurred and have not yet been cleared by an administrator or have not yet been manually moved to the History page.
Registered	This page displays events that have been registered and for which Intelligent Agents are currently testing services.
History	This page displays events that have cleared or have been manually moved from the Alerts page.

Figure 2–7   Events Pane

The Alerts, Registered, and History pages automatically refresh when toggling between tabs.

When you select an event listed in the History or Alerts page, the Event Viewer window appears containing the following pages:

Page	Function
General	This page displays properties of events and the tests that comprise them.
Log	This page is for viewing and adding comments about events. Any administrator with Modify or Full permissions can add a comment to this page.
Notification Details	This page contains information about all the notifications that were sent when an event occurred.

Note: For more information on the Event Management System, see Chapter 3, "Job and Event Systems".

3

Job and Event Systems

This chapter describes the Oracle Enterprise Manager Job Scheduling System and Event Management System.

The Job Scheduling System enables the automation of standard and repetitive tasks. With the Job system, you can create and manage jobs, schedule runs of jobs, and view information about jobs. Jobs can be scheduled against a single target (database or other service) or multiple targets in a network. If the node or its Intelligent Agent is down, the job request is queued, and once the node can be contacted, the queued job is submitted to the agent.

The Event Management System monitors your network environment for specific event conditions, such as loss of service or lack of storage. When registering an event, you choose pre-defined tests to be run against managed services by Intelligent Agents, then you select the notification parameters for which you or other system administrators will be notified. For some events, a fixit job can be set to automatically run in response to the event to correct the problem.

This chapter describes the Job Scheduling System and the Event Management System:

Topic	See Page
Job Scheduling System	3-2
Event Management System	3-7

Job Scheduling System

The Job Scheduling System allows you to schedule and manage job tasks throughout the network, even remotely. Any job that an administrator can perform from the operating system command or with SQL can be sent from the Job Scheduling System - and can be performed on any remote system.

With the Job Scheduling System, you can perform asynchronous tasks on multiple databases and other services without having to maintain connections to all those services. In addition, jobs can run simultaneously on different nodes in the system.

The three tiers of Oracle Enterprise Manager - the console and its Job Scheduling pane, the Oracle Management Server, and agents residing on managed nodes - work in unison to schedule and execute the job.

From job scheduling to job completion, the following steps occur:

1. From the console Jobs pane, a job is submitted that is made up of one or more tasks.

2. The Oracle Management Server stores the information and checks if the target node is up or down. If the node or its agent is down, the Oracle Management Server queues the job.

3. Once the node can be contacted, the Oracle Management Server sends the job information to the Intelligent Agent residing on the managed node. (Jobs can be sent to multiple nodes concurrently.)

4. The agent executes the job on schedule.

5. The agent returns any related job messages back to the Oracle Management Server for display in the appropriate consoles based on administrator permissions. If the agent cannot get in touch with the Oracle Management Server, it queues the messages.

This section discusses the benefits of the Job Scheduling System.

Topic	See Page
Pre-defined System Tasks	3-3
Job Scheduling	3-4
Lights-out Management	3-5
Cross-Platform Job Scripts	3-5
Job Progress	3-5
Job Notification and Filtering	3-5
Communication with the Intelligent Agent	3-6
Complex Jobs	3-6
Scalability	3-6
Security and Jobs	3-6

Pre-defined System Tasks

When scheduling a job, you construct it with one or more tasks. The Job Scheduling System includes a variety of pre-defined tasks from which to select, such as starting up or shutting down services, and running SQL scripts or operating system programs.

Figure 3–1   Selecting Tasks When Creating a Job
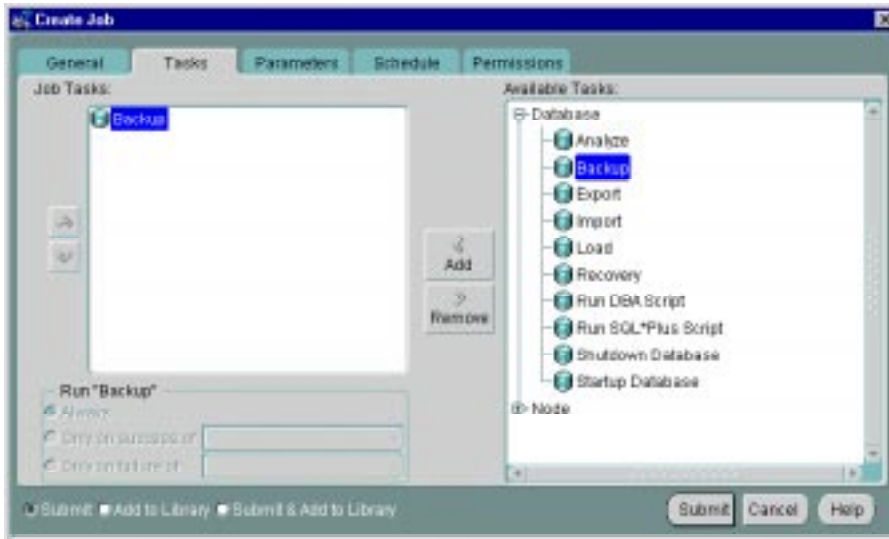
Job Scheduling

The Job Scheduling System is easy to use because the task of scheduling and managing jobs is centralized in the Oracle Management Server. A job needs only to be sent once, regardless of the number of destinations or the number of times it will run.

After a job is submitted, the Oracle Management Server sends the job information to the appropriate Intelligent Agents on the selected destinations. The agents are responsible for running the job on schedule and returning job status messages back to the Oracle Management Server which then alerts the appropriate console(s).

When a job is submitted to one or more destinations, it is possible that any one of those services may be down. If a service or its agent is down, the Oracle Management Server queues job requests that could not be delivered to the service. Once the service can be contacted, the Oracle Management Server submits the queued job to the agent.

If a job has been scheduled with an agent, and the connection between the agent and the Oracle Management Server goes down, the agent still executes the job on

schedule. When the job is completed, and if the Oracle Management Server is back up, the agent notifies the Oracle Management Server, which then displays the status of the job on the console. If the Oracle Management Server cannot be contacted, the agent queues the status message until the server is available.

To schedule a job, you do not have to connect directly to the node on which the job will be run. You only need to submit the job from the console and specify the destinations on which it should run. The destinations can include nodes, databases (and other services), listeners, and groups of such destinations.

Lights-out Management

The Job Scheduling System allows you to automate repetitive and periodic tasks and problem correction. If a job needs to be run periodically, the agents reschedule the job without the need for additional intervention. Messages about a job's status are reported back to the console.

The Job Scheduling System can be used with the Event Management System to automate problem correction. When you register an event, you have the option of specifying a fixit job, which will automatically be run in response to an event to correct the problem.

Cross-Platform Job Scripts

Jobs are implemented as Tool Command Language (Tcl) scripts. Tcl is a platform-independent scripting language used to write both job and event scripts. For example, a job can be run against a UNIX and an NT machine at the same time, without changing a single byte of information in the job definition.

Job Progress

You can monitor the progress of a job by double-clicking on the job in the Active Jobs page of the Jobs pane. When you click on a job in the list, the Job Properties dialog box appears providing information about the job's activities and progress.

After a job is run, a list of tasks comprising the job and the time that each task completed or failed appears in the Progress tab of the Job Properties dialog box.

Job Notification and Filtering

Administrators can be notified in various ways of the status of jobs, such as by electronic mail or page, depending on the administrator's preferences. With the job scheduling system, you can set up notification procedures and choose which

administrators to have notified of job completion or failure. You can also filter e-mail and pages sent to administrators according to a job's status.

Communication with the Intelligent Agent

Although a job is submitted from the console, the job scripts themselves reside on the Intelligent Agents residing on the managed nodes. Because the manner in which a job is implemented may depend on the platform, each agent keeps its own set of job scripts.

Complex Jobs

A complex job is a job comprised of more than one task. Tasks in a job can be set up in any order, and can be configured to depend on the success or failure of other tasks in the job. For instance, a task in a job can be configured to halt if the previous task in the job fails.

Scalability

The Job Scheduling System allows you to run jobs efficiently on multiple remote nodes. When you submit a job to run on a remote node, all the information needed to run the job is transferred to the agent servicing the node.

When the job is run, it is run by the agent on that node, minimizing network traffic between the remote node, the Oracle Management Server, and the console. The only communication between the agent and the Oracle Management Server is the initial transmission of the job and any subsequent messages about job status.

Because jobs are run independently by agents, you can submit any number of jobs on multiple nodes without affecting the console. For example, you can submit several jobs and then immediately administer something else without waiting for the agents to schedule the jobs.

Additionally, because there is an Intelligent Agent residing on each managed node, jobs can run on multiple nodes simultaneously. For example, you can submit a job, such as running a report, on multiple databases worldwide. The job is then run independently by each agent servicing each database. In this way, all jobs are performed by their respective agents at the same time.

Security and Jobs

When jobs are run on a managed service, your preferred credentials for that service (stored in the repository) are usually used for accessing that service; therefore, you

can perform any task from the console that you could perform if you were logged directly into the service using those credentials.

Event Management System

The Event Management System can be used to automatically monitor managed targets for potential problems, such as loss of service or lack of storage. The administrator defines what to monitor by creating an "event", which is a potential problem occurrence for which the Intelligent Agent then monitors services. An event is made up of one or more tests.

When a test within an event returns true, the Event Management System notifies you or another administrator that you specify. In certain cases, Oracle Enterprise Manager can also run a pre-defined fixit job to run in response to an event to correct the problem.

The Event Management System includes the following processes:

- Creation and registration of events by the selection of one or more tests
- Notification of specified administrators
- Correction of problem occurrences

The registering and monitoring of an event involves the following steps:

1. From the Events pane in the console, you register an event made up of one or more tests that you select from a list of pre-defined tests.

   In registering the event, you select the managed target(s) in the network that you want to monitor. You then select one or more tests to make up the event, specifying threshold parameters for each test.

2. When you have completed these event specifications, you submit the event.

3. The event is passed to the Oracle Management Server, which stores the information and checks if the node is up or down. If the node or its agent is down, the Oracle Management Server queues the event.

4. If the node and its agent are up, the Oracle Management Server sends the event information to the Intelligent Agent on the managed node containing the destination service. (Events can be sent to multiple nodes concurrently.)

5. When an Intelligent Agent receives an event, it runs the event's tests against the target service or services at user-defined polling periods which continue until the event is cancelled (de-registered).

6. When one or more tests on a service return true, the agent alerts the Oracle Management Server. If the Oracle Management Server is not reachable, the agent queues the messages.

