

# Managing Oracle 8*i* and Oracle9*i* Databases with Oracle Enterprise Manager 10g Grid Control

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# Managing Oracle 8i and Oracle9i Databases with Oracle Enterprise Manager 10g Grid Control

## INTRODUCTION

All businesses have high demands on their IT systems, whether or not such IT systems are servicing internal company operations, or running the business itself. There are increasingly high demands for continuous service availability, scalability, simplified management, and value-added reporting. Oracle Enterprise Manager 10g meets these demands by providing complete monitoring of the Oracle technology stack, distributed database and application server administration, enhanced diagnostics via collection of performance and availability data, automated tuning of the Oracle environment, and a new internet-enabled architecture that allows administrators to manage from anywhere.

Oracle Enterprise Manager 10g Grid Control provides complete database management for all supported version of the Oracle Database, including Releases 8i, 9i, and 10g. Using Grid Control, IT organization can leverage their administrative resources to deliver a scalable management solution that provides:

- Complete Database Administration
- Integrated Database Performance Management
- Real-Time Monitoring, Diagnostics and Historical Data Analysis
- Proactive Policy Management
- Hardware and Software Configuration Tracking
- Automated Patching and Software Deployment
- Remote Wireless Management

Please see “[Managing the Complete Oracle Environment with Oracle Enterprise Manager 10g](#)” on the Oracle Technology Network (OTN) for a paper focusing on the complete functionality set Oracle Enterprise Manager 10g Grid Control has to offer.

## MANAGING ORACLE 8i AND 9i DATABASES

Enterprise Manager consolidates the most relevant database information into a convenient, dashboard-style home page. Here the user can see the current database status, information about the host system, session and SQL performance information, key space usage and availability metrics, and outstanding alerts. Convenient links allow the DBA to drill down on the host system and obtain detailed information and performance statistics of the hardware and operating system.

## COMPLETE DATABASE ADMINISTRATION

Oracle Enterprise Manager provides comprehensive database administration tools. Administration actions for Oracle 8i, Oracle9i or Oracle 10g databases are handled from the Administration subtab for each database instance. Enterprise Manager offers powerful, easy-to-use features for managing:

- Init.ora parameters
- Schema objects such as tables, indexes and views;
- Storage entities such as tablespaces, datafiles, control files, rollback segments, redo log groups and archive logs;
- Users, roles and profiles;
- Resource consumer groups and resource plans;
- Source types such as packages, procedures, functions and Java classes.

Enterprise Manager 10g Grid Control is the only tool needed to manage all aspects of the Oracle database, regardless of version.

## INTEGRATED DATABASE PERFORMANCE MANAGEMENT

Oracle Diagnostic and Tuning Packs include powerful technologies that automate the monitoring of the complete Oracle environment. When administrators log onto their database home page an overview of real time statistics and tuning needs are exposed through the Database Homepage. Enterprise Manager Grid Control automatically examines the vital signs of different components, such as database and host operating system, and stores the required historical information to provide administrators a long-term view of their system behavior and help them administer service level goals more effectively.



Figure 1: Home page for 9.2 database

As shown in figure 1, the Oracle database home page allows you to view the current state of the database by displaying metrics that portray the overall health of the database, which is broken into six sections. The General section exposes information such as database availability, version, and basic up/down information. The second section to the right shows Host CPU information such as the run queue which represents the average number of processes in memory and subject to be run in the last interval. The last section on the top row, Active Sessions, exposes critical diagnostics information such as Top SQL, Bad SQL, and SQL Response time %. The home page is used as a launch point for the database status, administration and configuration of the database environment.

FINDING BAD SQL

Grid Control automatically identifies Bad SQL in Oracle 8i and Oracle9i databases via Statspack. The repository generates 2 different snapshots of the database SQL every 24 hours and analyzes it.

