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Managing the Oracle Application Server with Oracle Enterprise Manager 10g Grid Control

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Agenda

- Grid Management Challenges
- Oracle's Grid Management Solution
- Management Architecture
- Application Server Management Features
  - Grid Management
  - Application Server System Management
- Q&A

Grid Management Challenges

Grid Management Challenges

- Deliver highest quality of service for wide variety of services
- Maintain or lower IT management costs

Traditional management tools

are not up to this task

Traditional Management vs Grid Management

Traditional Management assumes…

- Lots of systems
- All different
- All special
- COMPLEXITY

Traditional management tools

manage complexity

Traditional Management vs Grid Management

Grid Management delivers…

- Lots of systems organized into few groups of like systems
- All standardized
- Zero exceptions
- SIMPLICITY

Grid management tools

eliminate complexity

Grid Management Mandates a New Management Approach

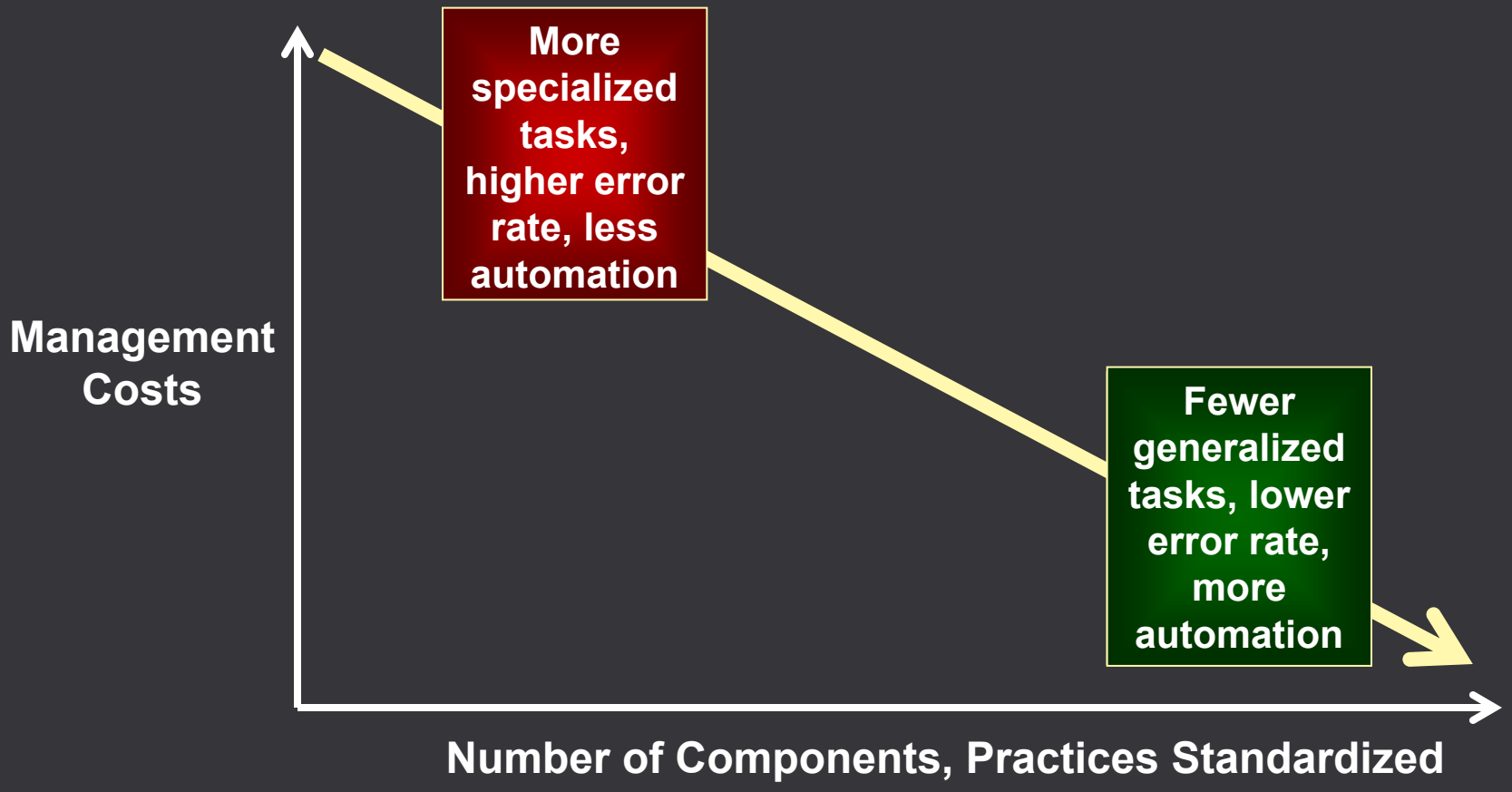
- Traditional: Support complexity
- Grid: Reduce/eliminate complexity

- Traditional: Expensive human specialists
- Grid: Automated standard tasks

- Traditional: Complex "unifying" frameworks
- Grid: Well tested simple tools

- Traditional: Error prone
- Grid: Highly reliable

The Value of Standardization



Grid Management Bottom Line

Simplicity of systems is inherently

- → more reliable
- → more predictable
- → lower cost

Oracle's Grid Management Solution

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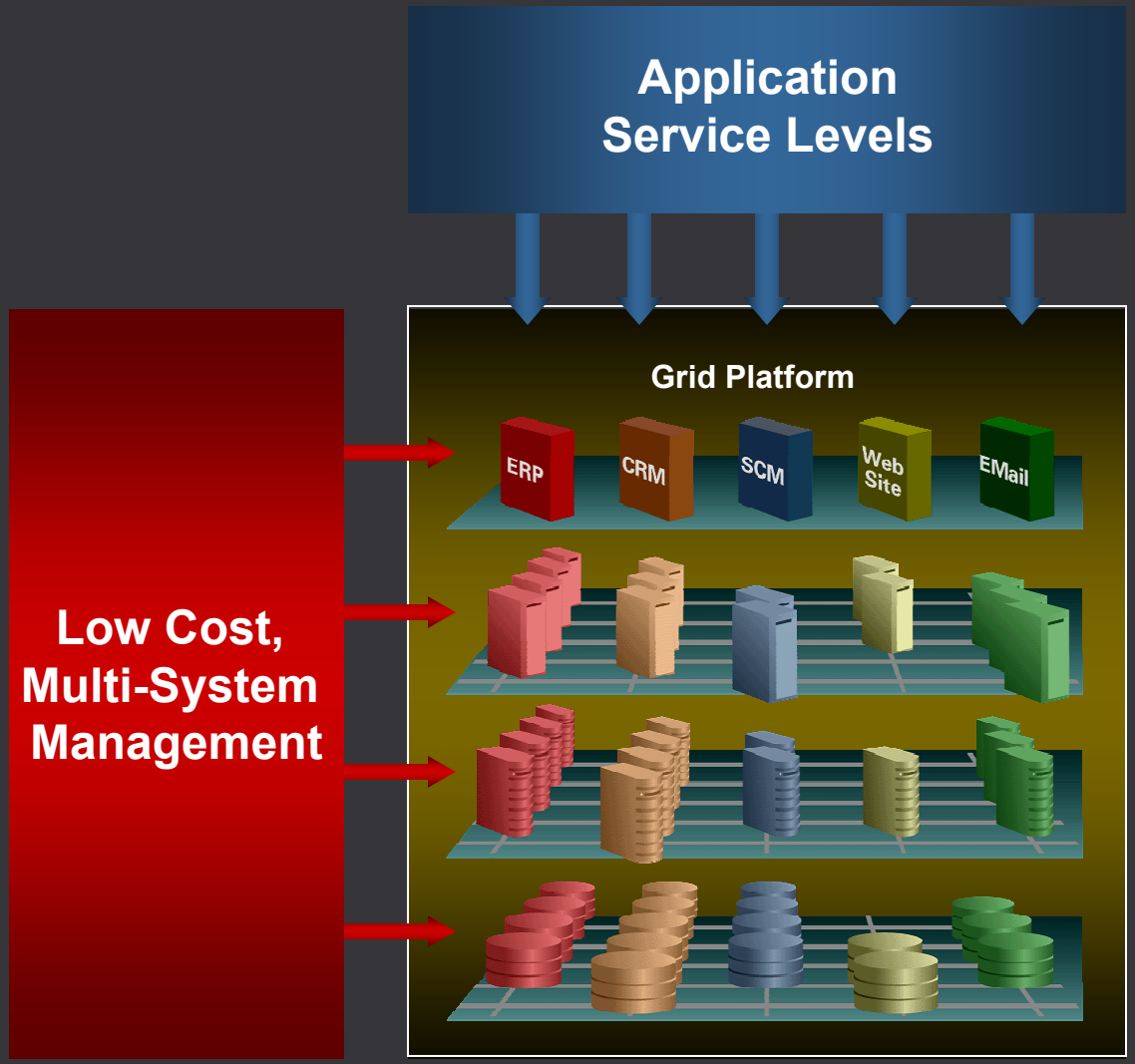
Grid Control Mission