7. Once the Oracle Management Server is notified, the Event Management System notifies administrators who have the Notify permission for the event and are scheduled for notification. Administrators are notified by console alert if they have at least view permissions, and can also be notified by page or e-mail alert if specified.

Information about an event's status is viewable in the Event Viewer window, which is accessible when you double-click on a listed event on the Alert page or History page in the Events pane. In the Event Viewer page you can check the status of an event and share information about it with other administrators by recording and viewing comments in the Event Log.

The Event Management System contains the following features:

Topic	See Page
Proactive Event Management	3-8
Scalability	3-8
Event Notification and Filtering	3-9
Event Log	3-9

Proactive Event Management

When registering an event, you have the option to specify a fixit job, which is run by the agent on the managed node in response to an event. Events and fixit jobs used together automate problem detection and correction. The proactive management of an event ensures that a problem is corrected before it noticeably impacts end-users.

Scalability

The Event Management System allows one person to monitor multiple databases and systems. For example, it would be difficult for one person to connect to 100 databases individually every day to check on each database's performance. However, using the Event Management System, one person can effectively have the databases monitored 24 hours a day - with minimal performance impact on the console - and can be alerted if a problem is detected. Because the monitoring is

performed by Intelligent Agents independently of the console, multiple services can be monitored without slowing down other tasks.

The Event Management System also gives you the option of focusing on select systems and events. Rather than monitoring all services or a large number of services at once, you can choose to focus on select services.

Event Notification and Filtering

When an event occurs, administrators are notified by console alert (if they have at least view permissions) and can also specify to be alerted by e-mail or page. When registering an event, you specify which administrator(s) are to be notified. You can also filter e-mail and pages sent to administrators according to the event's level of severity.

When the threshold of any test in the event exceeds the level specified by the test's parameter values, all designated administrators are notified. If a test does not have parameters, the alert occurs when the test returns true.

Every alert has a severity level indicated by color. The colors are displayed by an event severity flag located next to the name of each event in the Alerts page of the Events pane and on the target object(s) in the Groups pane.

The severity levels indicated by color are:

- Alert cleared (green)
- Warning (yellow)
- Critical (red)
- Unknown/Node Down (grey)

An event can be set up to notify an administrator at either a Warning threshold or at a Critical threshold. Additionally, if the event condition changes from Warning to Critical, or vice versa, an updated notification is sent.

In the Events pane, you can manually move an event from the list of events in the Alerts page to the History page; but the listed event will move back to the Alerts page if a test exceeds a threshold again.

Event Log

With the Event Log page, located in the Event Viewer page, administrators can share information with other administrators about events and how they are being

managed. The Event Log page allows comments to be entered on a selected event by administrators with modify permissions for the event.

The information displayed in the Event Log page includes any comments that have been entered for the event, the names of the administrators that entered the comments, and the time and date each comment was entered. The Event Management System itself also enters data in the Event Log page.

Unsolicited Error Detection

An unsolicited event is an event that is registered by a third-party application in an enterprise managed by Oracle Enterprise Manager. These events are not Oracle Enterprise Manager events, but can still be registered by third-party applications if the application is using the Oracle Enterprise Manager API (Application Program Interface). When an unsolicited event occurs, the Intelligent Agent on the node is notified and sends the message to the Oracle Management Server, which then notifies the Oracle Enterprise Manager client.

Note: Fixit jobs cannot be specified for unsolicited events.

4

DBA Management Pack

The primary database administration components of Oracle Enterprise Manager are contained in the DBA Management Pack, which is a suite of database administration tools and wizards bundled with Oracle Enterprise Manager. This functionality can be accessed with the new DBA Studio tool or launched separately from the Oracle Enterprise Manager Console or operating system. DBA Management Pack features can be used to perform most of your database administration tasks, and support all versions of Oracle databases.

DBA Studio or individual DBA Management Pack tools can be launched by either connecting to the Oracle Management Server using Oracle Enterprise Manager's three-tier framework, or by connecting directly to a database.

DBA Management Pack includes the following functionality:

- Instance Management

- Schema Management

- Security Management

- Storage Management

- SQL*Plus Worksheet

With this functionality you can:

- Complete database administration operations quickly and conveniently using a mouse rather than manually entering SQL commands

- Concurrently perform multiple tasks in multiple Oracle Enterprise Manager windows

- Administer multiple databases simultaneously

■ Perform database administration tasks from a central location for both local and remote databases running on any Oracle platform in any location worldwide

DBA Management Pack also includes wizards for assisting with such tasks as importing, exporting, loading, backing up, and recovering data.

This chapter contains the following sections:

Topic	See Page
DBA Studio	4-2
Common Features of DBA Management Pack Functionality	4-2
DBA Management Pack Functionality and Wizards	4-4

DBA Studio

DBA Management Pack features can now be accessed from the new DBA Studio, as well as from the Oracle Enterprise Manager Console or operating system. DBA Studio is an interface from which all DBA Management Pack features can be accessed (with the exception of SQL*Plus Worksheet) and can either be run with a connection to an Oracle Management Server, which utilizes Oracle Enterprise Manager's three-tier framework, or connected directly to a database.

With DBA Studio, you can manage database security, schemas, instances, and storage from a unified tree view without launching separate tools. This integrated access to DBA functionality simplifies switching between DBA tasks and provides an accurate view of database configuration status.

DBA Studio can be launched from the operating system or from the Enterprise Manager Console.

Common Features of DBA Management Pack Functionality

This section discusses the common features shared by the different tools in DBA Management Pack.

Tree Views and Property Sheets

Most DBA tools display a tree view of connected databases, which can be expanded to show subordinate objects. When you select a database or object in the tree, a

property sheet appears on the right where you can view or edit database properties. Wizards also display tree views and property sheets as necessary.

Multi-Column Lists

When you select a folder in a tree list, a multi-column list of all the folder's objects appears on the right side of the window, providing a quick summary of information about each object in the selected folder.

Database Version Awareness

All DBA Management Pack tools and wizards are aware of the features that are available in each database version. When you select a database in a tree view, the tool only displays objects and properties that are enabled in that database version.

Show SQL

Though one of the benefits of DBA Management Pack is that DBA tasks can be performed without manually entering SQL, you do have the option of viewing the SQL code generated for you. By selecting Show SQL, you can review this code before implementing any changes, as well as copy and paste it into your own SQL scripts if you wish.

Show Dependencies

Database object dependencies and dependents can be viewed by right-mouse clicking an object in the tree view and choosing Show Dependencies. Dependencies show what the selected object depends on, such as the tablespace location and the owner of the selected object. Dependents rely on the selected object, such as which indexes will be dropped and which synonyms will be affected if you drop the selected object.

Right-Mouse Commands

With DBA Management Pack, you can right-mouse click any folder or object in a tree list to perform administrative tasks. Right-mouse clicking an object shows all the tasks that can be performed on the object, such as connecting to or disconnecting from the database, creating users, adding or removing profiles, assigning privileges, showing dependencies, and bringing up wizards.

Advanced Mode

DBA Management Pack features can be run in Advanced Mode, which displays additional tabbed pages in property sheets from which a tool's advanced database administration features can be accessed.

DBA Management Pack Functionality and Wizards

This section describes DBA Management Pack's features and wizards.

| DBA Studio Tool	Task	See Page
Instance Management	Manages instances and sessions	4-4
Schema Management	Manages schema objects	4-8
Security Management	Manages security parameters	4-10
Storage Management	Manages database storage	4-13
SQL*Plus Worksheet	Executes SQL and PL/SQL commands	4-15
Wizards	Assist with importing, exporting, loading, backing up, and recovering data, as well as analyzing and creating tables and views	4-15

Instance Management

Instance Management functionality helps you manage database instances and sessions in your Oracle environment. With Instance Management features you can:

- Start up and shut down a database

- View and edit the values of initialization parameters

- View current session SQL and the explain plan

- Manage stored configurations (when connected to the Oracle Management Server)

- Manage resource allocations (with Oracle8*i*)

- Manage users' sessions

- Monitor long running operations (with Oracle8*i*)

When you select the Instance icon under the database in the tree view, the following list of objects and folders appears:

- Database
- Stored Configurations (only when connected to Oracle Management Server)
- Sessions
- Resource Consumer Groups (with Oracle8*i*)
- Resource Plans (with Oracle8*i*)

Figure 4–1   Instance Management Tree
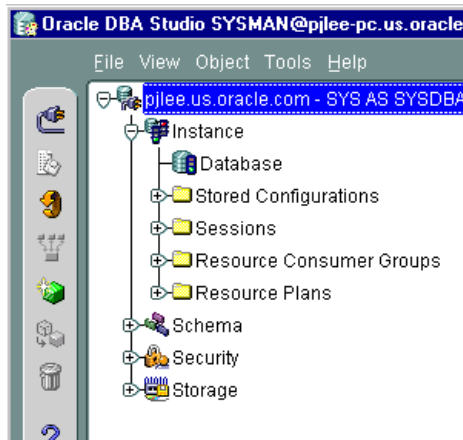
Database Operations

When you select the Database icon under Instance, a property sheet of tabbed pages appears on the right for viewing information about the database instance and editing database properties. In this property sheet, the following information can be viewed and/or edited:

- Status of the database, including the database version and any installed options
- Memory usage of the current database
- Current state of redo log archival
- Resource management (with Oracle8*i*)

Figure 4–2   Instance Management Window
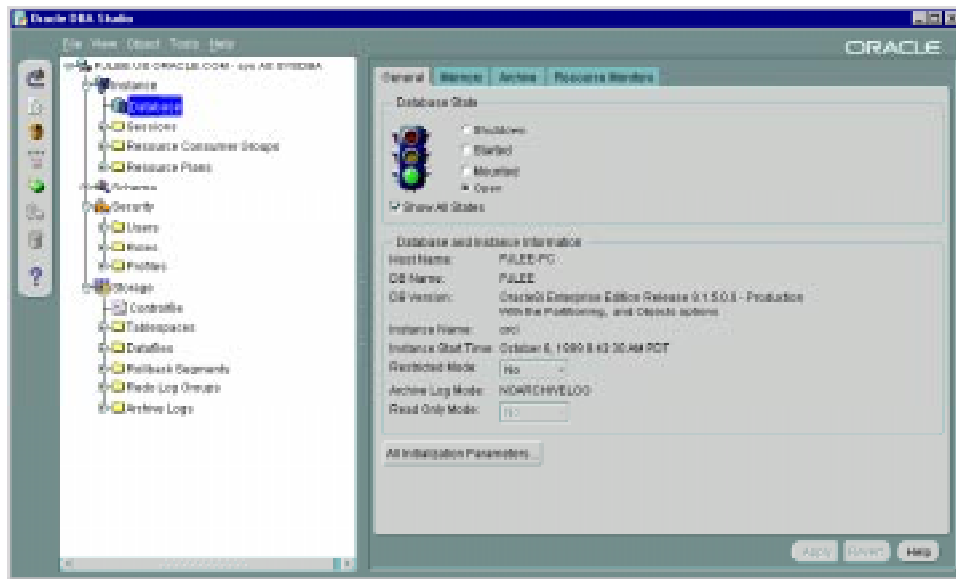
Stored Configurations

When the database is connected to the Oracle Management Server, the Stored Configurations folder appears in the tree view with which you can create multiple database start-up configurations without the need to track initialization parameter files (INIT<SID>.ORA). Stored configurations exist in the Oracle Enterprise Manager repository (they are not external files) and can be created, edited, and deleted. You can also add and delete parameters and export a configuration to a file.