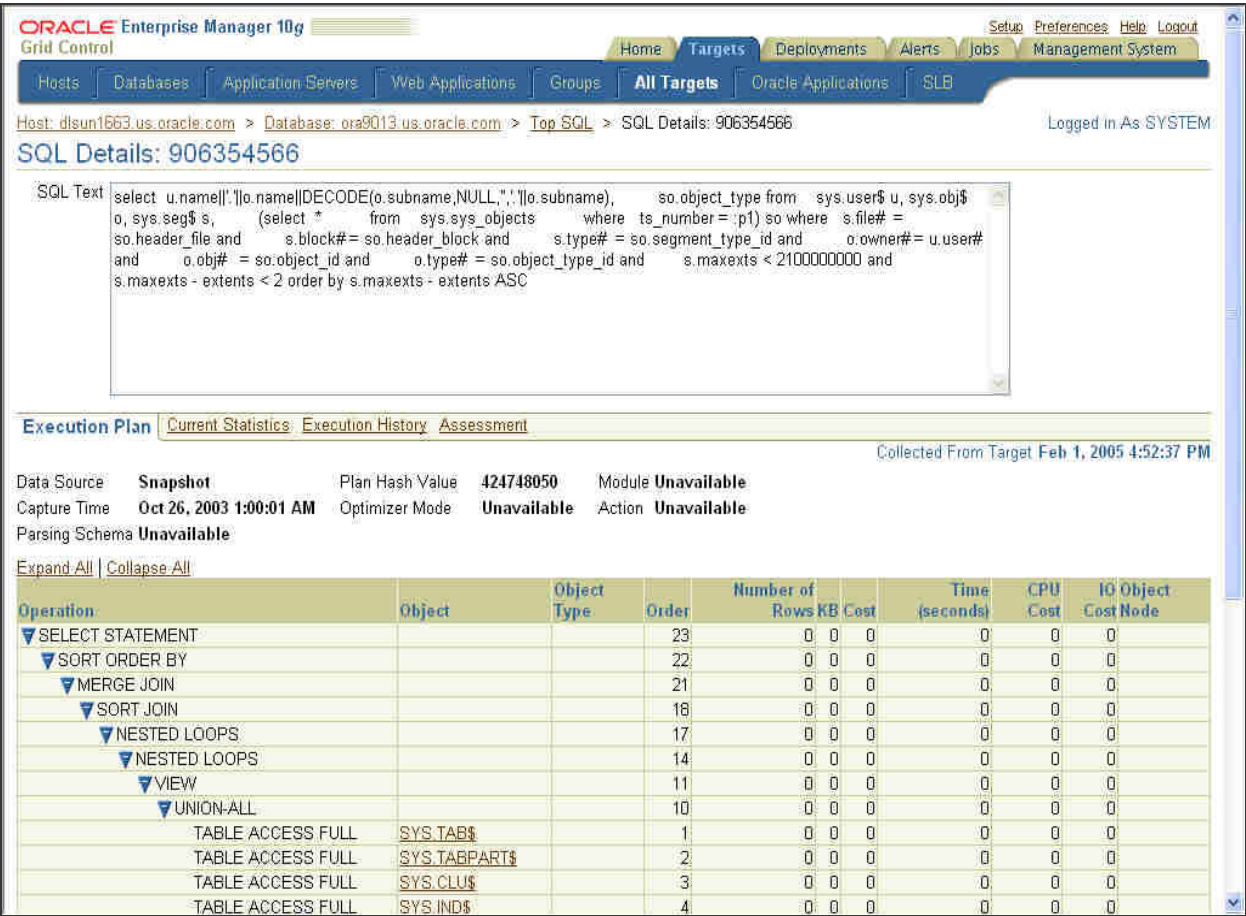


Figure 2: Oracle9i Bad SQL statement and Explain Plan

Grid Control takes each Bad SQL statement and describes the severity of the problems inherent in the statement. As seen in figure 2, each Bad SQL statement also shows the SQL statement (that can be pulled out and run on it's own), full Execution Plan, Current Statistics, and a tuning recommendation.

## IDENTIFYING AND TUNING PROBLEMATIC TABLESPACES

Manually identifying and correcting fragmented tablespaces can be a time consuming task.. Oracle Enterprise Manager identifies storage-related issues – Excessive Wasted Space and Excessive Row Chaining – by letting the administrator determine deviation percentages.

