

Managing Applications with Oracle Enterprise Manager 10g

An Oracle White Paper
November 2007

NOTE

The following is intended to outline our general product direction. It is intended for information purposes only, and may not be incorporated into any contract. It is not a commitment to deliver any material, code, or functionality, and should not be relied upon in making purchasing decisions. The development, release, and timing of any features or functionality described for Oracle's products remains at the sole discretion of Oracle.

Managing Applications with Oracle Enterprise Manager 10g

Complete, integrated management
solutions for applications.

INTRODUCTION

As customers automate more and more business processes and carry out a greater percentage of business interactions over the Internet, it has become increasingly critical to effectively manage applications and their underlying infrastructure. Today's mission critical applications fall into two main categories: packaged and custom. Whether they are packaged or custom applications, the key challenges for managing them include:

- Ensuring performance and availability
- Resolving problems quickly if they occur in order to minimize impact
- Containing the on-going costs associated with managing the applications
- Aligning IT and line-of-business priorities so the resources are applied to activities that generate the most business benefits

Furthermore, as customers continue to modernize their applications using more advanced technologies, the need to have the right support infrastructure to help them adopt these technologies incrementally becomes paramount.

Oracle Enterprise Manager provides a comprehensive, integrated management solution that helps businesses achieve high levels of performance and availability, and reduce the costs of managing applications. Oracle Enterprise Manager proactively monitors the health of all application components, the hosts that they run on, and the key business processes that they support. If a potential problem is spotted, Oracle Enterprise Manager's diagnostic tools will help to identify the root cause and fix it quickly. In addition, Oracle Enterprise Manager helps visualize the impact of application performance in the context of business impacts, so that IT professionals can apply resources in a way that is aligned with business priorities. Besides monitoring and diagnostics, Oracle Enterprise Manager also manages the configuration of application environments through its integrated configuration management tool. This tool provides the ability to configure application environments properly by keeping an inventory of application and infrastructure components, tracking the changes that are made, and validating the changes to make sure that they are correct. Oracle Enterprise Manager provides the tools that help organizations achieve the required application performance and availability, improve management productivity, better utilize resources, and drive down costs.

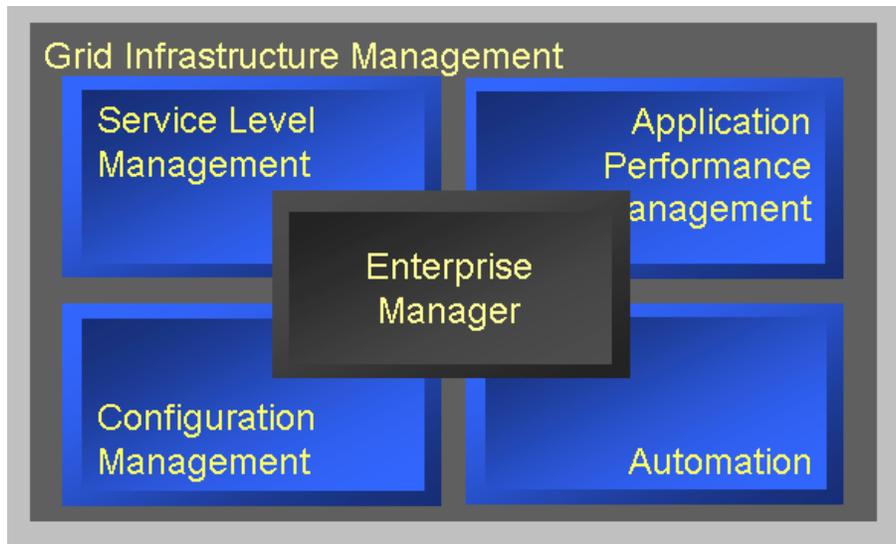
Packaged Application Management Solutions

Oracle Enterprise Manager provides three specially designed solutions for managing Oracle E-Business Suite, PeopleSoft Enterprise and Siebel applications. These solutions include:

- Application Management Pack for Oracle E-Business Suite
- Application Management Pack for PeopleSoft Enterprise
- Application Management Pack for Siebel

Custom Application Management Solutions

Oracle Enterprise Manager is the leading solution for managing custom applications that run on the grid. It helps align IT and the business around services, helps identify and resolve application performance problems before they can impact the business, reduces the cost of managing grid computing environment through automation, and deals effectively with the thousands of changes that must be made to the IT environment by prioritizing changes so their business impact can be understood, and their implementation verified. Most importantly, Oracle Enterprise Manager has capabilities that help specifically address SOA management challenges.



