

Oracle Application Server 10g : The Best Application Server for the Oracle Database

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Oracle Application Server 10g: Best Application Server for Oracle Database

1. INTRODUCTION

Enterprise applications have become complex and distributed spanning across multiple tiers. The infrastructure software required to develop, host and manage these applications has grown in scale and complexity too.

- The infrastructure software is fragmented and distributed requiring different management tools to manage and monitor. This makes it difficult to manage and monitor a distributed application as one holistic entity.
- For instance, in order to build an enterprise application, apart from database, the middleware required is itself varied and involves several different pieces like J2EE Server, Directory Server, Enterprise Portal, Business Process Management, Business Integration and Security infrastructure.
- The concept of quality of services features like high availability, fault tolerance, scalability and disaster recovery at each tier becomes meaningless unless you have these features end-to-end at application level. In order to achieve this, all the infrastructure software pieces, databases and application servers need to be integrated tightly.

“OracleAS leverages the advanced features of the Oracle Database better than BEA WebLogic Server, so customers potentially get more value from their database investments.”
-The FactPoint Group,
July 2003

Oracle Application Server 10g is the best Application Server for the Oracle Database because it makes it very simple and productive to develop and deploy Internet Applications and Web Service based solutions with Oracle Database in three ways:

- *Broadest, Most Up-to-Date Support for Oracle Database Features* – Oracle Application Server 10g always has the most up-to-date support for new versions of the Oracle Database and provides access to the broadest set of database features. Oracle Database has many enterprise features like Real Applications Clusters (RAC) option for High Availability, Fast Connection Failover, Enterprise User Security, Virtual Private Database, Label security, Advanced Queuing (AQ) system supporting message persistence and transactions, Oracle Spatial for Location Services, Oracle Ultra Search, Backup and Recovery and Disaster Recovery features. Oracle Application Server 10g is the **only** application server in market which can leverage these

features and provide end-to-end high availability, scalability, security, management, and disaster recovery features out-of-box at the application level.

- *Most Flexible Access to Database for Application Developers* - For developers building Applications in HTML, Java/J2EE, or PL/SQL, Oracle Application Server 10g provides the most flexible access to Oracle Database features through:
 - Support for Web-based Distributed Authoring and Versioning (WebDav) protocol
 - Database access via JDBC, SQLJ, Object-Relational Mapping
- *Single Set of Development Tools* - Users can use a single set of development tools to develop, deploy, and debug applications across both Oracle Application Server 10g and the Oracle Database using Oracle JDeveloper 10g.

Oracle Application Server 10g is the only application server in market along with Oracle database that offers the following unique benefits to customers:

- Enterprise Grid Computing features
- Rapid Application Development Environment
- End-to-end High Availability & Fault Tolerance
- High Performance and Scalability
- Integrated Security and Identity Management.
- A Single Unified Systems and Application Management environment Using *Enterprise Grid Control*

2. ENTERPRISE GRID PLATFORM

Grid computing is a computing architecture that effectively pools large numbers of servers and storage into a flexible, on-demand computing resource for all enterprise computing needs. Technology innovations like low-cost blade servers, small and inexpensive multiprocessor servers, modular storage technologies, and open source operating systems like Linux provide the raw material for the Grid.

Oracle enterprise grid computing platform Oracle 10g consists of (i) Oracle Database; (ii) Oracle Application Server; (iii) Enterprise Grid Control. This platform offers a comprehensive solution to manage information and run Enterprise Applications on Grids using Oracle Database 10g and Oracle Application Server 10g. Both Oracle Database 10g and Oracle Application Server 10g can be managed in a Grid Computing environment using Oracle Grid Control. Together these products address the challenges faced by I/T organizations today:

- *Radically Reduce or Eliminate Excess Computing Capacity* by automatically load balancing workloads to use spare capacity efficiently eliminating “islands of computation”
- *Modular, Inexpensive Capacity Growth* by adding capacity on-demand in low cost modular units
- *Radically Lower Cost of Management* by centralizing administration of the resources in a Grid and automating provisioning and administration tasks across these resources

Oracle Application Server 10g is the only Application Server in the industry that along with Oracle database provides enterprise grid computing features.