- Optimize application service levels
  - Better availability
  - Greater reliability
  - Consistent predictability
  - Improve speed of change
- Lower total cost of ownership
  - Simplify through standardization
  - Manage more with less
  - Eliminate human error

Grid Control Solution



Optimize Service Levels

- Model topologies
- Measure performance
- Diagnose root cause

Lower Costs with Grid Management

- Model ‘like’ components
- Manage sets as one
- Enforce standardization
- Automate tasks

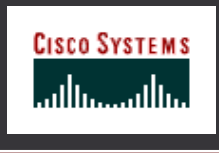
Manage the Complete Oracle Grid

Application Service Level Management

Integrated Suite Management

Component Level Management

Management for Oracle Eco-System



Oracle Collab Suite

Oracle Applications

Oracle AS

J2EE | Integration

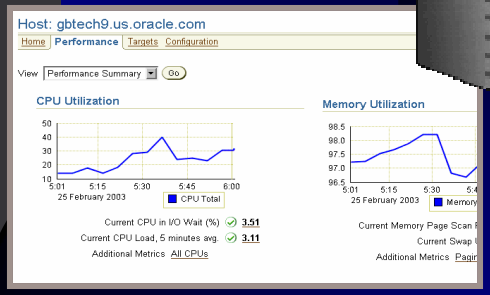
Web Services | OHS | Web Cache

Portal | Wireless | SSO

Integrated

One tool lowers learning curve, improves Quality of Service

Host and Hardware



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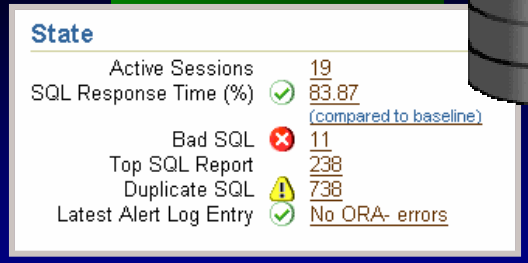
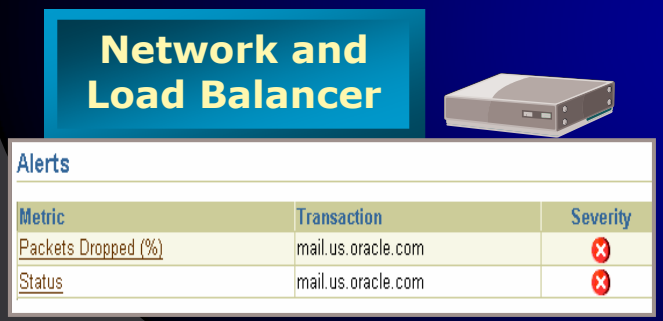


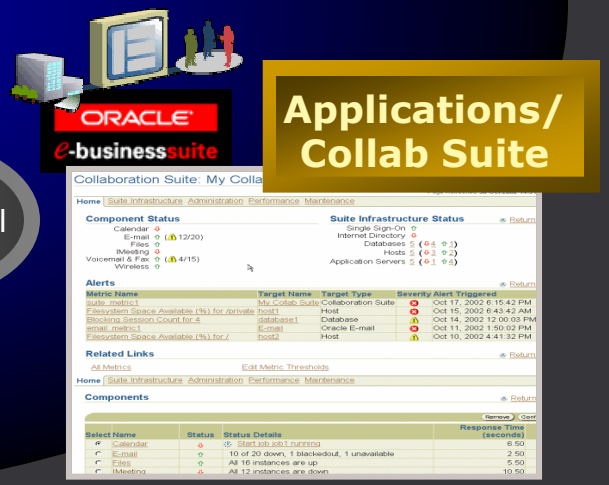
OracleAS

Administration
Configuration
Monitoring
Provisioning
Security

Network and Load Balancer

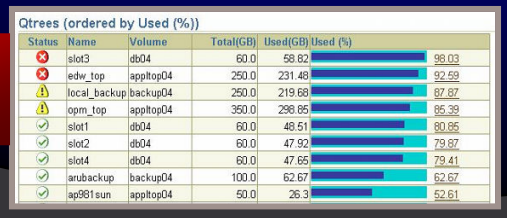


Applications/ Collab Suite



Grid Control

Storage



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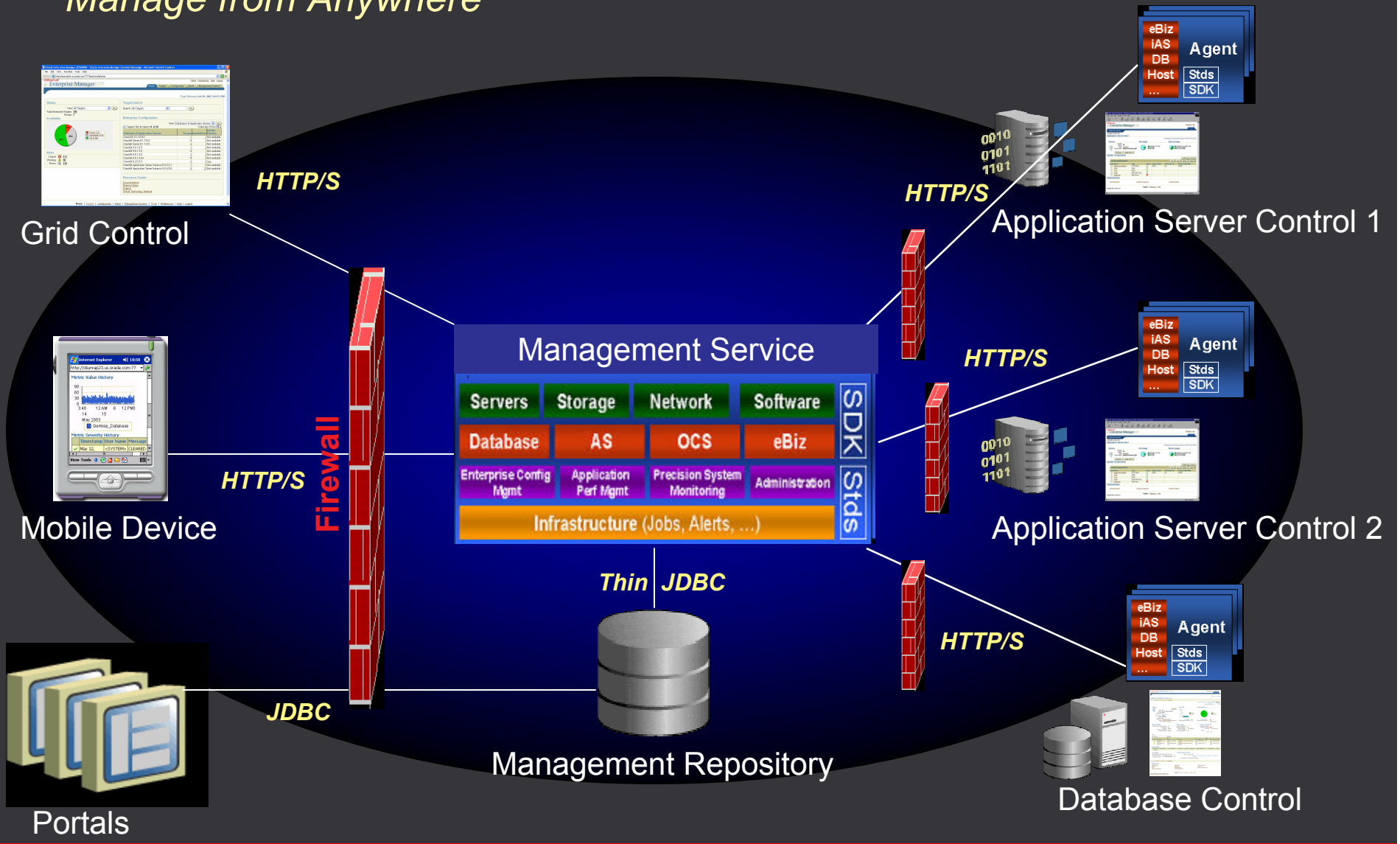
Management Architecture

