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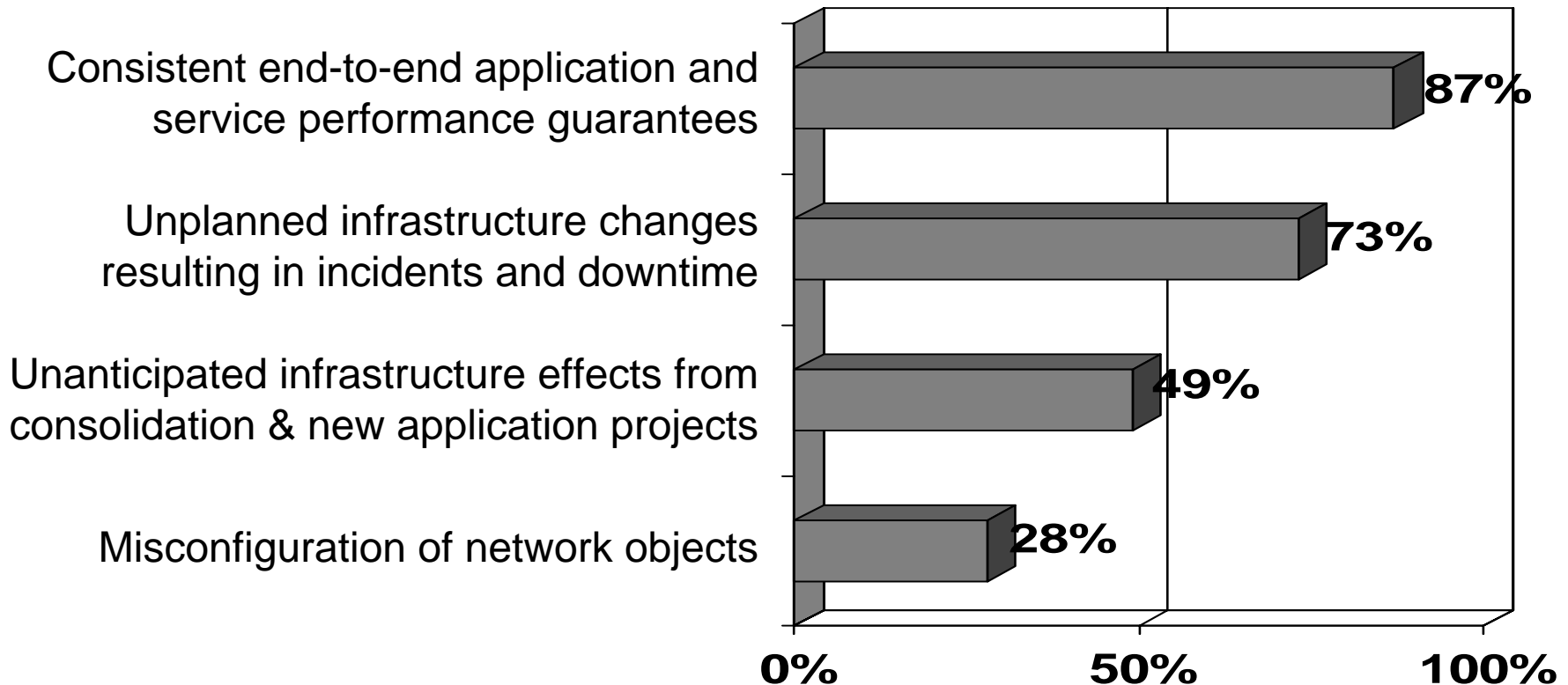
## **Improve IT Operations: Automate Provisioning, Patching & Managing Configurations of Fusion Middleware (Session #544)**

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Principal Product Manager



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# Top Challenges for Enterprise IT Managers



**First-class application management is critical to IT and business effectiveness**

Source: Forrester Research, Top Five Challenges For Enterprise IT Infrastructure Managers — And How To Resolve Them, Thomas Mendel, March 2005

# Oracle Strategy – Top-Down Application Management

LOB  
Managers

Business  
Analysts

IT/Business  
Liaisons

Enterprise  
Architects

- Discovery & mapping of application services, business services and business processes
- End-user Experience Mgmt and App Diagnostics (Application Performance Management)
- Business-centric Monitoring, Service Level Mgmt, Transaction Mgmt. and Reports

**Management of services  
offered to business users**

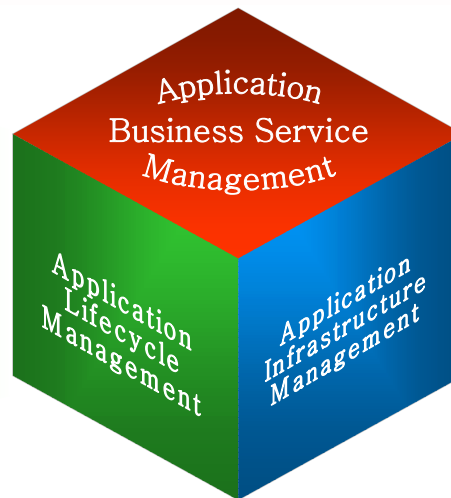
App  
Manager

**Management of application  
operational lifecycle**

- Testing, Provisioning, Patching
- Incident & Problem Management
- Availability & Performance Mgmt
- Change, Config & Release Mgmt
- Access, Usage & Compliance

Security  
Admin

CAB &  
Auditors



**Management of underlying  
IT components (stack)**

- Middleware Management
- Database Management
- Server/OS Management
- Storage Management
- Network Management

DB  
Admin

System  
Admin

Storage  
Admin

Network  
Admin

**Key Differentiator**

Integrated, end-to-end management of business services, applications and application infrastructure

# Program **Agenda**

- Requirements for Improving IT Operations
- Oracle Solution
- Key Features
- Demonstration
- Summary
- Q&A



