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Oracle Enterprise Manager Cloud Control 12c Managing Exalogic Elastic Cloud with Oracle Enterprise Manager Cloud Control

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Executive Overview

Oracle Enterprise Manager is Oracle's integrated enterprise IT management product line and provides the industry's first complete cloud lifecycle management solution. Oracle Enterprise Manager's Business-Driven IT Management capabilities allow you to quickly set up, manage and support enterprise clouds and traditional Oracle IT environments from applications to disk. Enterprise Manager allows customers to achieve:

- *Best service levels for traditional and cloud applications* through management from a business perspective including Oracle Fusion Applications
- *Maximum return on IT management investment* through the best solutions for intelligent management of the Oracle stack and engineered systems
- *Unmatched customer support experience* through real-time integration of Oracle's knowledgebase with each customer environment

Introduction

Enterprise Cloud presents new management challenges. The 2010 IOUG Survey on Cloud Computing states that a top benefit expected from private cloud adoption is "cost savings through standardization for operational efficiency." The survey also states "In this survey, more than half of the "advanced" deployers (with more than 10 services) say their greatest challenge is adequately provisioning server capacity to meet the new demands of the cloud,..." These findings clearly demonstrate that without proper management capabilities, expected economic benefits of cloud computing will not be realized. Oracle Enterprise Manager is Oracle's premiere cloud management solution. It is the industry's first complete solution including self-service provisioning balanced against centralized, policy-based resource management, integrated chargeback and capacity planning and complete visibility of the physical and virtual environment from applications to disk.

Oracle Exalogic Elastic Cloud

Oracle Exalogic Elastic Cloud is the world's first engineered system specifically designed to provide enterprises with a foundation for secure, mission-critical private cloud capable of virtually unlimited scale, unbeatable performance, and previously unimagined management simplicity. Oracle Enterprise Manager is engineered to provide a "single pane of glass" for application-to-disk management across the entire enterprise including your Exalogic and Exadata investments.

Enterprise Manager allows customers to achieve:

- Seamless management of both hardware and software assets, systems management specifically designed for both the general enterprise and Oracle Engineered Systems.
- Complete software lifecycle management over each phase: Deployment, Testing, Monitoring Management and Maintenance.
- Increased manageability and reduced support cost through proactive hardware monitoring, service request creation, and health-checks.

Oracle Enterprise Manager is the most comprehensive management solution for Oracle software and hardware infrastructure, but supports heterogeneous environments as well. Offering a single console to manage multiple server architectures and myriad operating systems, Oracle Enterprise Manager capabilities include asset discovery, provisioning of firmware and operating systems, automated patch management, patch and configuration management, virtualization management, and comprehensive compliance reporting. An open, extensible system that can be integrated with existing datacenter management tools, Oracle Enterprise Manager manages across the entire infrastructure stack—from firmware, operating systems and virtual machines, to servers, storage, and network fabrics.

Specifically engineered to work with Oracle's Exalogic Elastic Cloud, Oracle Enterprise Manager allows every individual hardware component within an Exalogic deployment to be monitored in real time and, at the customer's option, have hardware faults automatically reported to Oracle Support for proactive system maintenance.

Through integration with Oracle Support, Enterprise Manager can apply tested patch bundles tailored for Exalogic that cover every layer of the system, from device firmware and operating system to JVM, application server, upper-stack Fusion Middleware, and Oracle Applications.

Exalogic Elastic Cloud Management Strategy

Oracle has played a leading role in enabling a more agile and efficient enterprise IT environment with pioneering work in the area of grid computing. As enterprises take advantage of the cloud computing paradigm, Oracle wants to ensure that our platform and management technologies not only support but also enable that evolution. Oracle provides customers a comprehensive and complete software stack—starting with hypervisor, OS, database, middle tier all the way to enterprise applications—to build shared, scalable, elastic and flexible cloud infrastructure and services. In addition, Oracle

Enterprise Manager provides a very rich and scalable management framework providing a unified view of the enterprise cloud.

