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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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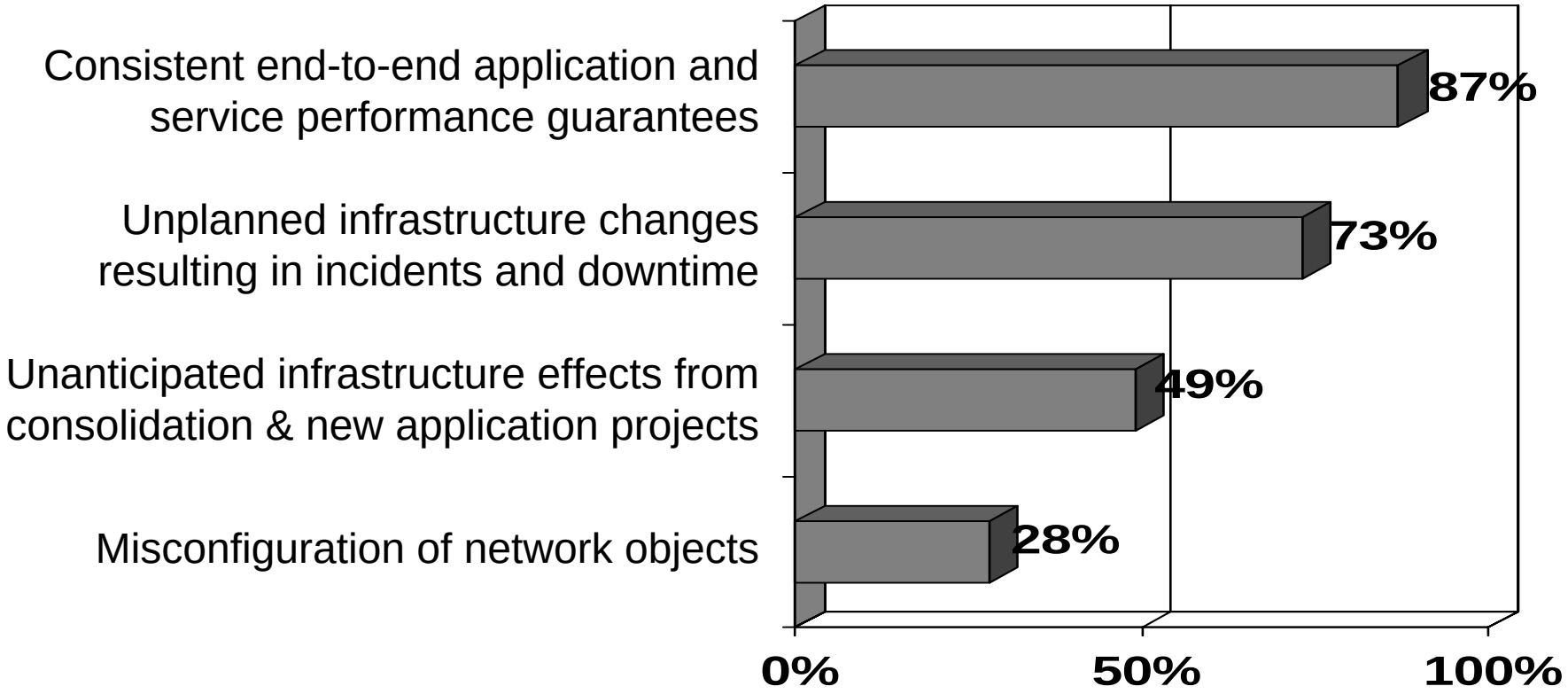
Top Challenges for Enterprise IT Managers



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

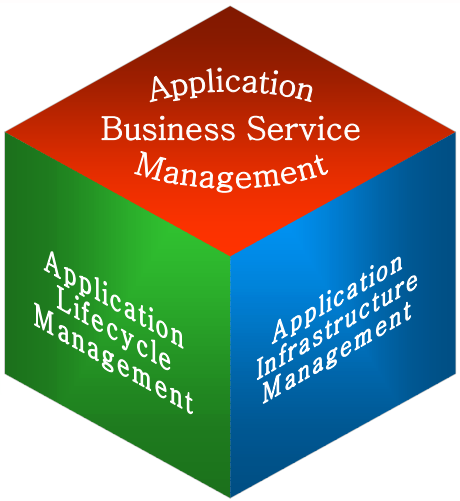
Cust. Support

Security Admin

CAB & Auditors

Management of application operational lifecycle

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



Management of underlying IT components (stack)