Sessions

The Sessions folder lists all users connected to the discovered database. When you select a user in the list, the Sessions property sheet appears with which you can edit user properties, view information about the status of each user, view current SQL or the last run SQL for the database session, and view the database session explain plan.

Resource Consumer Groups

The Resource Consumer Groups folder lists sets of users who have similar resource usage requirements. When you select a resource consumer group object in the folder, a property sheet appears in which you can view or specify properties and assign or remove users from the resource consumer group.

Resource Plans

The Resource Plans folder lists objects that represent resource plans, which are ways of allocating resources among consumer groups. Resource plans contain directives that specify the resources to be given to each group and can be specified in hierarchical fashion using subplans.

The Resource Plans property sheet, which appears when you select an object representing a Resource Plan, allows you to choose available groups/subplans to include in the resource plan, select the percentage of CPU resources allocated to a group, and then activate the plan. You can also view the degree of parallelism for each consumer group.

Schema Management

With DBA Management Pack's Schema Management functionality, you can create, alter, or drop database schema objects such as clusters, indexes, snapshots, tables, and views, as well as view dependencies of schema objects. Oracle Schema Management features also support Oracle8*i* objects, which include index organized tables, partitioned tables and indexes, advanced queues, and Java stored procedures.

Figure 4–3   Schema Management Window
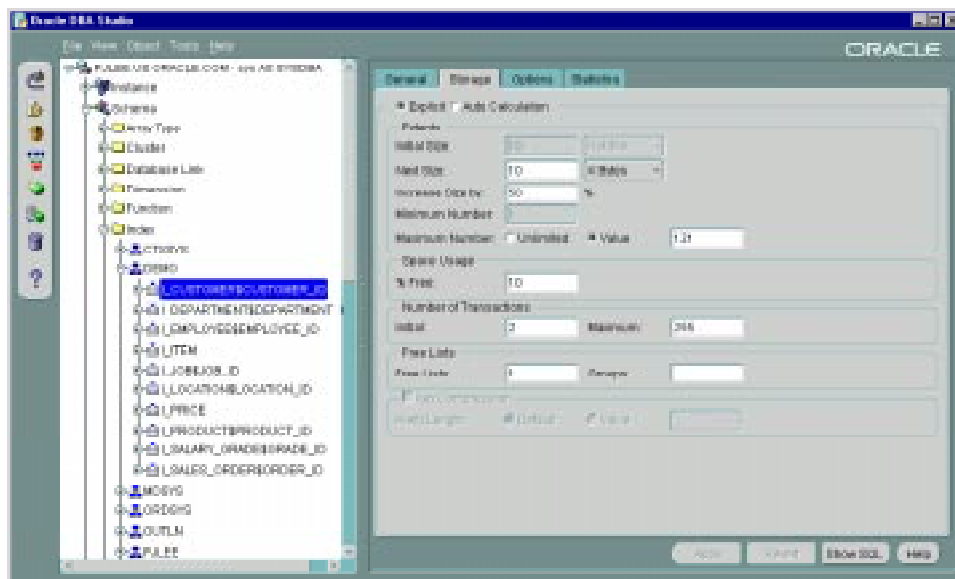
When you select the Schema icon under the database in the tree view, a list of schema objects appears.

Figure 4–4   Schema Objects
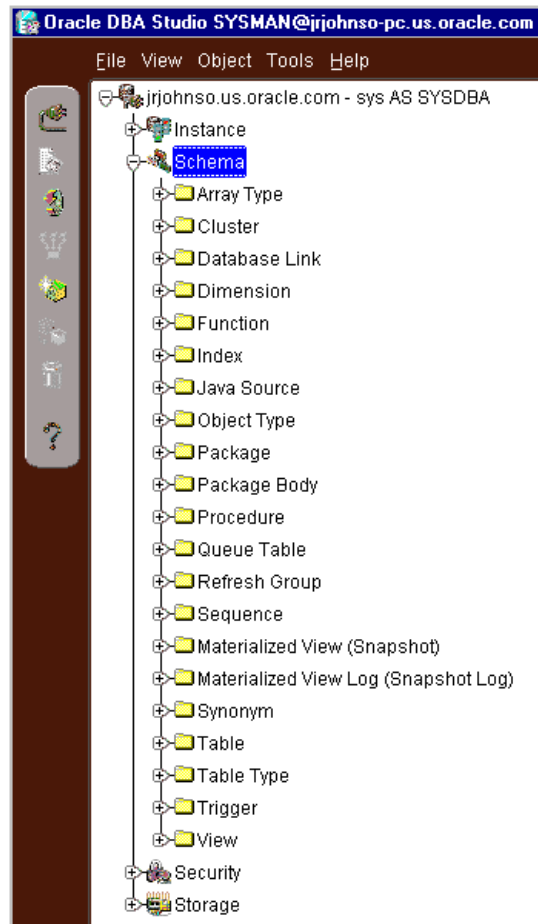
Tree List by Schema

Databases contain at least one named schema for each database user. Each schema object belongs to one of these named schemas, regardless of object type. Several objects belonging to the same schema can be edited by opening the View menu and

selecting By Schema. The tree view then reorders all schema objects within a set of schema folders listed alphabetically by name.

Editing an Object

To edit an object, you use the object's property sheet, which appears when you select the object in the tree view. You can then modify the object's parameters.

Schema Management features also include the Table Data Editor, which allows you to view, update, and delete the contents of a table by selecting a right-mouse command on a table in the tree view.
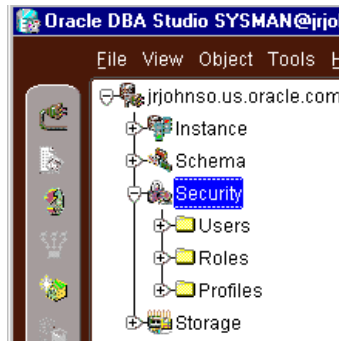
Creating Objects

Schema Management allows you to create an object or a clone of an object by selecting Create or Create Like from the Object menu. When creating a clone of an object, all attributes are identical except for the name. Parameters for new objects and cloned objects are specified in property sheets which appear when you select Create or Create Like from the Object menu.

Schema Management features also include a Table Wizard which walks you through each step of creating a table, providing defaults for most options.

Security Management

In a large network environment, security parameters for objects, administrators, and users are in constant change. With DBA Management Pack's Security Management features, an administrator can make these necessary changes quickly and efficiently.

When you select the Security icon under the database in the tree view, folders for users, roles, and profiles appear.

Figure 4–5   Managing Users, Roles, and Profiles

Figure 4–6   Security Management Window

User Operations

Security Management features help you manage the database users in your network by helping you create users and clones of users, add and remove user permissions and roles, and alter user properties, including account status and default profiles.

Security Management capabilities also allow you to easily see users' dependents and dependencies.

Role Operations

With Security Management role operations features, you can modify role properties as easily as user properties. You can also create roles and clones of roles, add and remove permissions from roles, and see grantees of roles.

Profile Operations

A profile is a set of limits on a user's database resources. As with users and roles, you can create a profile or a clone of a profile, alter a profile's properties, and assign and remove profiles from users. You also have the ability to see profile dependents and dependencies, as well as grantees of profiles.

Profiles, roles, and the users to which they are assigned can easily be seen in security lists provided by Security Management. Administrators can then use property sheets to determine security parameters, simplifying the process of making changes.

Security Management features also support Oracle8 password management, which increases system security. Supported features include: account locking, password lifetime and expiration, password history, password complexity, verifications, and export/import of passwords.

Storage Management

DBA Management Pack's Storage Management features help you administer tablespaces, datafiles, redo logs, and rollback segments for optimum database storage.

Figure 4–7   Storage Management Window
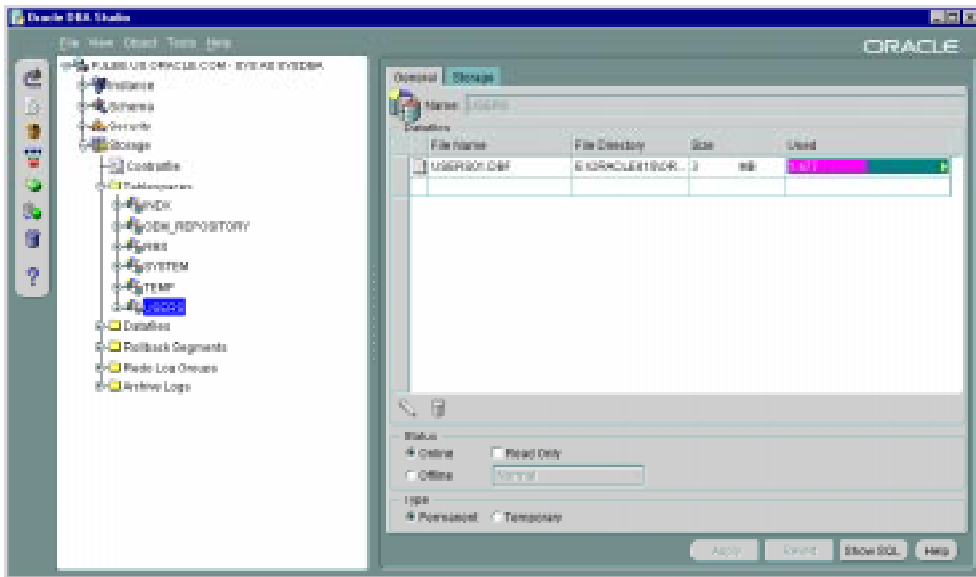
When you connect to a database, the Storage Management branch of the tree view lists an icon for the Controlfile and five folders which contain all the storage objects in the selected database. The five folders include:

- Tablespaces
- Datafiles
- Rollback Segments
- Redo Log Groups
- Archive Logs

Figure 4–8   Managing Database Storage Parameters
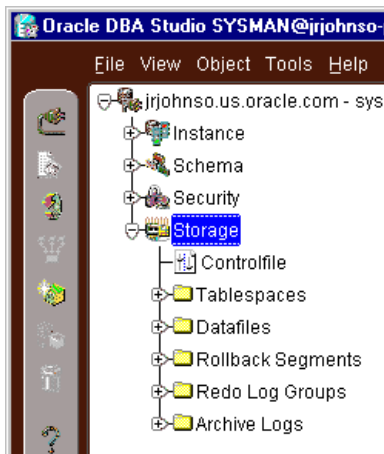
The following sections describe the Storage Management operations that can be performed with the objects in each of these folders:

Controlfile Operations

When you select the Controlfile icon, a property sheet appears where you can see the number of controlfiles created for the database and other statistics.