While Exalogic is optimized for enterprise Java, Oracle WebLogic Server, Oracle Fusion Middleware, and Oracle Fusion Applications, it is also an outstanding environment for the thousands of third-party and custom applications widely deployed today. Simply put, Exalogic is a giant step forward in realizing Oracle's vision for the datacenter of the 21st century.

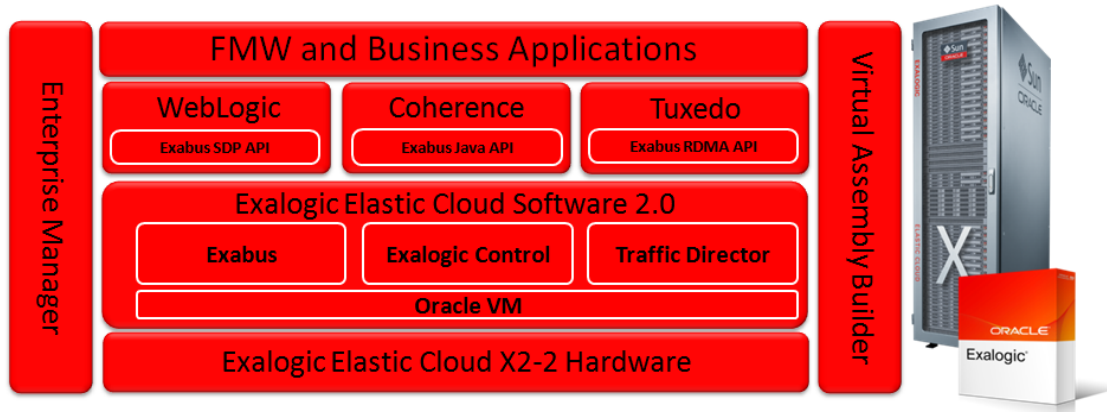


Figure 1 – Exalogic Elastic Cloud Software Infrastructure

Exalogic Elastic Cloud Management

Organizations have to be agile in order to compete globally and adapt to changes in business and technology. To achieve this objective, many large IT organizations have implemented complex integration solutions that include Java EE application servers, Service-Oriented Architecture (SOA), Business Process Management (BPM), identity management, and business intelligence platforms. These technologies form an enterprise architecture that supports distributed applications and orchestration of complex end-to-end business processes and services. Oracle has optimized this software stack for its engineered systems, providing the reliability and scalability to solve virtually any business problem.

Increasingly, the productivity and financial benefits delivered by these applications are making them an indispensable part of their owners' day-to-day business operations. These mission-critical applications handle complex business processes, ranging from processes that orchestrate financial transactions to processes that prepare insurance quotes. Maintaining high application availability and performance is vital to the owners of these applications. Unfortunately, managing this class of applications is no simple task and requires the right comprehensive management solution to realize the full return on investment (ROI) of these applications and services.

Oracle Fusion Middleware provides the runtime engine for mission-critical Java EE, SOA and middleware applications. This white paper outlines some common challenges faced by IT administrators running Oracle Fusion Middleware enterprise applications deployed on Exalogic and describes how Oracle Enterprise Manager, in conjunction with Exalogic, enables customers to reduce

the cost of management by providing a single management console to manage their end-to-end application environment.