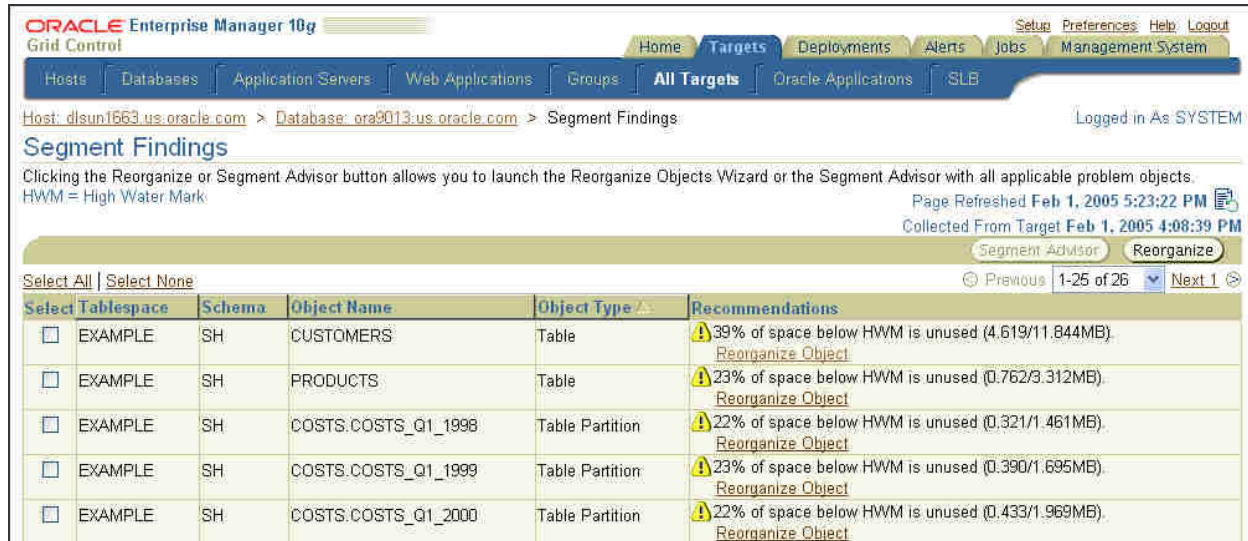


Figure 3: Oracle9i database segment findings – Option to reorganize

Once a storage problem has been identified, Administrators can follow the provided Recommendations, which in figure 3, are to reorganize objects. This launches the Reorganize Wizard and walks through the different steps to increase performance.

## REAL-TIME PERFORMANCE MONITORING

Grid Control uses Statspack to provide the same real-time performance page metrics as the Oracle 10g database. It offers similar drilldowns and identifies problem areas within the Oracle 8i and Oracle9i database.



Figure 4: Oracle9i database performance page



Figure 4 shows the same performance page as the Oracle 10g database. For more specific details, an Administrator can simply click on a performance spike. Also, at the bottom of the Performance page are “Additional Monitoring Links” that launch comprehensive tools to easily isolate an Oracle 8i or Oracle9i database problem:

- Top Sessions -- Use the Top Sessions page to display an ordered list of the Top Sessions for the current database. You can order the list by CPU, Disk Sorts, Memory PGA, Hard Parses, Total Parses, or Logical Reads.
- Top SQL -- Use the Top SQL page to display an ordered list of SQL statements for the current database. You can order the using several parameters including Disk Reads per Execution, Buffer Gets, Sorts, and Parse Calls.
- Database Locks -- Use the Database Locks page to view a list of user locks, blocking locks, or all locks.
- Blocking Sessions -- Use the Blocking Sessions page to display a table showing currently blocking sessions.
- Instance Activity -- Use the Instance Activity page to view database activity that shows you specific data about groups of metrics, such as cursors, sessions, and transactions.
- Top Consumers Page -- Use the Top Consumers page to display a series of charts for the current database showing the top consumers of system resources across a range of topics such as services, modules, sessions and clients.

## HISTORICAL PERFORMANCE DATA

A DBA’s responsibility is to make sure all their databases are available. If a database goes down, the first priority is to get it back up. After it’s available, an administrator needs to go back and identify the cause of the problem. Since Grid Control automatically captures historical snapshots, it can store the Top SQL, Instance Activity, and Explain Plan for 7 days.