Tablespace Operations

Using the contents of the Tablespaces folder, you can create, edit, or drop a tablespace, add a datafile or rollback segment, take a tablespace off- or on-line, make a tablespace read-only or writable, and set tablespace storage parameters.

Datafile Operations

With the contents of the Datafiles folder, you can create a datafile or a clone of a datafile, edit a datafile, and take a datafile off- or on-line.

Rollback Segment Operations

Using the Rollback Segments folder, you can create, alter, drop, or shrink a rollback segment as well as take one off- or on-line.

Redo Log Group Operations

Using the Redo Log Groups folder, you can switch the current redo log group, trigger a checkpoint in a redo log group, create a new redo log group, and rename, remove, or add new redo log group members.

Archive Log Operations

The archive log folder allows you to view the current archive logs in the database.

SQL*Plus Worksheet

When you need to administer your database environment with SQL, PL/SQL, or SQL*Plus commands, use Oracle SQL*Plus Worksheet. With Oracle SQL*Plus Worksheet, you can enter SQL and PL/SQL code and DBA commands dynamically and run scripts which are stored as files.

The SQL*Plus Worksheet window consists of an Input pane (top) where commands are entered, and an Output pane (bottom) where the results of your commands appear after you click the Execute button.

SQL*Plus Worksheet maintains a history of the commands you have entered, allowing you to edit and re-execute an earlier command without having to retype it. The last 50 command executions can be displayed by clicking the Command History button. Selections from the Command History dialog box can then be copied and inserted into the Input pane.

With SQL*Plus Worksheet, you can have multiple copies of the worksheet open at a time, each of which is separate from the others; so work can be committed or rolled back in each worksheet independently.

SQL*Plus Worksheet can be accessed from the Enterprise Manager Console.

Note: Additional information on all tools and wizards in DBA Management Pack can be found in the Oracle Enterprise Manager online Help.

Wizards

For help with database administration tasks such as importing, exporting, loading, backing up, and recovering data, the DBA Management Pack offers Backup Management tools and Data Management tools. These wizards increase the ease-of-use of the DBA applications.

The wizards can be launched from the Schema Management or Storage Management windows through the Oracle Enterprise Manager Console, or from DBA Studio if it is connected to the Oracle Management Server.

Backup Management Tools

Oracle Enterprise Manager backup management tools include the Backup Wizard and the Recovery Wizard, which assist with backing up and recovering Oracle8 databases. These wizards use the Oracle8 Recovery Manager (RMAN) subsystem to perform tasks.

The Backup Wizard is used for backing up one or more databases, tablespaces, datafiles, or archivelogs. The wizard prompts you to specify the time and frequency to run the backup, as well as the backup configuration and target database(s), then sends your specifications to the Job Scheduling system for execution.

The Recovery Wizard is used for restoring and recovering a database, or one or more tablespaces or datafiles. The wizard prompts you to select the objects you need to recover and the backup configuration to use, then sends your specifications to the Job Scheduling system for execution. You can also rename datafiles if required.

Data Management Tools

Data Management tools automate the transfer of data to and from Oracle databases. The Data Management tools consist of the Export Wizard, Import Wizard, and Load Wizard.

- The Export Wizard transfers data from an Oracle database to an Oracle binary operating system file.

- The Import Wizard transfers data from an exported binary file to an Oracle database.

- The Load Wizard transfers data from operating system files, such as text files, to an Oracle database.

All three wizards submit jobs to perform tasks. Jobs can be scheduled for a specific time or at recurring intervals. Once a job is submitted with one of the wizards, you can monitor its progress and view its properties in the console's Job pane, just like any other job.

Note: For more information on wizards, see the DBA Management Pack Quick Tour or the Oracle Enterprise Manager online Help.

5

Oracle Management Packs and Integrated Applications

Oracle Enterprise Manager's functionality can be extended further by adding one or more optional management packs. Combined with Oracle Enterprise Manager's console and framework, these specialized application packs offer integrated solutions for monitoring system bottlenecks, optimizing and tuning system performance, managing system changes, and planning for increases in resource utilization of your entire information system environment.

The following optional system management packs are available for use with Oracle Enterprise Manager:

- Oracle Diagnostics Pack

- Oracle Tuning Pack

- Oracle Change Management Pack

- Oracle Standard Management Pack

- Oracle Management Pack for Oracle Applications

- Oracle Management Pack for SAP R/3

Integrated into the Oracle Enterprise Manager Console are the following applications for added value in enterprise management. These applications are included with Oracle Enterprise Manager. (An asterisk indicates that the beta version of the product is released with version 2.1 of Oracle Enterprise Manager.)

- Oracle Applications Manager

- Oracle Enterprise Security Manager

- Oracle8*i inter*Media Text

- Oracle Parallel Server Management

- Oracle Replication Manager

- *Oracle Spatial Index Advisor

- Oracle Directory Manager

- *Oracle Distributed Access Manager

- Oracle Developer Server Forms Manager

- Oracle Applications Server Manager

The sections below describe each of the Oracle system management packs and integrated applications.

Oracle Diagnostics Pack

The Oracle Diagnostics Pack is a useful set of sophisticated, yet easy-to-use tools for managing the health of your system, including automatically detecting problems, diagnosing problems, and planning for the future. By using the tools in Oracle Diagnostics Pack, you can make significant gains in productivity, manageability, and database performance.

The Oracle Diagnostics Pack contains the following applications:

- Oracle Advanced Events

- Oracle Performance Manager

- Oracle Capacity Planner

- Oracle TopSessions

- Oracle Trace

Oracle Advanced Events

Total performance monitoring must include the ability to monitor remote systems that may not always be accessible from a graphical monitor. The Oracle Enterprise Manager Event Management System uses Intelligent Agents to monitor managed nodes for potential problem occurrences. These problem occurrences, called "events", which are comprised of pre-defined tests, are registered with the Event Management System for detection by Intelligent Agents.

The Oracle Diagnostics Pack takes event management a step further by adding a set of additional pre-defined tests, called Oracle Advanced Events, to the Event

Management System. These tests can be used with standard Oracle Enterprise Manager tests to comprise events used in monitoring the system for problem occurrences.

Oracle Advanced Events provide the following features:

- Autonomous node and database monitoring
- User-defined event thresholds and monitoring intervals
- User-defined events
- Multifaceted event notification
- Automated problem correction

Oracle Advanced Events provides the following types of monitoring:

- Performance monitoring
- Space management monitoring
- Resource usage monitoring
- Audit monitoring
- User-defined SQL monitoring
- Fault monitoring

Performance Monitoring

Performance monitoring covers a range of database performance considerations such as I/O rates, cache performance, and response time.

Space Management Monitoring

Space-management monitoring allows the user to monitor Oracle storage metrics such as the maximum number of extents allowable for a specific segment or the outer limits of contiguous free space. Oracle Advanced Events can also be used to monitor tables for fast growth trends and to monitor databases for potential space management problems such as opportunities to rebuild indexes.

Resource-Usage Monitoring

Resource-usage monitoring can spot important database resource issues, such as the maximum number of users, processes, and locks, and datafile size limits. Additionally, with Oracle Advanced Events, managed nodes can be monitored for excessive CPU utilization, load or paging problems, and disk capacity problems.

Audit Monitoring

Audit monitoring monitors specified database user connections. For example, an alert is displayed when a particular database user connection, specified by the username filter argument, has been detected.

User-Defined SQL Monitoring

User-defined SQL monitoring allows you to define your own SQL scripts that evaluate event tests. You can add SQL-based events to the Event Library for future use and/or editing as you would with any other event. Within the SQL script, you provide a datapoint that is used as a return value for comparison with the Alert and Warning Threshold values. With a User-defined SQL Event Test, you specify the operator, alert threshold, warning threshold, number of occurrences, and SQL script. The specified operator is used to compare the return value from the script with the supplied thresholds to determine the event condition. After the specified number of occurrences is met, the event is triggered.

Fault Monitoring

Database Fault monitoring monitors for severe problems that require immediate action.

Oracle Advanced Events can be customized with user-defined thresholds and monitoring intervals. The user can establish an event-metric threshold or an occurrence threshold. The user also can specify how often the Event Management System should check for the existence of an exceeded, event-metric threshold.

Advanced Event tests can be grouped together to form reusable, logical configurations of pre-defined events. For example, an event could be defined for "SGA Monitoring," and could include event tests such as Library Cache Hit %, Buffer Cache Hit %, and the Data Dictionary Cache Miss %. Once the Event is created, it can be registered or launched for use on any of the database services managed by Oracle Enterprise Manager.

The Event Management System also allows the administrator to decide when and how to be notified of a problem. The administrator can be contacted by console alert (with view permissions), page, or e-mail. Third-party systems, such as the HP Openview product, can be notified by creating a Simple Network Management Protocol (SNMP) trap.

Note: For more information about SNMP, see the *Oracle SNMP Support Reference Guide.*

In addition to alerting the administrator, Oracle Advanced Events can be configured to automatically correct a problem. Pre-determined fixit jobs, which are created by the administrator using the Oracle Enterprise Manager Job System can be set to occur when an event threshold is reached. For example, a fixit job could be created to increase the size of a datafile as a corrective action in response to an alert situation for the Datafile Limit event.

Oracle Performance Manager

Sustaining high performance and availability in an Oracle database requires careful system monitoring. Top performance is achieved through a balance of many factors, such as effectively using memory, minimizing disk input/output (I/O), and avoiding resource contention. Oracle Performance Manager is a tool that allows you to focus on the key metrics of your database, so that you can easily monitor the factors that most affect database performance.