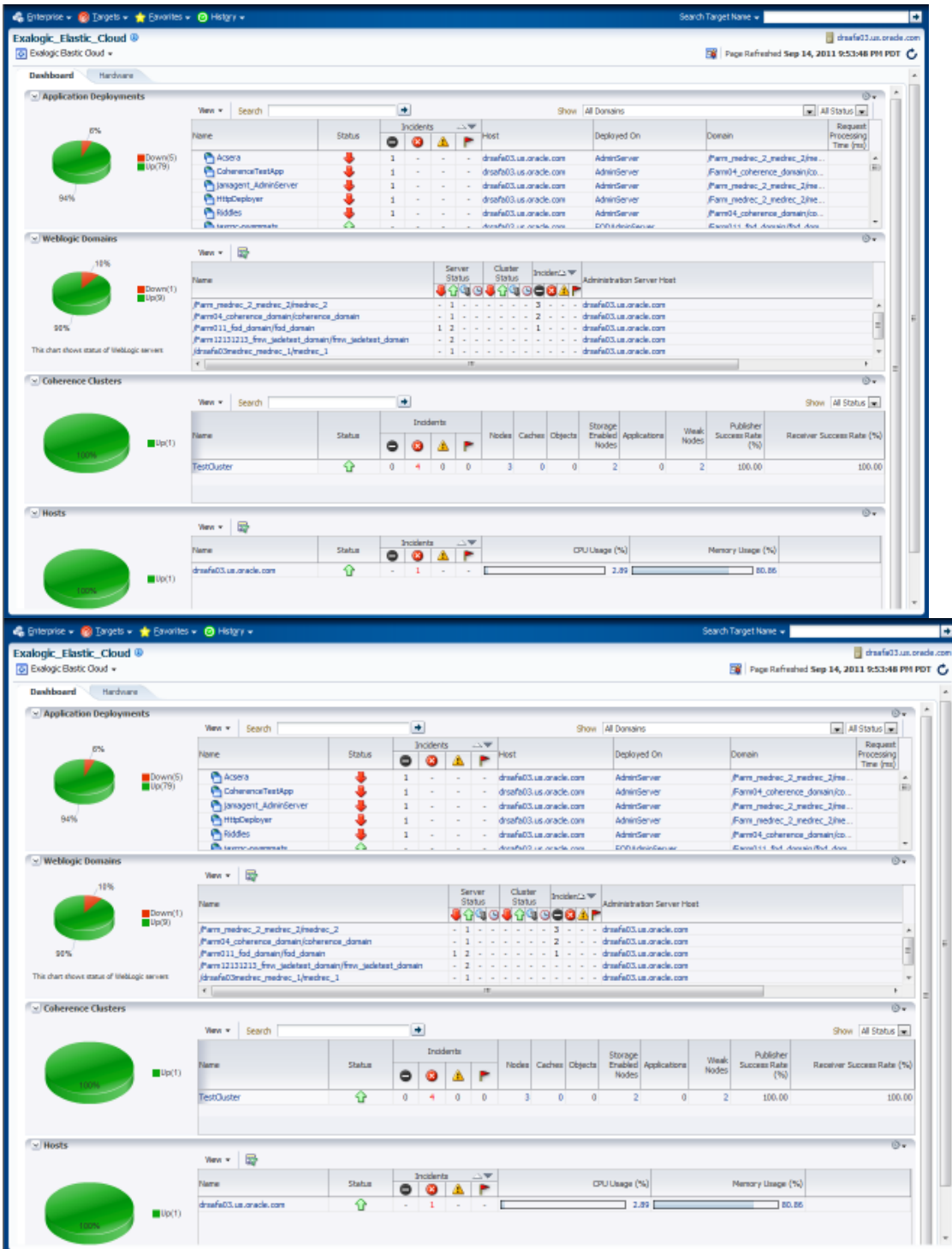


Figure 2 – Exalogic Elastic Cloud Dashboard

Application Lifecycle Management

In today's data center, proliferation of low cost servers and numerous software deployments on those servers have brought in a fresh set of lifecycle management challenges. One well-known challenge is deployment of software which supports the business. Such software spans from the application to the middleware to the database, and on down to the underlying operating system. Installing, configuring, and patching all these tiers is time consuming and error prone. Another common problem is administrators' difficulty in managing capacity to changing workload patterns. When there is an increased demand for services, there is no efficient nor automated way to adjust the underlying infrastructure – by adding capacity - to improve application performance. Manual, error-prone methods are most often relied upon. Such lifecycle management challenges eventually result in administrators spending a significant amount of time in software provisioning and maintenance operations.