The rest of this white paper will discuss these two sets of solutions in greater detail. Each of these two solution sets provides tools in four functional areas: Configuration Management, Application Performance Management, Service Level Management, and Automation.

CONFIGURATION MANAGEMENT

In order to achieve the necessary level of performance and availability to support the business objectives, applications must be configured properly.

Automatic Discovery

The first step in managing an application is to establish a detailed inventory of the application environment. Oracle Enterprise Manager collects detailed configuration information of all host systems and the installed software components across the environment. For packaged applications, Oracle Enterprise Manager goes a step further to automatically introspect topology information that are already defined and stored in Oracle E-Business Suite, PeopleSoft Enterprise, and Siebel applications in order to achieve a full inventory of all the components that need to be managed.

Achieve complete knowledge of the application environment through automatic discovery and mapping of applications to underlying components.

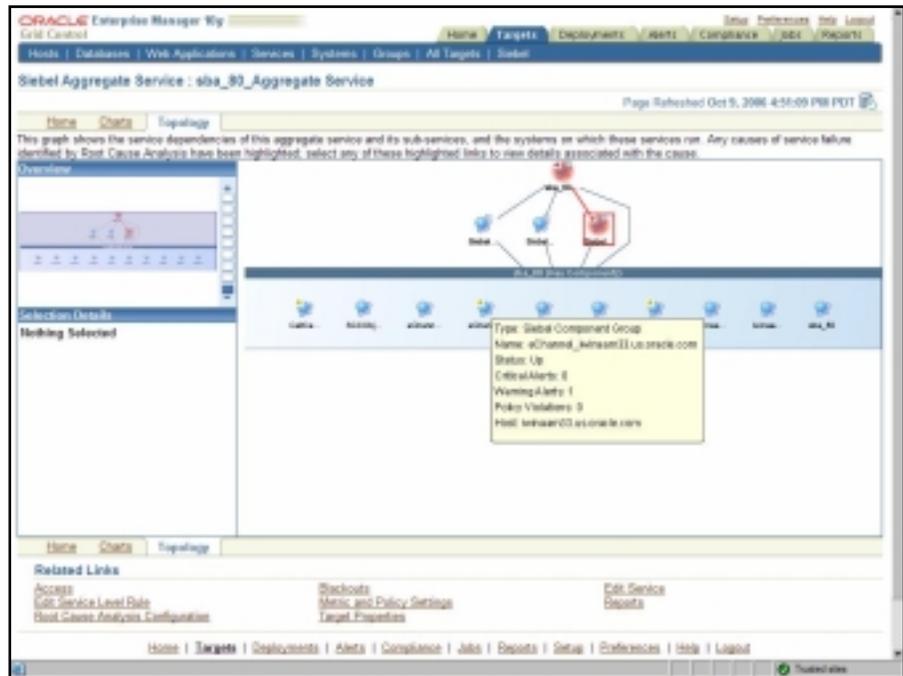


Figure 1 - Oracle Enterprise Manager Topology Viewer

Data collected includes information on:

- Host hardware specs including number and clock speed of the CPUs, memory, hard disk and network information
- Operating system parameter settings, file system information and installed packages and patches
- Oracle software installed on the host including version and component information, patch sets and interim patches, as well as software configuration settings
- Third party software that are used in conjunction with Oracle technologies
- The relationships amongst applications and their infrastructure components

This comprehensive application environment inventory is stored in Oracle Enterprise Manager's integrated Configuration Management Database (CMDB),

which is the foundation of Oracle Enterprise Manager's configuration management system. By default, the configuration data is refreshed daily. Administrators may choose to refresh this data at any time with the click of a button.

