S317063
Managing Oracle WebLogic Server: New Features and Best Practices

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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.
Agenda

- Overview: Oracle Enterprise Manager
- Challenges in Managing WebLogic Server
- Solution and Benefits
- Key Features
- Customer Success Story
- Summary
- Q&A
Overview: Oracle Enterprise Manager
Business-Driven IT Management

Business Transactions
- WEB PORTAL
- PRODUCT CATALOG
- ORDER ENTRY
- OTHER SERVICES

User Experience

Business Users and Customers

Business-Driven Application Management
- Understand business needs
- Manage from business perspective

Integrated Application-to-Disk & Cloud Management
- Eliminate management silos
- Create agile IT for dynamic business

Integrated Systems Management & Support
- Proactively identify and fix problems
- Maximize business productivity

Services Cloud
- Oracle Support

Integrated Application-to-Disk and Cloud Management

APPLICATIONS
MIDDLEWARE
DATABASES
SERVERS
STORAGE
Challenges in Managing WebLogic Server
Challenges in Managing WebLogic Server

- Server Performance Management
- Application Performance Management
- Lifecycle Management
- Configuration Management
Challenges in Managing WebLogic Server

- Difficult to manage across domains
- Resolving problems too time consuming
- Difficult to reproduce problem in test
- No insight into other tiers
Challenges in Managing WebLogic Server

- Lack visibility across shared components & services
- Lack visibility into business service performance
- No insight into real end user experience
Challenges in Managing WebLogic Server

- Inability to track and maintain configurations – including patch levels
- Difficult to comply with security and compliance standards
Challenges in Managing WebLogic Server

- Error prone, time consuming, manual installation and configuration process
Challenges in Managing WebLogic Server

- More Business Downtime
- Higher IT Costs
- Less Agility

Server Performance Management

Lifecycle Management

Configuration Management

Application Performance Management
Oracle’s Solution for WebLogic Server Management

- Server Performance Management
- Lifecycle Management
- Configuration Management
- Application Performance Management

Oracle Enterprise Manager

- WLS Domain 1
- WLS Domain 2
- WLS Domain 3
- WLS Domain 4
Solution Benefits

- Increase IT staff productivity through centralized management and out-of-box monitoring

- Improve performance and availability of WebLogic Server and Enterprise Java applications

- Improve service by minimizing downtime due to configuration change

- Reduce cost through automated deployment procedures to clone middleware

Result

Minimize Downtime
+ Lower IT Costs
+ Increase Agility
Key Features: Server Performance Management
## Server Performance Management: Challenges and Features

<table>
<thead>
<tr>
<th>CHALLENGES</th>
<th>FEATURES</th>
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</thead>
<tbody>
<tr>
<td>• Difficult to manage across domains</td>
<td>• Centralized management &amp; out-of-box monitoring</td>
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<td></td>
<td>• WebLogic Domain Groups</td>
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<tr>
<td>• Unaware of problems until end users complain</td>
<td>• Event monitoring</td>
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<tr>
<td>• Lack 24x7 monitoring</td>
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<tr>
<td>• Resolving problems too time consuming</td>
<td>• Customizable performance summaries</td>
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<tr>
<td>• Unable to easily correlate performance data across components and targets</td>
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<tr>
<td>• Difficult to reproduce problem in test</td>
<td>• JVM Diagnostics</td>
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<tr>
<td>• No insight into other tiers</td>
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</table>
Enhanced User Experience for Discovering WebLogic

Improve productivity and reduce management cost

- Support for WebLogic Server 10.3.x, 10.0.x, 9.x, 8.1.x, 7.x
- New wizard for adding FMW 11g, WLS 10.x, 9.x
  - Monitor each managed server independently to easily correlate monitoring data between WebLogic and underlying OS
  - Providing operating system credentials no longer required
  - Remote Agents no longer require local WebLogic jar files
- Add several domains in one operation via EMCLI
- Enable predefined job to automatically refresh domain post discovery

While adding WLS, specify Agent to monitor each managed server
Enhanced Interface for Managing Fusion Middleware 11g
Richer and easier to use interface

- ADF-based interface
- Navigation tree on left controls details displayed on right
- Customize home page views
- Context sensitive menus
- Drilldown in context to Fusion Middleware Control and/or WebLogic Administration Console