# Requirements for Improving IT Operations

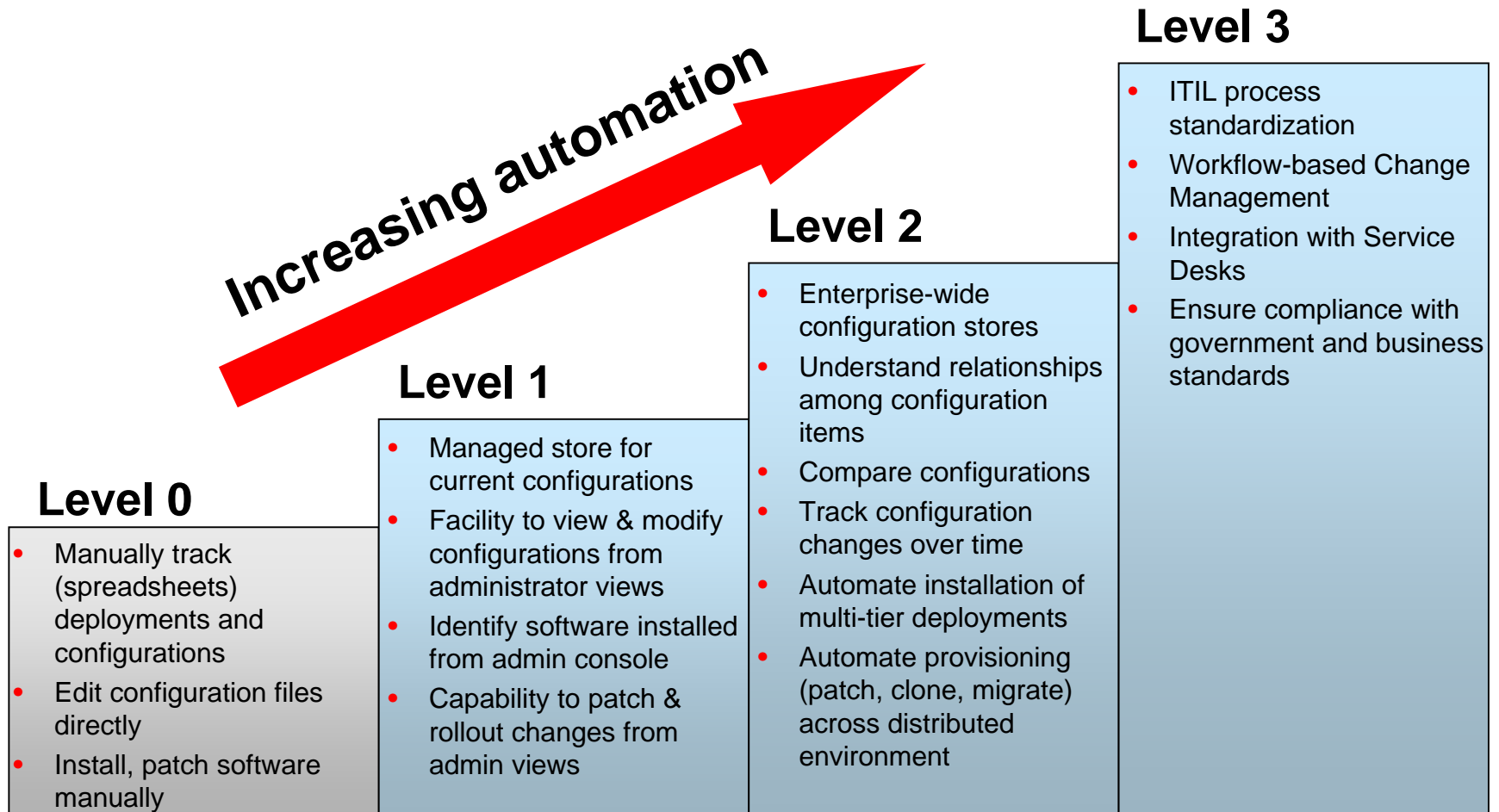


# Requirements for Improving IT Operations

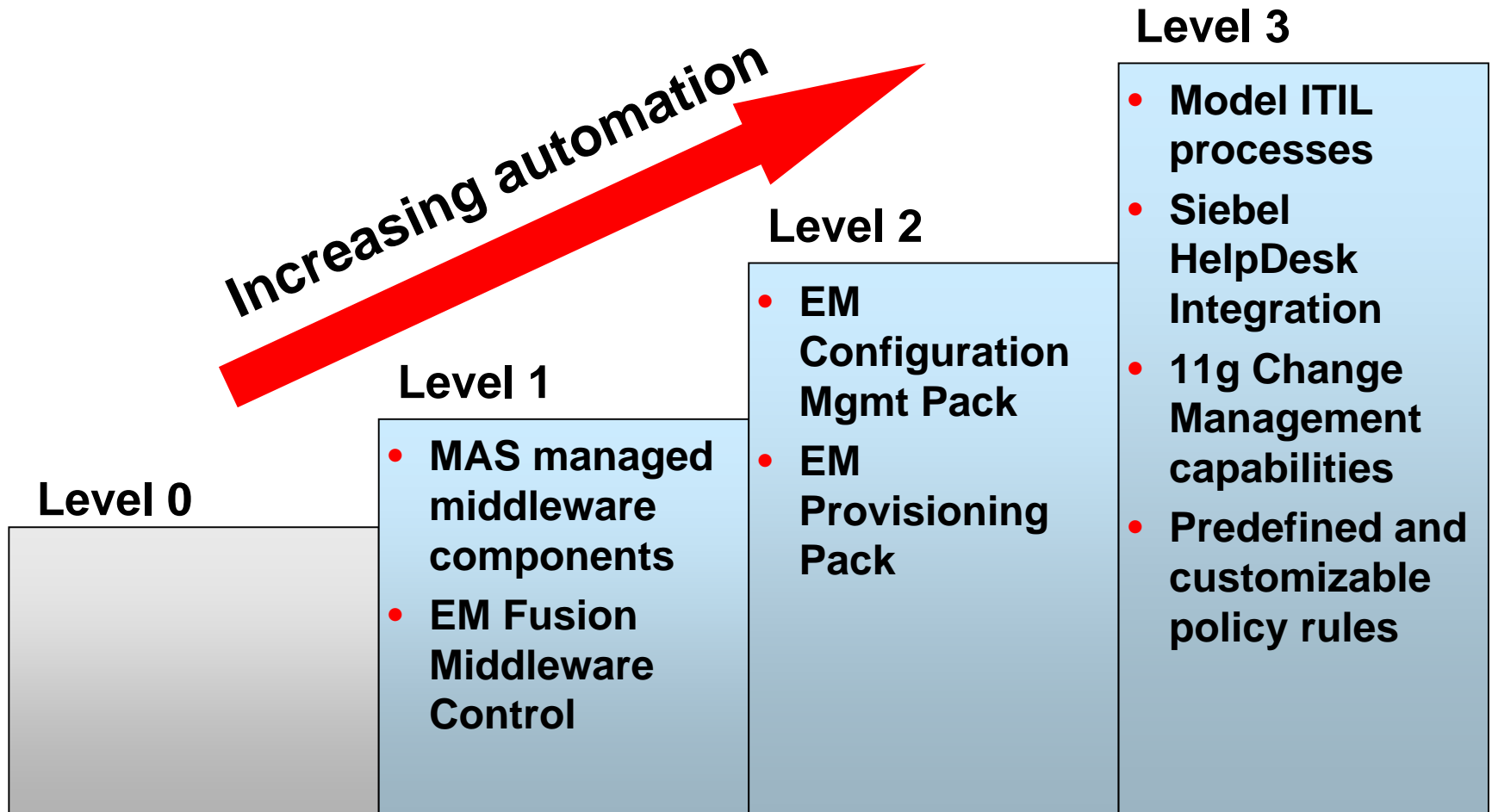
- Reduce human error and **eliminate manual involvement** in provisioning and patching
- Prevent **security vulnerabilities**
- **Maintain** configurations across enterprise without significant investment in time and resources
- Ensure **compliance** as **government regulation** increase
- **Minimize/eliminate downtime** due to infrastructure changes



# Provisioning, Patching & Configuration Management Continuum

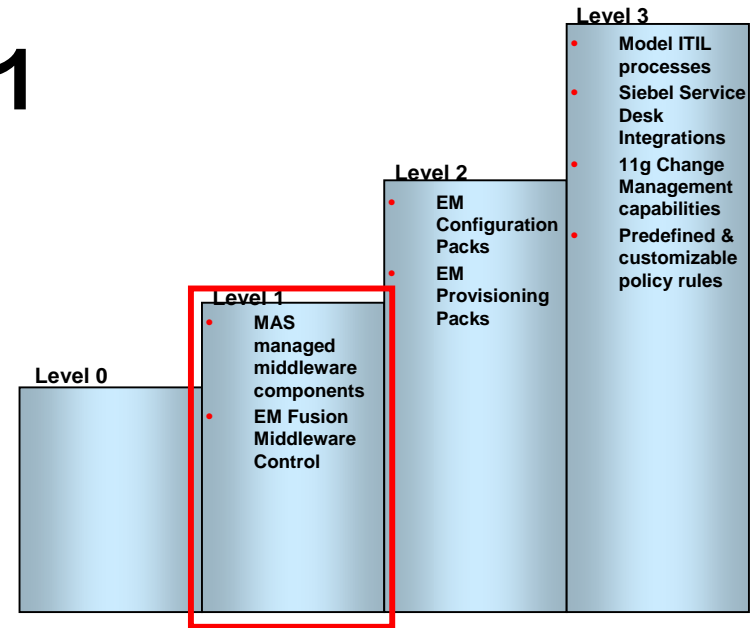


# Oracle Capabilities





# Oracle Solution: Level 1

## Enterprise Manager Fusion Middleware Control






















- Available with Oracle Fusion Middleware out-of-box
- Web-based tool managing single Fusion Middleware Farm
- Post installation configuration
- Group management
- MBean browser
- Centralized software inventory
- Patching wizard