3. RAPID APPLICATION DEVELOPMENT

Enterprise applications require a unified development environment to design, model, develop, deploy, test and debug applications. The tools needed to design database schemas, and develop PL/SQL applications are different from the tools required for building middle-tier application logic in J2EE. Often linking these two becomes a performance bottleneck. Also using different set of tools increases development costs and time.

Oracle JDeveloper 10g is the only integrated development environment with end-to-end support for modeling, developing, testing, debugging, optimizing, and deploying enterprise applications involving Oracle database logic in the backend and Java/J2EE and XML Web services logic running in the middle-tier. It provides:

- Visual and declarative framework for creating Object models. And from these models generate database schemas and EJBs at the same time.
- Optimized Object-Relational (OR) mapping code using Oracle Toplink for Oracle database.
- Rich Application Development Framework (ADF), a MVC framework, for rapidly building enterprise J2EE applications. ADF simplifies J2EE development by minimizing the need to write code that implements design patterns and application’s infrastructure. Oracle ADF provides these implementations as part of the framework. Visual, declarative, and wizard-based development features are built-into the ADF development environment, so inexperienced developers can quickly become productive with this framework.
- Visual environment for creating and viewing database schema, generation of SQL DDL scripts, filtering control on the database connection nodes in the Connection Navigator (filter which schemas objects you want to see, what kinds of schema objects you want to see, and optionally supply a name filter for those objects to narrow the list), SQL Worksheet to test the data returned from and the query optimizer explain plan of any SQL

statement, PL/SQL editing, compiling, and debugging (with syntax highlighting and code completion), PL/SQL Exception Breakpoints (e.g. exception breakpoint on exception named *\$Oracle.EXCEPTION_ORA_6502* to stop in the debugger whenever/wherever an ORA-6502 error is thrown in your code), WebDAV support for mapping Oracle 9i-or later version of XMLDB WebDAV folders into Oracle Jdeveloper and new visual XML Schema editor to visually understand, modify, or create new XML Schemas to use with Oracle's XML database features.

- Capability to launch a PL/SQL stored procedure in interactive debug mode and to get rich, debugger support just like for Java. This feature works with versions 8.1.7, 9.2, and 10g of the Oracle Database using Oracle JDeveloper 9.0.3 or later.

3.1 Database Web Services

There are lot of applications written in PL/SQL and running on Oracle Database. Increasingly customers leverage these assets by exposing these artifacts as web services. Oracle Application Server 10g is the only application server that can seamlessly expose Oracle database artifacts (packages, stored procedures, functions, Java stored procedures, and Oracle AQ- queues and topics) as standard based web services. It requires no coding in the middle tier to expose these artifacts as web services. A web service end point is created for every exposed service by the Oracle Application Server runtime. No other application server vendor provides such functionality out-of-box for Oracle Database applications.

3.2 Oracle Toplink Object-Relational (OR) Mapping

Oracle TopLink is a industry leading OR mapping framework that addresses the disparity between Java objects and Oracle databases. Oracle TopLink enables developers to: (i) Persist Java objects in virtually any relational database supported by a JDBC 2.0 compliant driver; (ii) Map any object model to any relational schema, using the Oracle TopLink Mapping Workbench graphical mapping tool; (iii) Use Oracle TopLink successfully, even if they are unfamiliar with SQL or JDBC, because Oracle TopLink provides a clean, object-oriented view of relational databases; (iv) Toplink provides mapping of complex SQL Types (specific to Oracle database) to Java, thus leveraging the advanced features of the Oracle database within a J2EE application without custom coding.

3.3 Oracle Business Intelligence Discoverer

Business Intelligence Applications developed using Oracle Application Server 10g also efficiently access the Oracle Database. OracleAS Personalization 10g uses the Oracle Database data mining facilities to efficiently generate sorted recommendation lists; Oracle Discoverer provides very efficient query and analysis

capabilities leveraging several Oracle Database features including Materialized Views, Query Prediction facilities, the Optimizer, and Resource Manager. Oracle BI Discoverer 10g is the first adhoc query, analysis and publishing tool to seamlessly integrate OLAP with Oracle relational database access, thus eliminating the need to use different tools for different business intelligence technologies. Discoverer allows users to create workbooks directly against the OLAP Catalog. Reports built against the OLAP Catalog will use the BI Beans query bean to build up the query, offering a much richer data selection tool than found in previous versions of Discoverer.