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

DB Admin

System Admin

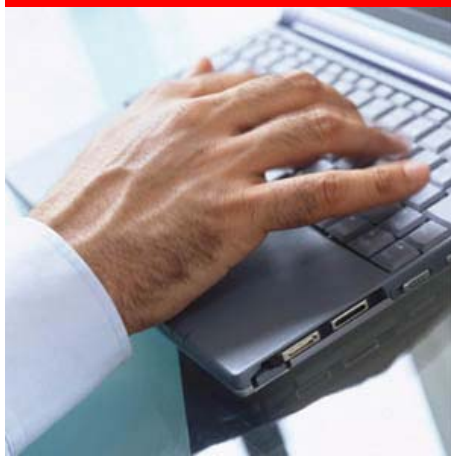
Storage Admin

Network Admin

Key Differentiator

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

Program Agenda



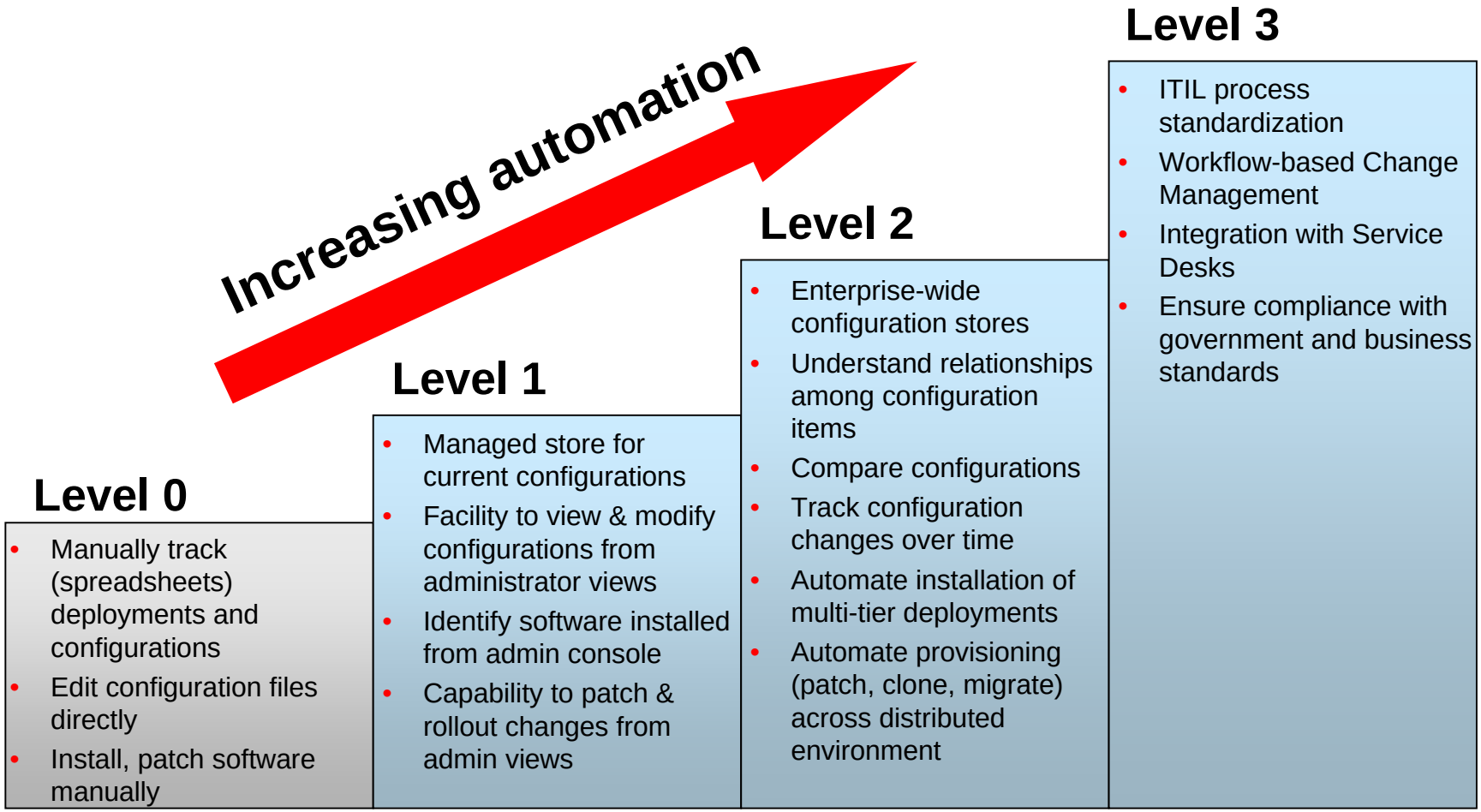
- Requirements for Improving IT Operations
- Oracle Solution
- Key Features
- Demonstration
- Summary
- Q&A

Requirements for Improving IT Operations

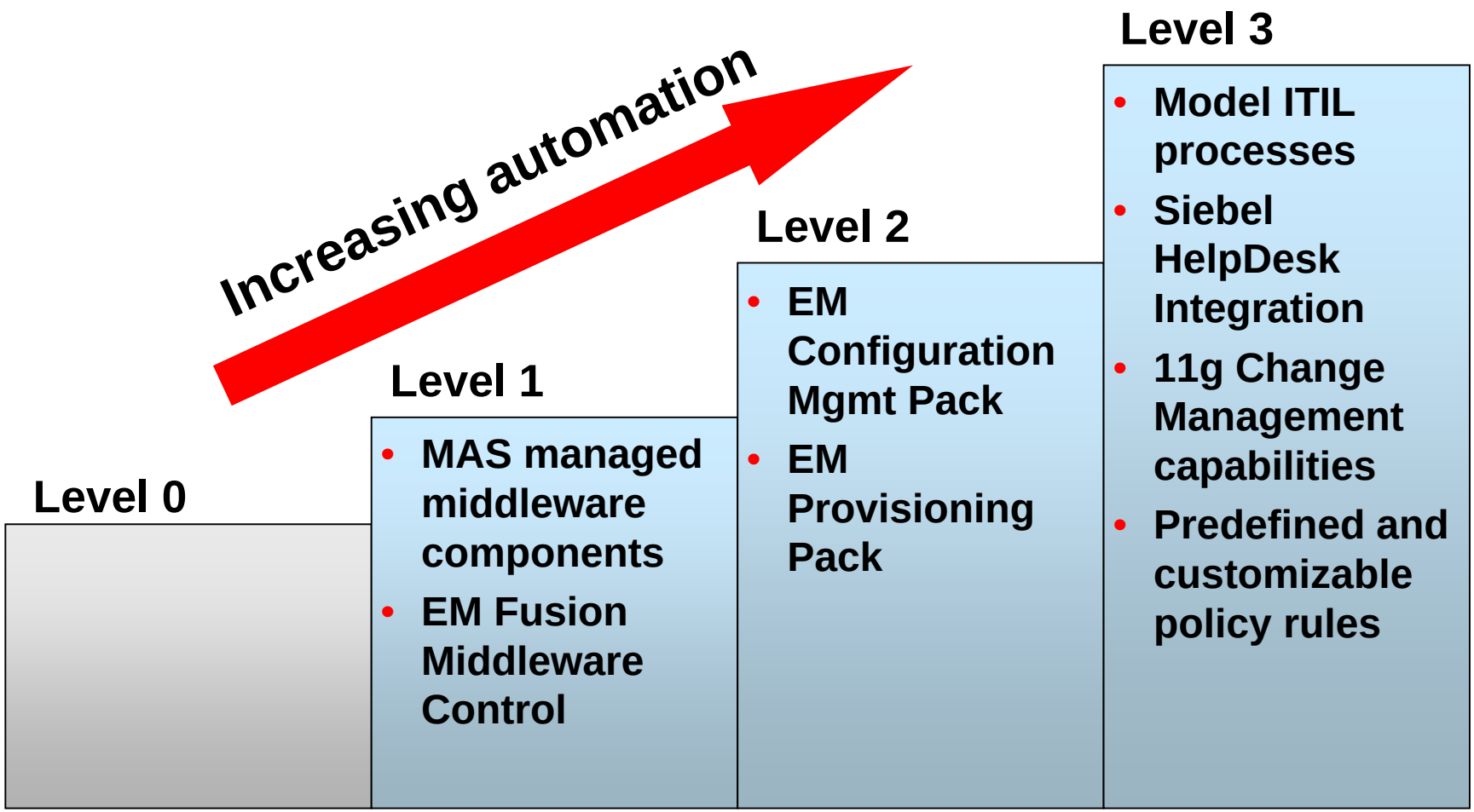
Requirements for Improving IT Operations