Management Architecture

Manage from Anywhere



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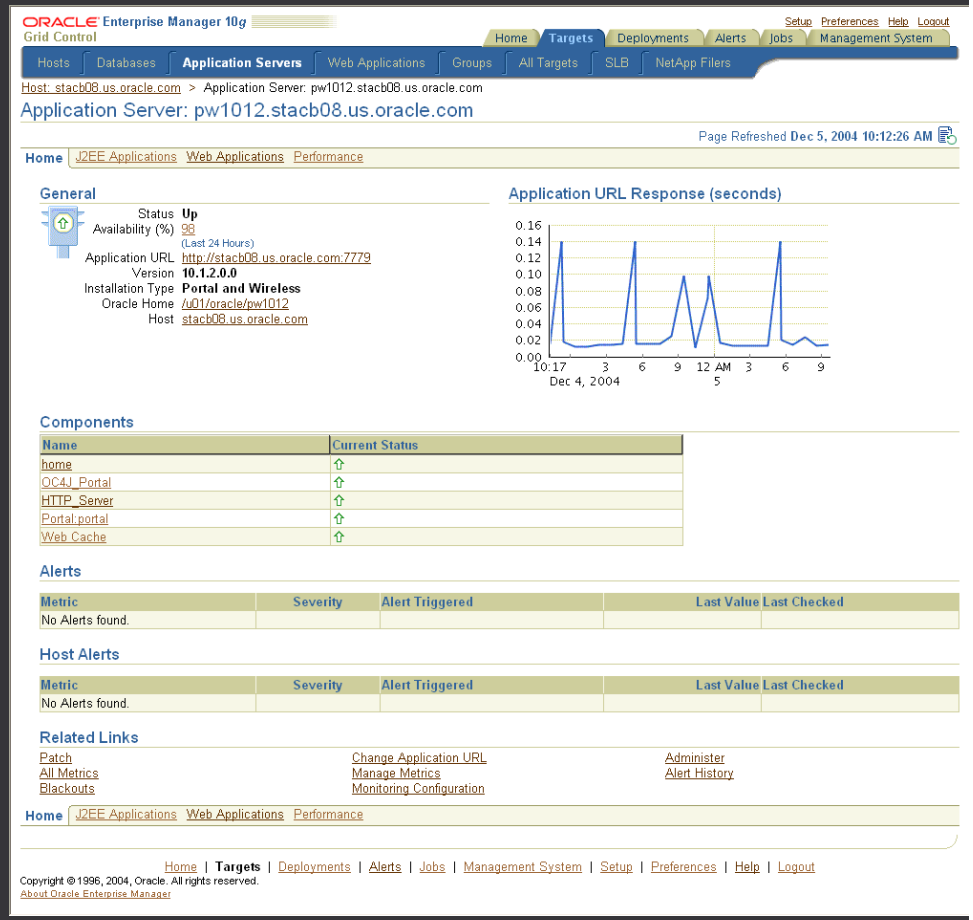
Out-of-Box Ready

Realize Immediate Value

- Grid Control
  - Management of all the Oracle Grid components
  - Centrally manage entire enterprise
  - Out-of-box management for all Oracle products
- Product Controls
  - Fully functional standalone management
  - Out-of-box with each product



Application Server Management Features

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Application Server Management Features

- Grid Management
- Application Server System Management

Application Server Management Features:

Grid Management

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Application Server Management Features: Grid Management

- Application Server Discovery
- Topology View
- Consolidated Group Management
- Out-of-box Monitoring
- Historical Collections & Analysis
- Task Automation
- Configuration Management
- Automated Provisioning & Administration
- Application Service Level Management

Application Server Discovery

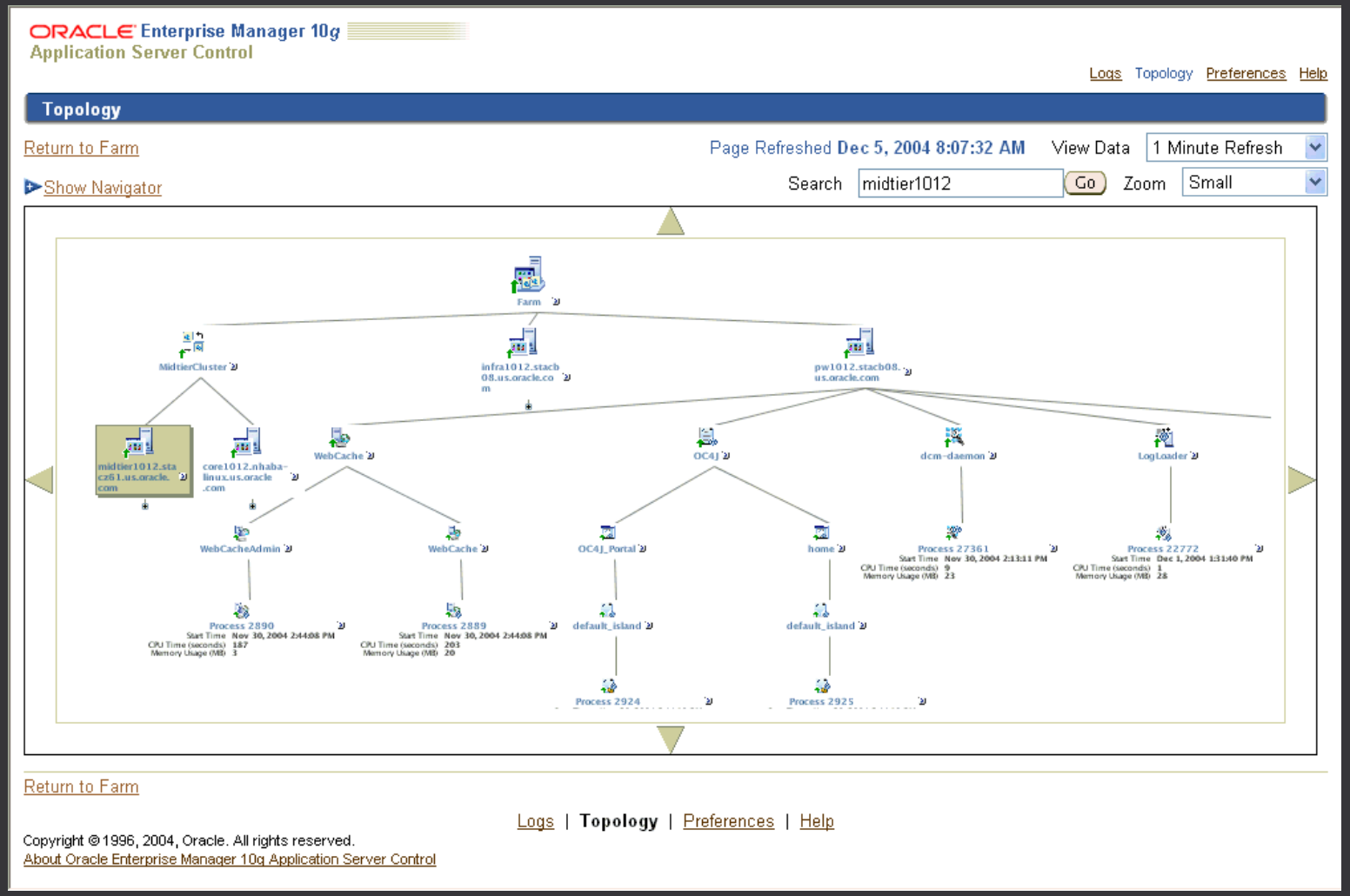
- Discovery is process of adding targets to Agent for central monitoring
- Three different ways to discover Application Server instances
  - Install Agent on Application Server machine (i.e. automatic discovery)
  - From Grid Control, click Add from Application Servers subtab
  - From OracleAS Control, click Configure from Central Mgmt area of Infrastructure property page

Topology View

Visualize and easily manage Application Server environment

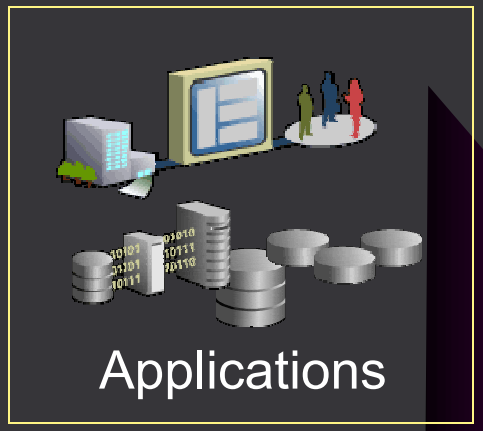
- Graphical representation of Application Server topology
- Real-time view of processes managed by OPMN
- Perform common administrative tasks from topology view