3.4 Oracle Ultra Search Portlet

Oracle Ultra Search is an out-of-the-box search solution that provides search across multiple repositories - Oracle databases, IMAP mail servers, HTML documents served up by a Web server, files on disk and many more. Oracle Application Server Portal 10g customers can use Ultra Search through a 'Portlet'. The Ultra Search Portlet provides crawling and universal search over all Ultra Search-supported repositories, including the ability to search the contents of OracleAS 10g Portal.

3.5 Advanced JDBC features

The JDBC driver in Oracle Database 10g supports a new and improved connection caching mechanism, the Implicit Connection Cache. It provides a rich set of features that address connection caching requirements through an efficient database connection caching in the JDBC drivers to optimize database resources and improve scalability. Connection Stripping is another useful feature (coming in JDBC 4.0, but already available in Oracle Database 10g JDBC). This useful feature lets users define their own set of tags or attributes, to enable future connection retrieval. This saves valuable CPU and network round-trips that would otherwise be necessary to set session state.

Oracle Application Server 10g JDBC data-sources leverage database 10g implicit connection cache features, thereby providing database and connection virtualization, enabling (i) Transparent and Centrally managed JDBC connection caches; (ii) Transparent Security: proxy authentication;(iii) Providing complete support for advanced Oracle data types: ARRAYs, STRUCTs, REFs, and abstract data types with inheritance; (iv) Transparent Access to rich JDBC features: connection stripping, attribute and weight based connection retrieval

4. HIGH AVAILABILITY

As more and more critical commercial applications move on the Internet, providing highly available services becomes increasingly important. In order to address this demand application server vendors and database vendors are proving high availability at each tier. But this tier-level high availability does not address application-level high availability. This application-level high availability requires

coordinated monitoring, death detection, automatic restart of failed instance, and garbage collection of stale connections across tiers and not just within a tier.

- Oracle Application Server 10g is the only application server that can provide end-to-end high availability for applications running on Oracle Database.
- Oracle Application Server 10g is the only application server that supports a single consistent fault monitoring architecture with the Oracle Database. This allows users to correlate failure events and faults across the application servers and databases. Any database or application server process failures are detected under a central management system. Any time heartbeats are missed beyond certain threshold, or a crash detected, the component is restarted. This design ensures minimal planned or unplanned downtime, thereby enabling end-to-end high availability with no single point of failure.
- Oracle Application Server 10g along with Oracle Database provides different High availability configurations like (i) active-active cluster configuration; (ii) active-passive cluster configuration.
- Both Oracle Application Server 10g and Oracle Database provide an integrated and automated backup and recovery strategy for applications, which no other application server can provide with Oracle Database.

4.1 Fast Connection Failover

In multi-tier applications with databases and application server middle tiers, detection of failures and propagation of failure events to tiers that dispatch requests is critical for end-to-end failover.

In Oracle Database 10g RAC (Real Application Cluster) or CFC (Cold Fail-over Cluster) instance failures cause stale connections in the pool. Application retries and fails if stale connections are not cleaned up. Application code, running on an application server has to detect if SQLException was caused due to a Fatal Error on the connection by explicitly calling Connection Error Detection API and is responsible for closing the connection pool and requesting for new connection pool. Additionally, some failures involving the complete loss of a database node (such as a halt or simply a loss of network connection) usually require a complete network timeout cycle to expire before the failure is actually detected and the corresponding failover takes place.

In 10g if the back end database is RAC, Oracle Application Server subscribes to the RAC node failure/failover events that gets propagated to ONS (OracleAS Notification Service). ONS in turn propagates these failure events to JDBC layer in OracleAS 10g and the JDBC layer transparently cleans up the existing stale connection pool to the failed RAC node and creates another connection pool to live RAC node. This feature is called Fast Connection Failover. No other application server other than OracleAS 10g provides this functionality.