Policy Manager

Once the configurations are captured, the next step is to make sure that all the application components are set up properly. Enterprise-wide compliance with Oracle's best practice configuration policies can be automatically monitored with the Policy Manager, saving many hours of tedious and repetitive work.

Severity	Violations Count	Policy Rule	Target	Type	Most Recent Violation	Category	Compliance Score (%)	Non-Compliant Objects
✖	2	Critical Patch Advisories for Oracle Homes	stam11.us.oracle.com	Host	Oct 9, 2006 2:19:22 PM PDT	Configuration	26	Oct 9, 2006 2:19:22 PM PDT
✖	3	Critical Patch Advisories for Oracle Homes	stake-pc2.us.oracle.com	Host	Oct 9, 2006 1:38:42 PM PDT	Configuration	26	Oct 9, 2006 1:38:42 PM PDT
⚠	1	Hot Users Automatic Standby Management	MY181_wentf18.us.oracle.com	Database Instance	Oct 9, 2006 1:49:25 AM PDT	Configuration	97	Oct 9, 2006 1:49:25 AM PDT
✖	1	Privilege with Excessive Allowed Failed Logins (ORA00004)	MY181_wentf18.us.oracle.com	Database Instance	Oct 9, 2006 1:27:35 AM PDT	Security	38	Oct 9, 2006 1:27:35 AM PDT
✖	5	Oracle Home Details (Database/Instances)	MY181_wentf18.us.oracle.com	Database Instance	Oct 9, 2006 1:27:35 AM PDT	Security	26	Oct 9, 2006 1:27:35 AM PDT
✖	3	Excessive Public Oracle Privileges	MY181_wentf18.us.oracle.com	Database Instance	Oct 9, 2006 1:27:35 AM PDT	Security	26	Oct 9, 2006 1:27:35 AM PDT
✖	2	Database Grace Time	MY181_wentf18.us.oracle.com	Database Instance	Oct 9, 2006 1:27:35 AM PDT	Security	26	Oct 9, 2006 1:27:35 AM PDT
✖	3	Oracle Privileges on SYS_PLUG_TO_PUBLIC	MY181_wentf18.us.oracle.com	Database Instance	Oct 9, 2006 1:27:35 AM PDT	Security	42	Oct 9, 2006 1:27:35 AM PDT
✖	3	Oracle Privileges on SYS_PLUG_TO_PUBLIC	MY181_wentf18.us.oracle.com	Database Instance	Oct 9, 2006 1:27:35 AM PDT	Security	42	Oct 9, 2006 1:27:35 AM PDT
✖	3	Oracle Privileges on SYS_PLUG_TO_PUBLIC	MY181_wentf18.us.oracle.com	Database Instance	Oct 9, 2006 1:27:35 AM PDT	Security	42	Oct 9, 2006 1:27:35 AM PDT
✖	3	Database Grace Time	MY181_wentf18.us.oracle.com	Database Instance	Oct 9, 2006 1:27:35 AM PDT	Security	26	Oct 9, 2006 1:27:35 AM PDT

Figure 2 - Policy Violation Report

Policy compliance is evaluated continuously even as new targets come online. Administrators are immediately advised of any policy violations as they are identified, and suggestions are given as to how to address the violations. Individual policies can be deactivated enterprise-wide or on a per-target basis. By proactively ensuring the proper configuration of the systems, Oracle Enterprise Manager helps prevent problems that are associated with incorrect settings.

APPLICATION PERFORMANCE MANAGEMENT

Besides tracking configurations, administrators need to monitor the applications proactively for potential problems and fix problems at the first sign of trouble.

Increase performance and availability through proactive monitoring and alerting.