- 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

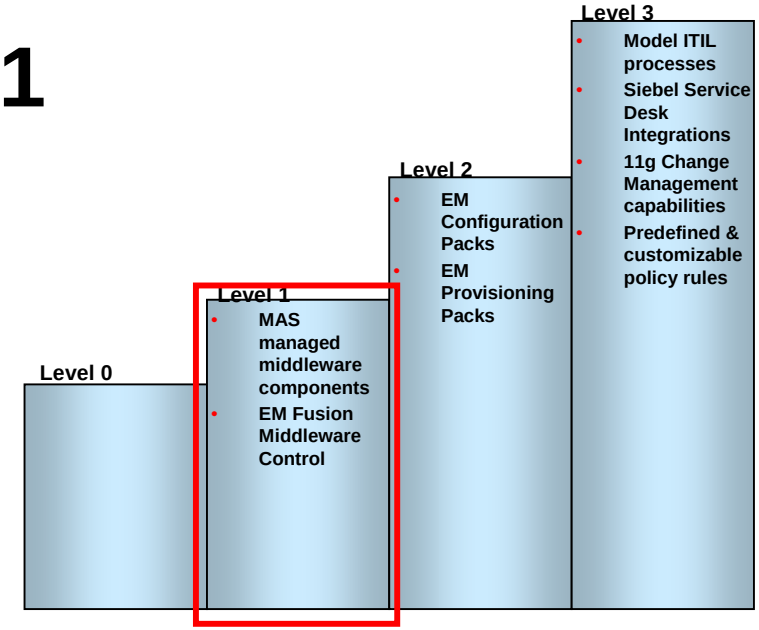


Oracle Capabilities



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)

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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.

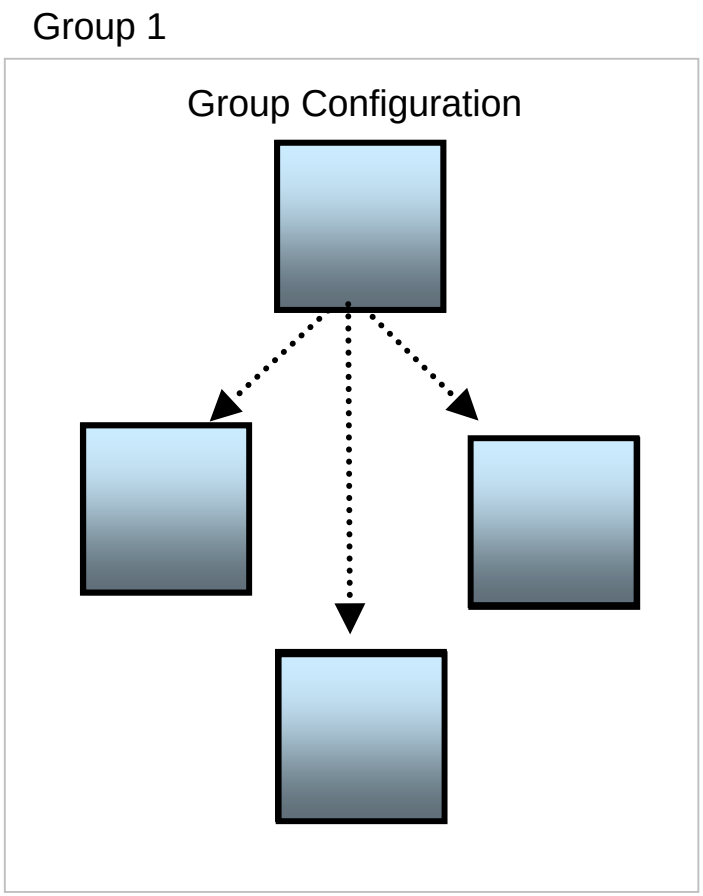
Create | Remove | Start | Stop

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 ()		stadk58.us.oracle.com	/net/stadk58/scratch/shgoel/view_storage/shgoel_adminserver_071106_1201/work/as11_oh