- Fast shutdown of connections in the connection cache, when RAC instance/node failures are detected. This prevents bad or invalid connections being handed out to application connection requests. For an application that depends on the implicit connection cache for total connection management, the Fast Connection Failover mechanism provides maximum connection availability, load Balancing of connections, when a RAC UP event is generated. In this model, connections are established and load balanced to all active RAC instances, without waiting for application connection retries/requests. Note that for RAC setups, the service is almost always instantly available, except when the entire service is down.
- Fast Connection Failover property may be set from an application server component's configuration file, for example, Oracle Containers for J2EE (OC4J) data-sources.xml without requiring any code changes.

4.2 Application Backup and Recovery

Backup and recovery is one of the most important aspects of administration. If a database crashes or an application server process dies, and there was no way to recover it, the devastating results to a business could include lost data, lost revenue and customer dissatisfaction.

Oracle Application Server Backup and Recovery Tool integrated with Oracle Database Backup Recovery Tool provides complete application backup and recovery. While Oracle Application Server Backup and Recovery Tool takes backup of configuration files and metadata repository files, database backup recovery takes backup of data files.

4.3 Oracle Application Server Fast-Undo

According to many studies, 40% of application outages are caused by operator or user errors. Part of being human is making mistakes. But these errors are extremely difficult to avoid and can be particularly difficult to recover from without advance planning and the right technology. Such errors can result in "logical" data corruption, or cause downtime of one or more components of the IT infrastructure. While it is relatively simple to rectify the failure of an individual component, detection and repair of logical data corruption, such as accidental deletion of valuable data, is a time consuming operation that causes enormous loss of business productivity. Typical user-errors may include accidental deletion of valuable data, deleting the wrong data, and dropping the wrong table. Flashback Technology provides a set of new features to view and rewind data backwards in time.

4.4 Disaster recovery: Oracle Application Server Guard

Disaster recovery refers to how a system recovers from catastrophic site failures caused by natural (power outages, earthquakes etc) or unnatural disasters. Many enterprises have inadequate business continuity and disaster recovery management programs. Any severe incident, such as severe earthquake, would cause crippling damage to businesses, and some might never recover.

It is all about planning for and eliminating unplanned downtime that severely impacts the business. Over the past few years, virtually every CIO has been asked to build or bolster a disaster recovery capability. However, the described growth in distributed, Web-centric computing has fundamentally changed disaster recovery economics. Computing assets must be flexibly utilized and readily shifted from routine functions to disaster recovery purposes, whenever and wherever necessary.

Only Oracle Application Server 10g along with Oracle Database can produce such agility, and can bring the cost of disaster recovery capabilities in line with the benefit they provide. OracleAS 10g and Oracle Database is the only combination of an application server and a database that can identify and test different disaster recovery scenarios and identify optimum points of recovery allowing systems to achieve 100% recoverability of all applications.