Tree view for easier navigation
Drill-down to JVM diagnostics via context sensitive menu
Drilldown into other consoles for direct administration
Centralized Management & Out-of-box Monitoring
Monitor all applications, all domains from one console

- Manage multiple domains centrally
- Monitoring spans:
  - Clusters and servers
  - Applications (servlets, JSPs, EJBs)
  - Resources (JDBC connection pool, data sources)
- Monitoring no longer dependent on Admin Server
- Predefined metrics
  - Performance and availability
  - Real-time monitoring
  - Historical monitoring for trending and reporting

Single page summarizing status & potential problems across all domains
Event Monitoring
Be aware of availability & performance problems 24x7

- Specify critical vs warning thresholds for metrics
- Various notification methods: email/page, SNMP trap, OS command
- Notification rules and schedule for when to receive alerts
- Corrective Actions: Start/Stop WebLogic Server, WLST scripts
- Pass alert info to help desk systems (e.g. Siebel Help Desk) via Management Connectors
Customizable Performance Summaries
Analyze and correlate performance data more efficiently

- Specify time range from which to display data
- Choose performance charts to be displayed from metric palette
- Arrange order of charts
- Select to display data from multiple components in single chart
- Select to display prior performance data alongside current performance data
- Save customizations as named chart sets accessible in future
WebLogic Domain Groups
Reduce complexity of monitoring several domains across enterprise

- Introduction of new target type ‘WebLogic Domain Group’
- Special type of group specifically for WebLogic Domains
- Monitor and manage multiple domains more efficiently
  - Understand availability across domains
  - Quickly identify worse performing managed servers across domains
  - Fewer clicks to start/stop or compare configurations
JVM Diagnostics
Accelerate production JVM diagnostics with minimal impact

- Always-on, real-time and historical monitoring and diagnostics
- No application knowledge, instrumentation, server restarts
- Complete visibility into the JVM stack heap and threads
- Enable cross-tier diagnostics between mid-tier and database
- Deploy on any JVM (i.e. Sun, JRockit, IBM)
- Single console for all JVM monitoring (i.e. AD4J features integrated into JVM Diagnostics Grid Control console)
Key Features: Application Performance Management
## Application Performance Management: Challenges and Features

<table>
<thead>
<tr>
<th>CHALLENGES</th>
<th>FEATURES</th>
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</thead>
</table>
| • Inefficient monitoring of deployed Java EE applications  
• Lack visibility across shared components & services | • Application Deployments new target type  
• Application Dependency & Performance |
| • Lack visibility into business service performance | • Business Transaction Management |
| • No insight into real end user experience  
• Unaware of problems until end users complain | • Real User Experience Insight (RUEI)  
• Service tests |
| • Difficult to track whether achieving SLAs  
• Unable to monitor performance proactively | • Service Level Management |
Application Deployments
Monitor applications more efficiently

- Introduction of new target types ‘Application Deployment’ and ‘Clustered Application Deployment’
- Monitor applications’ availability and performance in real-time and historically (e.g. active sessions, request processing time, requests per minute, most requested servlets/JSPs, etc.)
- Perform process control (i.e. start up, shutdown)
- Set metric thresholds and alert notification rules at application level
- Restrict administrator access to deployed applications via target privileges
Application Dependency & Performance
Improve service levels and reduce cost of maintenance

• Automatic discovery of Java EE components, services & relationships
• Metadata analysis understands structure of Java EE concepts
• Introspection of framework configuration metadata (e.g. Struts)
• Detailed method and SQL metrics for monitoring and troubleshooting
• Architecture display gives context to metrics for easy navigation and comprehension
• Single console for all application monitoring (i.e. CAMM features integrated into Grid Control console)
Business Transaction Management

- Live tracking of individual transactions
- Spans all interacting tiers and applications, beyond a single app server
  - Encompasses servers, applications, ESB's, BPM's, appliances, and more
  - Toolkit extends custom visibility into home grown systems
- Leverages transaction content for business visibility and interactive management
- Non-invasive approach avoids modifying applications or messages
  - No "tracers" or headers required
  - Requires no coding/deployment cycle
- Unique patent pending "fingerprinting" algorithm
  - Doesn't disrupt applications or messaging systems
  - Overcomes "uncooperative" components beyond management control
Real User Experience Insight (RUEI)

Improve business performance, optimize user experience, enable proactive monitoring & diagnostics