Topology View



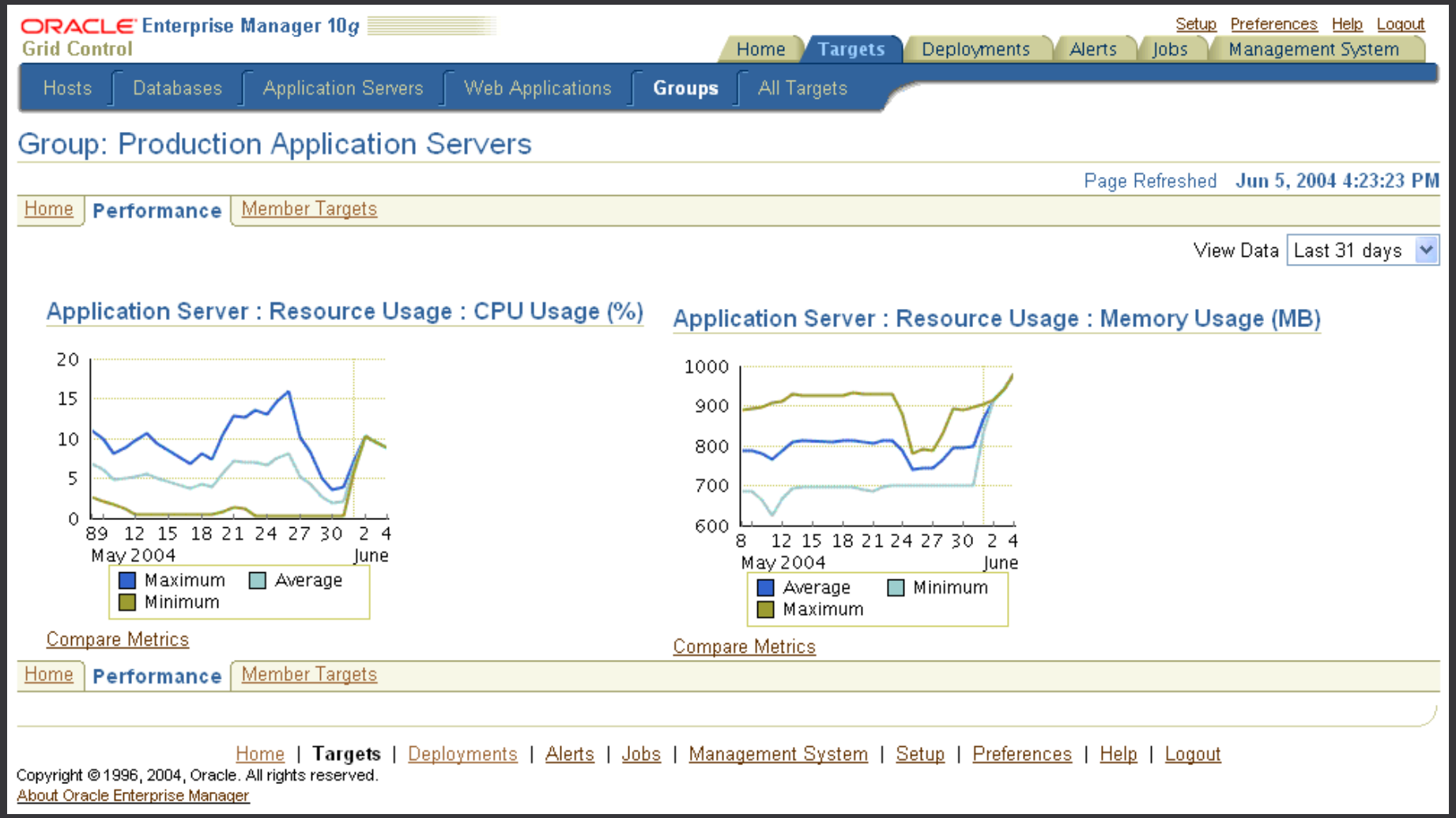
Consolidated Group Management

Manage many distributed systems as one



- Logical modeling of sets of systems
  - Applications
  - Farms
  - Clusters
- Managed from a single-view
  - Monitoring and automated operations
- Leveraged by all services – notifications, blackouts, jobs…

Consolidated Group Management

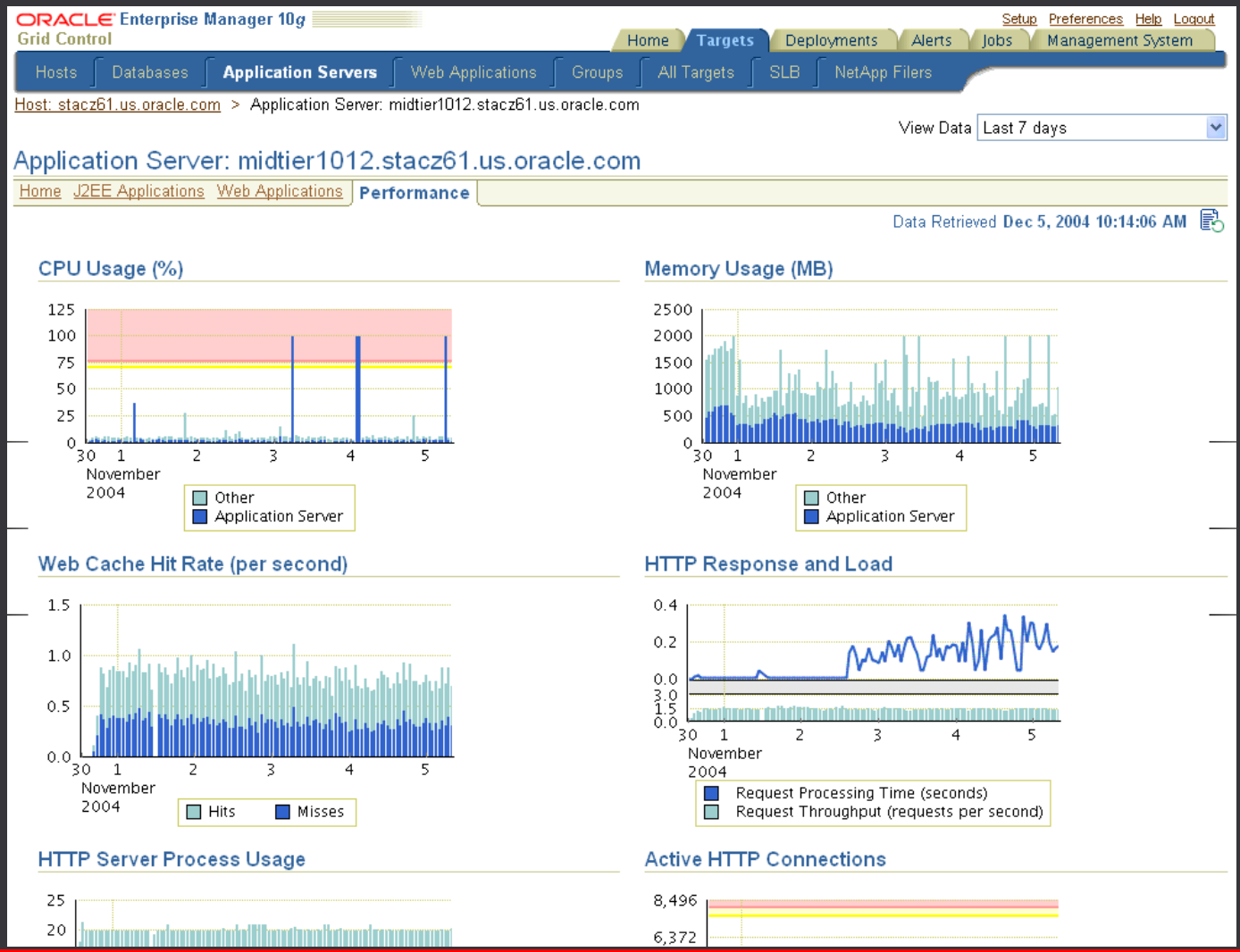


Out-of-Box Monitoring

Realize immediate monitoring value

- Monitor Application Server level as well as component level
- Automatic performance and availability monitoring with Oracle recommended settings
- Out-of-box notifications for critical alerts
- Summary view for rapid problem identification