# Post Installation Configuration

**/oowFarm** (Oracle Fusion Middleware Farm)  Logged in as **fmwadmin**  
Page Refreshed Nov 8, 2007 10:25:26 PM PST 

**Fusion Middleware Components**  
Review the list of Oracle Fusion Middleware application server instances, system components, and oracle applications currently available in the farm. You can also create, delete, start, and stop application server instances, system components, and oracle applications.

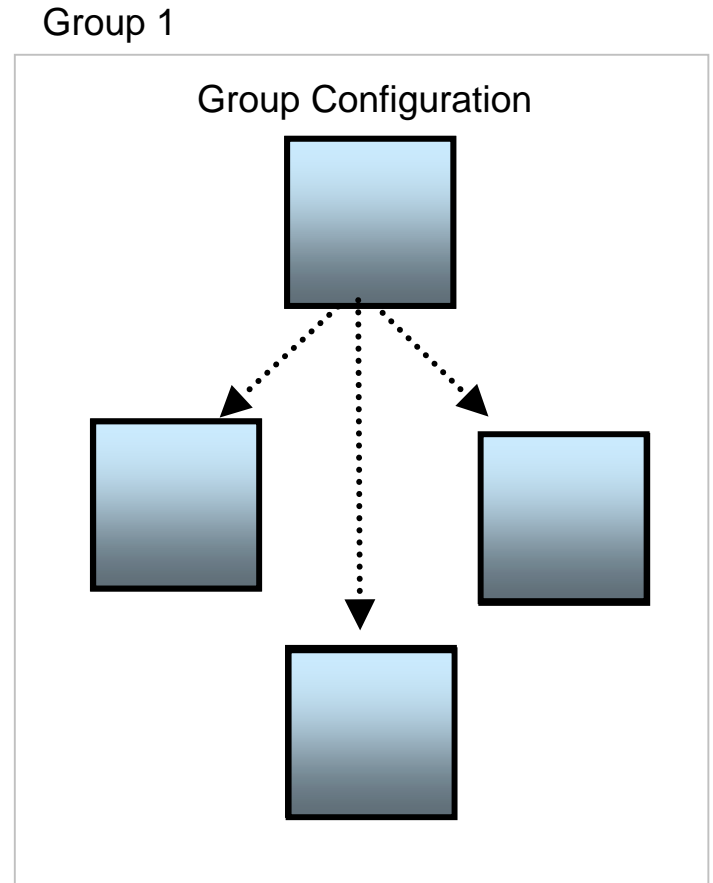
 Create  Remove  Start  Stop

Component Name 	Component Type 	Status 	Group Membership 	Host 	Oracle Home 
 inst1	Application Server	6  6		stadk58.us.oracle.com	/net/stadk58/scratch/shgoel/view_storage/shgoel_adminserver_071106_1201/work/as11_oh
oc4j1	OC4J			stadk58.us.oracle.com	/net/stadk58/scratch/shgoel/view_storage/shgoel_adminserver_071106_1201/work/as11_oh
oc4j2	OC4J			stadk58.us.oracle.com	/net/stadk58/scratch/shgoel/view_storage/shgoel_adminserver_071106_1201/work/as11_oh
oc4j3	OC4J			stadk58.us.oracle.com	/net/stadk58/scratch/shgoel/view_storage/shgoel_adminserver_071106_1201/work/as11_oh
ohs1	Oracle HTTP Server			stadk58.us.oracle.com	/net/stadk58/scratch/shgoel/view_storage/shgoel_adminserver_071106_1201/work/as11_oh
ohs2	Oracle HTTP Server			stadk58.us.oracle.com	/net/stadk58/scratch/shgoel/view_storage/shgoel_adminserver_071106_1201/work/as11_oh
wc1	Web Cache			stadk58.us.oracle.com	/net/stadk58/scratch/shgoel/view_storage/shgoel_adminserver_071106_1201/work/as11_oh
masInst	Application Server	0  0		stadk58.us.oracle.com	/net/stadk58/scratch/shgoel/view_storage/shgoel_adminserver_071106_1201/work/as11_oh

- Install software binaries once
- Create Application Server instances and their components (OC4J, OHS, Web Cache) post installation
- During component creation, define routing relationships and join existing group

# Group Management

- Group is a collection of manageable entities in a Farm
- Manage members of Farm as one single logical unit for easy administration
- Apply changes group configuration and all members of group inherit same change automatically



# MBean Browser



The screenshot displays the MBean Browser interface for the /oowFarm (Oracle Fusion Middleware Farm). The left pane shows a tree view of the MBean hierarchy, with the path `Configuration MBeans (735) > JMXImplementation (1) > OracleAS_AdminServer_Internal (2) > OracleAS_Admin_Server (2) > OracleAS_Admin_Services (30) > OracleAS_Configuration_MBeans (9) > OracleAS_Topology_Models (1) > OracleAS_Topology_Nodes (571) > com.oracle (12) > oracle.as.jmx (1) > oracle.as.jmx.federation (3) > oracle.as.pcs (8) > oracle.as.util (1) > oracle.oc4j.config (94) > ASInstance (94) > inst1 (92) > OC4JComponent (90) > oc4j1 (29) > ApplicationConfig (6) > ServerConfig (23) > ServerConfig (22) > IIOPConfig (1) > JtaConfig (1) > PlatformPolicyConfig (1) > RmiConfig (1) > ServerConfig.RmiConfig` selected. The right pane shows the details for the selected MBean, `ServerConfig.RmiConfig`. The "Show MBean Information" tab is active, displaying a table of attributes.

Name	Description	Access	Value
1 AccessRegionSetAllowUnkn...	Returns True if the default access/connection policy is 'allow'.	RW	true
2 ConfigMBean	If true, it indicates that this MBean is a Config MBean	R	true
3 eventProvider	If true, it indicates that this MBean is an event provider as defined by JSR-77	R	false
4 Host	Returns the host configuration for RMI.	RW	[ALL]
5 MaxServerSockets	Returns the max socket connections for each rmi server/listener.	RW	500
6 objectName	The MBean's unique JMX name	R	oracle.oc4j.config:baseClas...
7 Port	Returns the port configuration for RMI.	RW	\${rmi},23791
8 ReadOnly	If true, it indicates that this MBean is a read only MBean	R	false
9 SslConfigDefault	Returns the default ssl configuration for rmis.	RW	
10 SslConfigReference	Returns the default ssl configuration reference for rmis.	RW	\${rmis}
11 SslPort	Returns the ssl port configuration for RMI.	RW	\${rmis},23943
12 SubjectPropagationAllowUn...	Returns True if default subject propagation policy is 'allow'.	RW	true
13 SubjectPropagationEnabled	Returns True if subject propagation is enabled.	RW	
14 SystemMBean	If true, it indicates that this MBean is a System MBean	R	true

- Available at Farm, OC4J instance, J2EE application levels
- Simplifies MBean management
  - View/change attributes
  - Invoke operations
  - View statistics
  - Subscribe to notifications

# Centralized Software Inventory

- View software installed across Farm
- Displays instances, components, versions, patches

 /ha\_farm1 (Oracle Fusion Middleware Farm) 

### Software Inventory

The following table lists all Oracle Homes associated with an application server farm.

