Automate Your E-Business Suite Testing With Oracle Application Testing Suite

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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 remain at the sole discretion of Oracle.
Agenda

• Introduction
• EBS Testing Overview
• Functional Testing
• Load Testing
• Advanced Concepts
• Customer Case Studies
• Summary
• Q&A
Business-Driven IT Management

Business Users and Customers

User Experience

Business Transactions
- Web Portal
- Product Catalog
- Order Entry
- Other Services

Business Services

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

Oracle Support

Integrated Application-to-Disk and Cloud Management

Applications
- Middleware
- Databases
- Servers
- Storage

Services Cloud
Oracle Application Quality Management

*High quality testing for all tiers of application stack*

**Testing Application Changes**

- **Application Testing Suite**
  - Ensure quality and performance with end-to-end application testing

**Testing Infrastructure Changes**

- **Real Application Testing**
  - Designed and optimized for testing database tier infrastructure changes

**Test Data Management**

- **Data Masking Pack**
  - Achieve security & compliance objectives by obfuscating sensitive data in test environments
  - Enables secure, production-scale testing
Oracle Application Testing Suite
A powerful, integrated testing solution for ensuring application quality, performance and reliability

Oracle Functional Testing
Automated functional & regression testing

Oracle Test Manager
Test process management, requirements and defect tracking

Oracle Load Testing
Automated load & performance testing
Application Testing Suite – Key Features

- Integrated solution for automated functional testing, load testing and test process management
- Custom testing accelerators for Oracle Applications (E-Business Suite, Siebel, ADF and more)
- OpenScript integrated scripting platform for load testing and functional testing
  - Intuitive visual scripting interface
  - Java IDE for powerful extensibility
- Built-in server monitors and integration with EM Diagnostics to identify performance bottlenecks under load
- Scalable enterprise architecture built on Weblogic Server and Oracle Database, yet easy to deploy & manage
New in Application Testing Suite 9.2

- **New Database Testing module**
  - Load testing for Oracle Database
  - Integrated with Real Application Testing to generate test scripts

- **Adobe Flex support for functional & load testing**
  - Enhanced testing for Rich Internet Apps

- **New & updated Test Starter Kits for E-Business Suite 11i and R12**
  - Sample functional and load test scripts

- **Integration with Enterprise Manager for Database Diagnostics**
  - Analyze DB performance under load

- **Additional load and functional testing enhancements**
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Oracle E-Business Suite Testing Overview

- Oracle e-Business Suite provides a wide range of business-critical applications
  - Financials, ERP, HR, …

- Ensuring application quality is a major challenge
  - Frequent application & infrastructure upgrades/patches
    - EBS R12 upgrades from 11i (driven by end of Premium Support for 11.5.10.2)
    - Ongoing patch cycles
  - Many different applications and critical business flows to test
  - Multiple technologies (Web, Oracle Forms, JVMs, etc.)
  - Application customizations and integrations
Oracle E-Business Suite Testing

• Common E-Business Suite customer concerns:
  – Business:
    • Recurring patch/upgrade cycles make testing a constant challenge
    • Too much time preparing tests, not enough time actually testing
  – Tactical:
    • Non-testing specialists (i.e. actual EBS users) from different groups (Finance, HR, etc.) are usually being pulled in to do testing
    • Automated test tools often don’t work due to the complexity of the EBS applications and are too difficult to use & maintain

• Oracle now provides:
  – Reliable and easy-to-use automated test tools to reduce need for manual testing and accelerate the test process
  – Pre-built automated test scripts for testing key EBS application transactions, developed with input from EBS QA
  – Robust, integrated solution for automating load and functional testing
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• Q&A
Oracle Functional Testing for E-Business Suite

- Automated functional testing for Oracle E-Business Suite
- Integrated platform to create EBS load test scripts
- Supports Oracle EBS R12 (12.0.x & 12.1.x) and 11i (11.5.x)
- Supports both Web & Oracle Forms interfaces & protocols
- Supports Forms 10g and 6i, including custom Forms apps
- Intuitive visual scripting interface to simplify test development
- Powerful Java IDE for superior scripting extensibility
Tips for Successful Test Automation

• Begin With a Test Plan & Strategy
  – **Do**: Determine what you need to test & then which tests to automate
  – **Don’t**: Rely solely on ad-hoc testing to get the job done