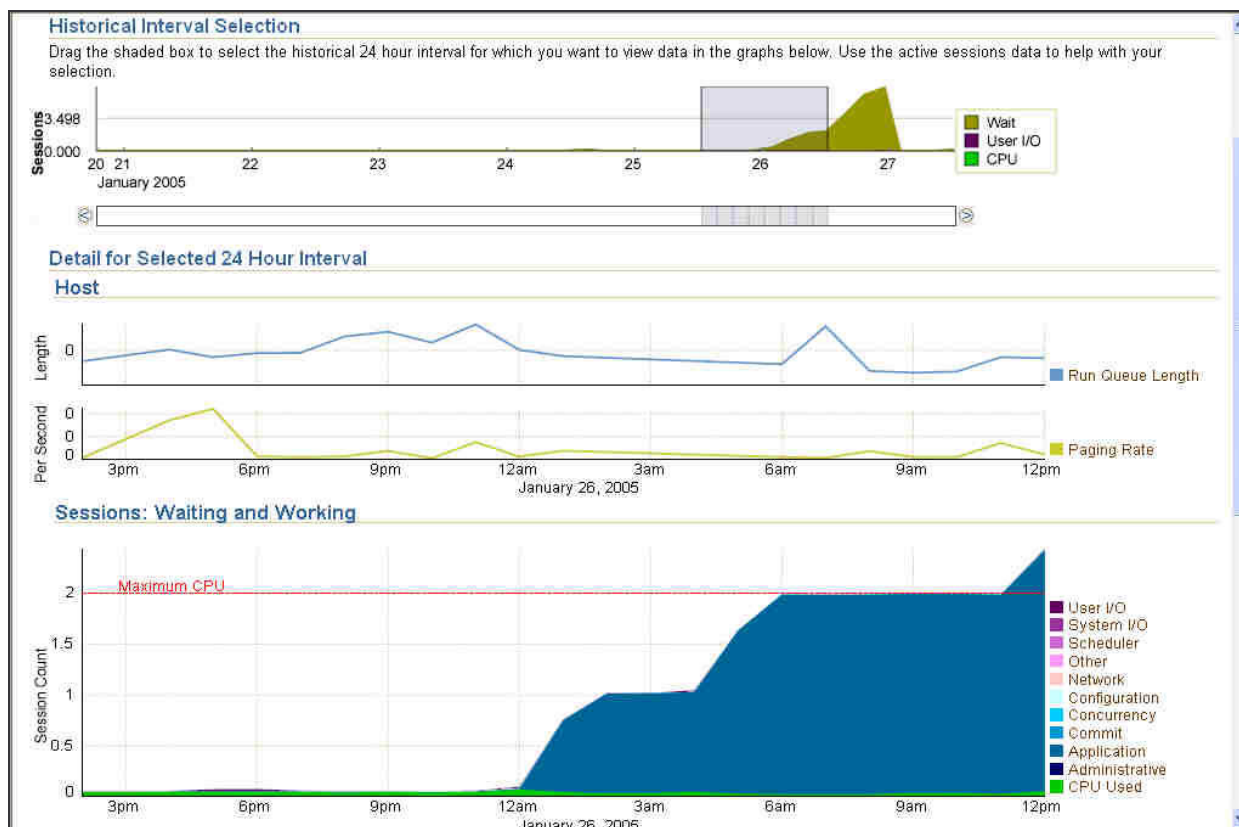


Figure 5: Historical Top SQL – 7-day view with Assess Bad SQL option

## USER DEFINED METRICS

Many Administrators use their own custom SQL scripts to monitor or collect information about their environment. Grid Control’s User Defined Metrics promotes a standardized monitoring system by allowing an Administrator to incorporate

custom scripts into Grid Control’s monitoring framework. Any scripting language (Perl, SQL, etc.) that the target can understand can be used. The returned values are directly tied into notifications, alerts, and response actions.

CONFIGURATION MANAGEMENT FOR ORACLE DATABASES

Managing new deployments of the Oracle database and applying patches is often a time-consuming task that requires administrators’ attention a regular basis. Being able to quickly and accurately view a snapshot of server configurations, operating systems, and software installed across an enterprise from a single console is key to making solid business decisions regarding changes to existing software configurations and hardware / software upgrades.

PATCHING DATABASES

The Critical Patch Advisory alerts users of critical patches issued by Oracle and immediately identifies all Oracle 8i, Oracle9i, and Oracle 10g database systems across the enterprise that require new critical security patches.