Oracle Home	Host	Install Date
/scratch/vverneka/mas/OHome3	stapj58.us.oracle.com	Oct 3, 2007 12:00:00 AM PDT
/scratch/vverneka/mas/OHome1	stapj58.us.oracle.com	Oct 3, 2007 12:00:00 AM PDT
/scratch/vverneka/mas/OHome2	stapj58.us.oracle.com	Oct 3, 2007 12:00:00 AM PDT

Row Selected: 1

---

**Software Components** Oracle Instances Interim Patches Applications

The following table displays the list of software components installed with selected Oracle Home - /scratch/vverneka/mas/OHome3.

Name	Description	Version
Application Server 11g	Installs components for Application Server 11g	11.0.0.0.0
Sun JDK	Sun JDK 1.5.0.1.1	1.5.0.1.1
Installer SDK Component	Install SDK libraries available for install developers	11.1.0.6.0
Oracle One-Off Patch Installer	Oracle One-Off Patch Installer	11.1.0.6.0
Oracle Universal Installer	Installs the components developed using the Oracle Softwa...	11.1.0.6.0
Oracle Jakarta	Oracle Jakarta	11.0.0.0.0
Oracle Webcenter Portlet Server WSRP	Installs Oracle Webcenter Portlet Server WSRP	11.0.0.0.0
Oracle Content DB	Oracle Content DB	11.0.0.0.0
Oracle Webcenter Application	Installs Oracle Webcenter Application	11.0.0.0.0
Oracle PageEditor	Oracle PageEditor	11.0.0.0.0
Oracle Webcenter Framework	Installs Oracle Webcenter Framework	11.0.0.0.0

# Patching Wizard

**ORACLE Enterprise Manager 11g Grid Control**

**/ha\_farm1(Oracle Fusion Middleware Farm) : Apply Patch**

Select Patch Patch Details **View Topology** Patching Plan

View Topology Help Cancel Back **Step 3 of 4** Next

**Farm Topology**

Review the components or oracle homes for which the selected patch is applicable. Select a component or oracle home and run a prerequisite check before applying the patch. This is to ensure that your environment meets all the minimum requirements to result in a successful patching operation.

View **Oracle Homes** Check Prerequisites

Name	Patch	Type	Oracle Instance	Host
Farm				
/scratch/vverneka/mas/OHome1	<input checked="" type="checkbox"/>	Oracle Home		stapj58.us.oracle.com
instance1		Oracle Instance	/scratch/vverneka/tmp/ha_farm1/instance1	stapj58.us.oracle.com
ohs				
nicoles_ohs				
/scratch/vverneka/mas/OHome2	<input checked="" type="checkbox"/>	Oracle Home		stapj58.us.oracle.com
instance2		Oracle Instance	/scratch/vverneka/tmp/ha_farm1/instance2	stapj58.us.oracle.com
ohs				

**Prerequisite Checks Performed**

The following prerequisite checks are performed on each component or oracle home.

**System-Related Checks.**

1. Checks if the system commands required for patching are available.
2. Checks if the oracle home is valid and if the files and directories in that location have valid permissions.
3. Checks if the oracle home is registered with Central Inventory
4. Checks if the required version of OUI is available in the given oracle home

**Patch-Related Checks.**

1. Checks if there is adequate hard disk space to install the patch.
2. Checks if the patch to be applied has any conflicts with the patches present in the oracle home.
3. Checks if the patch is applicable to the platform for which the patch needs to be applied.

- Apply patches to Fusion Middleware
- Support for HA patching to minimize/eliminate downtime
- Perform prerequisite check prior to applying patch
- Rollback patches