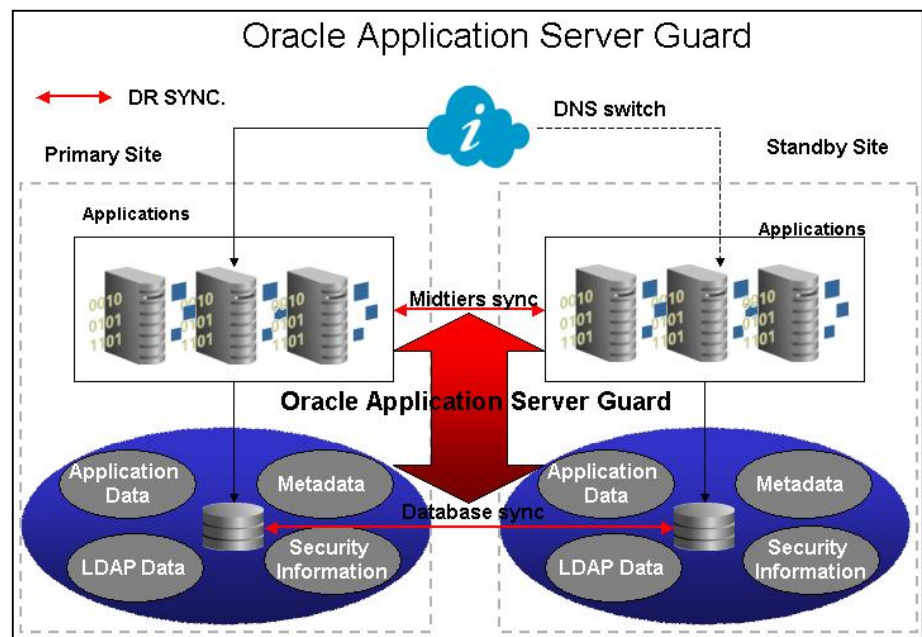


Figure 1 : Disaster Protection With Oracle Application Server Guard

Oracle Application Server Guard is the only integrated application server disaster recovery solution among major application server products. Leveraging Oracle Data Guard, the industry-leading disaster recovery solution for databases, Oracle Application Server Guard is an integrated, low-cost, and easy-to-use disaster recovery solution for an entire application system, including databases, J2EE

containers, value-add applications (Oracle Portal, Oracle Discover, Oracle Wireless, etc) and any custom applications on top of Oracle Application Server 10gR2.

Oracle Application Server Guard uses OracleAS Backup & Recovery for restoring configuration files of the Infrastructure and Middle Tiers and Oracle Data Guard technology for restoring the Infrastructure database at the standby site. ". Oracle Application Server Guard automates the following operations:

Instantiates standby site- Instantiates an standby site that mirrors a primary site.

Verifies the configuration - Verifies that a site meets the requirements to be used as a standby site for a given primary site.

Synchronizes sites:- Synchronizes the production and the standby sites using Oracle Data guard and Oracle Application Server 10g R2 Backup & Recovery Technology.

4.5 Rolling Upgrades

The term rolling upgrade refers to upgrading different instance of Application infrastructure without bringing down the deployed applications in a high availability environment. Oracle database 10g and Oracle Application Server 10g together supports application of patches in a rolling fashion minimizing the application downtime.

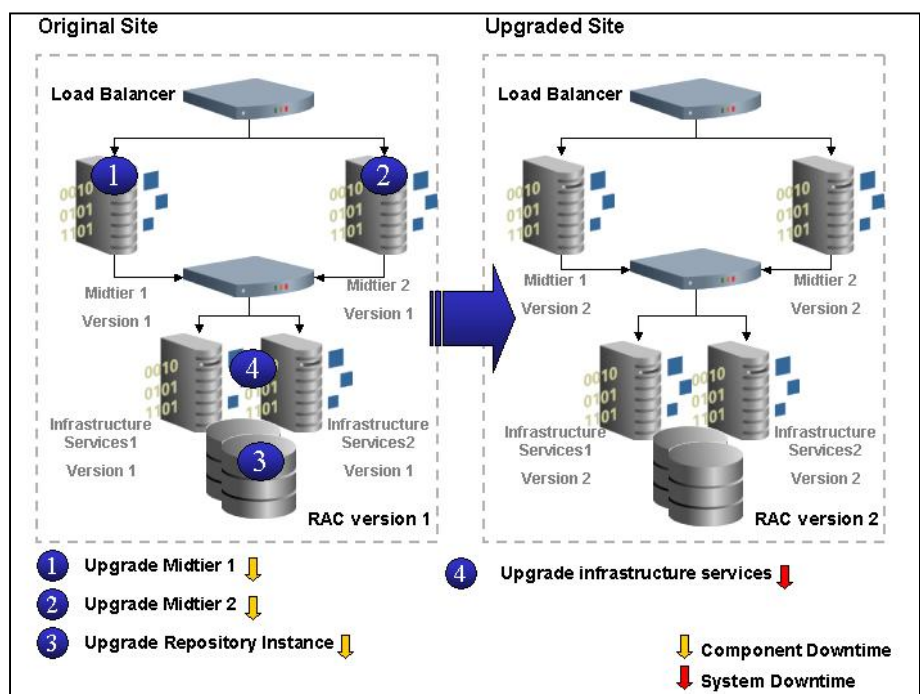


Figure 2 : Rolling Upgrade

In the above figure, Step 1 of the patch application procedure is to quiesce the first instance to which the patch is to be applied (midtier 1 in this example). Oracle patch tool (opatch) is used to apply the patch to the quiesced instance (the Oracle Home for midtier 1 is updated). Now the patched instance is reactivated and

rejoins the cluster.. Similarly, in Step 2 the midtier 2 is patched. In Step3 the Repository instance is patched. These three steps can be performed without bringing down the deployed applications. The last step, step4, upgrading infrastructure services, is the only step that involve bringing down the deployed applications.