• Start Small & Build Out
  – **Do**: Focus test automation on where you get the biggest bang for the buck and then build on each success
  – **Don’t**: Try to automate every test case at once and get frustrated

• Focus on Automated Test Suite Maintainability
  – **Do**: Modularize transaction components & reuse across many scripts
  – **Don’t**: Create monolithic test scripts that will all need to be updated if minor changes occur to the application
Deciding What to Automate

- Not every test makes sense to automate; test automation should complement your manual testing
- Some key factors may help you decide what to automate
  - Is this part of the application stable?
  - Is this transaction/business flow repeatable?
  - Is this a transaction that I will need to test again in the future?
  - Other factors? (EBS customizations, enterprise integrations, …)

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*Note: This table is just an example for illustration purposes
Managing Your Test Cases in Oracle Test Manager

- Create a multi-level test plan for both manual and automated tests
- Execute all test cases from test plan and maintain run history
- Track associated requirements and issues
Where to Start Your Test Automation: EBS Test Starter Kits

- EBS Test Starter Kits for ATS include sample scripts for testing EBS applications
  - New in ATS 9.2: EBS TSK’s for EBS 12.1.2 and EBS 11i (11.5.10.2)
- Include ~75 unique test scripts, covering 17 different EBS modules across various product areas
- Scripts were created against a Vision demo database
  - Vision Demo Database is included in the EBS Release Rapid Install
- Test scripts will need to be modified in order to run successfully against other databases
  - Such as a copy of your EBS production database
- Test Starter Kit is a useful guide to help you determine where you want to start your test automation efforts
EBS Apps Covered by Test Starter Kit Scripts

• **Financial Products:**
  - Oracle Payables
  - Oracle Receivables
  - Oracle General Ledger
  - Oracle Assets
  - Oracle Internet Expenses

• **Manufacturing Products:**
  - Oracle Purchasing
  - Oracle Inventory
  - Oracle Order Management
  - Oracle Cost Management
  - Oracle Materials Requirement Planning
  - Oracle Process Manufacturing Products

• **CRM Products:**
  - Oracle Contracts
  - Oracle Service
  - Oracle Marketing

• **Human Resources Product:**
  - Oracle Human Resources

• **Projects Product:**
  - Oracle Projects

• **Technology Product:**
  - Oracle Application Object Library
Example of a Test Starter Scripts

Oracle Receivables Test Details

• **ar0001a - Create a customer**
  
  **Actions:**
  1. Create a new customer
  
  **Verifications:**
  1. Verify that transaction is saved
  2. Verify that updates on Business Purposes tab is saved
  3. Verify that updates on Contact Tab is saved

• **ar0002a - Create an invoice**
  
  **Actions:**
  – 1. Create a new invoice using the customer in ar0001a
  – 2. Complete the new invoice using the customer in ar0001a
  
  **Verifications:**
  – 1. Verify that transaction is saved
  – 2. Verify the Line item is saved
  – 3. Verify the Transaction Total is correct
  – 4. Verify that tax rate has defaulted
  – 5. Verify Transaction is complete after pressing the Complete button

• **ar0003a - Create a cash receipt**
  
  **Actions:**
  1. Create a cash receipt for the invoice created in ar0002a
  
  **Verifications:**
  1. Verify status is cleared on the Receipt header
  2. Verify the Functional Amount is defaulted correctly
  3. Confirm header transaction is saved
  4. Confirm Cash Receipt data is saved
  5. Confirm apply box is checked
  6. Confirm the saved box is unchecked
  7. Verify Save checkbox is checked after save
Parameterize Script Inputs for Data-Driven Testing

- All Web & Forms GUI actions can be parameterized
- Allows you to substitute a variable for the action “value”
- Drive the variable inputs from an external “databank” file
  - Can also specify alternate data source such as a database
- Right-click any action and select “Properties”, then click “Substitute Variable” button
- Can also use variables to extract data from one page & use it on another page
Add Test Cases to Validate Application Content

- Test cases can be added to the script to test the content
  - Text Matching Test checks for specific text string
  - Object Test (shown below) checks object properties
  - Table test checks content stored within table
Building Custom EBS Automated Test Scripts

