Minimizing Oracle E-Business Suite Maintenance Downtimes

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Program Agenda
Minimizing Maintenance Windows

**Pre-Patching**
- Reviewing the list of patches and analyzing their impact

**Patching Trials**
- Testing the patch prior to actual production deployment

**Patch Deployment**
- Applying patches to an EBS System

**Post Patching Analysis**
- Validating the patch application
Program Agenda
Minimizing Maintenance Windows

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Post Patching Analysis
- Validating the patch application
Pre-Patching

- Review Oracle announcements
  - New/recommended patches

- Analyze and review pre-requisites
  - Impact analysis: Functional & Technical

- Plan Downtime schedule
  - Determine downtime window
  - Announcements

Tools

Oracle Applications Manager (OAM)
Patching & Utilities
1. Software Updates Dashboard
2. Patch Wizard
3. Registered Flags
4. Maintenance Announcements
OAM: Patching & Utilities

- Review Applied Patches, File History & AD Logs
- Patch Wizard
- Registering Customizations
- Maintenance Downtime Announcements
1. OAM: Software Updates Dashboard

- Verify whether a patch has been applied or not
- Lists patch recommendations
- Review AD Logs of recent patch deployments
2. OAM: Patch Wizard

- Recommended patches (based on preferences)
- Automatic download of patches
- Patch impact analysis (without applying the patch)
2. OAM: Patch Wizard: Patch Impact Analysis

- Impact Analysis on recommended patch & prerequisites
- Analyze impact to customizations
3. OAM: Register Flagged Files

- Register customized Oracle EBS application files
- Determine impact to customizations with patch impact analysis
4. OAM: Maintenance Announcements

• Warning announced on Oracle Home Page

• Alert users of downtime

• Links to current status
Pre-Patching Summary

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  - New/recommended patches

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Tools

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Value

- Reduce surprises/errors during patch application
- Reduce effort
- Expedite patch application process
Program Agenda
Minimizing Maintenance Windows

- **Pre-Patching**: Reviewing the list of patches and analyzing their impact
- **Patching Trials**: Testing the patch prior to actual production deployment
- **Patch Deployment**: Applying patches to an EBS System
- **Post Patching Analysis**: Validating the patch application
Patching Trials

- Review Patch Application Details
  - Review and resolve exceptions
  - Review and tune performance issues

- Validate Customizations
  - Review customizations
  - Redeploy customizations (if necessary)

- Validate Business Functions
  - Ensure functionality works as expected
  - Resolve issues

Tools

1. OAM Timing Reports
3. Application Testing Suite
1. OAM: Timing Report

- Review patch timing information
- Review job usage and performance
- Review detailed run information
Application Management Suite for EBS

• Oracle E-Business Suite Plug-in 4.0
  ✓ Oracle Application Management Pack for E-Business Suite
  ✓ Oracle Application Change Management Pack for E-Business Suite
• Oracle Real User Experience Insight 6.5.2
• Oracle Application Configuration Console 5.3.2
• Oracle Configuration Change Console 10.2.0.5

See MOS Note 1224313.1
2. Application Change Management Pack for EBS

- Centralized Dashboard to review, monitor and orchestrate custom changes
2. Application Change Management Pack for EBS

- Create AD compliant customization packages
- Over 200 file types supported
- Compiles Java and PLD files
- Custom patches can be applied using Patch Manager
- Validate the custom files based on a set of standards
- Interface with Version Control systems
3. Application Testing Suite Accelerators

Testing Support
- Functional/regression, Load/Performance
- Test Management

Automatic script generation
- Reduce scripting time by ~50%

EM Grid Control Integration
- JVM Diagnostics for mid-tier
- DB Diagnostics for DB-tier
- DB Profiles for Oracle Database
3. Application Testing Suite Accelerators

• Accelerators & Test Starter Kits
  • Support for EBS 11i & R12 (socket & servlet mode)
  • Supports both FORMS and Web actions (back-office/self service)
  • EBS specific object identification rules
  • EBS specific correlations
  • Automatic test case creation
  • Oracle E-Business Suite Test Starter Kit (~75 pre-built scripts)
3. Application Testing Suite Accelerators

Web Actions
Forms Actions
Patching Trials Summary

• Review Patch Application Details
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Tools

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Patching Trials Summary

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  - Ensure functionality works as expected
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Value

- Fine tune patch runs for quicker patching
- Ensure business continuity
- Provide quicker go-live (for new functionality)
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  - Validating the patch application
Patching Deployment
Time-Saving Features and Tools