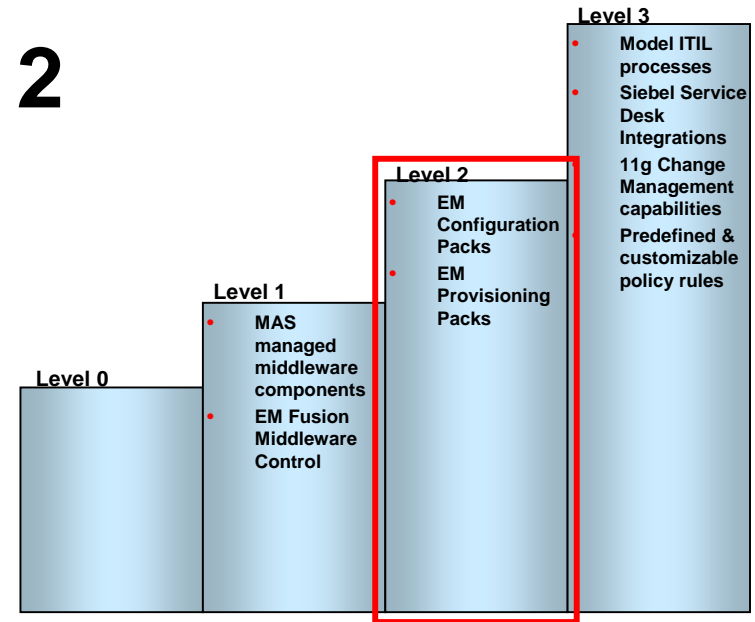
# **Demonstration:**

## **Enterprise Manager Fusion Middleware Control**



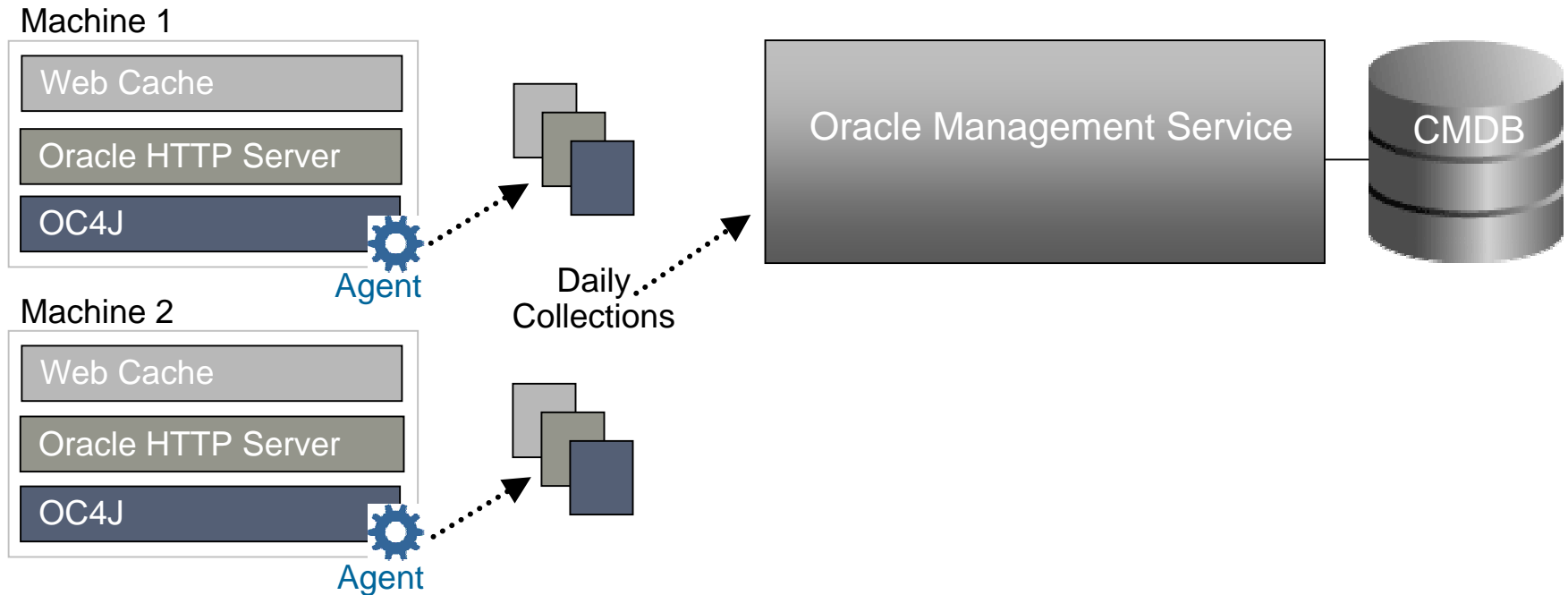
# Oracle Solution: Level 2

## Enterprise Manager Grid Control



- Configuration collection & analysis
- Topology viewer
- Provision and patch Fusion Middleware through Deployment Procedures
- Provision Linux operating system
- Patch Linux, Solaris & Windows operating systems

# Configuration Collection & Analysis

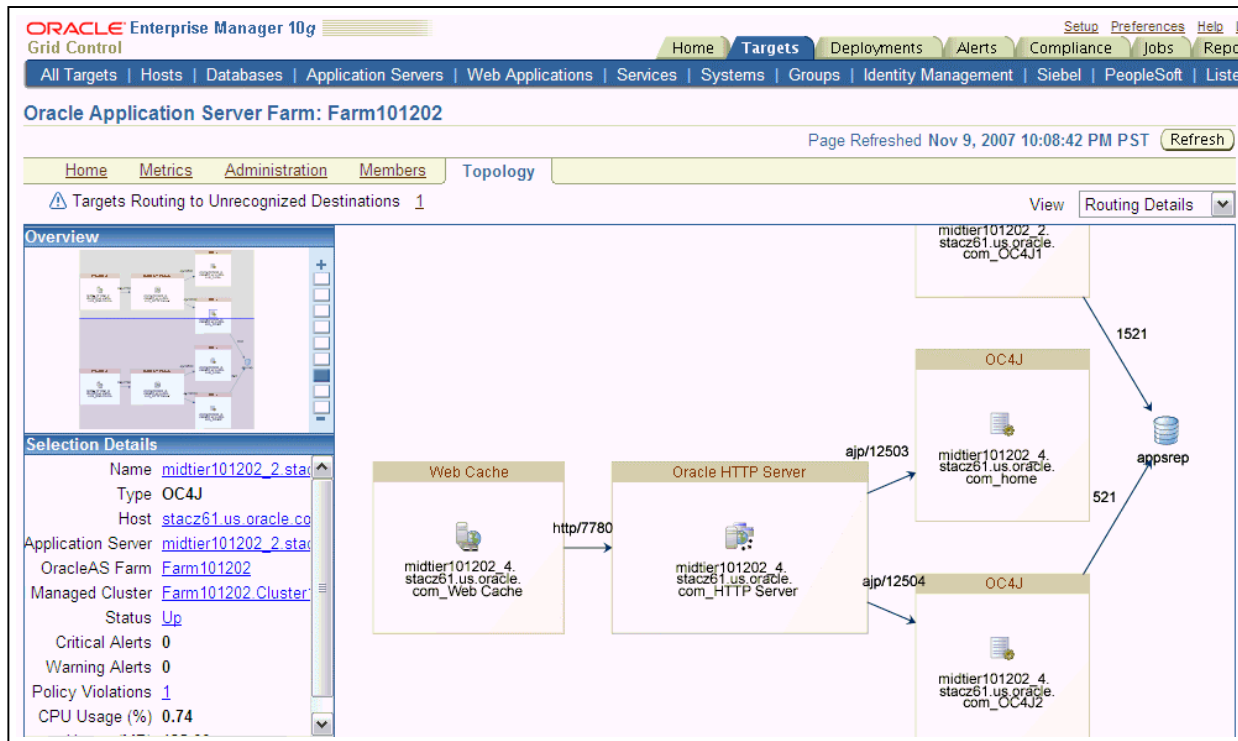


- Understand what is installed where by analyzing collected data
- Search across enterprise for specific configuration data
- Identify differences across machines, middleware installations, middleware configurations
- Identify root cause of application performance problems to prior configuration change

# Sampling of Collected Configuration

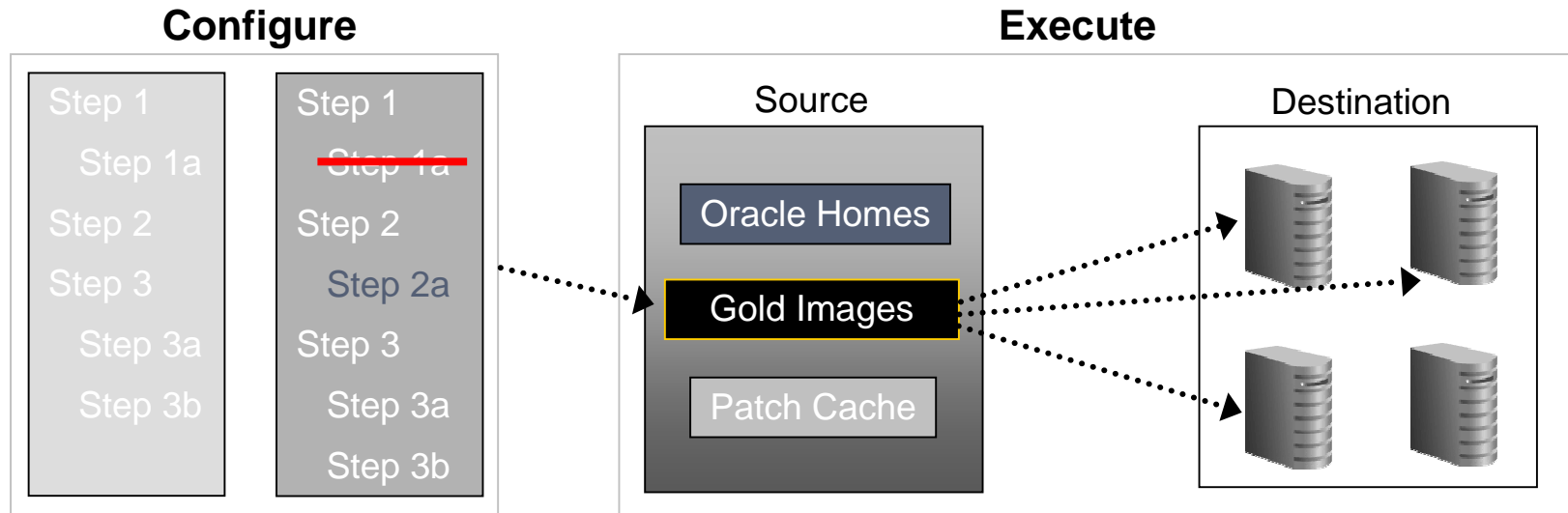
Oracle Fusion Middleware	Hardware	Operating System
Oracle Home (products, components, versions, patches)	CPU (speed, vendor, type, cache)	Kernel Parameters
Ports & Protocols	Memory (RAM, SWAP)	Environment (shell) Variables & Parameters
Sites & Origin Servers	IO Devices (vendor, type, frequency)	File Systems
Virtual Hosts	Network Interfaces Settings	Packages
JVM Resource Usage Settings	Disk Subsystem (controller, raw diskspace)	Patches
Deployed J2EE Applications & Modules		
JDBC Data Sources & Connection Pools		
Configuration Files		