1. Create new script & select “Oracle EBS/Forms” under Functional Testing

2. Click “Record” button to begin recording script
3. Step through an EBS transaction in the browser to capture it
Building Custom EBS Automated Test Scripts

4. Run the recorded script to replay the transaction & analyze results
Building Out an Automated Regression Test Suite

• Greatest value from automated test scripts comes in using them for regression testing
  – Re-run a set of scripts to test each application patch or upgrade

• Once you’ve decided which transactions to automate, you can target scripts to test each of these transactions
  – Reuse TSK scripts or create them on your own
  – Parameterize script inputs & add custom test cases as needed

• Then maintain and extend automation suite with each test cycle
  – Update scripts / components as needed based on app changes
  – Add new scripts to automate additional tests/transactions
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Oracle E-Business Suite Load Testing

- EBS load testing lets you test the impact of many concurrent users accessing and interacting with the application at once
  - Simulate production-level workloads and assess EBS application performance and response times
  - Identify and address application bottlenecks under load
  - Stress test beyond normal usage patterns to test the system's response at unusually high loads and assess capacity
Oracle Load Testing for E-Business Suite

- Automated load testing for Oracle E-Business Suite
- Scale to thousands of concurrent users to simulate peak production loads
- Supports Oracle EBS R12 (12.0.x & 12.1.x) and 11i (11.5.x)
- Supports both Web & Oracle Forms interfaces & protocols
- Supports Forms 10g and 6i, including custom Forms apps
- Intuitive Web console promotes collaborative testing
- Integrated server monitors help identify & resolve performance bottlenecks
Automatically Generate Load Test Scripts from Real User Experience Insight

- Generate ATS load test scripts from Real User Experience Insight (RUEI) session
  - Export real user session transaction data from RUEI
  - Import it into OpenScript to generate a load test script
  - Supports load test script generation for EBS, Siebel and Web applications
Record Additional Scripts in OpenScript

- OpenScript records both HTTP and Forms actions in the test script to automate your transaction

Click Record
Execute Load Tests in Oracle Load Testing

- Oracle Load Testing is used to configure load test scenarios, run load tests and view results
  - Uses test scripts created in OpenScript to generate load against your application
Configure Key Performance Metrics to Monitor Using ATS ServerStats During Your Load Test

- Oracle Database Metrics
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ATS Advanced Concepts

- Understanding script actions in Tree View
- Using Java to edit scripts in Code View
- Debugging scripts in OpenScript
- Modularizing test scripts using Function Libraries
- Leveraging ATS & Enterprise Manager diagnostics during Load Testing
Understanding Automated Test Scripts

- Examples of EBS Web actions in ATS:

**Actions shown in script tree view:**

- [1] No Title (/RF.jsp)

- [2] Login (/RF.jsp)
  - WaitForPage (http://stang02.us.oracle.com:8002/OA_HTML/RF.jsp?function_id=1)
  - SetText textBox("@id='usernameField'") operations
  - PressTab textBox("@id='usernameField'")
  - SetPassword textBox("@id='passwordField'")
  - Click button("@id='SubmitButton'")

  - WaitForPage (http://stang02.us.oracle.com:8002/OA_HTML/OA.jsp?OAFunc=OA)
  - Click link("@text='General Ledger, Vision Operations (USA)"")

  - WaitForPage (http://stang02.us.oracle.com:8002/OA_HTML/OA.jsp?OAFunc=OA)
  - Click link("@text='Enter'")

**What they mean:**

- Navigate to the EBS homepage
- Wait for that page to load
- Set the username
- Set the password
- Click the submit button
- Wait for the next page to load
- Click the “General Ledger…” link
- Wait for the next page to load
- Click the “Enter” link
• Examples of EBS Forms actions in ATS:

Actions shown in script tree view:

- [7] Find Journals
  - Forms Screen Shot
  - SetText textField("@name='FOLDER_QF_LEDGER_NAME_0'") vision
    - Click button("@name='FOLDER_QF_FIND_0'")

- [8] Enter Journals (Vision Operations (USA))
  - Forms Screen Shot
    - Click button("@name='CONTROL_REVIEW_HEADER_0'")

- [9] Journals (Vision Operations (USA)) - 06-NOV-02 Project Mfg To Operati
  - Forms Screen Shot
    - SelectMenuIItem window("@name='HEADER'") File|Exit Oracle Application