1. Shared Application Tier Filesystem
2. Distributed AD
3. Staged Application System
4. Merge Patches
5. AutoPatch Non-Interactive Patch Mode
6. AutoPatch Testing Mode
7. Lightweight MLS
8. AutoConfig: Check Config Utility & Performance Profiler
9. AutoConfig: Parallel Execution
10. OAM Restricted Mode
11. Application Change Management Pack
1. Shared Application Tier Filesystem

- **↓ Risk** - Eliminates the risk of patch levels getting out of synch
- **↓ Cost, ↑ Agility** - Eliminates overhead of maintaining multiple copies
- **↓ Cost, ↑ Agility** - Enables the use of advanced AD features, distributed AD, to reduce patch downtimes

See MOS Notes 384248.1 and 1324602.1.
2. Distributed AD

- Parallel Processing
  - Run AutoPatch workers on the primary node and the secondary nodes
  - Works only for Shared Application Tier Filesystem
- Time to complete AD tasks reduced
- Better utilization of system resources

See MOS Note 236469.1
2. Distributed AD

1. Primary Node
   Start AutoPatch with Distributed AD worker options
   Example: $ adpatch workers=8 localworkers=3

2. All Secondary Nodes
   Start AD Controller on remote node(s)
   Example: $adctrl distributed=y

See MOS Note 236469.1
3. Staged Applications File System

- Apply patches
  - Copy files
  - Link executables
  - Compile jsps
  - Generate jarfiles
  - Update database
  - Generate Forms
  - Generate Reports
  - etc.

- Transfer
- Patch History
- Update Database
- Synchronize files

Legend:
- Uptime
- Downtime

See MOS Note 734025.1
4. Merge Patches

- Merge multiple patches into a single patch using admrgpch
- Merge only compatible patches
- Eliminates AutoPatch overhead

See Oracle E-Business Suite Patching Procedures, Part No. E12148-04
5. AutoPatch Non-Interactive Patching Mode

- Reduces the need for user intervention during patch application
- AutoPatch information is provided in a default file
- Reduces delays between successive tasks

See Oracle E-Business Suite Patching Procedures, Part No. E12148-04
6. AutoPatch Test Mode

- Review the effects of a patch prior to application
- Provides a list of each file that will be copied, relinked, executed or generated
- Execute AutoPatch in Test Mode as follows:
  $ adpatch apply=n

See Oracle E-Business Suite Patching Procedures, Part No. E12148-04
7. Lightweight MLS

- English User Interface
- Data entered in relevant language
- Mixing Lightweight MLS and Full MLS is not supported
- A hybrid of Lightweight MLS and Full MLS for multiple languages is supported
- Base language must be English for Lightweight MLS

- Reports can be generated with the language data entered
- Disk space used for translations is reduced
- A language enabled as Lightweight MLS eliminates required NLS patch

See MOS Note 1077709.1
8. AutoConfig Check Utility Tool & Performance Profiler

Check Config Utility
- Review the affects of executing AutoConfig
- HTML file is generated by the Check Config Utility
- Execute Check Config Tool:
  
  $AD\_TOP/bin/adchkcfg.sh

Performance Profiler
- Review the timings of executing AutoConfig
- HTML file is generated by the Performance Profiler Utility
- Execute Performance Profile Utility:
  
  $adconfig.pl \contextfile=$CONTEXT\_FILE \-profile

See MOS Note 387859.1
9. AutoConfig Parallel Execution

- AutoConfig parallel executions supported
- Maintenance downtime is reduced
- 45% reduction in time to run Autoconfig

See MOS Note 387859.1
10. OAM (Restricted Mode)

- Monitor status of Patch Application
  - Prerequisite: Setup `ad_monitor` account

- Steps to view restricted mode...
  - Web Server in restricted mode $ adaprstctl.sh start
  - OAM → `<host>`:<`port`>/servlets/weboamLocal/oam/oamLogin
  - Login using `ad_monitor`
  - Review Patch-in-progress in Timing Reports
    Navigation: Sitemap > Maintenance > Patching and Utilities > Timing Reports

- Deploy EBS patches
- Deploy custom patches
- Check prerequisites
- Order/Merge patches
Patching Deployment
Time-Saving Features and Tools

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8. AutoConfig: Check Config Utility & Performance Profiler
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10. OAM Restricted Mode
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Value

- Reduce maintenance downtime
- Reduce DBA Effort
- Reduce errors
- Reduce risk
Program Agenda
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- **Post Patching Analysis**
  - Validating the patch application
Post Patching Analysis

- Review AD Logs
  - For any exceptions or warnings

- Validate Business Functions
  - Ensure existing/new functionalities are working as expected