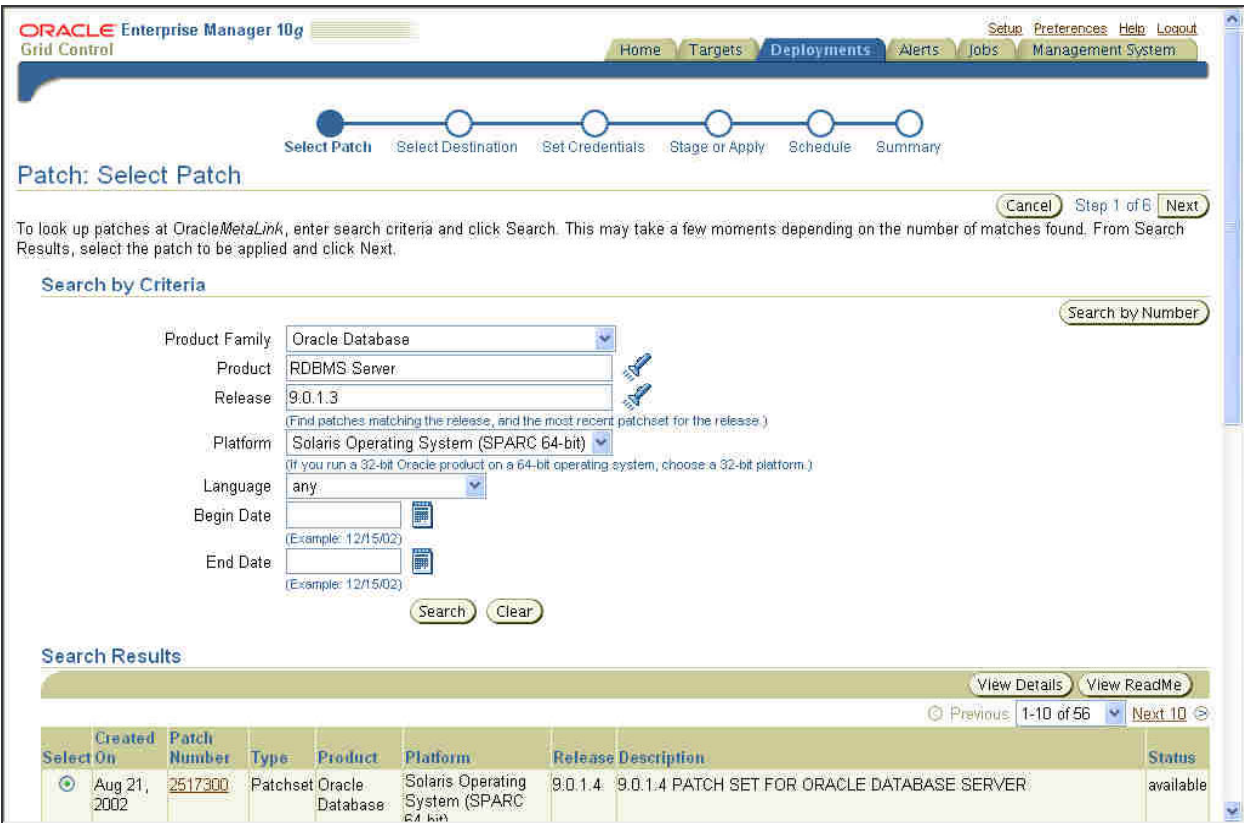


Figure 6: Patch Wizard Custom Search for a 9.0.1.3

As seen in figure 6, patches that pre-exist on the databases are filtered out of view – leaving only new patches. Once the necessary patch is located, Grid Control walks through the 6-step wizard to download, distribute, and install the patch in all affected Oracle Homes.



## PROACTIVE MANAGEMENT USING DATABASE POLICIES

Enterprise-wide compliance with Oracle's best practice security and configuration policies are automatically run against all Oracle database targets. For example, here are some of the out-of-box policies run against an Oracle 8*i* or Oracle9*i* database:

- Checks for tablespaces containing both rollback (other than SYSTEM) and data segments
- Checks for insecure authentication of remote users (remote OS authentication)
- Checks for tablespaces with non-uniform default extent size
- Checks for use of a single control file

Searches can also be preformed against all databases that violate different policies to help push out enterprise-wide standardization.

## CLONING DATABASES

Grid Control provides a convenient and flexible way to intelligently duplicate Oracle software installations (a.k.a. Oracle homes) across hosts. Guided by an intuitive wizard, users can designate an Oracle software home on a source system and select one or more destination hosts to which they want to clone that home. The cloning of an Oracle home is performed in an intelligent manner, i.e. environment-dependent home properties such as the host name, IP address or listener settings are automatically adjusted during the cloning process. Oracle Home Cloning is limited database versions 9.2 and higher. Database Cloning functionality uses RMAN, so databases 8.1.7.4 and higher can be Cloned.

Cloning helps duplicate well-tested and certified environments to other hosts so that the systems behave. The Administrator saves time by eliminating the standard install, upgrade, and patch processes.

## WIRELESS REMOTE DATABASE MANAGEMENT

Enterprise Manager Grid Control can also be accessed via EM2Go 10g using a PDA device with Pocket PC internet browser. This gives administrators the power and flexibility to manage any supported database version from anywhere, at any time.