Oracle Performance Manager provides real-time graphical views of performance data collected from Oracle databases, non-Oracle databases (such as SQL Server) and the host operating system. This data is collected by a data collection service, which is an extension of the Intelligent Agent that resides on the managed node containing the database. Performance statistics are displayed by Oracle Performance Manager in real-time graphical views for monitoring and analyzing. Views include pre-defined or user-defined tables and charts that can be automatically refreshed at user-defined intervals. When a performance problem is detected, the user can drill down into charts linked to the view to find the source of the problem by examining finer details.

Oracle Performance Manager's large collection of pre-defined charts and tables are organized into performance monitoring groups which include:

- Lock Monitor
- File I/O
- Contention
- Load
- Memory
- Database Instance
- Top Resource Consumers
- Host operating system resource usage

Each group allows easy access to key metrics for that performance category. For example, the memory group includes pre-defined charts for database buffers, library and dictionary cache performance, memory sort performance, parse ratios, and a tabular presentation of all cached SQL statements.

A chart's activity can also be recorded and played back at your convenience for analyses at a later date. Chart recordings are stored in the Oracle Enterprise Manager Repository.

Additionally, users can define their own real-time charts by using the powerful graphical presentation capabilities of Oracle Performance Manager with their own database monitoring scripts. User-defined charts can be created for virtually any data in your database. Oracle Performance Manager provides dialog boxes for entering the SQL to retrieve the data, defining operations to be performed on the data, and selecting the type of chart best suited to graphically display the data. User-defined charts are stored in the Oracle Enterprise Manager Repository.

Performance Manager also allows you to focus on the most resource-intensive parts of your system causing performance bottlenecks. This "top" database information can be viewed in "top" charts such as Top Datafiles.

Integrated into Performance Manager are the lock monitor charts, which monitor database locks and contention. While database locks are necessary to ensure data integrity, they must be managed to prevent unnecessary data-access blocking. Lock Manager helps identify troublesome locking situations and provides a graphical display which includes details such as the locking user, lock type, object locked, and mode held and mode requested. Sessions blocking and waiting are displayed in a graphical tree view for easy analysis. If necessary, locked sessions can be terminated by Lock Manager's "kill session" feature.

Some of the most commonly used monitoring and diagnostics charts are accessible directly from the Oracle Enterprise Manager Console. For example, you can select a database in the Navigator window and use the right mouse menu, tool menu, or diagnostics tool drawer to launch a Performance Overview chart for the database. Similarly, you can also launch a Lock Monitor chart directly from the console to immediately diagnose lock contention problems.

Performance problems detected by Oracle Performance Manager can be corrected using other tools in the Oracle Diagnostics Pack, as well as tools in the Oracle Tuning Pack, Change Management Pack, and DBA Management Pack.

Oracle Capacity Planner

Oracle Capacity Planner is a tool for collecting, storing, and analyzing historical performance data collected from Oracle databases, non-Oracle databases (such as SQL Server) and the host operating system, enabling you to plan for future resource needs. This data is collected by a data collection service, which is an extension of the Intelligent Agent that resides on the managed node containing the database.

With Oracle Capacity Planner, you first specify the type of performance data you want to collect, the interval of the collections, the load schedule, and the data management policy. Oracle Capacity Planner's in-depth analyses and reports allow you to then explore the data, format it into easy-to-use graphs and reports, and analyze the data to predict future resource needs.

While viewing real-time data in charts, you can also drill down to historical data and related tools. For example, while looking at a chart showing current file I/O, you might notice that one disk is more active than expected. By right-mouse clicking the chart, you can view the past I/O for that disk. The data is presented in an easy-to-read chart, allowing you to see trends or pinpoint times of unusual activity. You can also view maximum, minimum, and average values overlaid on the data.

Oracle Capacity Planner also allows you to connect to the historical database and view the performance metrics available for each node and service. Capacity Planner includes pre-defined performance metrics which are categorized into categories of available types of database and operating system statistics, such as CPU usage, file I/O, and "top" sessions (the most resource-intensive sessions at a given point in time). These pre-defined sets make it easy to find the performance metrics that you wish to collect. You can also define your own customized statistics to collect.

Browsing a tree listing or navigator in the historical database, you select the node or database of interest and the specific type of performance data for viewing. Oracle Capacity Planner then displays the data in easy-to-read graphs or tables, allowing you to build in-depth reports to chronicle the performance of your system over time.

In addition to helping you browse historical performance data, Oracle Capacity Planner helps you interpret the data by taking any performance metric and extrapolating to a point in the future. For instance, you can extrapolate to a particular value (e.g. when will my disk be 75% full?) or to a point in time (e.g. how full will my disk be on November 1, 2001?). The extrapolation analyses are plotted on graphs, making them easy to interpret and add to a report if desired.

Oracle TopSessions

Oracle TopSessions provides the ability to pinpoint database sessions causing the greatest impact on performance. The top "N" sessions can be identified in real time based upon performance impact factors such as resource usage, open cursors, user transactions, and block changes.

Once a problem session is identified, Oracle TopSessions can be used to drill down into the session to examine detailed statistics on session activity such as cache processing, redo activity, SQL processing, and lock contention. Selected SQL statements and explain plans can then be displayed for analysis. Oracle TopSessions also allows the database administrator to take action by easily terminating problem sessions.

Oracle Trace

Most data used in performance monitoring applications is collected based on sampling techniques collected at pre-set intervals regardless of the activity of the system being monitored. While efficient, statistically valid, and ideal for many performance monitoring applications, data samples collected at pre-set intervals are not suitable for applications that require precise data. Applications requiring precise data need Oracle Trace, which collects data for each and every key occurrence in a product being monitored, providing an entire census of occurrence data rather than a sample of data. Collecting data for each and every occurrence allows performance problems detected through sampling techniques to be pinpointed to specific occurrences of a software product's execution.

Oracle Trace is a flexible, highly efficient tracing mechanism for collecting precise database occurrence statistics from Oracle products as well as end-user and third-party applications. Oracle Trace includes an open API (Application Program Interface) which is used to monitor occurrences in any software product.

Software products that are recognized by Oracle Trace during occurrence-based data collection are programmed with Oracle Trace API calls. When a specific occurrence occurs on an API-instrumented application during a scheduled Trace collection, the occurrence invokes an Oracle Trace API call. Oracle Trace recognizes the occurrence and collects the data.

Information collected by Oracle Trace can include:

- System resources used during an occurrence such as CPU time, memory usage, and pagefaults

- Elapsed time and frequency of occurrences

- Application-specific occurrence data, such as user name, transaction type, and dollar amount

- Tracking occurrences that occur within other occurrences, such as all of the SQL statements that execute within a single logical transaction

- Tracking occurrences that are related across products, such as a transaction that spans an application and a database server

Oracle Trace Manager

Oracle Trace Manager is a tool for administering Oracle Trace data collected from API-instrumented products. Oracle Trace Manager runs on the Oracle Enterprise Manager Console and uses Intelligent Agents to search Oracle directories on managed nodes for products using the Oracle Trace API. Once discovered, the products and their nodes are displayed for the user in the Oracle Trace navigator for collection scheduling with the Job Scheduling System.

Oracle Trace Data Viewer

Data collected in Oracle Trace Manager typically are large volumes of valuable information that can be used for troubleshooting and tuning products, but can also be unwieldy to process and sort. Oracle Trace Data Viewer is a tool that sorts and processes large Oracle Trace data collections, extracting and aggregating key metrics, and presenting the information in pre-defined data views selected by the user who can then perform analysis on the data.

When you select a data view, the Oracle Trace Data Viewer automatically locates and presents the collection for processing and presentation. You can also drill down as needed into the view to get additional details about the data. Examples of pre-defined data views include Average Elapsed Time per SQL statement, Logical Reads to Rows Processed Ratio, and Rows Fetched to Fetch Count Ratio. You can also define your own data views using a convenient wizard.

Oracle Tuning Pack

The Oracle Tuning Pack optimizes performance in the database environment by identifying and tuning major database and application bottlenecks such as inefficient SQL, poor database structures, and improper use of resources. Oracle Tuning Pack's advanced tools focus on tuning the highest-impact database performance areas, such as:

- Application SQL
- Indexing strategies
- Instance configuration
- Object sizing, placement, and reorganization

Oracle Tuning Pack optimizes database performance by helping the database administrator to collect, evaluate, and implement tuning changes that impact database performance.

Oracle Tuning Pack includes the following applications that cover the complete spectrum of Oracle tuning:

- Oracle Expert
- Oracle Index Tuning Wizard
- Oracle SQL Analyze
- Oracle Tablespace Map
- Reorg Wizard

Oracle Expert

An essential follow-through to performance monitoring is database tuning. Database tuning ensures that you are getting maximum database performance and maximum use of the system resources supporting your database.

However, because the nature of database tuning is complex, time-consuming, and requires specialized skills and adherence to a structured methodology, database tuning is often dealt with only when unpredictable problems arise instead of on a consistent basis.

Oracle Tuning Pack meets the need of consistent database tuning by providing an automated performance tuning application, Oracle Expert. Oracle Expert can be used on a periodic, proactive basis to discover Oracle tuning opportunities and to create scripts to correct any problems that have been identified.

Oracle Expert provides flexible and focused tuning in three categories:

- Instance tuning, which includes tuning specific key database initialization parameter categories such as the SGA, sort operations, I/O, and parallel query

- Application tuning, which includes optimizing database access methods used by an application, and searching for redundant SQL in the cache (except for case and spacing)

- Structure tuning, which includes evaluating database storage structures for proper placement and sizing, use of temporary objects, and optimal flexible architecture compliance

After collecting tuning data, Oracle Expert stores the data and any other information supplied by the user into the Oracle Expert repository for analysis by the rules inference engine. The patented object-oriented rules inference engine is designed to perform complex database tuning analysis and contains hundreds of rules for tuning an Oracle database. Oracle Expert then evaluates this data, looking for tuning opportunities and produces a set of recommendations for tuning improvements listed in the order of performance gain impact.

If the user accepts Oracle Expert's tuning recommendation, a script is generated to implement the recommendation. Many of the scripts can be implemented immediately or customized by the user. A detailed report of the collected data and the analysis process can also be created on request by the user.

Oracle Expert can also share tuning data with Oracle SQL Analyze, which is another tool in the Oracle Tuning Pack (discussed below). This shared data is stored in Oracle Tuning Pack's SQL History, which stores all data gathered by Oracle Expert and Oracle SQL Analyze. By sharing tuning data, Oracle Expert and Oracle SQL Analyze do not need to gather system data that has already been gathered and stored in SQL History.