- Validate Customizations
  - Review & re-deploy (if necessary)

NOTE: Similar to “Patching Trials”

Tools

1. OAM Timing Reports
3. Application Testing Suite
Post Patching Analysis

• Review AD Logs
  • For any exceptions or warnings

• Validate Business Functions
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NOTE: Similar to “Patching Trials”

Value

• Reduce errors
• Reduce time to deployment
• Reduce time for system checkout (post-deployment)
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Pre-Patching

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Minimize Maintenance Downtimes

Guidelines

- Develop a plan to keep current
- Schedule periodic, proactive maintenance
- Perform production system backup prior to patching or upgrading
- Proactively deploy additional capacity to meet resource demand
- Perform patch impact analysis
- Defer system wide tasks to the end of the maintenance window
- Use tools to facilitate patching deployment
- Use features to reduce maintenance
Summary Minimize Maintenance Downtimes

Tools and Features

• OAM
  o Patching Utilities
  o Patch Wizard
  o Flagged Files
  o Software Update Dashboard
  o Patch Impact Analysis
  o Patch Timing Report
  o OAM Restricted Mode

• Application Change Management
  o Centralized Dashboard
  o Patch Application (Oracle and Custom)
  o Patch Details
  o Check Prerequisites
  o Order/Merge Patches

• Application Testing Suite
  o Generate tests
  o Accelerator Kits for EBS
  o Test Management
Summary Minimize Maintenance Downtimes

Tools and Features

- Shared Application Tier Filesystem
- Distributed AD
- Staged Application System
- Merge Patches & Non-Interactive Patch Mode
- Hot Patching & Testing Mode
- Lightweight MLS
- AutoConfig: Check Config Utility & Performance Profiler
- AutoConfig: Parallel Execution
Case Study
World Leader in Pharmaceutical Product Development

1. Merged Patches
2. Included latest AD/FND and CPUs with application patches
   - Incremental effort to test techstack patches along with application patches
3. Review patch timing reports
   - Tune the jobs in the patch.
4. Usage of multiple servers for patching efforts
   - Use CPU capacity on multiple servers
5. Disabling archivelog mode in production during major patching
6. Adjust DB SGA in production during major patching

Reduced upgrade time from 82 hrs to 24 hrs!
Next Oracle E-Business Suite Version
Release 12.1 Technology Stack: 3-Tier Logical Architecture

Client

Application

Database

Client

10g

OC4J

JSP

BC4J

UIX

BI Publisher

Forms

JDBC/SQL Net

HTTPS

Oracle Fusion Middleware Application Server

Oracle Database

10gR2 | 11g

Global Single Data Model

RAC & ASM

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Online Patching
12.2 Online Patching

Changing the unit of measure for downtime

• Downtime will be measured in minutes not hours or days
• Downtime windows will be very predictable
• Patches are applied while the Production Application remains online
Online Patching

What were we missing for a complete solution?

- EBS uses both the file system and the database to store the code and data that make up the application
  - File system
    - Staged APPL_TOP provided the basis for the design
    - Enhanced in 12.2 to a “Dual File System”
    - Two identical file systems are installed with 12.2
  - Database (This was the missing piece)
    - Edition Based Redefinition (EBR) a revolutionary new feature of the 11g R2 database provides this missing piece
    - Commissioned by the Applications Division
Oracle E-Business Suite Online Patching

The Basics

Prepare
- Make a copy of the production application code

Apply
- Apply one or more patches to the copy

Cutover
- Shutdown production application
- Perform maintenance operations
- Restart application on patched copy

Cleanup
- Remove obsolete objects
## References

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<td>Getting Started with Oracle E-Business Suite Plug-in, Release 4.0</td>
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<tr>
<td>384248.1</td>
<td>Sharing The Application Tier File System in Oracle E-Business Suite Release 12</td>
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<tr>
<td>1324602.1</td>
<td>Converting To Shared Application Tier File System</td>
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<tr>
<td>734025.1</td>
<td>Using a Staged Applications System (APPL_TOP) to Reduce Patching Downtime in Oracle E-Business Suite Release 12</td>
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<td>Using AutoConfig to Manage System Configurations in Oracle E-Business Suite Release 12</td>
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# References

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| AD Utilities & Oracle Applications Manager | Oracle E-Business Suite Maintenance Procedures E13675-03  
Oracle E-Business Suite Maintenance Utilities E13676-03  
Oracle E-Business Suite Patching Procedures E12148-04 |
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Q&A
Latin America 2011
December 6–8, 2011

Tokyo 2012
April 4–6, 2012
Hardware and Software
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