What they mean:

- Set the field for ledger name to “vision”
- Click the Find button
- Capture a Forms screenshot
- Click the Review button
- Capture a Forms screenshot
- Select the menu “File|Exit Oracle Apps”
Extend Scripts Through OpenScript Tree View or Java Code View IDE

- Java code representation of the test script
- Displays script commands in Java code through Eclipse IDE
- Code can be edited using Eclipse editors(debuggers)
- Tree View updated based on Java code edits
- Syntax errors must be resolved before switching to Tree View
Tree View Debugger

• Provides debugging capabilities from the OpenScript Tree View
• Includes multiple features such as:
  – “Add Breakpoint” from Tree View
  – “Step” through script nodes
  – “Step into” functions
  – “Execute” this action
  – “Playback to here”
  – “Playback from here”
  – “Script Variables” view
  – “Pause” and “Pause on Exception”
Creating Modular & Reusable Scripts & Functions

• Many EBS business flows require the same set of actions
  – Example: Logging into EBS
• Rather than repeat these actions in every script, modularize the script into shared components
  – Makes script code more maintainable
  – Example: If “login” page changes you don’t have to update every script
• These components can be created as either shared scripts or functions
  – Main script would call one or more “component” scripts or functions
Using Script Functions in OpenScript

- Create shared, public functions which can accept user-defined arguments
  - Insert new functions from Add..Other menu and then record into them

- Call those functions from other scripts to modularize script code
Enterprise Manager Diagnostics Integration

- Integrates Oracle Load Testing and Enterprise Manager Middleware & Database Diagnostics to let users analyze performance under load
  - Configure Enterprise Manager connection using new ServerStats data source
  - Specify EM metric type and target for app JVM or Domain
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About Forsythe

• Proven IT infrastructure integrator
• 39 years of providing data center solutions to enable innovation, reduce cost and manage risk
• Strong tradition as a trusted, independent advisor
• North American base with international reach
  • 900+ employees
  • 44 offices in the U.S.
  • Canada (4 offices) and UK
• Support 36% of Fortune 100
Forsythe Vision

Forsythe is a leading, independent provider of expert technology infrastructure solutions, and is focused on helping customers optimize their technology investment.
Forsythe’s Growth is Through Our Clients’ Growth

- International: Aligning our reach with that of our clients
- Advisory services: IT and business alignment, prioritization, sequencing
- Reseller and integrator of technology platforms: Integrating interdependent technologies
- Foundation in financing and legacy systems: Economics and high availability disciplines
IT QA Opportunity (Business Problem)

- Complex Business Processes
- Workloads increasing
- Regression turnaround time slow
- Small staff
- Inconsistent test scenarios/cases

Drive to decrease cycle time and improve quality
ATS Testing Scope

• E-Business Suite Forms

• E-Business Suite Self Service

• E-Business Suite Concurrent Manager

• Oracle Portal 10g (Intranet/Extranet)
Solution Highlights

• Oracle Application Testing Suite 9.1
• Oracle E-Business Suite 11.5.10.2
  – Order Management
  – Procurement
  – Supply Chain
  – Customer Data Management
  – Inventory Data Management
  – Notifications/Approvals
  – Workflow
• Quote to Cash Process
• Self Service HR
ATS Versus Manual Testing Times

- **EBS Forms**
  - ATS: 21 hours
  - Manual: 270 hours

- **Self Service**
  - ATS: 8 hours
  - Manual: 67 hours

- **Portal**
  - ATS: 17 hours
  - Manual: 120 hours

- **CCM**
  - ATS: 13 hours
  - Manual: 145 hours

**Time in Hours**

- Red: ATS
- Gray: Manual
### Challenges
- Lack of effective Oracle Forms based testing
- Complex business process transitions
- Long test cycles
- Need to eliminate defects while in QA
- Manual defect tracking process
- Need to more effectively utilize scarce QA resources
- Diverse technology stack
- Inconsistent test tracking and reporting

### Capabilities
- Quick intuitive test case development / UI
- Single shared reusable repository
- Single interface to record tests
- Flexible testing capability across technologies
- Dashboard of test execution
- Output of one process facilitates input for downstream process
- Open interface to retrieve and manipulate data sources