Complete and Integrated Management

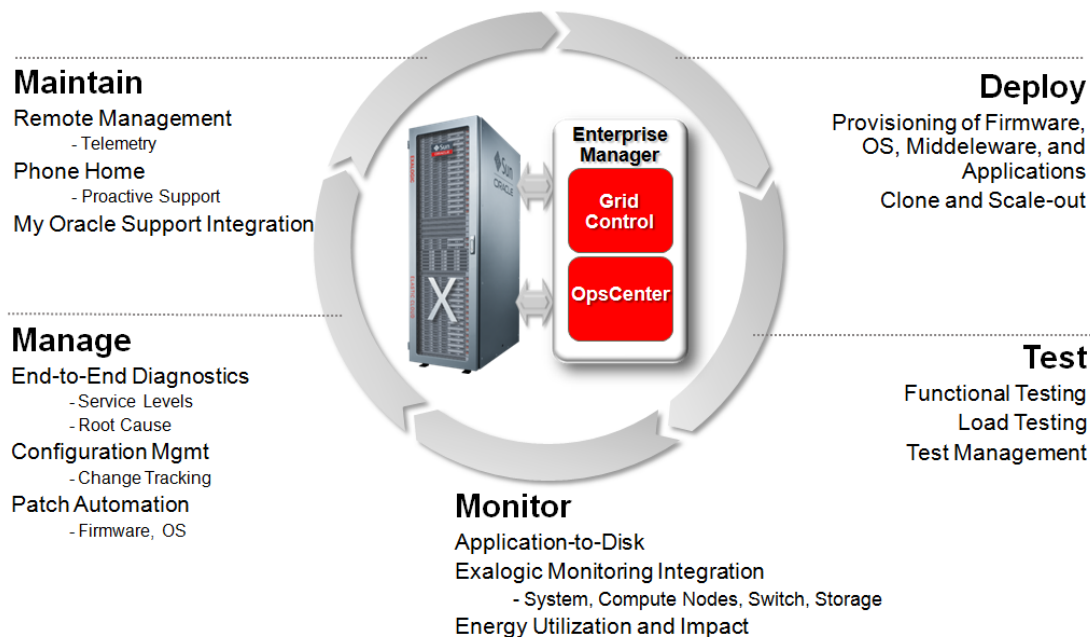


Figure 3 – Exalogic Elastic Cloud Software Infrastructure Management Lifecycle

Deploy

Operations Automation

Rather than spend resources on manually installing and configuring Oracle Fusion Middleware software, administrators would rather spend time and money on more strategic initiatives. To help achieve this, Oracle Enterprise Manager has automated common provisioning operations such as cloning Oracle SOA Suite 11g and scaling out an Oracle WebLogic Domain, making such critical

datacenter operations easy, efficient and scalable results in lower operational risk and lower cost of ownership.

Automating Discovery and Tracking Assets

Traditionally, tracking assets and configuration items across the IT environment relies upon the knowledge of key individuals, time-consuming ad-hoc processes and scripts, and manual, error-prone spreadsheets. In contrast, Oracle Enterprise Manager automatically collects deep configuration information about Oracle WebLogic Server and the associated Fusion Middleware stack as well as its underlying hardware and operating system.

Monitor

Performance Monitoring

With Oracle Enterprise Manager, administrators can proactively monitor their Oracle software stack from both systems & end-user perspectives.

Application Monitoring for Runtime Performance and Availability

Oracle Enterprise Manager brings predictability, visibility and control to service-oriented applications by delivering comprehensive service level management for services, transactions and business processes across heterogeneous environments. Java EE metadata can be complex and abstract and this complexity keeps growing with the introduction of new frameworks. In order to map the interdependencies between various application components such as Servlets, JSPs, EJBs, and underlying SQL calls, it is important to understand the metadata defining those relationships.