- Passive monitoring with no application instrumentation, no agents, no changes
- Increase business performance by resolving user issues before they impact business
- Reduce support costs by accelerating problem resolution and avoiding helpdesk calls
- Improve application performance by drilling down from user’s perspective
Service Level Management
Align IT and business customers on service levels

- Model services and underlying systems
- Monitor availability, performance and service level compliance of critical services
- Base SLAs on both system and end user metrics
- Proactively monitor end-user experience from remote locations via service tests
Key Features: Configuration Management
# Configuration Management: Challenges and Features

<table>
<thead>
<tr>
<th>CHALLENGES</th>
<th>FEATURES</th>
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<tbody>
<tr>
<td>• Inability to track and maintain configurations – including patch levels</td>
<td>• Automatic asset discovery &amp; tracking</td>
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<tr>
<td>• Minimize/eliminate downtime due to infrastructure changes</td>
<td>• Compare configurations</td>
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<tr>
<td>• Difficult to comply with security and compliance standards</td>
<td>• Provision configurations</td>
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<td>• Ensure compliance with standards via policy management</td>
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</tbody>
</table>
Asset Discovery & Tracking
Know what you have - effective use of your assets

- Configuration blueprints
- Automated, daily collection of configuration data
  - Resource adapters, web services, node managers & machines
  - Installations & patches
- Customize content & frequency of collection
- Search across enterprise
- Detect real-time change
  - Files, users, processes
  - Reconcile change with change mgmt system
  - Authorized vs unauthorized change

View applied WLS patches
Find Needle in Haystack
Reduce time to remediate issues

- Compare configurations
- Find meaningful differences
- Directly provision changes

<table>
<thead>
<tr>
<th>Name</th>
<th>Weblogic</th>
<th>Weblogic</th>
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<tr>
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<td>Primary View</td>
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<td>-Xms2048m -Xmx2048m -XX:MaxPermSize...</td>
<td>-Xms1024m -Xmx1024m -XX:MaxPermSize...</td>
<td>-Xms1024m -Xmx1024m -XX:MaxPermSize...</td>
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<tr>
<td>Xsl View</td>
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Quickly Revert to Prior Working Configuration
Reduce recovery time

• View all saved versions of configuration
• Directly provision different version of configuration
Manage Application Life Cycle
Reduce migration and deployment efforts

Application Stack View

<table>
<thead>
<tr>
<th>Dev_CA</th>
<th>QA_NC</th>
<th>Stage_NV</th>
<th>Prod_NV</th>
<th>Prod_CA</th>
<th>DR_NC</th>
</tr>
</thead>
<tbody>
<tr>
<td>WebLogic Cluster</td>
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<tr>
<td>Web Server</td>
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<td>Tuxedo</td>
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<td>Oracle</td>
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ORACLE
Ensure Compliance with Standards

Know quickly if there is an issue

- User & predefined ‘best practice’ policies
- Alerts and notifications of non-compliance
- Compliance scores, trends and dashboard views
Key Features: Lifecycle Management
## Lifecycle Management: Challenges and Features

<table>
<thead>
<tr>
<th>CHALLENGES</th>
<th>FEATURES</th>
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</thead>
<tbody>
<tr>
<td>• Time consuming, manual installation and configuration process</td>
<td>• Clone Oracle Fusion Middleware 11g via predefined deployment procedure</td>
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<tr>
<td>• Reduce human error in building new environments</td>
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<tr>
<td>• Difficult to quickly add capacity in response to changes in workload</td>
<td>• Scale Up Domain via predefined deployment procedure</td>
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</tbody>
</table>
Clone FMW 11g and WebLogic Server
Reduce time and eliminate errors in building environments

• Clone directly from test to production
• Clone operation includes
  – WebLogic Server binaries and domain configuration
  – SOA artifacts, including SOA Composites and Web Services
  – Java Platform Security configuration
• Extend domain or cluster in same flow
• Modify predefined procedures with custom steps & scripts

![Diagram of WLS Domain and Cluster with SOA Composite Applications, Web Services, and File-based JPS]
Scale Up Oracle WebLogic Domain

Quickly improve application performance

- Add capacity to existing, generic domain or cluster to accommodate increase in load
- Scale up operation includes provisioning home, adding/cloning managed servers, creating machine and node manager

![Diagram of Oracle Enterprise Manager 11g Grid Control](image)
Support Workbench for WebLogic Server
Stream-line interaction with Oracle Support for WebLogic Server issues