### Value
- Shorter time to deliver projects
- Faster time to identify issues
- Reduced cycle time / testing time
- Repeatable regression testing
- Comprehensive end to end testing
- Enhanced QA productivity
- Improved perception of quality
- Increased test scenario coverage
- Reduced resource ramp up time
- Fast implementation (< 1 week)
Next Steps

- Load Testing
- Mixed Load Capacity Testing
  - Batch
  - Self Service
  - Portal
  - Workflow
- SOA Testing
- WebLogic Stress Testing
# About Patni and Relevant Services

## PATNI OVERVIEW
- 2009 revenue 656m$, over 14,500 employees, operations in 18 countries
- 272 active clients, 95% repeat business
- Global delivery model & Micro Vertical based strategy

## TESTING PRACTICE OVERVIEW
- 10+ years of independent QA experience, with 2000+ consultants
- 90 + global customers
- Over 10,000+ people years of PDE

## ORACLE PRACTICE OVERVIEW
- Mature Practice with 600+ consultants
- Track record - over 250 projects
- Over 3000 person years of Oracle experience
- Oracle Platinum Partner Worldwide

## SERVICE OFFERINGS
- Test Process Consulting and Assessments
- Managed Test Center / TCOE Solution
- IT, Business and Compliance focused testing
- FAAST – Automation Frameworks
- Performance, Usability and DWH testing
- Accelerators for Siebel and EBS

## SERVICE OFFERINGS
- Implementation & Rollouts
- Upgrades & Migrations
- Application Support
- Database & System Administration
- Testing
- Enhancement & Customization
Integrated Best Practice Driven Test Model

- Verify project library for similar projects
- Organizational data for effort estimation
- Reuse & create components from reusable components
- Test Engineering methodology, templates, techniques
- Knowledge Update & add reusable components
- Document & use knowledge of products to reduce cost of delivery

- KM System
- Metrics
- Tools
- Methodology
- Templates
- KM System
- KM System

- Preparation of Plan
- Project Initiation
- Test Cycle Execution
- Project Delivery
- Post Delivery Support
- Ongoing Support

- Formal Closure of project

- Review of plan
- Functional test – Key activities

- Extensive use of metrics to manage the project
- Predictive quality model during testing phases
- Use of standard, well defined QMS processes to execute the project
Patni Accelerators

WinRunner to ATS Conversions

- Jump start migration from WinRunner to Oracle ATS
- Limited understanding of WinRunner scripts required
- Migration of WinRunner recorded scripts to OpenScript
- Auto-conversion of WinRunner object definition to OpenScript definitions
- Support for simultaneous conversions of WinRunner scripts
- Auto-migration of test data
- Support for Data driven scripts

EBS & Siebel Test Repositories

- 50% reduction in testing efforts & increased test coverage
- Reduction in post go-live defects due to effective testing
- 80% increase in re-usable business process test sets
- Significant saving in efforts through change impact testing that helps focus on only those business process which are impacted
- Reduced time and increased ROI through Patni's global delivery model

UPK Integration with ATS

- Converts a UPK scenario to ATS test case
- 40% reduction in manual test case creation time
- Increase in test case coverage, giving 60% reduction in post go-live defects
- Significant efforts reduction required for Functional Testing and Load Testing using ATS
- Overall improvement in the quality of the software to be deployed to production
ATS Test Automation for a Critical EBS Application
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Summary

- Automated testing can accelerate your test cycles and reduce the burden of EBS manual testing
- Load testing can help you simulate production-level loads & identify performance bottlenecks
- Oracle Application Testing Suite enables automated functional testing and load testing of EBS
- Used effectively, EBS test automation can help you improve quality and reduce testing times
Oracle Enterprise Manager 11g Resource Center
Access Videos, Webcasts, White Papers, and More
Oracle.com/enterprisemanager11g
# Oracle Enterprise Manager Hands On Labs

**Monday September 20, 2010**

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<td>Database Performance Diagnostics and Tuning</td>
<td>Marriott Hotel, Salon 12/13, YB Level</td>
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<tr>
<td>5:00 p.m. - 6:00 p.m.</td>
<td>Provisioning, Patch Automation, and Configuration Management Pack</td>
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<td>Oracle Application Mgmt. Pack for Oracle E-Business Suite: Monitor/Clone</td>
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## Additional Oracle Enterprise Manager Sessions