Out-of-Box Monitoring

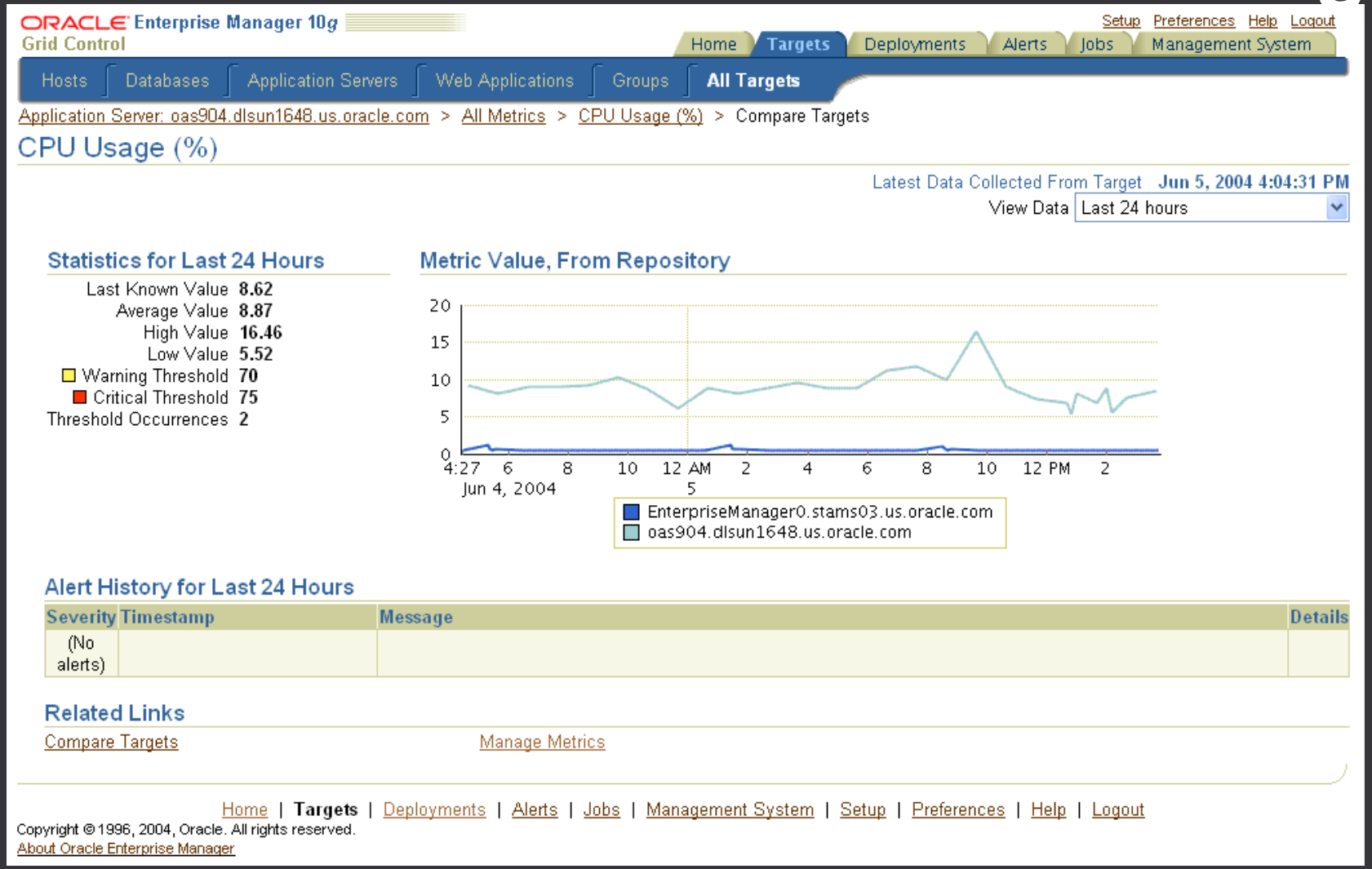


Historical Collections & Trending

Easily track performance trends

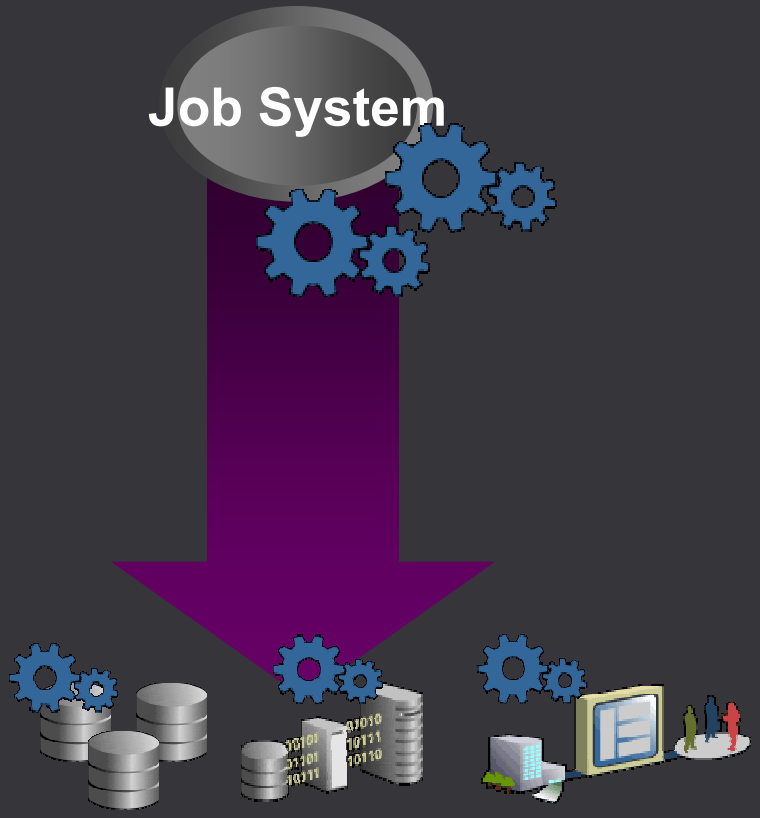
- Performance and availability data automatically collected
- Data stored in Management Repository
- Analyze performance and availability data over time
  - Diagnose past problems as they occurred
  - Look for trends

Historical Collections & Trending



Task Automation

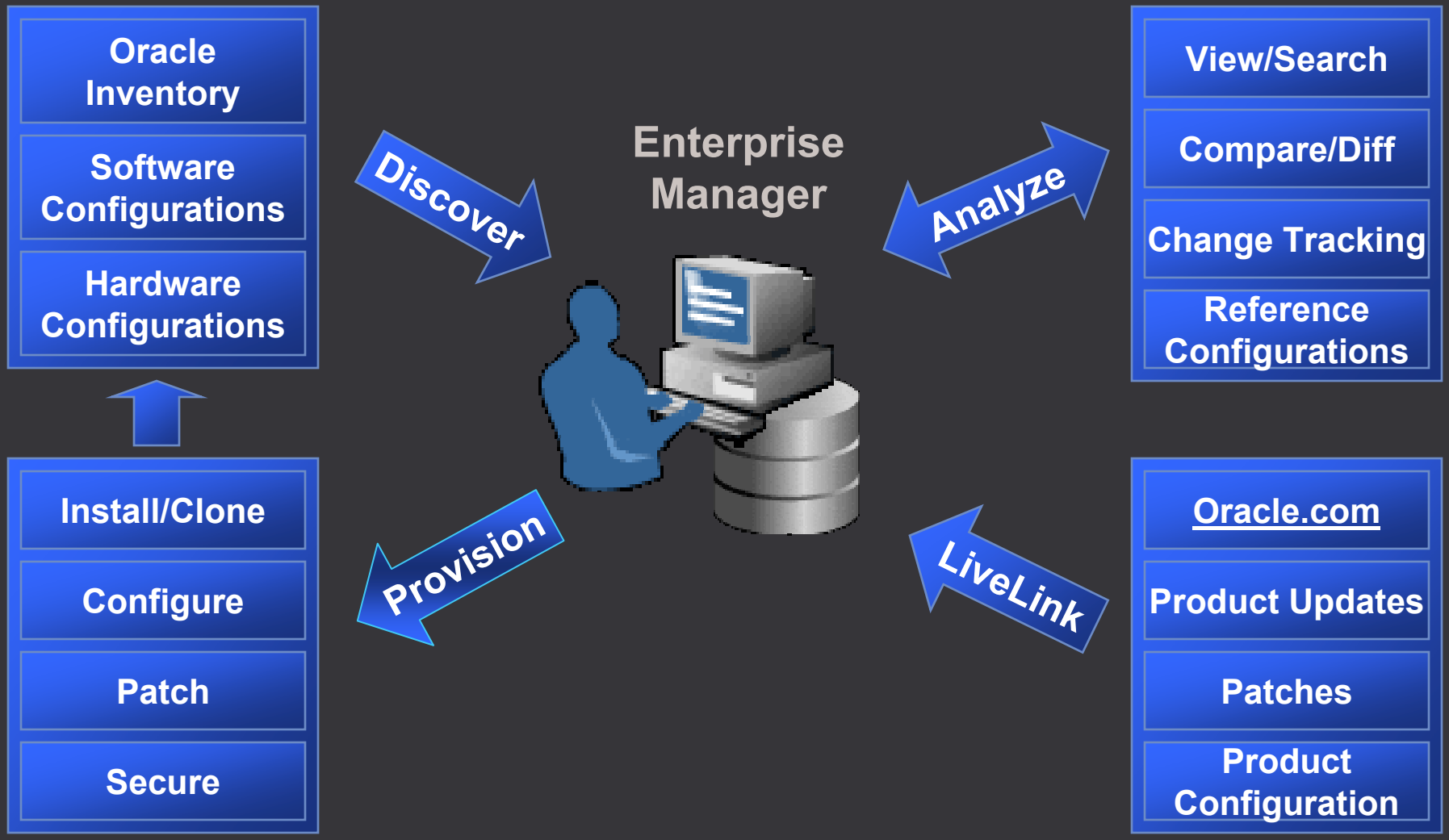
Automate any operation across large sets of systems