4.6 Oracle Maximum Availability Architecture (MAA)

Maximum Availability Architecture (MAA) is a straightforward, redundant, and robust architecture that prevents, detects, and recovers from different outages within a small mean time to recovery (MTTR), as well as preventing or minimizing downtime for maintenance.

Oracle Maximum Availability Architecture (MAA) is Oracle's best-practices blueprint based on unified Oracle Database 10g and Oracle Application Server 10g high availability features and recommendations, with the goal of removing the complexity in designing the optimal high availability architecture, and maximizing systems availability.

Oracle Maximum Availability Architecture encompasses the following main components: (i) Real Application Clusters; (ii) Oracle Data Guard; (iii) Oracle Application Server 10g;(iv) Redundant Network infrastructure; (iv) Redundant Storage Infrastructure; (v) Best practices and guidelines

MAA provides the following unique benefits:

- MAA reduces the implementation costs for a highly available Oracle system by providing detailed configuration guidelines. The results of performance impact studies for different configurations are highlighted to ensure that the chosen highly available architecture can continue to perform and scale accordingly to business needs.
- MAA provides best practices and recovery steps to eliminate or minimize downtime that could occur because of scheduled and unscheduled outages such as human errors, system faults and crashes, maintenance, data failures, corruptions, and disasters.
- MAA gives the ability to control the length of time to recover from an outage and the amount of acceptable data loss under disaster conditions thus allowing mean time to recovery (MTTR) to be tailored to specific business requirements

Oracle Maximum Availability Architecture encompasses the following main components:

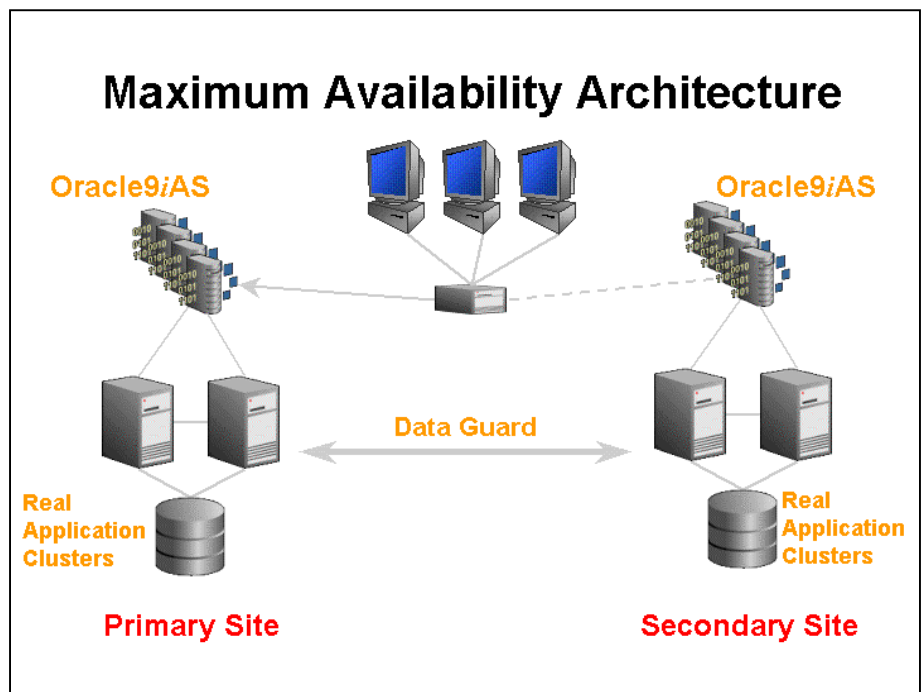


Figure 3 : Maximum Availability Architecture

5. UNIFIED SECURITY MODEL

E-business has changed how major corporations are conducting business. There is more collaborative work between the company, its customers, suppliers and partners. Companies therefore not only have to administer their employees, but also have the additional responsibility of provisioning partners, customers and suppliers to allow them access to targeted information within the company. Employee turnover, role changes, and the dynamic nature of company relationships are driving up the costs of user administration. In today's business environment there is a need for 24x7 user administration just as there is a need for 24x7 application availability.