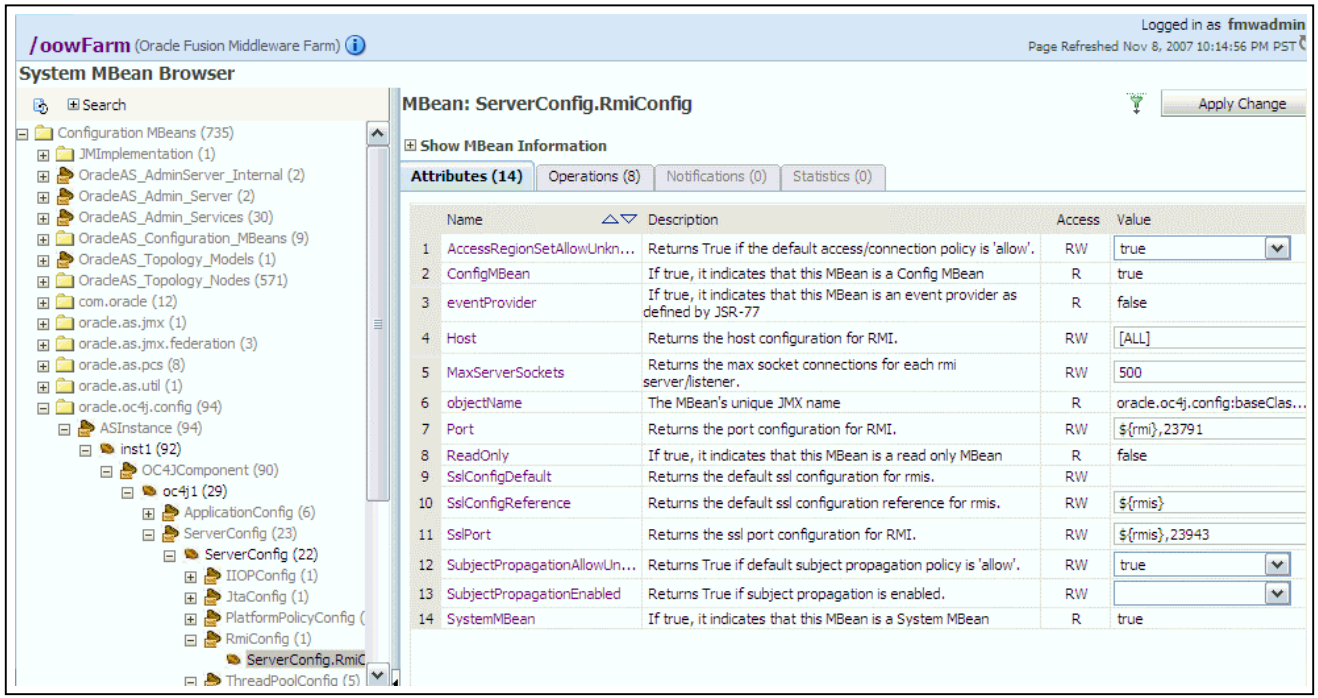
- Install software binaries once
- Create Application Server instances and their components (OC4J, OHS, Web Cache) post installation
- During component creation, define routing relationships and join existing group

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



- 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	☑	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	☑	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.

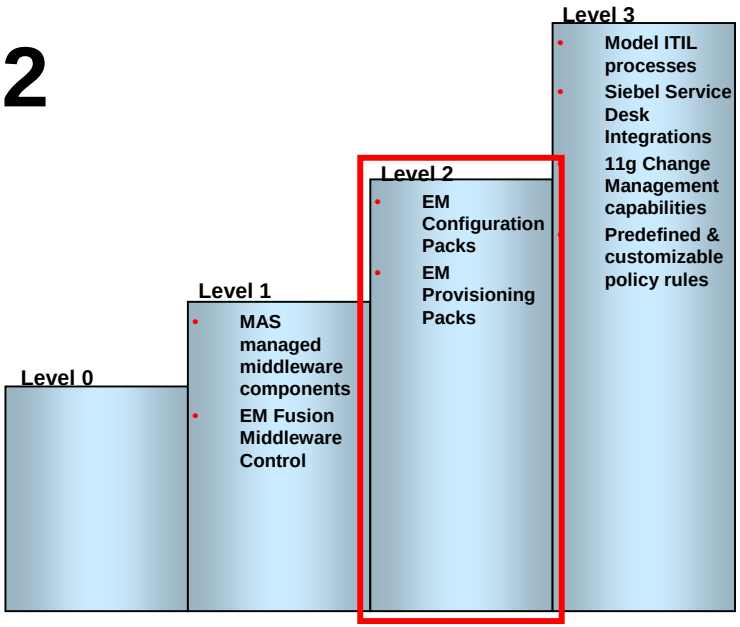
- Apply patches to Fusion Middleware
- Support for HA patching to minimize/eliminate downtime
- Perform prerequisite check prior to applying patch
- Rollback patches

Demonstration:

Enterprise Manager Fusion Middleware Control

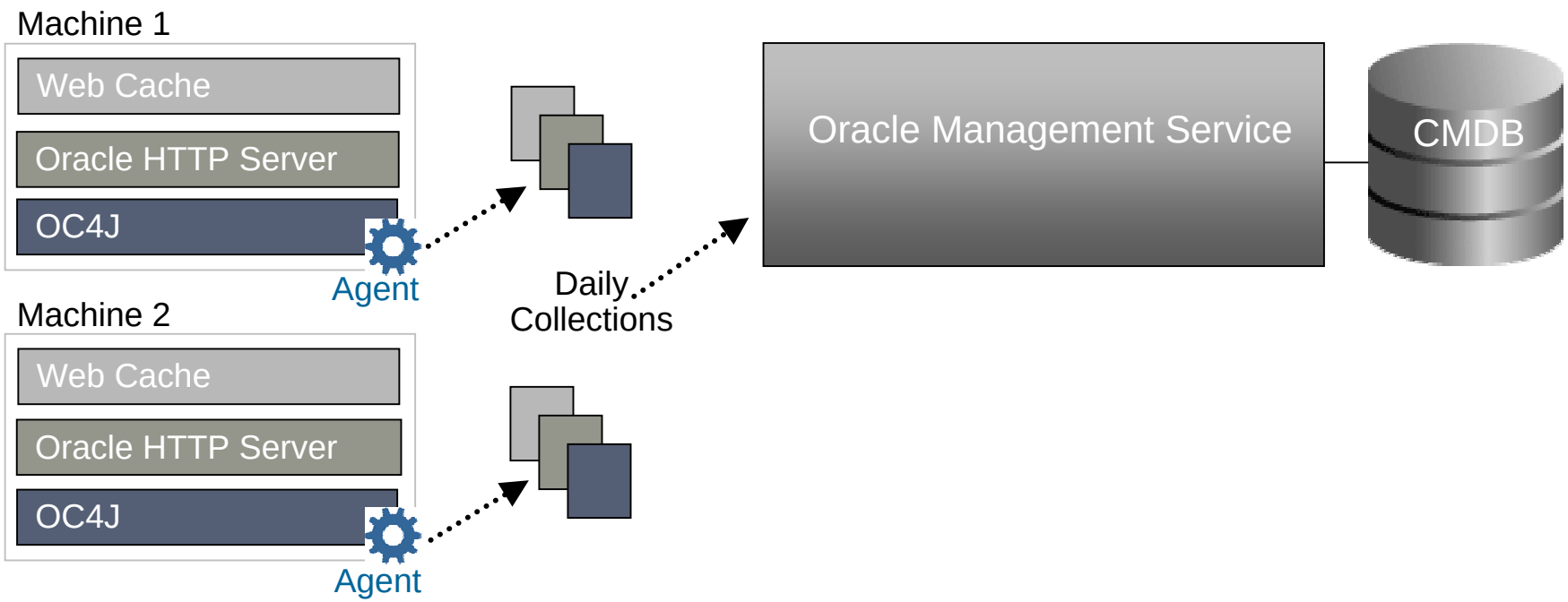
Oracle Solution: Level 2

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

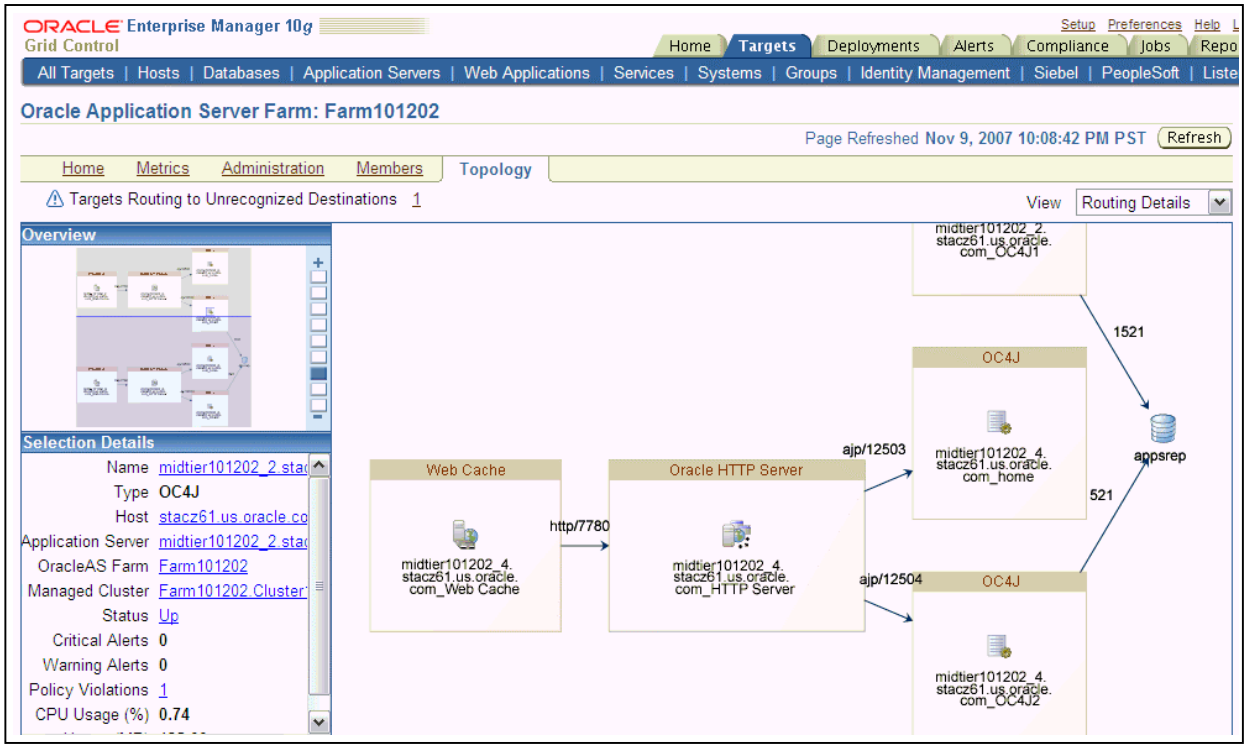


- Understand what is installed where by analyzing collected data
- Search across enterprise for specific configuration data
- Identify differences across machines, middleware installations, middleware configurations
- Identify root cause of application performance problems to prior configuration change

Sampling of Collected Configuration

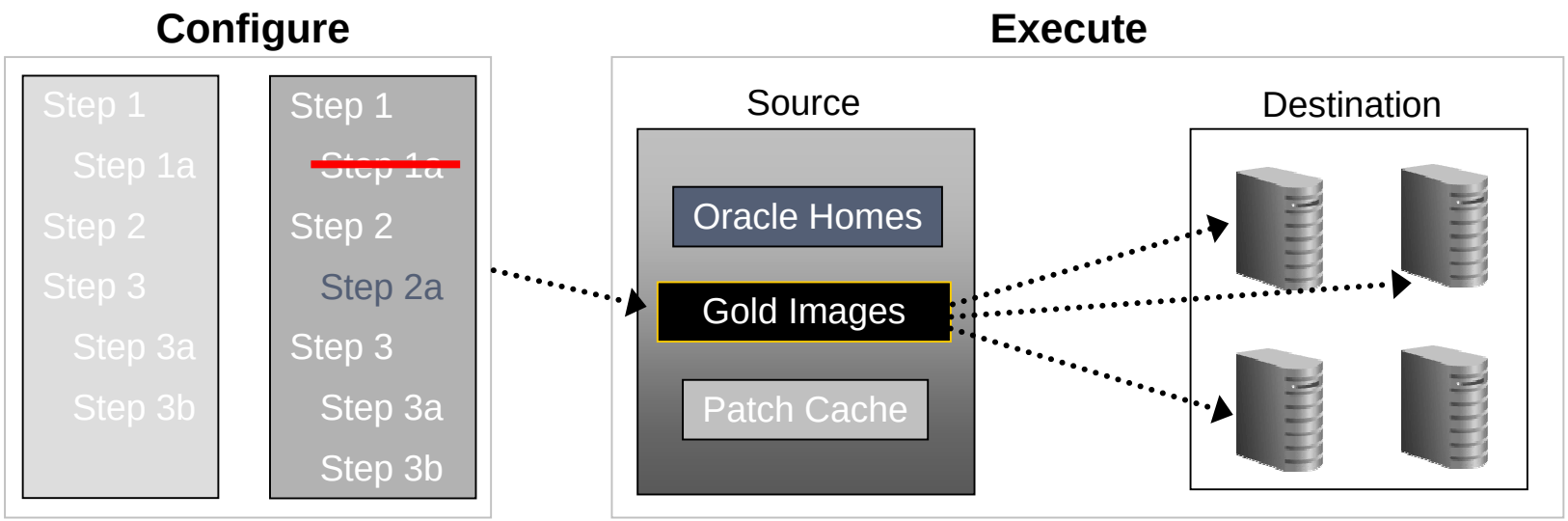
Oracle Fusion Middleware	Hardware	Operating System
Oracle Home (products, components, versions, patches)	CPU (speed, vendor, type, cache)	Kernel Parameters
Ports & Protocols	Memory (RAM, SWAP)	Environment (shell) Variables & Parameters
Sites & Origin Servers	IO Devices (vendor, type, frequency)	File 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