Proactive Monitoring and Alerting

As applications are put into operation, Oracle Enterprise Manager continuously monitors key performance, usage and health indicators, and the occurrence of errors and warnings of the discovered application components. If any anomaly is found, Oracle Enterprise Manager alerts administrators to the potential problem, and can escalate the problems to other persons as necessary. In addition, features such as Automatic Root Cause Analysis and Adaptive Thresholds increase the accuracy of the alerts by reducing false positives.

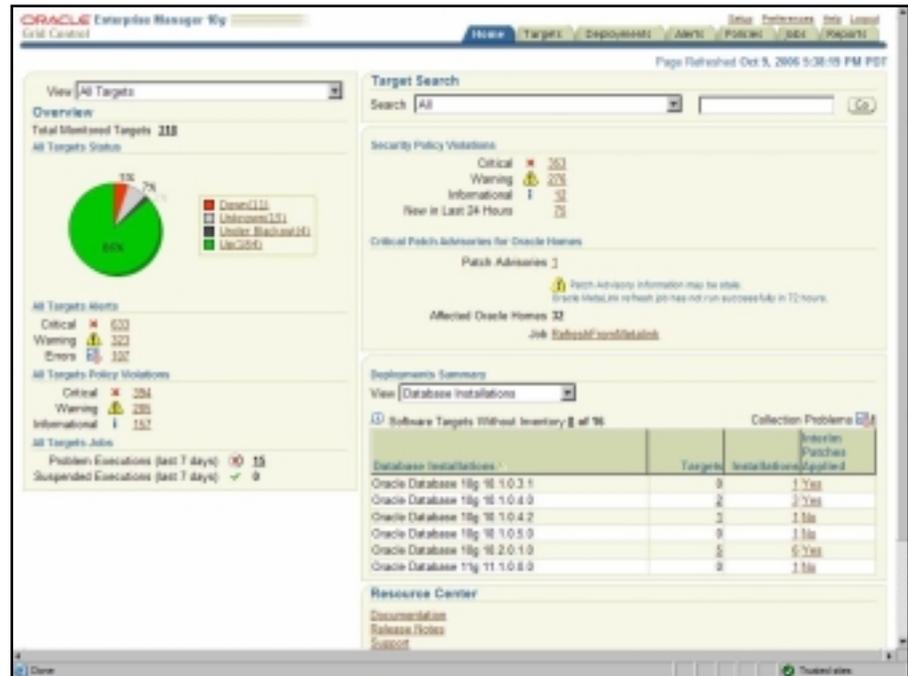


Figure 3 - Grid Dashboard

Oracle Enterprise Manager supports both “active” and “passive” monitoring of applications. Active Monitoring uses specially designed service test “beacons” to drive transactions through the application’s user interface. Passive End-User Monitoring leverages transaction data automatically collected by the application infrastructure to monitor the actual performance that end users experience. With this data, administrators can:

- Understand the performance of applications from the end-user perspective.
- Analyze the scope and impact of performance problems.
- Prioritize repairs for system problems based on scope and impact analysis.

Dashboards

Dashboards provide the graphical visualization needed to achieve situation awareness for the health of applications when emergencies occur, or simply when the administrator needs to get an idea on how the application is performing.

Administrators may customize the dashboard pages by choosing the metrics and statistical functions for roll-ups. The dashboards allow administrators to:

- Customize aggregated performance, usage and availability metrics for consolidated event monitoring, and monitor the entire application environment, including 3rd party infrastructure components such as Microsoft SQL Server, IBM DB2, F5 Load Balancer and EMC Storage Devices through the use of plug-ins, as one logical entity rather than individual components.
- View system topology with visual identification of problems.
- Analyze performance and workload distribution.

Configuration Comparison

Oracle Enterprise Manager provides tools for comparing elements within the application environment, or between different snapshots of the application environment at great detail, allowing the administrator to quickly and easily pinpoint any potential differences. This helps to keep the components in the application environment synchronized and reduces "configuration drift". It also simplifies investigations into why components that are presumed to be identical may behave differently.

Fix problems faster using configuration comparison; interactive transaction performance analysis and event log analysis.