Oracle Application Server 10g is the only application server that provides an end-to-end integrated security for both Application Server users and Oracle Database users.

Oracle Database provides data-level security policies: (i) Oracle databases have built in solutions to secure data at the row level, called fine-grained access control, also known as Virtual Private Database (VPD). This feature applies a dynamic predicate to all SQL statements, which can filter rows depending on who is accessing the data; (ii) Oracle Label Security have relied on the Oracle Database as the central repository for policy and user label authorizations.

Oracle Application Server Identity Management acts as a central repository for Oracle Label security policy and user label authorizations. Managing Oracle Label Security metadata in a centralized LDAP repository provides many benefits.

Policies and user label authorizations can be easily provisioned and distributed throughout the enterprise. In addition, when employees are terminated their label authorizations can be revoked in one place and the change automatically propagated throughout the enterprise. The following Oracle Label Security information is stored in the directory: (i) Policy information, namely policy name, column name, policy enforcement options, and audit options; (ii) User profiles identifying their labels and privileges; (iii) Policy label components: levels, compartments, groups; (iv) Policy data labels.

6. UNIFIED SYSTEMS AND APPLICATION MANAGEMENT

Systems management includes tasks such as installation, patching, mass cloning, software configuration, compliance tracking (such as tracking for compliance with security rules and other forms of standardization), generating compliance reports, analyzing and comparing installations, and tracking configuration changes.

Oracle Database customers having third party application server have to deal with two different sets of system management tools with differing capabilities; one for database and one or more for application server. This is expensive, error prone and does not provide a holistic picture of enterprise systems and applications.

Oracle Grid control (formerly known as Enterprise Manager) is a single unified systems and application management engine to centrally manage complete Oracle Environment with a single look and feel, thereby reducing cost of administration of Oracle environment. It automates many labor-intensive operations such as creation of clusters, cloning and patching, provisioning, systems monitoring and application monitoring tasks.

6.1 Systems Management and Monitoring

The purpose of a grid computing management system is to achieve optimal performance of the grid-computing environment as measured by such parameters as the response time, throughput, security, the mean time to failure, and others. As we established earlier in this paper, such a management system will have to cope with the issues of scale, diversity, decentralization, and dynamism.

Oracle Grid Control automates many of the low-level systems management tasks that previously consumed an administrator's time. Oracle Grid Control provides a centralized view on Oracle 10g environment. From Grid Control, Oracle Application Server components and database instance can be started and stopped remotely; system usage metrics like CPU and memory usage can be collected and analyzed across the grid.

Status monitoring: Enables automatic death-detection of running Oracle Application Server and database components and fast restart of these components across grid.

Performance and Resource Monitoring: Oracle Grid Control web site collects performance statistics both for Oracle Application Server 10g and Oracle Database

10g through Dynamic Monitoring Service (DMS). The Grid Control web site also gathers resource usage statistics from the host operating system. The Grid Control home page provides a rolled-up view of the performance of OracleAS 10g and database instances, including the aggregate performance of each component in the instance. Administrators can easily identify components that may require diagnostic investigation and drill down into those components for more detailed performance information, such as deployed applications.

The composite data presented in the roll-up is broken down for each deployed application. Administrator can easily determine which application is incurring the highest volume of requests or longest response time. An application can be further examined by drilling into the application to view the performance of individual objects such as servlets and EJBs. In this way the administrator and application developer can isolate the source of the problem more easily.

System Notifications: When a target becomes unavailable or if thresholds for performance are crossed, alerts are generated in the Grid Console and notifications are sent to the appropriate administrators. Grid Control supports notifications via email (including email-to-page systems), SNMP traps, and/or by running custom scripts.

Historical Change Tracking: Administrators sometimes find themselves responsible for figuring out why a system that once worked well is suddenly not performing at an acceptable level. Did someone make a change to a configuration parameter? Apply an Operating System patch? Remove memory? Trying to determine the exact change responsible for the decrease in system performance could take hours if the administrator had to go through each of the possible scenarios by hand. This is further complicated by number of nodes in a grid.

Grid Control makes it simple by tracking all changes to hardware and software installations and configurations. This makes it quick and easy for the administrator to view changes that have been made since the last time the machine was functioning appropriately, and apply the appropriate solution to get the system back up to an acceptable level.