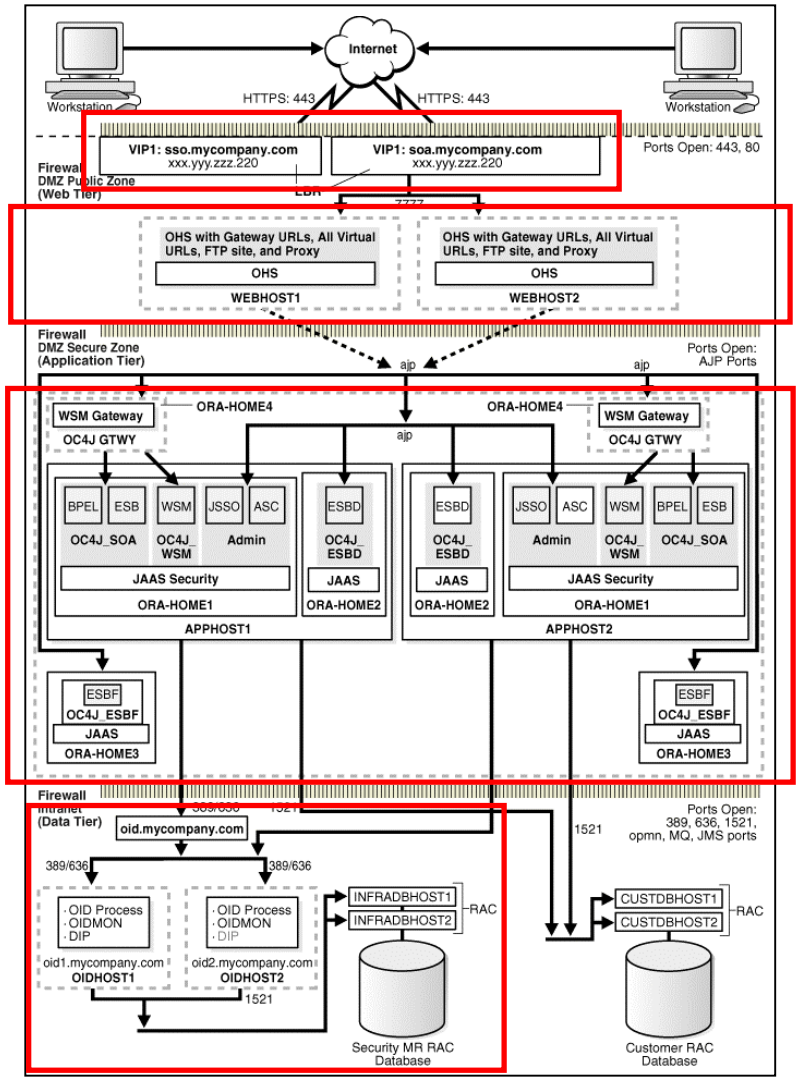
- View routing details between components in Farm
- View ports/protocols between components
- Monitor availability and performance

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

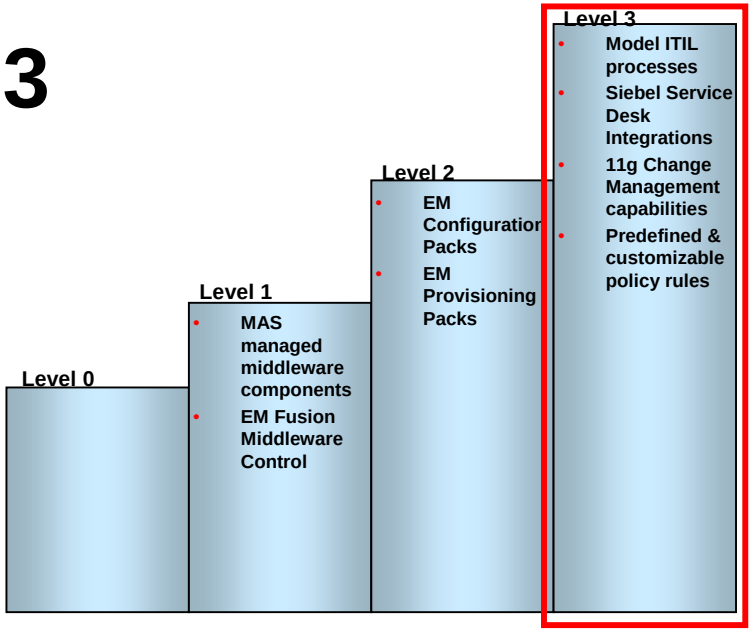


Verify Application Tier system requirements	Parallel	
Verify Application Tier system requirements	Component	Verifies system requirements for Application Tier
Verify and fix Application Tier system requirements	Component	Verifies and fixes system requirements for Application Tier (requires sudo privileges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

Demonstration:

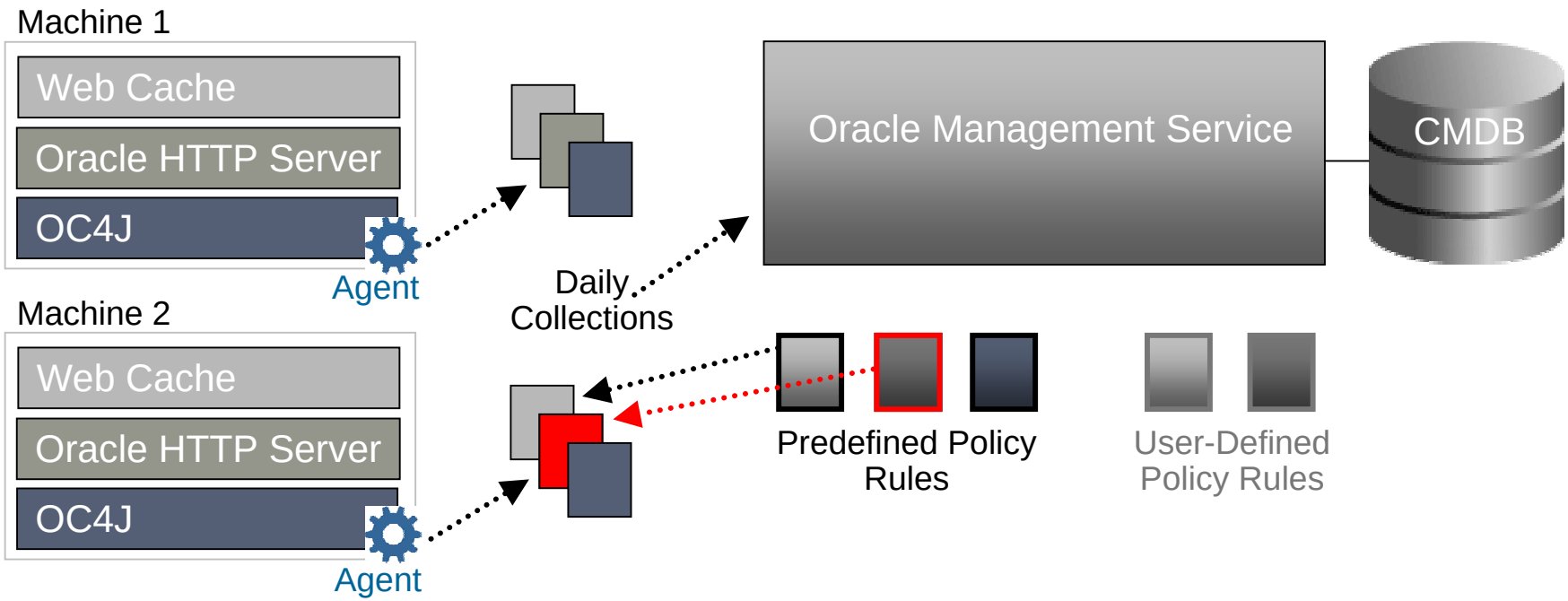
Configuration Management & SOA Deployment Procedure

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

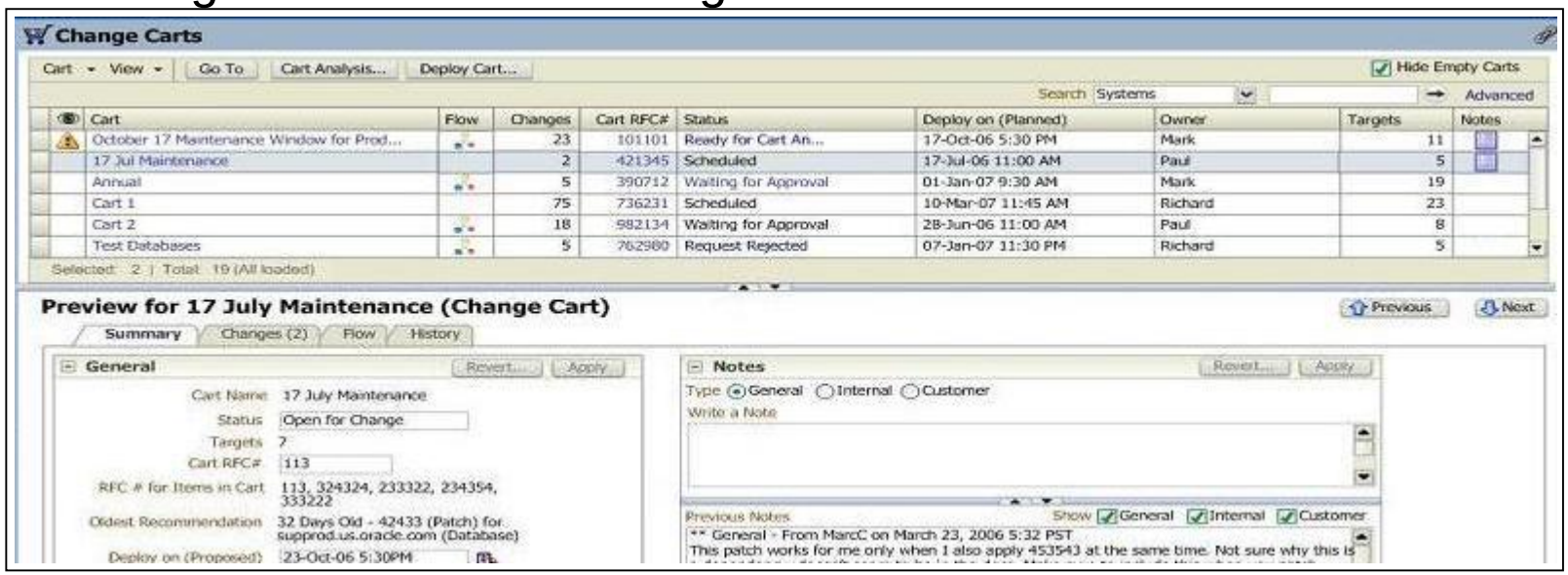
Oracle Fusion Middleware	Host
Web Cache Access Logging	Critical Patch Advisories for Oracle Homes
Web Cache Dummy Wallet	Open Ports
HTTP Server Access Logging	Insecure Services
HTTP Server SSL	Execute Stack
HTTP Server Max Keep Alive Requests	NTFS File System
HTTP Server HostNameLookups	
OC4J Password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