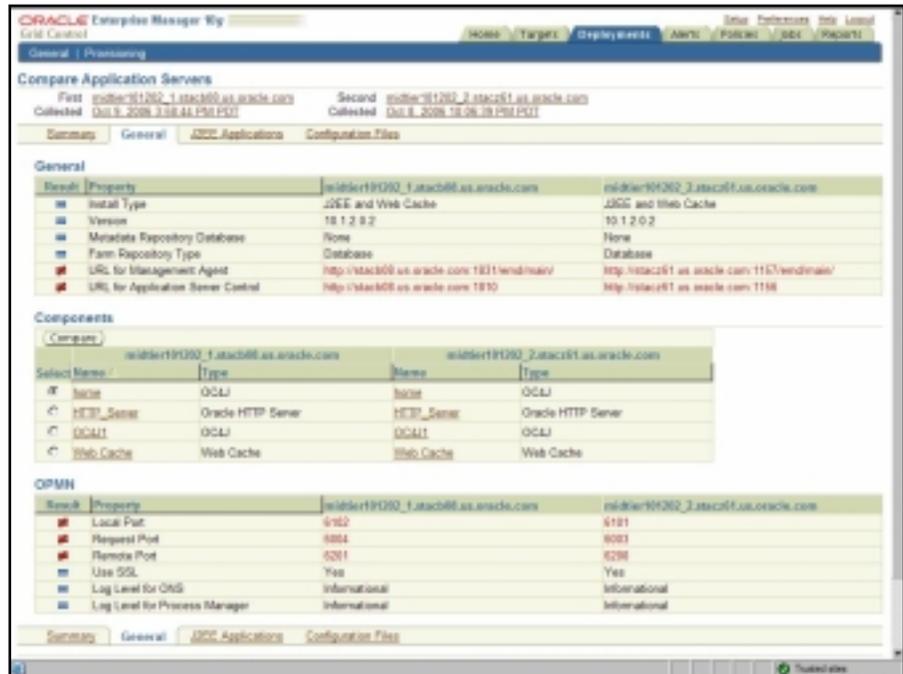


Figure 4 - Configuration Comparison

Interactive Transaction Performance Analysis

After an application performance problem is identified, the next step is to investigate the cause of the problem by locating transaction bottlenecks using

captured execution data. Oracle Enterprise Manager's Transaction Performance Analysis tool allows administrators to:

- Look for all the transactions that are associated with a user.
- Identify the slowest running transactions.
- Get the aggregate breakdown on where time is spent in processing transactions, and the incremental CPU and memory consumption for the steps.
- Visualize the data graphically.
- Trace a particular transaction to identify bottleneck.

Event Log Analysis

Another tool that Oracle Enterprise Manager provides is event log analysis. In distributed applications, event logs are often recorded in multiple files on multiple physical servers. Finding the relevant log entries that provide clues on the cause of a problem can be a tedious exercise of searching through many files on different machines. Oracle Enterprise Manager provides a centralized way to find the logs, and browse them once the proper ones are located. This helps administrators to find the relevant information needed to solve application problems faster.

SERVICE LEVEL MANAGEMENT

Align business and IT through Service
Level Management.

In order for IT to be able to work effectively with its line-of-business counterparts and align their priorities, they must achieve common understanding of service level objectives and make decisions through Service Level Management.

Service level may mean different things to different organizations in different contexts. For example, availability, a key component of service level, may be defined as the percentage of uptime excluding or including regularly scheduled maintenance. Furthermore, the very definition of uptime may be open to interpretation because of the distributed nature of modern applications. For some applications, merely being able to login and look up information may be adequate. For others, there is a certain set of critical transactions that must be supported.

Therefore, the first step in effective collaboration and alignment is to achieve a more precise definition of service level. With the more formal service level objective defined, IT and line-of-business sponsors may then set up the proper monitoring and reporting mechanisms to ensure that the required service levels are achieved.