Oracle Index Tuning Wizard

Missing or inappropriate indexes can often cause serious performance problems for an application. To quickly identify and correct index problems, the Oracle Tuning Pack includes a wizard to guide you step-by-step through the process of tuning indexes. The wizard uses the analyzing capabilities and intelligence built into the Oracle Tuning Pack to both recommend optimal indexing strategies and to implement the tuning recommendations.

Oracle SQL Analyze

Inefficient SQL statements can cause database performance problems in even the best-tuned databases. To complement the database tuning features of Oracle Expert, the Oracle Tuning pack provides Oracle SQL Analyze, an application for analyzing and tuning individual SQL statements.

Oracle SQL Analyze provides a workbench for identifying and tuning problematic SQL statements which are causing the greatest impact on database performance. SQL Analyze identifies the SQL statements executing on the database and evaluates the statements based on user-selected criteria, such as resource usage and I/O's per statement. Once a problem SQL statement is identified, it can be dragged and dropped from the database library cache to the SQL Analyze tuning window for evaluation and tuning.

Under one of two optimizer modes - cost-based or rule-based - Oracle SQL Analyze examines the SQL statement to determine what the optimal execution path for the statement would be. For statements retrieving data from multiple tables, the optimizer figures out the optimal table join methods, join orders, and access paths based on such factors as available indexes, the order of tables and columns in the statement, and statistics on the cardinality of objects referenced in the statement.

When using the cost-based optimizer to control the execution plan, the user can use SQL "hints". The use of SQL hints can be valuable for specific queries where the developer is aware of details that may not be available to the optimizer.

The SQL statement's execution path is displayed through an explain plan which provides a list of the operations involved in the statement's execution. After generating one or more explain plans for a SQL statement, you can use SQL Analyze to examine the plan, the order of operations, and relevant statistics for objects used in the plan.

Because explain plans can be confusing to interpret, (the hierarchical order of operations listed in the explain plan is not the order of execution) SQL Analyze makes the execution order clear by providing a graphical step-by-step explanation of the statement's operations which the user can walk through. With this step-by-step explanation, the user can see how the statement will execute and what step each operation is performing.

After the explain plan is reviewed and interpreted, the next step is testing the performance of the statement under various optimizer modes. SQL Analyze allows you to easily execute the statement one or more times to measure performance, such as the elapsed time that it takes to perform the query, the CPU time, and the number of logical and physical reads. SQL Analyze also takes advantage of the new query

progress monitoring capability of Oracle8*i*, allowing you to track the progress of a SQL statement executed from SQL Analyze.

All SQL metrics can be displayed for comparison by highlighting the desired SQL object in the navigator. When you select a SQL object, a table of performance metrics for each comparison is displayed for each optimizer. SQL Analyze also provides "split view" screen options which allow side-by-side comparison of two different SQL statements, or two different optimizer modes for the same statement. Comparing explain plans and performance statistics throughout the tuning cycle allows the user to quickly gauge the relative performance of several different approaches for obtaining the same result set.

Oracle Tablespace Map

Getting the best performance from a database's application SQL requires more than tuning individual SQL statements; it also requires identifying database storage problems. To meet these needs, the Oracle Tuning Pack includes Oracle Tablespace Map, a tool for monitoring tablespace usage.

The Tablespace Map provides a complete picture of the characteristics of all tablespaces associated with a particular Oracle database. These characteristics include analysis status, segment type, segment name, number of extents, and the total size of the extent in blocks. You can display all segments for a tablespace or all segments for a datafile.

The Tablespace Map also provides an allocation map which illustrates the organization of a tablespace's segments. This map displays an overview of the sequential allocation of space for segment extents within a selected tablespace or datafile. Within the tablespace map, it is possible to select an individual extent and see the ID of the block in the extent, the ID of the extent, and the full name and path of the datafile which is the physical location of the extent.

Reorg Wizard

To correct database storage problems, Oracle Tuning Pack provides the Reorg Wizard, which can help you maintain a well performing database by correcting space usage problems. Over time, database performance can be affected by problems such as row chaining and/or migration and index stagnation. The Reorg Wizard can eliminate space problems by reorganizing database space usage and allowing you to change an object's storage settings and location.

Oracle Change Management Pack

An important task of database administrators is preparing for and reacting to change. Because business needs and requirements can change quickly, adjustments and enhancements are often required for business applications and their supporting databases. DBAs need the ability to respond to these changes quickly and effectively.

Oracle Change Management Pack is a set of easy-to-use tools for managing complex changes in the Oracle Server and database objects. While tracking and implementing changes has typically been a very expensive and difficult process, Oracle Change Management Pack greatly reduces the time and costs associated with managing the implications of changing business needs and requirements.

Managing change in an Oracle environment can mean managing the evolution of schema objects and the database environment. Changes to applications can require changes in the definitions of particular objects like tables or triggers. Over the lifetime of a database, changes may need to be made to the characteristics of a tablespace or a set of users. Oracle Change Management Pack can manage all of these types of changes.

With Oracle Change Management Pack, you can track changes by capturing the definitions of a set of database objects and comparing the object definitions in one schema or database to another. You can also compare object definitions in a schema or database to a previously-captured state (baseline) of the same schema or database - or compare two baselines.

Change Management Pack also keeps track of versions of baselines, comparisons, and changes. For example, you could capture repeated versions of a baseline for keeping track of an evolving schema like a meta-data backup.

In addition to tracking changes, Oracle Change Management Pack allows you to implement changes. After comparing two sets of object definitions, you can implement changes by synchronizing database definitions with those of a baseline or another database; or you can create one or more object definitions on multiple databases that are copies of the definitions in another database. You can also change object definitions by simply specifying the changes to make.

To make changes, Oracle Change Management Pack generates scripts that are run against database object definitions. When a script is generated, you have the ability to view and edit the script, execute it whenever you like or schedule a time for the script to be executed, and optionally to roll back the changes. Oracle Change Management Pack also provides an impact report which the administrator can evaluate before making the changes.

In the following section, some of the major capabilities of Oracle Change Management Pack are described.

Change Manager

Change Manager is a central application for managing your work in Oracle Change Management Pack. The tree view on the left of the application's interface displays baselines, comparisons, and plans. With the detail view on the right, you can launch other wizards and tools.

The following functionality can be accessed from Change Manager:

DB Capture

DB Capture is a wizard that guides you through the process of capturing the definitions of a database (or subset of a database) in the form of a baseline for other Change Management Pack applications to use. The captured definitions can also be stored in a SQL DDL statement for creating definitions in a new database or as input to CASE tools that accept SQL DDL input.

For example, DB Capture could capture a baseline of the current state of object, schema, or database definitions, then use DB Diff later to compare the baseline to the same object, schema, or database definition.

DB Diff

DB Diff is a wizard that guides you through the steps of selecting two sets of object definitions and comparing them. The object definitions can be from current databases or from a baseline created earlier with DB Capture. The comparisons can be saved and also written to a report.

You can also use DB Diff's Synchronization Wizard to modify one set of definitions to match the other set of definitions (with the exception of baselines, which are read-only).

For example, DB Diff's Synchronization Wizard could be used to synchronize the current schema or database with a previously captured baseline of the schema or database. The resulting effect would be that any changes made to the schema or database since the baseline was captured are rolled back.

DB Quick Change

DB Quick Change guides you through the process of making one or more changes (a "quick change") to a single definition of a database object. Multiple changes can be executed as a unit.

DB Alter

DB Alter guides you through the process of making changes to one or more object definitions in one or more databases. Multiple changes in a database are executed as a unit.

DB Propagate

DB Propagate guides you through the steps of selecting one or more object definitions from a database, then reproducing those definitions in a destination schema within the source database, or in one or more destination databases.

DB Propagate simplifies such tasks as:

- Cloning a set of tables and data to one or more databases or other services

- Reproducing database object definitions for developers to modify in conjunction with enhancements to an application

- Reproducing the enhanced object definitions at the original database after the developers are satisfied with their modifications

- Reproducing a set of object definitions from a development database to a test database and later to multiple production databases

- Reproducing needed object definitions when deploying a new application to multiple production databases

DB Search

DB Search is a search capability for specifying or locating objects based on characteristics of their names. For example, if you know that all your test tables contain the string "TEST", and you need to know how many test tables you have, you can search for all tables or objects with names containing that string. DB Search can be used on its own as a search facility, or with other applications in the pack. For example, DB Search can be used when using DB Capture for specifying that your baseline contain all objects with names containing the string "TEST".

Plan Manager

Plan Manager lets you view, edit, and execute plans that you have created in Oracle Change Management Pack.

By using Oracle Change Management Pack to manage change, administrators can respond quickly to new requirements, eliminate errors or loss of data when making changes, minimize downtime, and maximize productivity.

Oracle Standard Management Pack

Oracle Standard Management Pack is a management pack designed for smaller enterprises that use the Oracle Workgroup Server or Oracle 8*i*. This pack combines many of the diagnostic, tuning, and change management functionalities of Oracle Diagnostics Pack, Oracle Tuning Pack, and Oracle Change Management Pack into one easy-to-use application suitable for the smaller business enterprise. Oracle Standard Management Pack monitors and diagnoses problems, tunes high impact indexes, and tracks and compares changes in the Oracle environment.

Oracle Standard Management Pack is comprised of the following applications for managing the Oracle Environment:

- **Oracle Performance Manager** - Applies real-time, graphical Oracle and host monitoring through an extensive array of customized performance charts.

- **Oracle TopSessions** - Quickly identifies, diagnoses, and eliminates problematic database sessions.

- **Oracle Index Tuning Wizard** - Proactively optimizes the indexes in your database environment.

- **Oracle DB Capture** - Captures definitions of schema objects, allowing users to easily "reverse engineer" a schema.

- **Oracle DB Diff** - Allows users to easily compare schemas or databases and object definitions.

- **Oracle Advanced Events** - This set of additional tests is an extension to the Oracle Enterprise Manager event management system, providing more advanced event monitoring functionality.

Oracle Management Pack for Oracle Applications

The Oracle Management Pack for Oracle Applications is a set of advanced tools for monitoring and diagnosing your Oracle Applications environment and planning for future resource needs. The pack extends the existing database management capabilities of Oracle Enterprise Manager to the middle-tier application subsystem of Oracle Applications, namely the Concurrent Processing Servers. The pack builds on the Oracle Enterprise Manager host and database management framework and incorporates Oracle Applications within its managed services.