# Topology Viewer



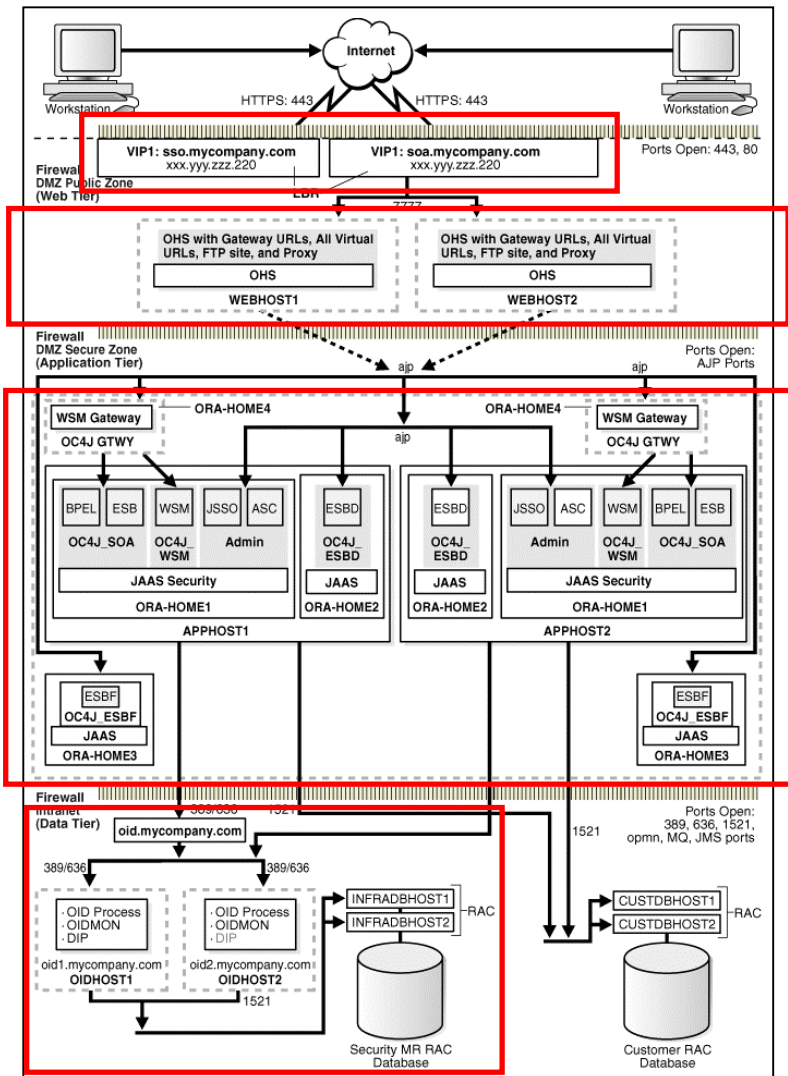
- View routing details between components in Farm
- View ports/protocols between components
- Monitor availability and performance

# Provision & Patch Fusion Middleware



- Automate provisioning via Deployment Procedures – predefined hierarchical sequence of provisioning and patching steps
- Available procedures include:
  - myJ2EECompany
  - SOA
  - BPEL process
  - Patch
- Additional procedures released via Oracle MetaLink
- Modify procedures with custom steps & scripts
- Automate multi-tier deployments in single execution

# SOA Deployment Procedure



<u>Verify Application Tier system requirements</u> <u>Verify Application Tier system requirements</u> <u>Verify and fix Application Tier system requirements</u> <u>Verify and fix Web Tier system requirements</u>	Parallel	Verifies system requirements for Application Tier
	Component	Verifies and fixes system requirements for Application Tier (requires sudo privileges as root)
	Component	Verifies and fixes system requirements for Web Tier (requires sudo privileges as root)
	Parallel	Verifies system requirements for Web Tier
	Component	Generates the configuration and zip file(s) in source Oracle Home(s) specified
<u>Application Tier deployments</u> <u>Stage Application Tier Targets to be Cloned</u> <u>Stage</u> <u>Install</u> <u>Run root scripts</u>	Parallel	Application Tier deployments
	Directive	Extracts Gold Image from the source Oracle homes to the target
	Component	Extracts Application Tier source on the target
	Component	Installs the Application Tier
	Directive	Run root scripts (requires sudo privileges as root)
<u>Configure Load Balancer</u> <u>Load balancer setup</u> <u>Register Cluster</u> <u>Refresh Host Configuration</u> <u>Install</u> <u>Run root scripts</u> <u>Configure</u> <u>Register Web Tier</u> <u>Refresh Host Configuration</u>	Parallel	Configures the Load Balancer for the Web Tiers selected
	Component	Configures the load balancer to direct requests to the Web Tiers.
	Computational	Registers the Oracle Application Server Cluster with the Grid Control
	Job	
	Directive	Installs the Web Tier
	Directive	Run root scripts (requires sudo privileges as root)
	Directive	Configures and starts the Web Tier
	Directive	Registers the Web Tier target and ensures that the home is discovered by the Agent for ECM Collections
	Job	
	Parallel	Configures the Gateway Server for Application Tier and Web Tier
	Directive	Configures the Gateway Server for Application Tier and Web Tier
	Parallel	Configures the Load Balancer for the Web Tiers selected
	Component	Configures the load balancer to direct requests to the Web Tiers
	Computational	Registers the Oracle Application Server Cluster with the Grid Control
	Parallel	Registers the Application Tiers with the Oracle Internet Directory (OID) Specified and deploys your application on the Application Tiers
	Component	Registers Application Tiers with Oracle Internet Directory (OID)
<u>Register the Application Tier with Oracle Internet Directory (OID) and deploy sample application</u> <u>Register Application Tier with Oracle Internet Directory (OID)</u> <u>Register Application Tier with Oracle Internet Directory (OID)</u>	Parallel	Registers the Application Tiers with the Oracle Internet Directory (OID) Specified and deploys your application on the Application Tiers
	Component	Registers Application Tier with Oracle Internet Directory (OID)
	Manual	Registers Application Tier with Oracle Internet Directory (OID)
	Directive	Run root scripts (requires sudo privileges as root)
	Component	Executes the Configuration scripts to set up Enterprise Service Bus(ESB)