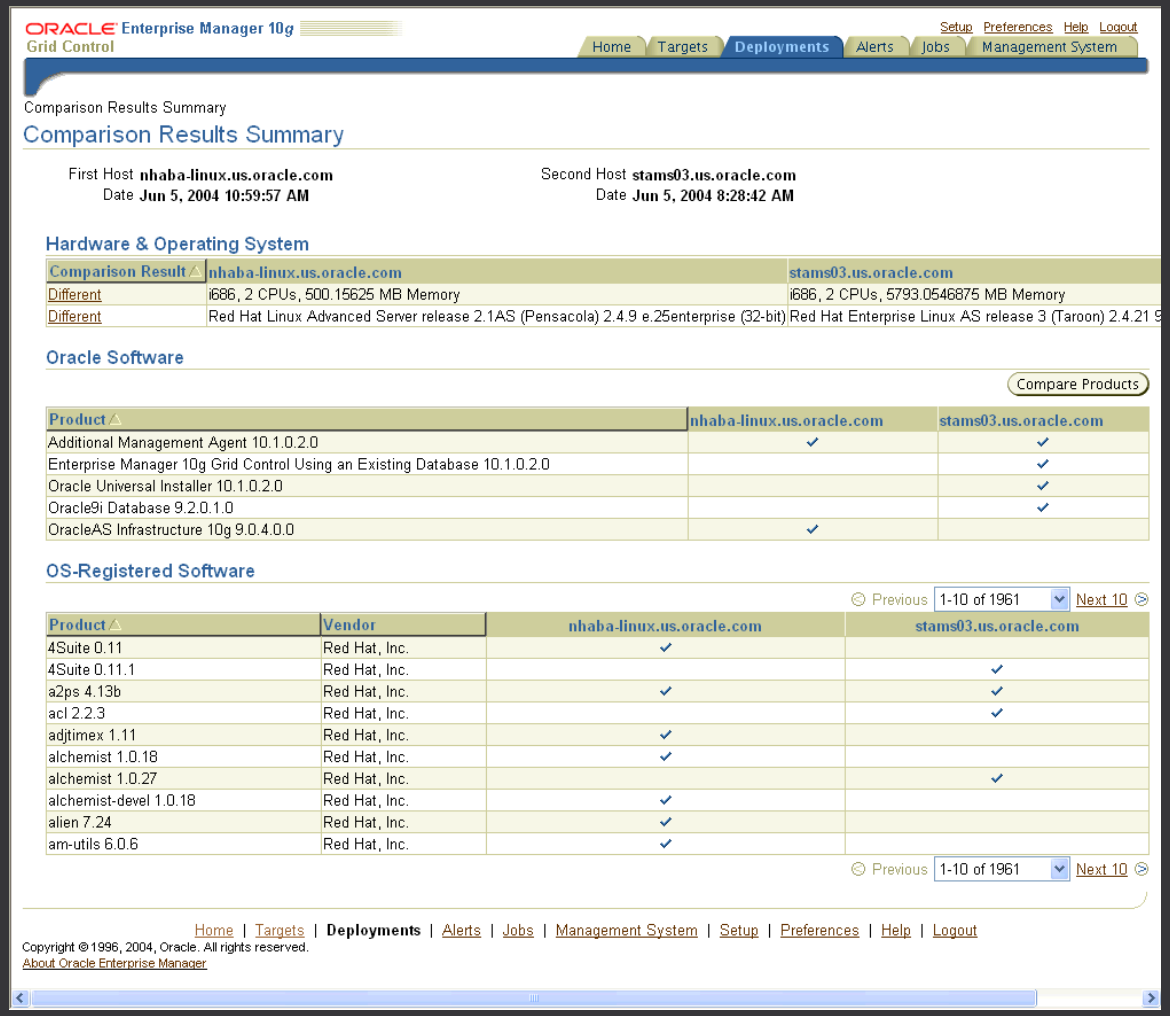
- Execute simple or complex tasks across 100's of systems
- Pre-packaged jobs
- Generic job types
  - OS command
- Ad hoc job creation
  - Custom scripts
- Flexible scheduling

Configuration Management

Reduce costs associated with software and hardware inventory and maintenance



Configuration Management



ORACLE Enterprise Manager 10g
Grid Control

Setup | Preferences | Help | Logout

Home | Targets | Deployments | Alerts | Jobs | Management System

Comparison Results Summary

Comparison Results Summary

First Host **nhaba-linux.us.oracle.com**
Date **Jun 5, 2004 10:59:57 AM**

Second Host **stams03.us.oracle.com**
Date **Jun 5, 2004 8:28:42 AM**

Hardware & Operating System

Comparison Result	nhaba-linux.us.oracle.com	stams03.us.oracle.com
Different	i686, 2 CPUs, 500.15625 MB Memory	i686, 2 CPUs, 5793.0546875 MB Memory
Different	Red Hat Linux Advanced Server release 2.1AS (Pensacola) 2.4.9 e.25enterprise (32-bit)	Red Hat Enterprise Linux AS release 3 (Taroon) 2.4.21 9

Oracle Software

Compare Products

Product	nhaba-linux.us.oracle.com	stams03.us.oracle.com
Additional Management Agent 10.1.0.2.0	✓	✓
Enterprise Manager 10g Grid Control Using an Existing Database 10.1.0.2.0		✓
Oracle Universal Installer 10.1.0.2.0		✓
Oracle9i Database 9.2.0.1.0		✓
OracleAS Infrastructure 10g 9.0.4.0.0	✓	

OS-Registered Software

Previous 1-10 of 1961 Next 10

Product	Vendor	nhaba-linux.us.oracle.com	stams03.us.oracle.com
4Suite 0.11	Red Hat, Inc.	✓	
4Suite 0.11.1	Red Hat, Inc.		✓
a2ps 4.13b	Red Hat, Inc.	✓	✓
acl 2.2.3	Red Hat, Inc.		✓
adjtimex 1.11	Red Hat, Inc.	✓	
alchemist 1.0.18	Red Hat, Inc.	✓	
alchemist 1.0.27	Red Hat, Inc.		✓
alchemist-devel 1.0.18	Red Hat, Inc.	✓	
alien 7.24	Red Hat, Inc.	✓	
am-utils 6.0.6	Red Hat, Inc.	✓	

Previous 1-10 of 1961 Next 10

Home | Targets | **Deployments** | Alerts | Jobs | Management System | Setup | Preferences | Help | Logout