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<td>Moscone S Rm 102</td>
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<td>3:30 p.m.</td>
<td>&quot;Lost in Transaction&quot;: Managing Business Transactions across Distributed Systems</td>
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<td>Accelerate/Streamline Your Unicode Migration: Oracle Unicode Migration Assistant</td>
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<td>Avoiding SQL Performance Regressions: New Techniques for Solving an Old Problem</td>
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<td>3:30 p.m.</td>
<td>Business-Driven Application Management and End-to-End Performance Diagnostics</td>
<td>Moscone W L3, Rm 3024</td>
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<tr>
<td>5:00 p.m.</td>
<td>Application Change &amp; Configuration Management: Tales from the Trenches</td>
<td>Moscone S Rm 102</td>
</tr>
<tr>
<td>5:00 p.m.</td>
<td>Mission Accomplished: Virtualization Powered by Oracle Enterprise Manager</td>
<td>Moscone S Rm 305</td>
</tr>
<tr>
<td>5:00 p.m.</td>
<td>Managing Oracle WebLogic Server: New Features and Best Practices</td>
<td>Moscone W L3, Rm 3024</td>
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### Additional Oracle Enterprise Manager Sessions

**Tuesday, Sept. 21**

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<tr>
<th>Time</th>
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<tr>
<td>11:00 a.m.</td>
<td>General Session: Business-Driven IT with Oracle Enterprise Manager 11g</td>
<td>Moscone S Rm102</td>
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<tr>
<td>11:00 a.m.</td>
<td>Managing the Oracle Ecosystem on a Cloud Platform: Oracle Enterprise Manager</td>
<td>Moscone S Rm 309</td>
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<tr>
<td>2:00 p.m.</td>
<td>Smart Database Administration: Cool New Features for Power DBAs</td>
<td>Moscone S Rm104</td>
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<td>2:00 p.m.</td>
<td>Application Testing in the Cloud: Smart Testing for Agile Enterprises</td>
<td>Moscone W L2, Rm 2010</td>
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<tr>
<td>3:30 p.m.</td>
<td>Oracle Identity Management Administration Best Practices</td>
<td>Moscone S Rm 309</td>
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<tr>
<td>3:30 p.m.</td>
<td>Latest on Oracle Application Change Management Pack for Oracle E-Business Suite</td>
<td>Moscone W L2, Rm 2024</td>
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<tr>
<td>3:30 p.m.</td>
<td>Deploy New Database Features Risk-Free with Database Replay</td>
<td>Moscone S Rm 102</td>
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<tr>
<td>5:00 p.m.</td>
<td>SQL Tuning for Smarties, Dummies, and Everyone in Between</td>
<td>Moscone S Rm 104</td>
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<tr>
<td>5:00 p.m.</td>
<td>Oracle Enterprise Manager Ops Center for OS and Hardware Management</td>
<td>Moscone S 270</td>
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## Oracle Enterprise Manager Demogrounds

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<tr>
<td>Oracle Real Application Testing: SQL Performance Analyzer</td>
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<td>Self-Managing Database: Automatic Performance Diagnostics</td>
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<td>Self-Managing Database: Automatic Fault Diagnostics</td>
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<td>Self-Managing Database: Automatic Application and SQL Tuning</td>
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<tr>
<td>Application Quality Management: Application Testing Suite</td>
<td>Moscone South - S022</td>
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<td>Real User Monitoring with Oracle Enterprise Manager</td>
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<td>Siebel CRM Application Management</td>
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<td>Real User Monitoring with Oracle Enterprise Manager</td>
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<td>Oracle WebLogic Server Management and Java Diagnostics</td>
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<td>Smart Configuration Management</td>
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<td>Oracle Enterprise Manager Ops Center</td>
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<tr>
<td>Managing the Enterprise Private Cloud</td>
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<tr>
<td>System Management, My Oracle Support, and Oracle Enterprise Manager</td>
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<tr>
<td>Self Managing Database: Change Management for DBAs</td>
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<td>Oracle Enterprise Manager: Complete Datacenter Management</td>
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<tr>
<td>Self-Managing Database: Data Masking for DBAs</td>
<td>Moscone West</td>
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For More Information

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application testing suite

or

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