Modeling Application Services

To enable monitoring of application services, administrators can define Service Level Objective, Availability Criteria, Key System Components, and Service Tests to model services as executed by end-users. Oracle Enterprise Manager works seamlessly to enable monitoring of services without the need to modify any application code. In addition, Oracle Enterprise Manager provides the ability to:

- Define service level and the time period when it is enforced.

- Achieve exact availability definition.
- Map application services to its underlying IT infrastructure.
- Graphically model and view all critical system components and dependent sub-services.
- Enable “beacons” to measure the availability and key performance indicators from representative end-user locations.
- Easily record business transactions to monitor for availability and performance.

Oracle Enterprise Manager provides the flexibility to define availability criteria according to business requirements. Availability of a service can either be determined by executing service tests from key user locations where “beacons” are enabled, or by using the availability status of underlying critical system components.

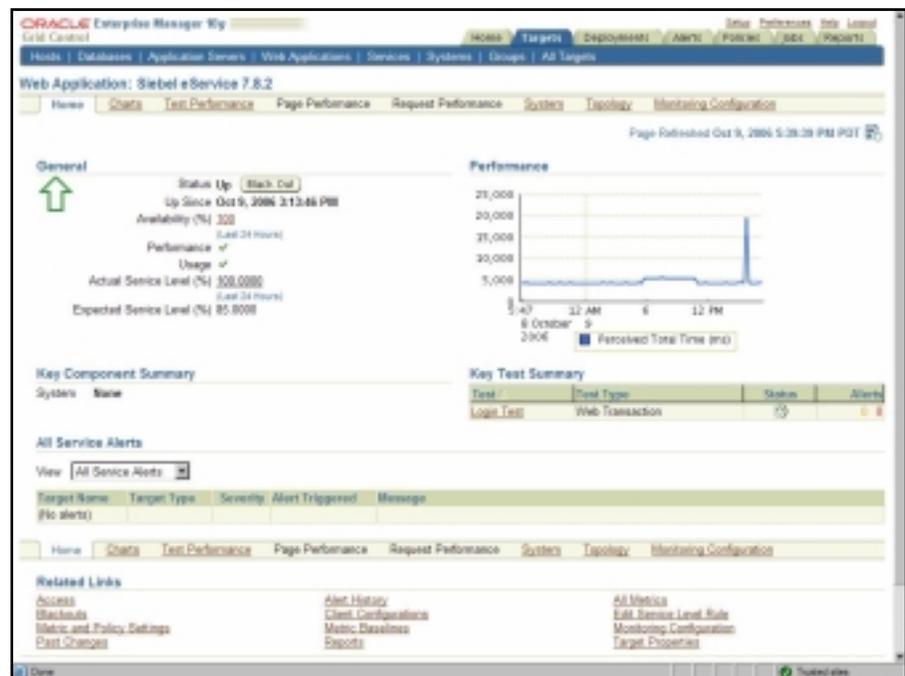


Figure 5 - Service Home Page

Monitoring Service Performance and Usage

Service performance indicates the quality of service that applications are providing to their end-users. Service usage represents the user demand of the application in terms of its underlying systems components. Both performance and usage metrics are essential service level indicators because often, poor performance may be a result of an overload of demand for an underlying system resource. Oracle Enterprise Manager enables administrators to choose from a variety of out-of-box system metrics that can best represent key indicators for the performance and usage of applications, and:

- Ensure critical business operations are available to their end-user communities.
- View at a glance the availability status of all the service's sub-services, components and their relationships using Oracle Enterprise Manager's Topology viewer.
- View all historical performance and usage metric charts to identify trends and problem areas causing performance bottlenecks.
- Determine whether performance problems are attributed to localized network problems or to underlying system components.
- Measure transaction response times.
- Be notified and informed of service problems before they seriously impact end-users.