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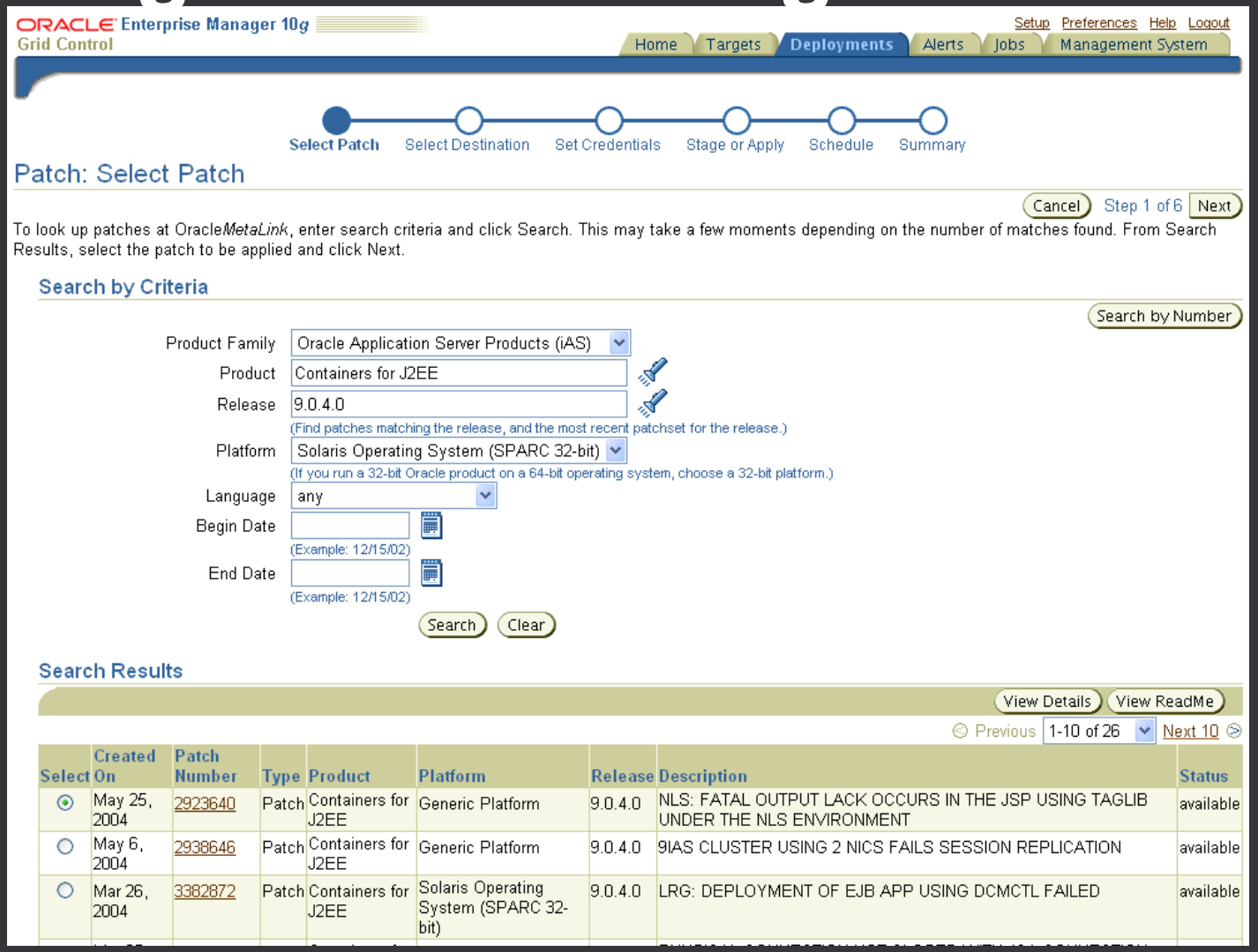
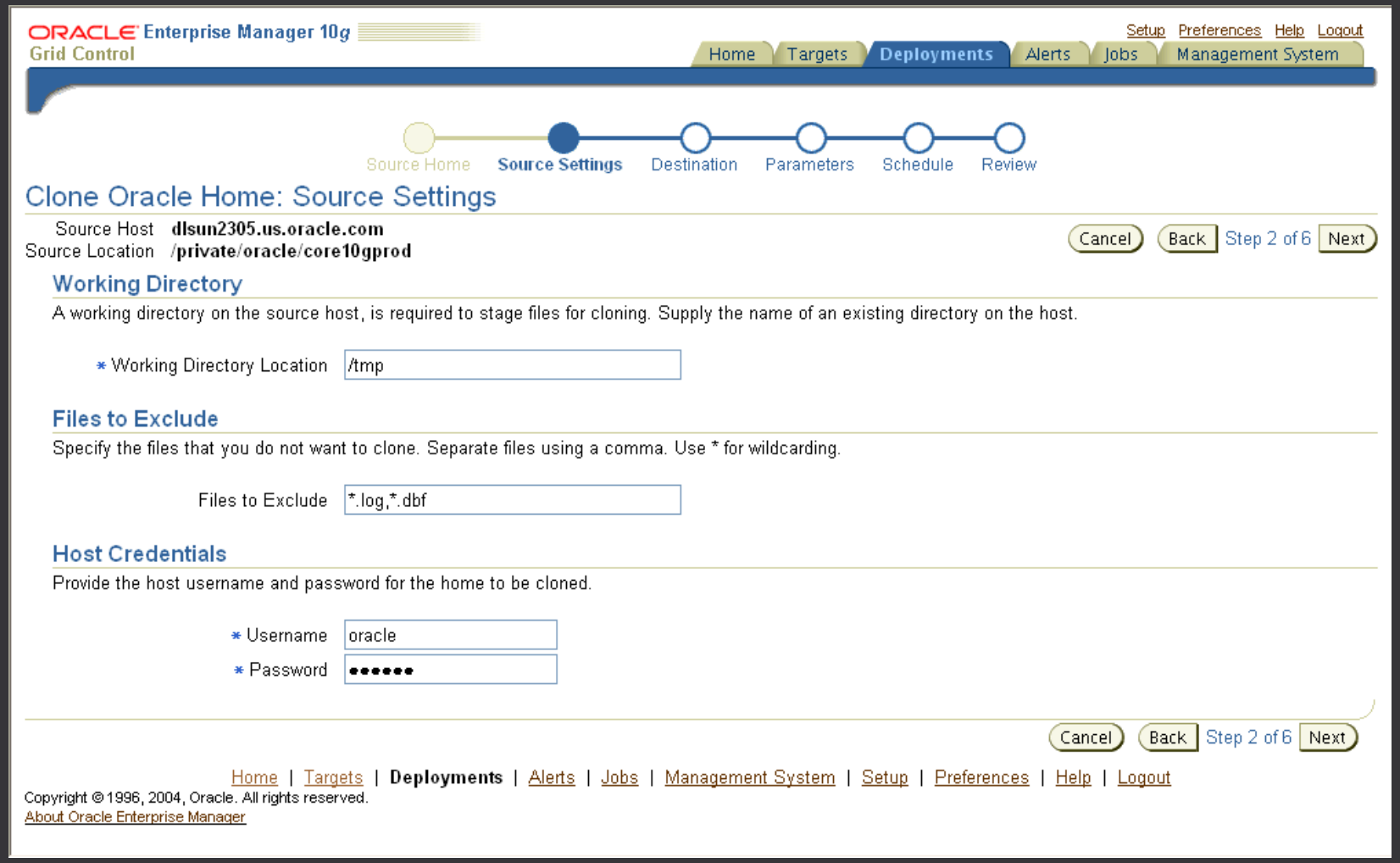
About Oracle Enterprise Manager

Configuration Management



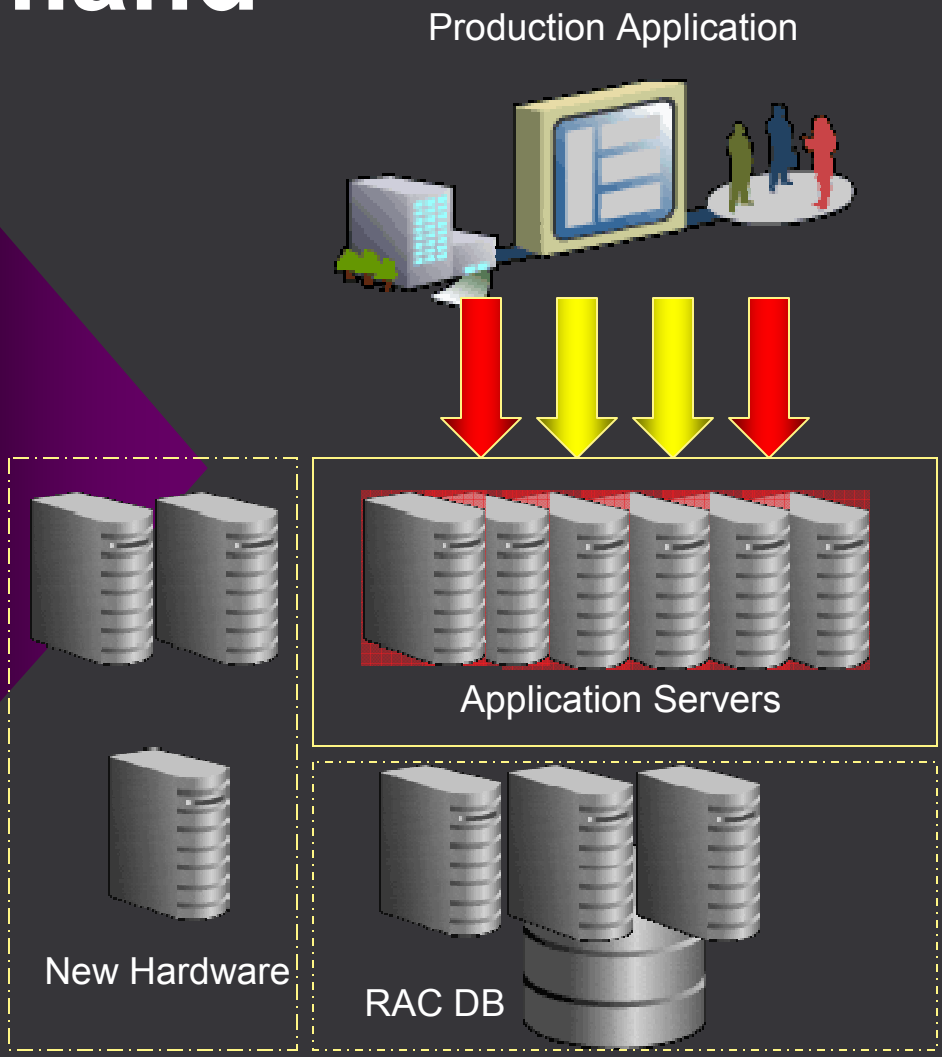
Configuration Management



Configuration Management: Capacity-on-Demand

1. Load increase identified -- additional resources required
2. Systems chosen for deployment from available hardware
3. New servers added to application