The Management Pack for Oracle Applications includes the following diagnostic applications for optimum Oracle Applications management:

- **Oracle Performance Manager** - With the pack's performance management capabilities, it can recognize multiple instances of Oracle Applications and display real-time data of Concurrent Processing Servers and Forms Servers in easy-to-interpret, consolidated graphical views.

- **Oracle Capacity Planner** - The pack's capacity planning feature collects historical performance data from Concurrent Processing Servers, Forms Servers, and their underlying hosts, allowing correlation and trending of this information for determining future resource requirements.

- **Concurrent Processing Tuning Assistant** - This feature analyzes historical batch job execution records and identifies scheduling bottlenecks as well as programs that would benefit the most from tuning.

- **Oracle Applications Advanced Events** - This extension to the Oracle Enterprise Manager event management system allows lights-out event monitoring and problem detection of the entire applications system.

The Management Pack for Oracle Applications displays Concurrent Processing Servers on the Oracle Enterprise Manager Console. The console provides central administration of a distributed application system, allowing administrators to notify each other if any of the servers go down, and schedule jobs and monitor events on the application subsystems.

Oracle Management Pack for SAP R/3

Oracle Management Pack for SAP R/3 is a set of applications for monitoring, diagnosing, and planning in the SAP R/3 environment. This pack extends the advanced tools in Oracle Enterprise Manager for monitoring the SAP R/3 environment, diagnosing problems, and planning for future needs.

The Management Pack for SAP R/3 builds on the Oracle Enterprise Manager host and database management framework, and manages the SAP R/3 system as one of its managed services. The pack displays R/3 application servers in the navigator and map views. Jobs and events, including Management Pack for SAP R/3 Advanced Events, are similarly integrated.

Oracle Management Pack for SAP R/3 contains the following applications:

Oracle Performance Manager - This tool recognizes multiple instances of R/3 and displays real-time data of R/3 application servers, buffers, and work processes in an easy-to-interpret, consolidated graphical view.

Oracle Capacity Planner - This tool collects R/3 metrics and diagnoses problems through correlation and trending of the collected information to determine future resource requirements.

Oracle Advanced Events - This extension to the Oracle Enterprise Manager event management system allows lights-out event monitoring and problem detection of the entire R/3 applications system.

Integrated Applications

The applications listed below are integrated with Oracle Enterprise Manager for added value in managing your Oracle environment, and are installed with Oracle Enterprise Manager if your environment requires them. The applications can be accessed from the Oracle Enterprise Manager Navigator pane and/or the console application drawers, or from your operating system. (An asterisk indicates that the current release of the product is beta.)

Oracle Applications Manager

Oracle Applications Manager is a tool that provides administrative and diagnostic capabilities for concurrent processing in Oracle Applications. The Oracle Applications Manager console provides a single point of administration for concurrent managers and requests on multiple Oracle Applications instances.

Using the console, you can monitor the status of all concurrent managers in an Oracle Applications instance, as well as details for all processes and requests. You can start and stop managers, cancel or put holds on requests that have not yet run, and define new managers.

Oracle Enterprise Security Manager

Oracle Enterprise Security Manager is a component of the Oracle Advanced Security Option and manages Oracle 8i Enterprise User Security. The application allows administrators to manage enterprise-level role authorization among multiple databases simultaneously.

Enterprise Users are created and centrally managed in an LDAP Directory Server. They use digital certificates and Secure Sockets Layer (SSL) to achieve Single Sign-On to multiple Oracle8i Database Servers. Upon authenticating an Enterprise User, Oracle 8i will search for its role authorizations in the Directory. Such role authorizations are known as, "Enterprise Roles".

Enterprise Security Manager allows multiple administrators to define "Enterprise Domains" of servers that share a common set of Enterprise Roles. The tool also allows administrators to create Enterprise Users and then manage their Enterprise Roles within these domains. All information on Enterprise Domains, Databases, Enterprise Roles, and Enterprise Users is stored securely in a Directory, for example Oracle Internet Directory.

Oracle8*i inter*Media Text

The Oracle8*i inter*Media Text application (the text-management component of the Oracle *inter*Media product) is a text-search system for managing and searching for text in the Oracle database. This application helps you manage and search for text in the database as quickly and easily as any other type of data. Oracle *inter*Media Text's search techniques make text a standard datatype in the Oracle server which you can create, modify, and delete. Additionally, with Oracle8*i inter*Media text, new text-based developments or extensions to existing applications are easy and cost-effective to build with standard SQL tools.

With Oracle8*i inter*Media Text, you can search for data in any Oracle database application that uses text - from search-enabling a comments field in an existing application to implementing large-scale document management systems dealing with multiple document formats and complex search criteria. Oracle8*i inter*Media Text also supports basic full-text searches in most languages supported by the Oracle database.

Oracle8*i inter*Media Text allows the database administrator to create and manage *inter*Media Text indexes used for text querying. Text servers, which poll for new documents not yet indexed can also be started when connecting to a database through the Oracle Management Server.

Oracle Parallel Server Management

Oracle Parallel Server Management enables the administration of databases that use the Oracle Parallel Server option. Once discovered, Parallel Server Databases appear in the Databases folder of the console's navigator panel alongside single-instance databases.

Parallel Servers behave similarly to single-instance databases, allowing the full power of the Schema, Security and Storage applications to be applied to parallel server databases. The database adminstrator can start up, shut down, or check the status of parallel server databases, as well as see the status of parallel servers and the progress of parallel server operations by node and service.

Parallel server startup and shutdown job tasks allow parallel servers to be started and stopped as part of scheduled jobs. Database job tasks, such as Run DBA Script, can be executed on parallel server instances. All database event tests can be registered on parallel server instances.

Oracle Replication Manager

Oracle Replication Manager enables an administrator to quickly set up, configure, and manage an Oracle Replication environment. Specifically, Replication Manager provides a comprehensive wizard to prepare a database for supporting multimaster and/or snapshot replication. Once set up, additional wizards help you replicate schema objects using either multimaster or a combination of multimaster/snapshot replication. After you have configured your replication environment, you can use the Oracle Enterprise Manager Navigator tree and property pages to monitor and modify your replication environment.

*Oracle Spatial Index Advisor

Oracle Spatial Index Advisor helps you analyze and tune spatial indexes on data. Using this application, you can analyze the effectiveness of spatial indexes defined on spatial data. The Advisor lets you see if indexes are properly defined for optimum query performance. The application also provides an understanding of the distribution of data through visual inspection.

A spatial index is a set of database tiles. With Oracle Spatial Index Advisor, the database administrator specifies the size and number of tiles in a database. The geometric coverage of the tiles has a direct impact on query performance. The Advisor allows the user to see the interaction of the tiles with the geometric coverage and to issue queries against the data to see how typical queries will perform.

Oracle Directory Manager

Oracle Directory Manager is a Java-based tool for administering most functional areas of Oracle Internet Directory and its related processes. Using Oracle Directory Manager, you can connect to directory servers; manage configuration parameters; add, modify, and delete entries, attributes, and object classes; set up access control policies; configure security; and view and modify replication agreements.

*Oracle Distributed Access Manager

Oracle Distributed Access Manager is a tool for monitoring and administering Oracle's heterogeneous distributed environments. Non-Oracle systems, such as Sybase, Informix, DB2, and SQL Server are transparently integrated into an Oracle distributed environment using Oracle's transparent gateway technology (i.e., Heterogeneous Services).

Distributed Access Manager monitors gateways configured for non-Oracle systems. It displays all the gateway instances that have been registered with the database to

which the tool is connected. For active gateway instances the user can browse the details of each gateway session.

For each active gateway session, Distributed Access Manager provides the name of the Oracle client session that created the gateway connection, the name and location of the gateway process, and the list of gateway initialization parameters used to modify the gateway behavior.

Oracle Developer Server Forms Manager

Oracle Developer Server Forms Manager allows you to control and monitor Forms Listener, Forms Server, Load Balancer Server, and Load Balancer Client. The tool provides the following functionality:

- Automatic node discovery, which helps find the Forms listener, Metrics Server, and Metrics client running on the node you want to discover.

- Forms Server listener control, which allows you to remotely create, start, stop, and refresh Forms listener, as well as modify the configuration and list the runtime processes

- Forms Server runtime control, which displays information about the users currently connected

- Load Balancer Control, which helps you remotely create, start, stop, and load the balancer

- Activity monitoring, which allows you to schedule a job while particular events are occurring, such as listener down, CPU usage consumption, and excessive memory usage

- Fixit jobs, which can be used to restart the forms listener automatically if it stops for abnormal reasons

- Notification capability, which allows administrators to be notified by email or pager when a particular event occurs

Oracle Applications Server Manager

Oracle Applications Server Manager helps you manage your web site and the Oracle Applications Server. This tool discovers all Oracle Appliction Servers installed on managed nodes and allows you to view and manipulate the components and features of the server and your web site.

Oracle Applications Server is the middle tier in a three tier web server. The client tier is a generic browser such as Netscape or Internet Explorer, the middle tier is the

Oracle Applications Server, and the third tier is usually a dedicated database. The middle tier Oracle Applications Server handles communication with all the clients. It can also execute custom application logic that accesses and/or manipulates database data and displays it to the client in the desired format.

Glossary

Advanced Events:

A set of additional pre-defined events that are included in Oracle Diagnostics Pack, Oracle Management Pack for Oracle Applications, and Oracle Management Pack for SAP R/3. These events provide advanced options for use with the Event Management System.

Applications Manager:

An application integrated with Oracle Enterprise Manager that provides administrative and diagnostic capabilities for concurrent processing in Oracle Applications; provides a single point of administration for concurrent managers and requests on multiple Oracle Applications instances.

Applications Server Manager:

An application integrated with Oracle Enterprise Manager that helps administrators manage web sites and the Oracle Applications Server; discovers all Oracle Application Servers installed on managed nodes, allowing an administrator to view and manipulate the components and features of the server and web site.

Blackout:

A feature which can be set up to prevent administrators from being flooded with emails and pages if a managed service is brought down; deactivates enhanced notification (paging/email) while the service is down.

Capacity Planner:

A tool in Oracle Diagnostics Pack used for collecting, storing, and analyzing historical performance data collected from managed databases.

Console:

The client user interface of Oracle Enterprise Manager; the first tier in the three-tier framework from which network tasks are administered; the interface for the Navigator, Group, Jobs, and Events panes, which are the four areas from which different administrative tasks can be performed.

Change Management Pack:

An optional system management pack that is used with Oracle Enterprise Manager to help simplify the managing of complex changes to the Oracle Server and database objects.