Siebel HelpDesk Integration

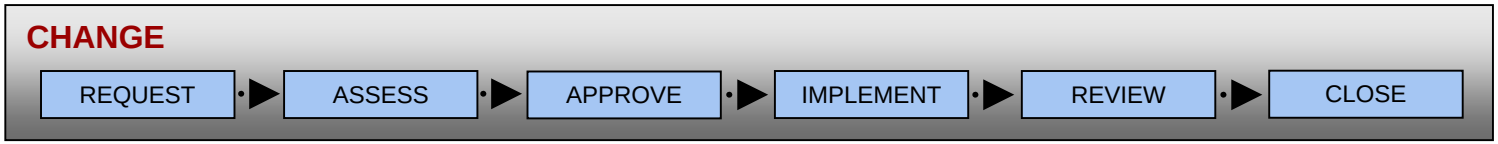
- Incident ticket creation
  - Automatically/Manually open trouble-tickets for EM Alerts
  - Customizable Ticket templates
    - Tickets compatible with Siebel Helpdesk implementation
    - Facilitate incident categorization and classification
- Incident tracking and resolution
  - In-context launch 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

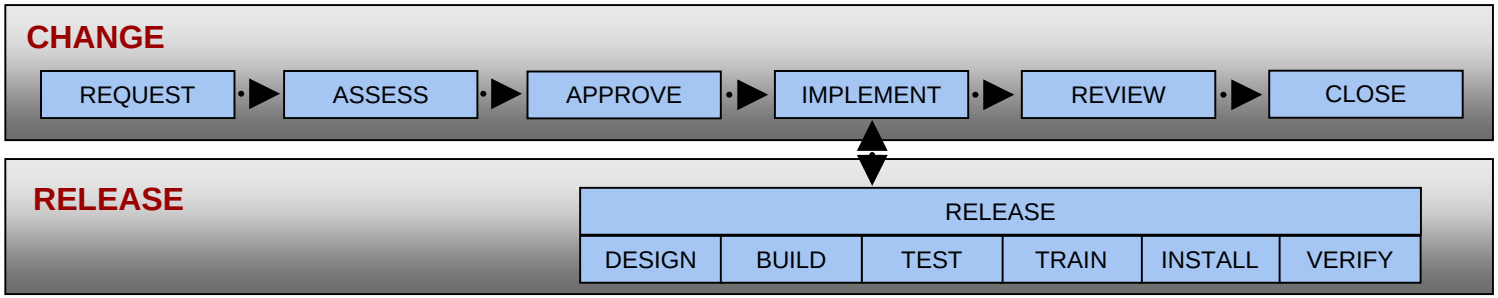


Model ITIL Change, Release & Configuration Management Processes



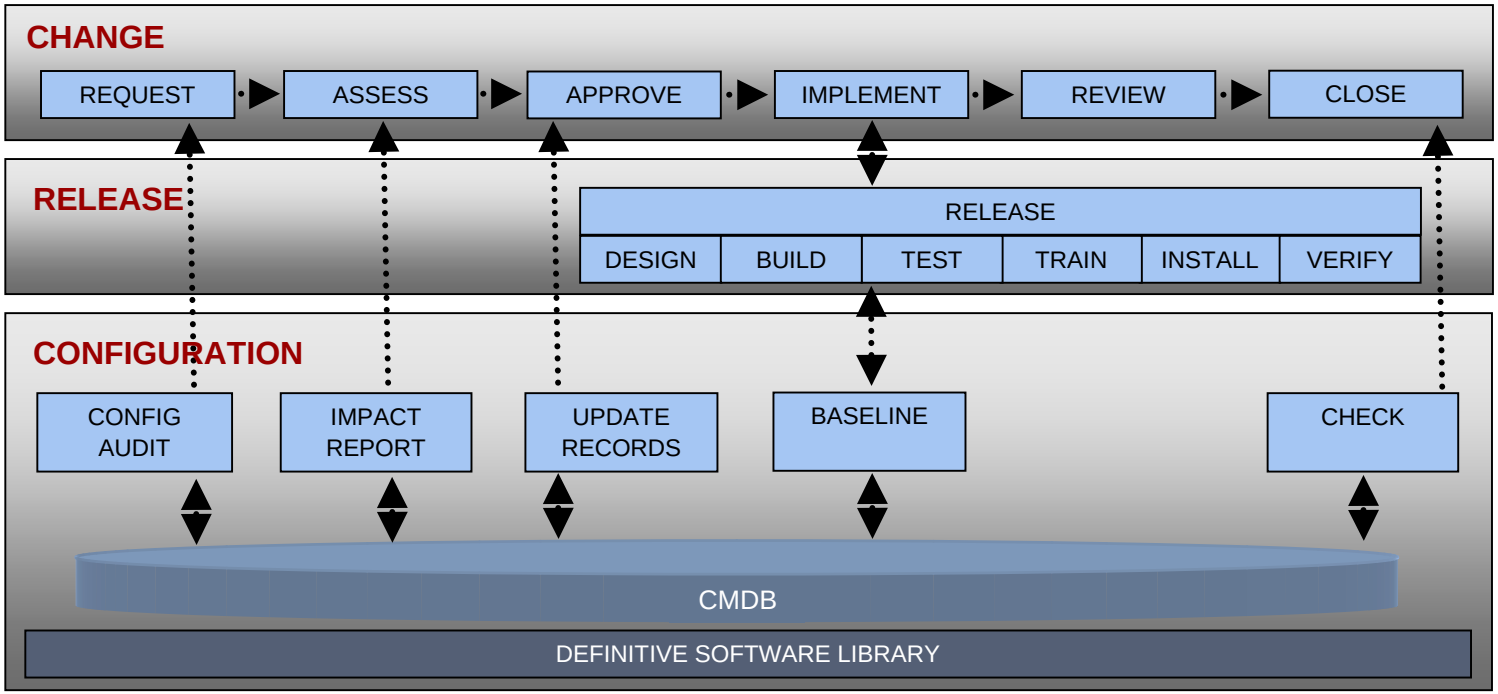
- Change Management
  - Create change cart to roll out multiple changes at once
  - Integrate with Siebel HelpDesk to initiate requests for change
  - Track approval status for requests for change
  - Analyze impact of change via topology viewer
  - Validate changes by reviewing collected configuration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

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