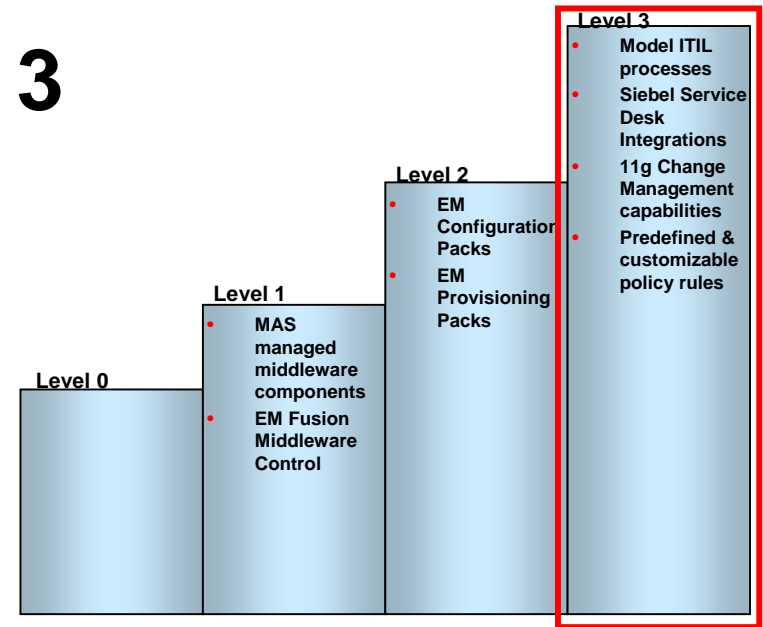
**Demonstration:**

# **Configuration Management & SOA Deployment Procedure**



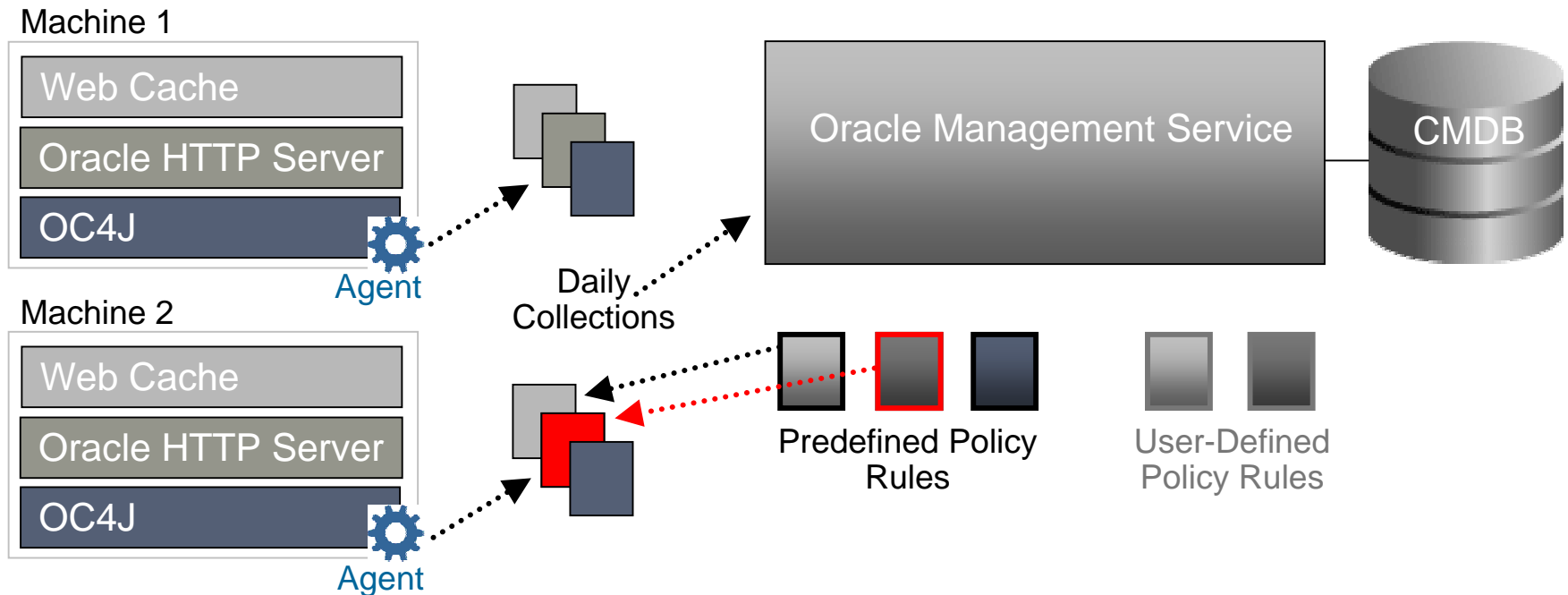


# Oracle Solution: Level 3



- Predefined & customizable policy rules
- Siebel HelpDesk Integration
- Workflow-based change management
- Model ITIL processes

# Predefined & Customizable Policy Rules



- Prevent configuration drift with out-of-box and user-defined “best practices”
- Automate assessment of systems, report on deviations and optionally take action to bring systems back into compliance
- Gain continuous visibility of compliance posture

# Sampling of Out-of-Box Policy Rules

Oracle Fusion Middleware	Host
Web Cache Access Logging	Critical Patch Advisories for Oracle Homes
Web Cache Dummy Wallet	Open Ports
HTTP Server Access Logging	Insecure Services
HTTP Server SSL	Execute Stack
HTTP Server Max Keep Alive Requests	NTFS File System
HTTP Server HostNameLookups	
OC4J Password Indirection	

# Siebel HelpDesk Integration

- Incident ticket creation
  - Automatically/Manually open trouble-tickets for EM Alerts
  - Customizable Ticket templates
    - Tickets compatible with Siebel Helpdesk implementation
    - Facilitate incident categorization and classification
- Incident tracking and resolution
  - In-context launch of Help Desk UI from EM
  - Help Desk ticket is synchronized with EM alert changes
  - Ticket has link to EM for incident resolution



# Workflow-based Change Management

- Out-of-box integration & RFC tracking with external Change Management Systems
- BPEL-based change workflow for change & approval tracking
- Change cart rolls out multiple changes under single, scheduled downtime
- Comprehensive Change cart analysis for pre-requisites, co-requisites and impact analysis
- Change validation via Configuration Standard evaluation

The screenshot displays the Oracle Change Carts application. The top section shows a list of change carts with columns for Cart, Flow, Changes, Cart RFC#, Status, Deploy on (Planned), Owner, Targets, and Notes. Below this, the 'Preview for 17 July Maintenance (Change Cart)' is shown, including a Summary tab with fields for Cart Name, Status, Targets, and Cart RFC#, and a Notes section with a text area and a list of previous notes.

Cart	Flow	Changes	Cart RFC#	Status	Deploy on (Planned)	Owner	Targets	Notes
October 17 Maintenance Window for Prod...	**	23	101101	Ready for Cart An...	17-Oct-06 5:30 PM	Mark	11	
17 Jul Maintenance	**	2	421345	Scheduled	17-Jul-06 11:00 AM	Paul	5	
Annual	**	5	390712	Waiting for Approval	01-Jan-07 9:30 AM	Mark	19	
Cart 1	**	75	736231	Scheduled	10-Mar-07 11:45 AM	Richard	23	
Cart 2	**	18	582134	Waiting for Approval	28-Jun-06 11:00 AM	Paul	8	
Test Databases	**	5	762960	Request Rejected	07-Jan-07 11:30 PM	Richard	5	

Selected: 2 / Total: 19 (All loaded)