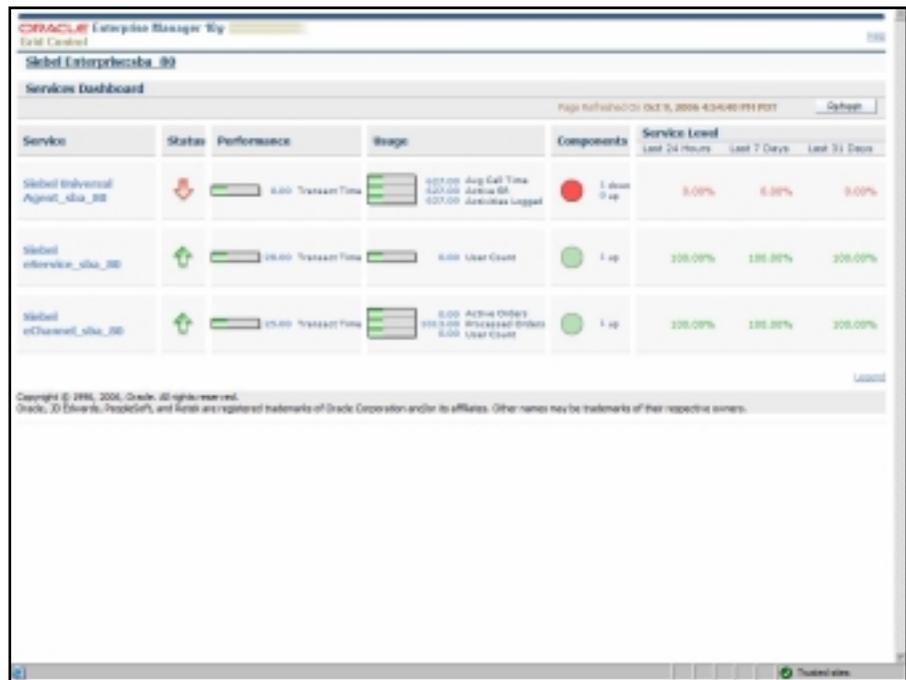


Figure 6 - Services Dashboard

Reporting Service Level Indicators

Centralized and comprehensive reporting is essential in enabling IT and line-of-business application sponsors to make fact-based decisions using common information. Oracle Enterprise Manager provides both at-a-glance summary and detailed views of applications. Reports are provided both at the executive level for assessing overall service level compliance and making IT investment decisions, and at the administrative level for ensuring consistent delivery of high service levels. Reporting features available include:

- Customizable Service Dashboards that provide a picture of the overall health of all critical applications services.

- Various out-of-box reports for service availability and performance.
- Customizable reports using Oracle Enterprise Manager Information Publisher.

AUTOMATION

The primary direct costs associated with operating applications are labor and systems resources. Besides the productivity enhancing tools that make it easier and quicker to achieve proper system configuration, monitor system health and troubleshoot problems, Oracle Enterprise Manager provides other automation capabilities that optimize resource consumptions and simplify the day-to-day management of the applications.

Bare-Metal Provisioning

Ensuring that resources are not under or over-provisioned to an application while balancing the need to achieve required performance level require constant monitoring and effective, just-in-time reaction. Oracle Enterprise Manager optimizes resource allocation to applications through automatic provisioning of hardware. When more resources are needed, administrators simply add more hardware, and let Oracle Enterprise Manager's Bare-Metal Provisioning capability to install the application and the infrastructure needed on a new server machine. When processing needs change, administrators reallocate the resource accordingly and let Oracle Enterprise Manager take care of re-imaging the machine. This automatic provisioning mechanism helps to optimize resource allocation, while reducing the labor it takes to achieve the balance.

Patch Management

One of the key challenges in managing an application environment is keeping the software configuration up-to-date with the latest patch level in order to take advantage of the continuous improvements in performance. Oracle Enterprise Manager makes it easy through its integration with Oracle MetaLink. When a patch becomes available, Oracle Enterprise Manager evaluates the environment to see if the patch is applicable, and alerts the administrator on its availability. The administrator may then decide to apply the patch at the appropriate time, and execute the patch application across the entire environment through a wizard-driven interface.