## DEPLOYMENT CONSIDERATIONS

### REPOSITORY DATABASE OPTIONS

Enterprise Manager 10g Grid Control repository can be deployed on a variety of database platforms. The repository database can be either Oracle9*i* (9.0.1.5 or 9.2.0.4 – 9.2.0.6) or Oracle 10g (10.1.0.3).

### AGENT DEPLOYMENT OPTIONS

To accommodate quick and easy agent installation in a variety of environments, there are three different deployment options:

- The Management Agent can be installed manually on a host using the Oracle Universal Installer (OUI).
- The Mass Deployment Agent, downloadable agent, provides a scripted way to do a 'silent' (non-interactive) install of the agent. The OMS hosts the different OS bit types so when a script is run from a target, regardless of Operating System, it installs the agent and discovers all the targets on that host.
- The shared Agent is one agent installed on a central location, such as NFS-mounted, that is available to all the hosts. All the hosts share the agent install and only store their 'state' locally.

Once an Agent has been deployed to a target host, it automatically discovers all the Oracle targets (e.g. Oracle 8*i*, Oracle9*i*, and Oracle 10g databases) and non-Oracle targets (OS and File System) on the host.

## **MIGRATING ENTERPRISE MANAGER 9i TO ENTERPRISE MANAGER 10g GRID CONTROL**

It's very simple to migrate an existing Enterprise Manager 9i environment to a Grid Control environment without losing any of the personalized preferences or downtime for the existing databases. Grid Control provides a script that utilizes EM 9i Job System to silently install an EM 10g Agent on each host. Then it transfers over information about users, privileges, groups, and preferred credentials to the new Management Repository. Once the migration is complete, the EM 9i agents can be shut off and Grid Control will be managing the environ

## **CONCLUSION**

Enterprise Manager 10g Grid Control comprehensively manages all supported versions of the Oracle product family. It exposes new functionality built directly into the product or uses functionality within Grid Control to offer similar functionality. In a datacenter that has ever growing requirements and management needs, Enterprise Manager 10g Grid Control is the answer for past, present, and future versions of Oracle and it's surrounding eco-system.

## DATABASE MANAGEMENT MATRIX:

Administration		8i	9i	10g
	Database Administration (Instance, Storage, Security, Schema, Warehouse)	✓	✓	✓
	Memory, MTTR, and Undo Wizards	✓	✓	✓
	High Availability (Data Guard)	✓	✓	✓
	Resource Manager	✓	✓	✓
Diagnostics		8i	9i	10g
	Automatic Performance Diagnostics (ADDM)			✓
	Automatic Workload Capture (AWR)			✓
	Comprehensive System Monitoring	✓	✓	✓
	Monitoring using Statspack	✓	✓	
	Monitoring using AWR			✓
	Out-of-Box metric thresholds	✓	✓	✓
	Alerts	✓	✓	✓
	Alert History	✓	✓	✓
	Related Alerts	✓	✓	✓
	User Defined Metrics	✓	✓	✓
	Blackouts	✓	✓	✓
	Jobs	✓	✓	✓
	iSQL Plus	✓	✓	✓
	Top sessions	✓	✓	✓
	Top SQL	✓	✓	✓
	Database locks	✓	✓	✓
	Instance Activity	✓	✓	✓
	Search Sessions	✓	✓	✓
	Real-time performance info	✓	✓	✓
	Historical	✓	✓	✓
	Bad SQL	✓	✓	
	Top SQL Report	✓	✓	✓
	Paging	✓	✓	✓
	SQL Response Time	✓	✓	✓
	Active Sessions	✓	✓	✓
	High Availability	✓	✓	✓
	Problem Tablespaces	✓	✓	✓
	Alert log	✓	✓	✓

Configuration Management		8i	9i	10g
	Patch Advisories	✓	✓	✓
	Patching Wizard	✓ (50%)	✓	✓
	Search	✓	✓	✓
	Compare host to host	✓	✓	✓
	Compare Databases	✓	✓	✓
	Export Configuration	✓	✓	✓
	Clone Database	✓	✓	✓
	Clone Oracle Home		✓ (9.2+)	✓
	Policy Management	✓	✓	✓
	Host Configuration	✓	✓	✓
Tuning		8i	9i	10g
	SQL Tuning Advisor			✓
	SQL Access Advisor			✓
	Memory Advisor		✓	✓
	MTTR Advisor		✓	✓
	Segment Advisor		✓	✓



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