- Support Workbench for DB expanded to include WebLogic Server
- When critical errors occur in WebLogic Server, Support Workbench automatically collects WebLogic Server diagnostic data and simplifies process of sending data to Oracle Support
- Greatly reduces resolution time of external bugs related to WebLogic Server
Customer Success Story
Adam Leach
Senior Systems Administrator
Raytheon
Company Information

- Major Aerospace and Defense Contractor
- 75,000 employees worldwide
- $25 billion in 2009 sales
- Holds contracts with many Federal government agencies
- Responsible for building and managing many different middleware infrastructures which support our customers
- Provide end-to-end solutions for many SOA implementations
Infrastructure

- Oracle WebLogic Portal 10.2
- Oracle WebLogic Server 10.0 (11 clusters across 3 domains)
- Apache HTTP Server 2.2
- Oracle RAC 10g
- “Master Data Management Engine” (standalone Java app)
- Enterprise Content Management Java Web Application
- Red Hat Enterprise Linux (RHEL)
- HPUX
Challenges

- Managing multiple tiers and products requires too many tools
- Not aware of performance problems until end users complain
- Diagnosing performance problems too time consuming; too much finger pointing between DBA and WLS admin
Management Solution

- Oracle Enterprise Manager 10g Grid Control 10.2.0.5
  - Deployed in production since 2008
  - Single Management Service on HPUX
  - Management Repository in single instance DB 10g on HPUX
  - 73 managed targets across 15 host machines
  - Separate Grid Control 10.2.0.5 deployed in test environment

- Oracle Real User Experience Insight (RUEI) 6.5
  - Deployed in production since Winter 2009
  - One host machine with reporter, collector and database
  - One collector to monitor inside of firewall and one to monitor outside firewall
Management Solution (cont’d)

- Oracle Composite Application Monitor & Modeler (CAMM) 10.2.0.5
  - Deployed in production since Winter 2009 in conjunction with RUEI
  - Two instances running, each monitoring a separate domain
  - Monitoring 12 Java Enterprise Applications and 1 WebLogic Portal Application

- Oracle Enterprise Manager 11g Grid Control 11.1
  - Has been deployed in test environment since August
  - Will be deployed in production November 2010
Deployment Architecture Today with Grid Control 10g, RUEI 6.5, CAMM 10g

User Community

Web Tier
- RUEI Reporter, Collector, and Database
- RUEI Collector

Management Repository
- Management Service
- WebLogic Portal
- WebLogic Server
- CAMM

Management Agent
- CAMM Agent
- CAMM Agent on Admin Server
- Management Agent on Admin Server

Database
Deployment Architecture in Future with Grid Control 11g, RUEI 6.5

User Community

Management Service
Management Repository Active
Management Repository Standby
WebLogic Portal
WebLogic Server
Application Monitoring Agent
Management Agent x2
Application Monitoring Agent
Management Agent x2
Management Agent x4
Database

RUEI Reporter, Collector, and Database
RUEI Collector
Management Agent
Management Agent
Management Agent
Management Agent

Deployment Architecture in Future with Grid Control 11g, RUEI 6.5

Sensitive But Unclassified
Feature Usage

- **Oracle Enterprise Manager 10g Grid Control 10.2.0.5**
  - DBAs use for complete DB management/monitoring
  - Monitor availability/performance for WebLogic Servers, deployed applications, underlying operating system/hardware

- **Oracle Real User Experience Insight (RUEI) 6.5**
  - Used in Operations to monitor SLA’s on front end and back end web applications
  - Daily, weekly, and monthly reports generated for reporting response times and number of hits to upper management
Feature Usage (cont’d)

- Oracle Composite Application Monitor & Modeler (CAMM) 10.2.0.5
  - Proactive use of tool in order to identify bottlenecks in web application servlets, POJO’s, and other WebLogic Server resources before end-users impacted
  - Reactive use for determining where problems are occurring in the stack
Benefits Gained

- Saved $125,000 by reducing consulting services

- Saved 2 weeks and $75,000 in labor in diagnosing and resolving performance issues

- Achieved 99.999% uptime from proactive monitoring

- Hit SLA’s when moving to production after deploying in test
Next Steps

- Upgrade production to Oracle Enterprise Manager 11g Grid Control 11.1 by November