### Preview for 17 July Maintenance (Change Cart)

**Summary** | Changes (2) | Flow | History

**General** | Revert | Apply

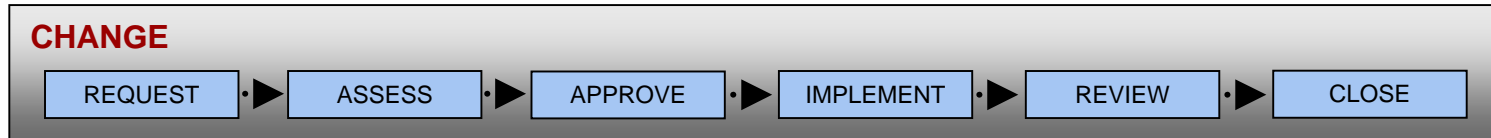
Cart Name: 17 July Maintenance  
Status: Open for Change  
Targets: 7  
Cart RFC#: 113  
RFC # for Items in Cart: 113, 324324, 233322, 234354, 333222  
Oldest Recommendation: 32 Days Old - 42433 (Patch) for: supprod.us.oracle.com (Database)  
Deploy on (Proposed): 23-Oct-06 5:30PM

**Notes** | Revert | Apply

Type: ☒ General ☐ Internal ☐ Customer  
Write a Note

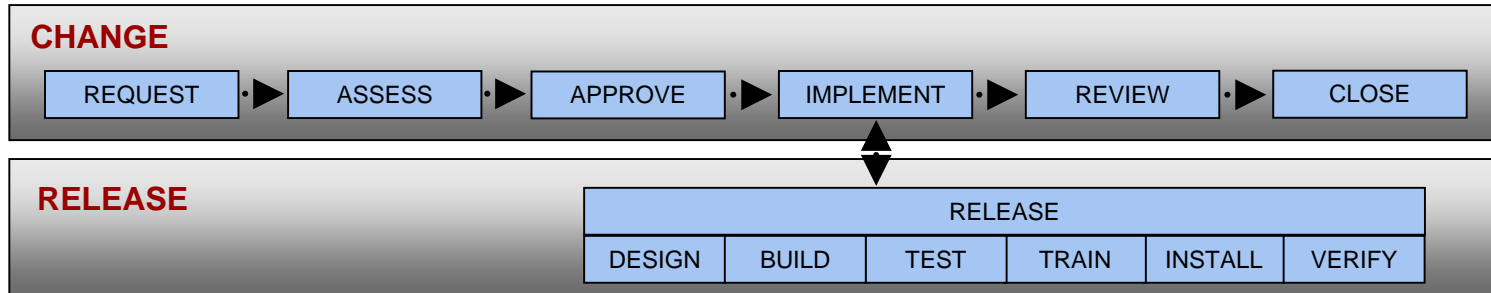
Previous Notes: Show ☒ General ☒ Internal ☒ Customer  
\*\* General - From MarcC on March 23, 2006 5:32 PST  
This patch works for me only when I also apply 453543 at the same time. Not sure why this is

# Model ITIL Change, Release & Configuration Management Processes



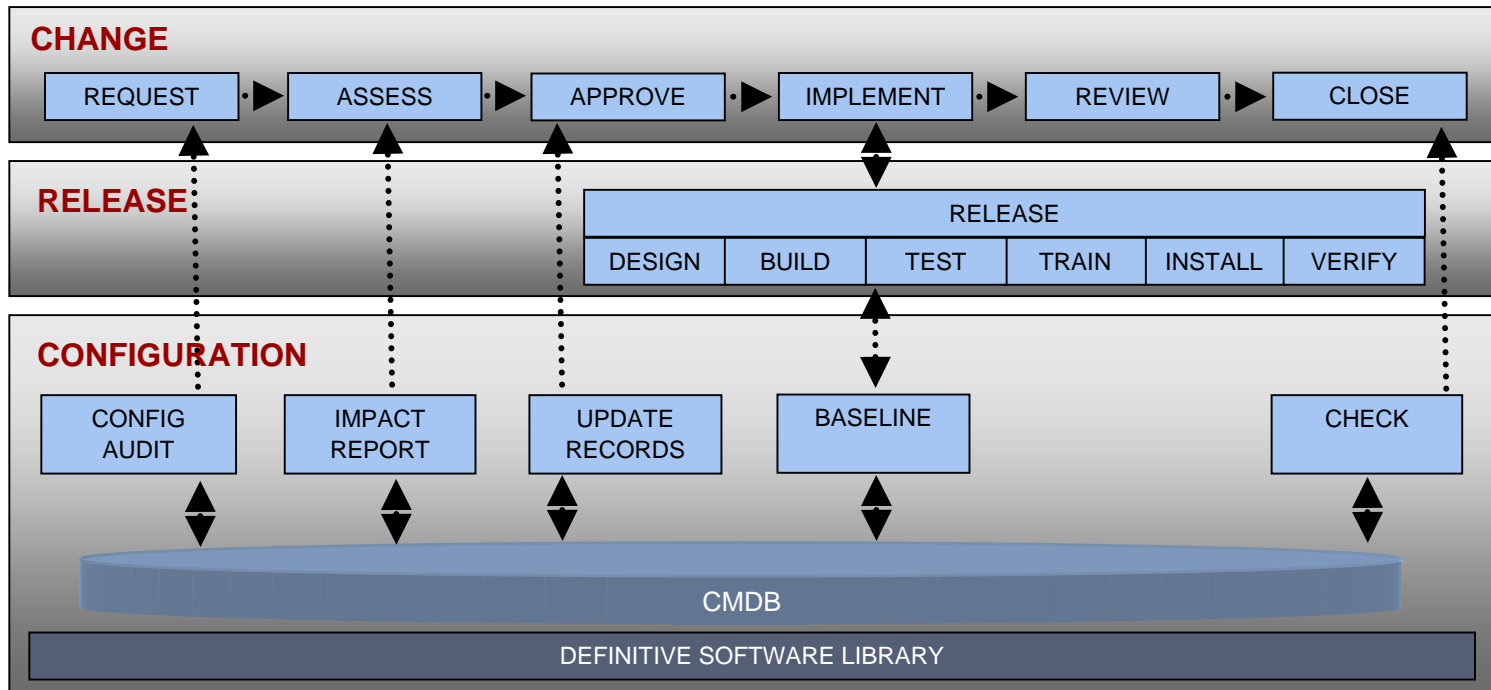
- Change Management
  - Create change cart to roll out multiple changes at once
  - Integrate with Siebel HelpDesk to initiate requests for change
  - Track approval status for requests for change
  - Analyze impact of change via topology viewer
  - Validate changes by reviewing collected configuration
  - Rollback changes
  - View and track configuration change history

# Model ITIL Change, Release & Configuration Management Processes



- Release Management
  - Maintain validated software configurations in software library
  - Deploy software via well-defined procedures

# Model ITIL Change, Release & Configuration Management Processes



- Configuration Management
  - Automatically discover configuration items across enterprise
  - Map dependencies between configuration items
  - Track and audit configuration changes
  - Automatically assess configuration against best practices



# Summary



# Summary

Progress your IT organization to the next level in the Provisioning, Patching & Configuration Management Continuum by relying on Oracle Enterprise Manager:

- Automate provisioning and patching
- Maintain configurations across enterprise
- Minimize/eliminate downtime due to infrastructure changes
- Model ITIL processes

# Questions & Answers



# Thank You

- Please complete evaluation form
  - Speaker Name: Nicole Haba
  - Session Name: Improve IT Operations: Automate Provisioning, Patching & Managing Configurations of Fusion Middleware
  - Session Number: 544
- For further questions, contact Nicole Haba at [nicole.haba@oracle.com](mailto:nicole.haba@oracle.com)



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