Database Administrator:

An administrator of a managed database and a user of Oracle Enterprise Manager whose database administrator account and privileges are granted and managed by a Super Administrator.

Database User:

A user of a database managed by Oracle Enterprise Manager; not an Oracle Enterprise Manager user.

DB Alter:

A tool in Oracle Change Management Pack used for making changes to one or more object definitions in one or more databases.

DBA Management Pack:

Database administration functionality that is integrated into Oracle Enterprise Manager; also can be accessed with DBA Studio.

DBA Studio:

An interface from which all DBA Management Pack features can be accessed (with the exception of SQL*Plus Worksheet); allows administrators to manage database security, schemas, instances, and storage from a unified tree view without launching features separately; can be used to manage databases with or without a connection to an Oracle Management Server.

DB Capture:

A tool in Change Management Pack used for capturing database definitions in the form of a baseline to be used by other Change Management Pack tools.

DB Diff:

A tool in Change Management Pack used for selecting two sets of database object definitions and comparing them.

DB Propagate:

A tool in Change Management Pack that helps administrators select one or more object definitions from a database and reproduce them in a destination schema within the source or destination database.

DB Search:

A tool in Change Management Pack that helps administrators locate database objects based on naming characteristics.

DB Quick Change:

A tool in Change Management Pack that helps administrators make one or more changes to a single definition of a database object.

Developer Server Forms Manager:

An application integrated with Oracle Enterprise Manager that allows administrators to control and monitor Forms Listener, Forms Server, Load Balancer Server, and Load Balancer Client.

Diagnostics Pack:

An optional system management pack that is used with Oracle Enterprise Manager to help manage the health of a system, including detecting and diagnosing problems and planning for the future.

Directory Manager:

An application integrated with Oracle Enterprise Manager used for administering most functional areas of Oracle Internet Directory and its related processes; can be used to connect to directory servers; manage configuration parameters; add, modify, and delete entries, attributes, and object classes; set up access control policies; configure security; and view and modify replication agreements.

Distributed Access Manager:

An application integrated with Oracle Enterprise Manager used for monitoring and administering Oracle's heterogeneous distributed environments.

Enterprise Security Manager:

An application integrated with Oracle Enterprise Manager used for administering the Oracle environment for user security using an LDAP-compliant directory server; allows an administrator to manage enterprise-level role authorization among multiple databases simultaneously.

Event:

A potential problem occurrence registered with the Event Management System in the form of one or more tests on a managed database or other service; triggers an alert to the console, as well as a possible corrective action, if an event occurs; can also trigger e-mail or page alerts.

Event Management System:

The system through which events are registered from the Events pane in the Oracle Enterprise Manager Console; provides proactive alert notification.

Expert:

See Oracle Expert.

Export Wizard:

A data management tool in DBA Management Pack that aids in transferring data from an Oracle database to an Oracle binary operating system file.

Filtering (see Notification Filtering)

Fixit Job:

A job that can be scheduled to run when a particular event occurs to automatically correct the problem.

Group:

A logical administrative collection of objects which are grouped together in the Group pane of the Oracle Enterprise Manager Console for more efficient management and administration.

Import Wizard:

A data management tool in DBA Management Pack that aids in transferring data from an exported binary file to an Oracle database.

Index Tuning Wizard:

A tool in Oracle Tuning Pack that helps administrators quickly identify and correct index problems by recommending optimal indexing strategies and implementing the tuning recommendations.

Intelligent Agent:

An independent object that resides on a managed node in the third tier and executes commands sent by the Oracle Management Server; monitors for critical

occurrences (events) and executes jobs on the databases and other managed services on the node; is responsible for reporting back to the console via the Oracle Management Server the status of jobs and events on the node; functions independently of the databases and other services it supports, and is also independent of the Oracle Management Server and console clients.

Instance Management:

Functionality in the DBA Management Pack that helps administrators manage database instances and sessions.

Job:

A set of one or more administrative tasks scheduled with the Oracle Enterprise Manager Job Scheduling System; runs on managed databases or other services.

Job Scheduling System:

The system through which jobs are scheduled from the Jobs pane of the Oracle Enterprise Manager Console.

Load Wizard:

A data management tool in DBA Management Pack that aids in transferring data from operating system files, such as text files, to an Oracle database.

Management Pack for Oracle Applications:

An optional system management pack that is used with Oracle Enterprise Manager; a set of applications for monitoring and diagnosing the Oracle Applications environment and planning for future resource needs.

Management Pack for SAP R/3:

An optional system management pack that is used with Oracle Enterprise Manager; a set of applications for monitoring, diagnosing, and planning for future needs in the SAP R/3 environment.

Navigator:

The pane in the Oracle Enterprise Manager Console where a tree list of discovered databases and their objects appears when connected to an Oracle Management Server; provides access to managed databases and other services which can be viewed and managed from this pane.

Node:

A machine in the third tier of the Oracle Enterprise Manager framework where the managed databases and other services reside; also hosts an Intelligent Agent which monitors performance and performs tasks on the node's databases and services.

Notification:

The ability of Enterprise Manager administrators to be notified of the status of jobs and the occurence of events by console alert, e-mail, or page; allows you to choose which administrators to have notified, and whether to use notification filtering.

Notification Filtering:

A feature which allows you to filter e-mail and pages sent to administrators based on job status or event severity level.

Oracle8*i inter*Media Text:

An application integrated with Oracle Enterprise Manager; a text-search system for managing and searching for text in the Oracle database.

Oracle Management Server:

The middle tier of the Oracle Enterprise Manager framework where system management tasks are processed and which provides centralized intelligence and distributed control between the console clients and the managed nodes; processes commands sent from the console administrators to be executed by agents on the managed nodes; can be used alone, or can be grouped with other Oracle Management Servers if necessary; uses a repository for storing system information such as administrator accounts and privileges.

Oracle Expert:

A tool in Oracle Tuning Pack that helps administrators with database initialization parameter tuning, application tuning, and structure tuning.

Oracle Trace:

A tool in Oracle Diagnostics Pack that is used for collecting precise database-occurrence statistics from Oracle products as well as end-user and third-party applications.

Pane:

One of four partitions in the Oracle Enterprise Manager Console representing either Groups, Jobs, Events, or the Navigator tree view through which administrators manage the database environment.

Parallel Server Management:

An application integrated with Oracle Enterprise Manager that enables the administration of databases using the Oracle Parallel Server option.

Performance Manager:

A tool in Oracle Diagnostics Pack that helps administrators monitor the factors that most affect database performance; provides real-time graphical views of performance data collected from Oracle databases, other services, and the host operating system.

Plan Manager:

Oracle Change Management Pack's general-purpose interface that gives administrators access to all Change Management Pack features; allows experienced administrators to accomplish everything that Change Management Pack can do from a single interface, while the other tools in the pack provide step-by-step guidance for specific features.

Privilege:

The right to execute a particular Oracle Enterprise Manager command or SQL statement; a right granted to a database administrator by a Super Administrator, or to a database user by a database administrator.

Profile:

An individualized summary of data specifying system privileges as well as limitations on system resources; assigned to each database administrator and database user.

Property Sheet:

A summary of information about a database or object that appears when you select a database or object in a tree view; can be used to view and change object properties; often contains multiple tabbed pages.

Replication Manager:

An application integrated with Oracle Enterprise Manager that enables an administrator to quickly set up, configure, and manage an Oracle Replication environment.

Repository:

A set of database tables used as a back-end store for the middle-tier Oracle Management Server(s), and that can be located in any Oracle database; is shared by

administrators and stores the state and history of registered events and scheduled jobs; also contains accounts of all administrators, including information such as administrator passwords and privileges; contains the current view of the network including all system data, application data, and information about the state of managed nodes.

Role:

A set of database privileges granted to a database administrator or database user.

Schema Management:

Functionality in the DBA Management Pack that helps administrators manage database schema objects; helps administrators to create, alter, or drop database clusters, indexes, snapshots, tables, and views.

Security Management:

Functionality in the DBA Management Pack that helps administrators make changes to security parameters for database objects, users, and other administrators quickly and efficiently.

Spatial Index Advisor:

An application integrated with Oracle Enterprise Manager that enables administrators to analyze and tune spatial indexes on database data.

SQL Analyze:

A tool in Oracle Tuning pack that analyzes and tunes problematic SQL statements that are causing the greatest impact on database performance.

SQL*Plus Worksheet:

A tool in the DBA Management Pack with which administrators can execute SQL and PL/SQL commands and store them as files to reuse at a later time.

Standard Management Pack:

An optional system management pack that is used with Oracle Enterprise Manager by administrators of smaller database enterprises who use the Oracle Workgroup Server or Oracle 8*i*; combines several of the diagnostic, tuning, and change management features of Diagnostics Pack, Tuning Pack, and Change Management Pack into one application suitable for smaller enterprises.

Storage Management:

Functionality in the DBA Management Pack that helps administrators manage database storage for optimum database performance, such as managing tablespaces, datafiles, redo logs, and rollback segments.

Super Administrator:

The first administrator to set up an administrator account in the repository; the head administrator to one or more middle-tier Oracle Management Servers; can create as well as disable other administrator accounts and set up all administrator credentials.

Tablespace Manager:

A tool in Oracle Tuning Pack for monitoring and managing tablespace usage to achieve optimum database performance.

Task:

What a job is comprised of when scheduled to run on a managed database or other service; what an administrator selects to create a job when scheduling a job with the Job Scheduling System; is selected from a list of pre-defined tasks.

Test:

What an event is comprised of when registered against a managed database or other service; what an administrator selects to create an event when registering an event with the Event Management System; is selected from a list of pre-defined tests.

TopSessions:

A tool in Oracle Diagnostics Pack that gives administrators the ability to pinpoint database sessions that are causing the greatest impact on performance.

Tuning Pack:

An optional system management pack that is used with Oracle Enterprise Manager to help optimize performance in the database environment, including identifying and tuning major database and application bottlenecks such as inefficient SQL, poor database structures, and improper use of resources.

Trace:

See Oracle Trace

Trace Data Viewer:

A tool in Oracle Trace that sorts and processes large collections of Oracle Trace data, extracting and aggregating key metrics, and presenting the information in pre-defined data views selected by the user, who can then perform analyses on the data.

Trace Manager:

A tool in Oracle Trace for administering Oracle Trace data collected from API-instrumented products.

Tree List:

A list of discovered and managed databases and other services and their objects that appears in a console client when connected to the Oracle Management Server or single database; can appear in the Oracle Enterprise Manager Console, a DBA Management Pack application, a system management pack, or, in certain circumstances, wizards.

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