- Leverage additional features
  - Consolidated management with JVM Diagnostics and Application Dependency and Performance integrated into Grid Control console
  - Alert notification for proactive, 24x7 monitoring
  - JVM Diagnostics to pinpoint bottlenecks
  - Configuration Management to perform comparisons and track changes
  - Business Transaction Management to gain more visibility into transaction issues in order to resolve problems faster
Best Practices

- Upgrade to Enterprise Manager 11g to consolidate management tools (e.g. single console for diagnosing performance problems instead of three)

- Review installation documentation on OTN and certification matrix on Oracle Support to ensure proper versions are being used across product family

- Install Management Agent on each host machine on which WebLogic Server is installed to gain more capabilities (i.e. host correlation, cloning, Support Workbench)
Best Practices (cont’d)

- After ensuring Management Services & Agents installed & functioning properly, enable JVM Diagnostics, then enable Application Dependency & Performance

- For each discovered domain, enable automated refresh to ensure all members of domain are monitored at all times

- Use monitoring templates to simplify setting performance metric thresholds for multiple managed servers and application deployments
Best Practices (cont’d)

- Create separate Enterprise Manager accounts for each administrator; use target privileges to restrict access to targets and target information.

- When application problems occur, start your analysis with Real User Experience Insight; follow by drilling down into Application Dependency & Performance, and then into JVM Diagnostics.
Summary

SOFTWARE. HARDWARE. COMPLETE.
Comprehensive WebLogic Server Management

Only Oracle can deliver all of the following

**Performance Management**
- Server Performance Management
  - Monitor performance & availability proactively
  - Diagnose issues in production, not test
  - Reduce time to resolution
- Application Performance Management
  - Gain visibility across shared components/services
  - Monitor end-user performance

**Configuration Management**
- Compare configurations between stage & prod
- Track WebLogic Server patches across domains
- Understand if change is authorized or unauthorized

**Lifecycle Management**
- Reduce time and human error via cloning from test to production
- Add capacity in response to increase in application load
Oracle Enterprise Manager 11g Resource Center
Access Videos, Webcasts, White Papers, and More
Oracle.com/enterprisemanager11g
Not to be Missed Enterprise Manager Sessions!

**Business-Driven IT Management with Oracle Enterprise Manager 11g**
- Leng Tan, VP, Tuesday, Sept 21st, 11 am, Moscone South 102
- EM Overview, Product Roadmap, Cool Demos!

**Enterprise IT and Cloud Computing**
- Richard Sarwal, SVP, Monday, Sept. 20th, 3:30 pm, Moscone South 102

**Business-Driven Application and End-to-End Performance Diagnostic**
- Ali Siddiqui, VP, Monday, Sept 20th, 3:30pm in Moscone West Room 3024
- MW Management Overview, Product Roadmap, Cool Demos

**What Lies Beneath: Oracle Ops Center for OS and Hardware Management**
- Steve Wilson, VP, Tuesday, Sept 21st, 5:00pm in Moscone South Room 270
## Additional Sessions / Demos / Hands-On Labs

<table>
<thead>
<tr>
<th>SESSION ID</th>
<th>TITLE OF TECHNICAL SESSION</th>
<th>DATE &amp; TIME</th>
<th>LOCATION</th>
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<tr>
<td>S317067</td>
<td>WebLogic Server Management for Oracle DBAs</td>
<td>Thursday 9:00 am</td>
<td>Marriott Hotel, Salon 9</td>
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<tr>
<td>S316996</td>
<td>Oracle Enterprise Manager Grid Control Deployment Best Practices</td>
<td>Thursday 10:30 am</td>
<td>Moscone South, Room 102</td>
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<tr>
<td>S317066</td>
<td>Deep Java Diagnostics and Performance Tuning: Expert Tips and Techniques</td>
<td>Thursday 1:30 pm</td>
<td>Marriott Hotel, Salon 9</td>
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<tr>
<td>S317060</td>
<td>Managing User Experience in the Cloud: Lessons from eBay</td>
<td>Thursday 1:30 pm</td>
<td>Marriott Hotel, Golden Gate A</td>
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Enterprise Manager DEMOgrounds in Moscone West

Fusion Middleware Management Hands-On Lab on Tuesday 2:00-3:00 pm and Thursday 10:30 – 11:30 am in Marriott Hotel, Salon 12/13, YB Level
Questions & Answers
SOFTWARE. HARDWARE. COMPLETE.