Cloning

Oracle Enterprise Manager provides the ability to create a new application environment based on an existing working model. When rolling out an application, administrators may want to create a staging environment to assemble all the components and run system tests to ensure the proper integration of all the pieces. With cloning, they may create the production environment out of this staged environment. Cloning can also help to scale out the capacity of the application environment on-demand. Administrators can easily identify idle

servers and put them to use by cloning new software on them and adding the new servers to applications that need the extra resources. This level of automation saves time and reduces the chance of making mistakes. Another use of cloning is to create a development or test environment that resembles the actual production environment. In this case, cloning can not only replicate the environment, but also filter out sensitive data not needed in the test data set.

Configuration Snapshot

Administrators often need to create new systems that are equivalent in performance to existing systems. One way to do this is to capture point in time information for an existing system. This information can then be used as a blueprint for creation of new systems. Oracle Enterprise Manager allows users to easily capture, store and view such information.

PATH TO FUSION APPLICATION

Oracle's next-generation enterprise applications will merge the best features from all of Oracle's product lines—Oracle E-Business Suite, Siebel, PeopleSoft Enterprise, JD Edwards EnterpriseOne, JD Edwards World—into a new enterprise software line called Oracle Fusion Applications. The ultimate objective of Oracle Fusion Applications is to provide customers with better business insight, more-adaptable business processes, and a superior ownership experience. Not just a vision for the future, these changes are happening today, as some of these features are incorporated into the newest releases of applications. In addition, Fusion Middleware, the underlying technical foundation for Fusion Applications, are available today, and customers may begin to leverage this set of technology immediately to augment existing applications and pave the path for the future.

Oracle is embedding the Oracle Superior Ownership Experience into the DNA of its next-generation applications and their infrastructure, with the goal of offering reduced costs, improved risk management, and an enhanced customer experience. Oracle Enterprise Manager is a key component for delivering this Superior Ownership Experience. Customers may begin to take advantage of Oracle Enterprise Manager by using it to manage existing applications. When it makes sense to augment existing applications with Fusion Middleware technologies or make the transition to Fusion Applications, customers may do so while using Oracle Enterprise Manager to manage current applications, Fusion Middleware and Fusion Applications as one single logical system. The approach makes it easier to take advantage of Fusion functionalities at customer's own pace, and protects their current investments in applications.

CONCLUSION

Oracle Enterprise Manager provides complete, integrated solutions to achieve the level of business service quality required of enterprise applications. It includes tools for managing configuration, performance and availability, and when

Adopt Fusion functionalities incrementally,
and manage current applications and
newer Fusion technologies as one logical
system.

combined with other management packs and plug-ins, it provides the means to achieve end-to-end management of the entire application infrastructure. It allows management of applications both from a traditional system perspective, as well as from a service perspective. IT professionals can thus collaborate effectively with application owners to meet their business needs. Finally, it provides a roadmap for the adoption of the state-of-the-art capabilities that next generation Oracle Fusion Applications will bring.



Managing Applications with Oracle Enterprise Manager 10g
November 2007
Author: Chung Wu
Contributing Authors: Rajiv Taori, Moe Fardoost

Oracle Corporation
World Headquarters
500 Oracle Parkway
Redwood Shores, CA 94065
U.S.A.

Worldwide Inquiries:
Phone: +1.650.506.7000
Fax: +1.650.506.7200
oracle.com

Copyright © 2007, Oracle. All rights reserved.

This document is provided for information purposes only and the contents hereof are subject to change without notice.

This document is not warranted to be error-free, nor subject to any other warranties or conditions, whether expressed orally or implied in law, including implied warranties and conditions of merchantability or fitness for a particular purpose. We specifically disclaim any liability with respect to this document and no contractual obligations are formed either directly or indirectly by this document. This document may not be reproduced or transmitted in any form or by any means, electronic or mechanical, for any purpose, without our prior written permission. Oracle, JD Edwards, PeopleSoft, and Siebel are registered trademarks of Oracle Corporation and/or its affiliates. Other names may be trademarks of their respective owners.