Request Monitoring

Oracle Enterprise Manager automatically discovers business transaction request call paths and provides visibility into the dynamic and flexible application infrastructures providing everything from aggregated request monitoring metrics with call path topology details to instance level transaction tracing across web service infrastructures.

Energy Monitoring

Oracle Enterprise Manager allows datacenter staff to observe and take action against energy misuse, and supports viewing energy consumption in terms of real dollars. Oracle Enterprise Manager correlates energy draw to CPU, temperature, and fan information and the data can be aggregated per rack, business owner, or any other logical group combination.

Manage

Tracking End-to-end Performance, Availability and Service Level Management

Oracle Enterprise Manager monitors system traffic in real time, providing live views of in-flight transactions, keeping administrators apprised of the behavior of each application component. It provides a rich snapshot of vital runtime data—such as throughput, availability, response times and

faults—across a range of time intervals and within the context of the business transaction and the business user.

Mapping Services and Associated System Components

Administrators have to ensure that the critical applications they are responsible for are meeting the expected service levels. If they are not, they are often required to quickly remedy the situations in a very short timeframe. The service level management built into Enterprise Manager provides the ability to proactively monitor all service and system components via proactive service tests that can mirror actual transactions in the application from any geographical location.

Cross-tier JVM Diagnostics

Oracle Enterprise Manager provides deep diagnostics for any JVM within the application infrastructure providing immediate insight into actual thread stack or other common JVM issues. Oracle Enterprise Manager also correlates the Java session to that of a database session making it possible to do cross-tier analysis. Oracle Enterprise Manager's deep diagnostic capability operates at a native level, which makes it possible to have extremely low performance overhead (<1%) making it suitable for 24/7 real-time production diagnostics.

Configuration Management

Oracle Enterprise Manager also provides the ability to track configuration changes over time across the stack—from the application down to the hardware—allowing administrators to easily monitor all changes for a specific configuration between two points in time. By keeping systems configured to a standard baseline and identifying any configuration changes that occur, Oracle Enterprise Manager helps organizations reduce “configuration drift” and confirm if and when a planned change takes place.

Maintain

Support Workbench

When problems arise within the Oracle WebLogic or Oracle Fusion Middleware stack that the IT organization cannot resolve on their own, they must reach out to Oracle Support for assistance. To help Oracle Support more quickly triage an issue, it is important to provide them with the necessary information to diagnose the problem.

Integration with My Oracle Support offers some powerful features that help to simplify and expedite the management of datacenter hardware. Automated service requests based on specified hardware alarms and faults can be initiated, tracked, and managed through the Oracle Enterprise Manager console. Oracle Enterprise Manager automatically forwards debugging information and data files to My Oracle Support. In addition, new OS patches and updates can be received from My Oracle Support and are pushed down to Oracle Enterprise Manager. These proactive functions can help facilitate problem resolution and free datacenter staff for other duties.

Ensuring Compliance with Standards

Ensuring compliance with standards such as SOX, ITIL, and PCI, as well as with unique business standards, is a challenge that impacts the overall line of business as well as IT operations. Oracle Enterprise Manager ships with several predefined policies for Oracle WebLogic Server, Oracle Fusion Middleware, and the Operating System and also enables users to define their own specific policies and groups to quickly demonstrate compliance with various regulations and standards.

Conclusion

Oracle engineered systems enable customers to serve their customers and partners more efficiently and solve business problems in a smaller, more manageable, computational footprint than ever before. Although these applications offer unprecedented flexibility and agility, they now are more challenging to monitor and manage. To effectively manage this new breed of applications, IT organizations need a new breed of management solutions. Oracle Enterprise Manager Cloud Control provides a new approach that allows Oracle Exalogic Elastic Cloud administrators to stay focused on business priorities by using the most comprehensive management solution for the entire system stack in order to reduce the effort and cost of managing sophisticated applications built on Oracle Exalogic Elastic Cloud.



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Managing Exalogic Elastic Cloud with Oracle

Enterprise Manager Cloud Control

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