Baselines: 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 standard for creation of new systems. Grid Control allows users to easily capture, store and view such information via the Grid Control Console. In addition to using this information as a gold standard, the captured information can be used to quickly and easily diagnose system issues by comparing the originally captured information with the current system information for a particular machine. This decreases the amount of time the administrator has to spend diagnosing system problems.

6.2 Automated Patch Management

For many enterprises, patch management is a tedious, manual task loathed by administrators. Software updates, service packs and patches are unavoidable manual tasks in an IT environment. Failure to apply critical patches in a timely manner is expensive. Meta Group estimates it takes 1920 hours to apply 4 patches across 120 servers. Multiply by hundreds or thousands of servers, and again by the number of patches published per month, and patching becomes a full-time job that can cost an organization millions of dollars.

Consider the annual costs associated with manual patching for a typical company with 50 systems running an application server and Oracle database.

Number of servers	50
Admin Hourly Rate	\$100
Number of Patches (yr)	12
Number of Incidents (yr)	2

<i>Systems</i>	<i>Hours per Patch</i>		<i>Annual hours to patch</i>	
	<i>BEA</i>	<i>OracleAS 10g</i>	<i>BEA</i>	<i>OracleAS 10g</i>
<i>Patch Research</i>	<i>6</i>	<i>1</i>	<i>72</i>	<i>12</i>
<i>Patch Testing</i>	<i>5</i>	<i>2</i>	<i>60</i>	<i>10</i>
<i>Remediate</i>	<i>165</i>	<i>6</i>	<i>1980</i>	<i>72</i>
<i>Validate & Report</i>	<i>30</i>	<i>2</i>	<i>360</i>	<i>24</i>
<i>total patch hours</i>	<i>206</i>	<i>11</i>	<i>2472</i>	<i>118</i>
<i>Patch Cost</i>			<i>247,200</i>	<i>11,800</i>

Without an automated system, analysts at Spire estimate that administrators will patch servers once a month (12 total) instead of the 23 times necessary, for a total labor cost of **\$247,200** annually.

Oracle Enterprise Grid Control provides administrators with tools to quickly query for patches available for Oracle Database and Oracle Application Server products installed and used across their enterprise. Patches can be found either in the context of a specific target or, if desired, the administrator can query for a specific patch. Once the necessary patch is located, Enterprise Manager can be used to download and deploy it. Optionally, Enterprise Manager can execute an end-user provided script to install the patch to all systems that require it. Each of these steps allows for quicker application of patches across the customer's enterprise.

6.3 Application Performance Monitoring

Grid Control's Application Performance Monitoring (APM) tools allow Administrators to monitor applications for availability and responsiveness across database and application server components of their application.

- For the first time, Administrators have the ability to monitor their e-business systems from the top down and trace the experience of their real end-users as they enter and navigate a enterprise application.
- Root-cause analysis enables rapid problem diagnostics and resolution and in-depth reports provide Administrators with a complete view of the performance of their application.
- Grid Control enables Administrators to ensure their applications on the grid are available to all their users, all the time, across all application tiers. APM tools provide Administrators with the flexibility to define availability criteria for their application, whether it is an e-commerce site or an internal CRM application. This critical functionality combines with the ability to monitor discrete components located anywhere in the application infrastructure. Administrators can record and monitor crucial business transactions that provide an in-depth view of the availability of system components along any transaction path.

Complete system integration means your management solution is fully integrated into your applications. Grid Control allows contextual drill-downs from Web Application performance metrics into the underlying infrastructure, enabling root-cause analysis of performance bottlenecks. In-depth diagnostics capability provides a breakdown of network, middle-tier and database access to the explain plan level. Administrators can easily view the amount of the time spent in the business logic components such as EJBs. Now Administrators can diagnose problems in real-time, vastly improving the ability to triage performance issues.

7. CONCLUSION

Oracle Application Server 10g is designed from ground up to provide best application platform for the Oracle Database. Together they provide best performance, scalability, end-to-end high availability, integrated security and unified systems and application management that no other application server vendor can claim against the Oracle Database. It has most upto date support for latest Oracle database and it's features.



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