- Image/Clone OracleAS
- Instantiate the new OracleAS instance:
  - Associate OracleAS with Infrastructure
  - Add OracleAS to cluster

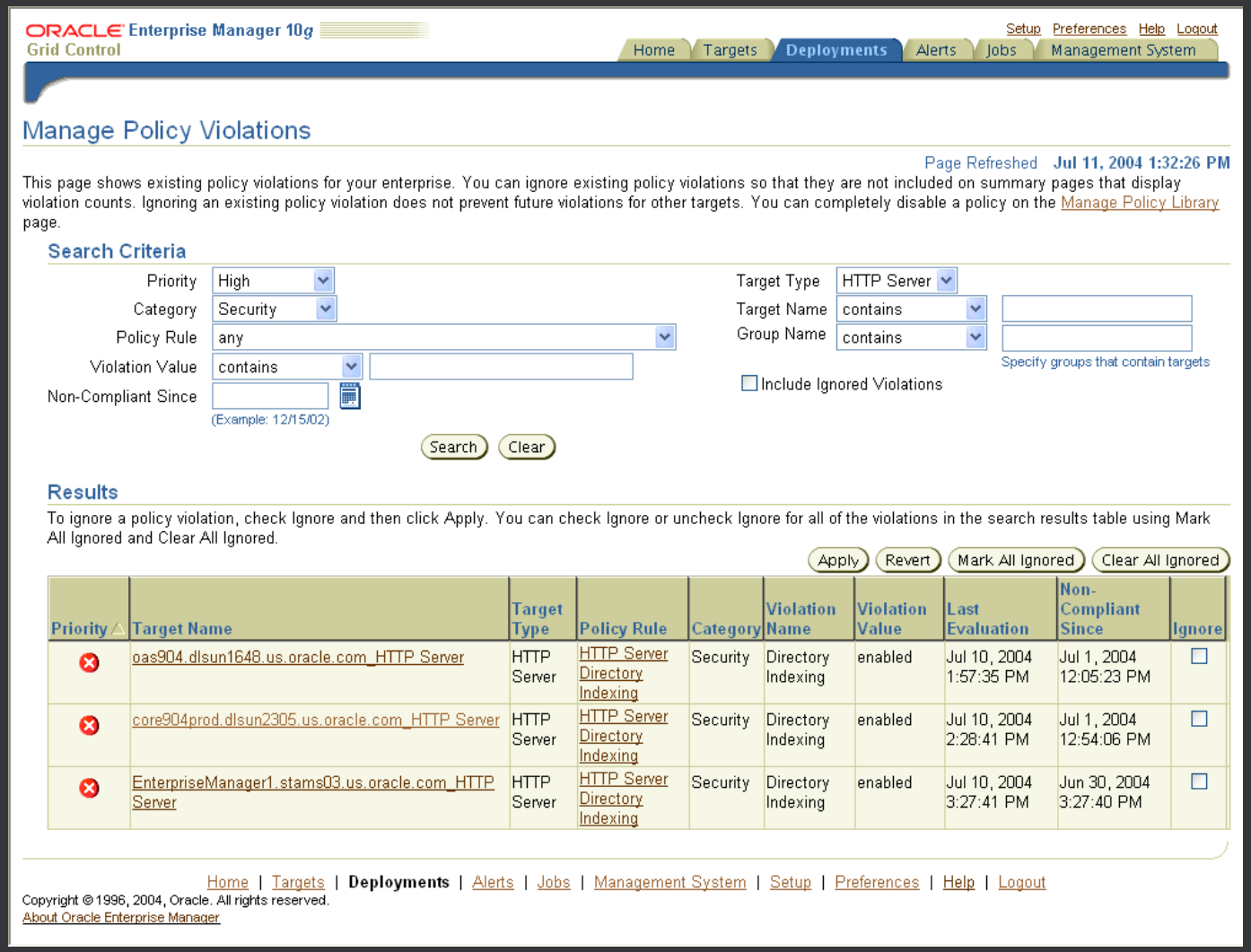


Configuration Management: Policy Management

Standardize and enforce best practices

- Out-of-box policy definitions
- Identify security vulnerabilities
  - Process permissions
  - Access logging turned on
  - Enabled directory indexing
- Search enterprise for policy violations

Configuration Management: Policy Management

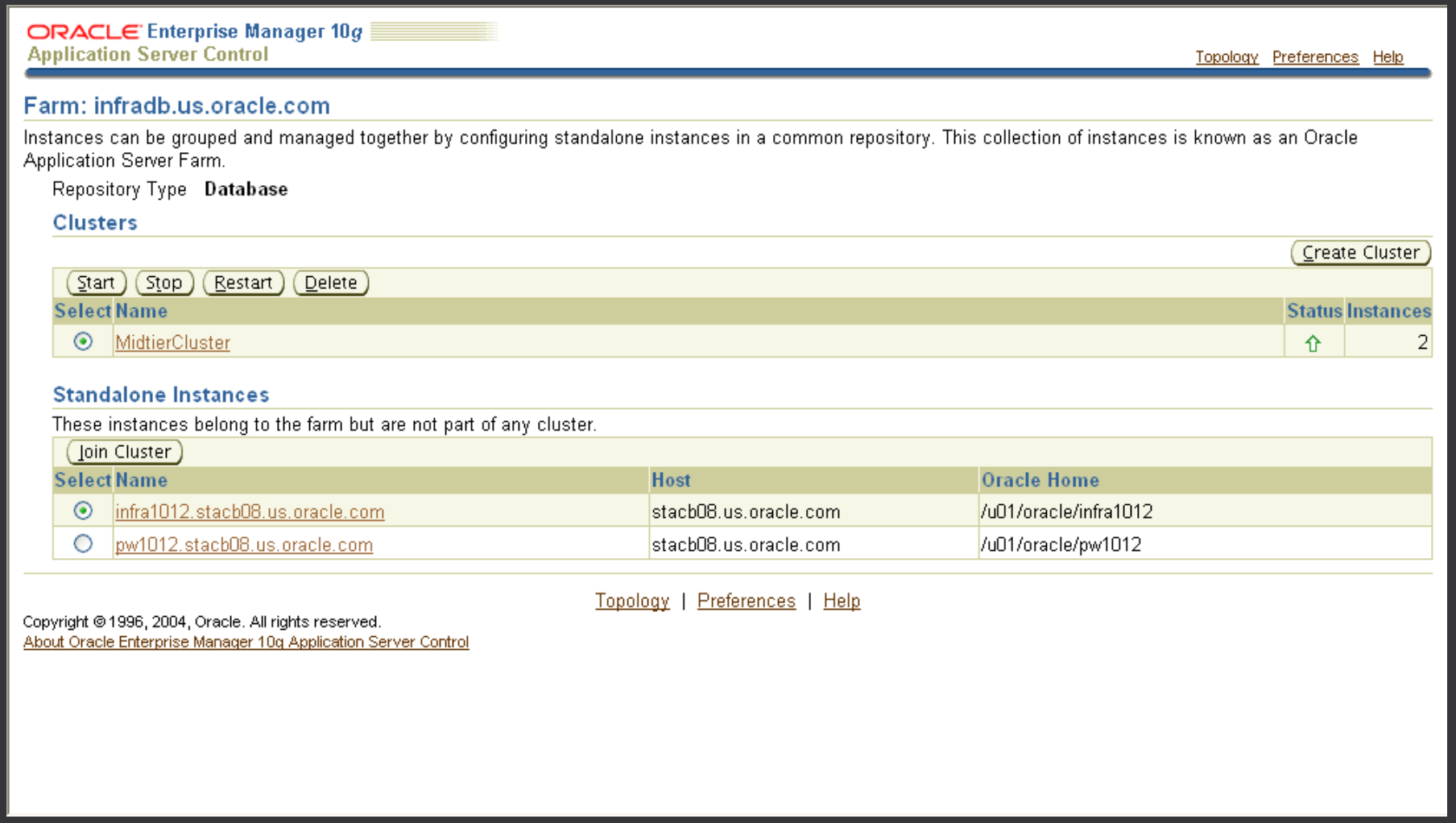


Automated Provisioning & Administration

Automate configuration changes across cluster

- Application Server Farm
  - Collection of instances using same Farm Repository
  - Clustering operation driven off instances in farm
- Application Server Clusters
  - Management support for DB-based repository and file-based repository
  - Automate instance configuration across cluster
  - Automate application deployment across cluster

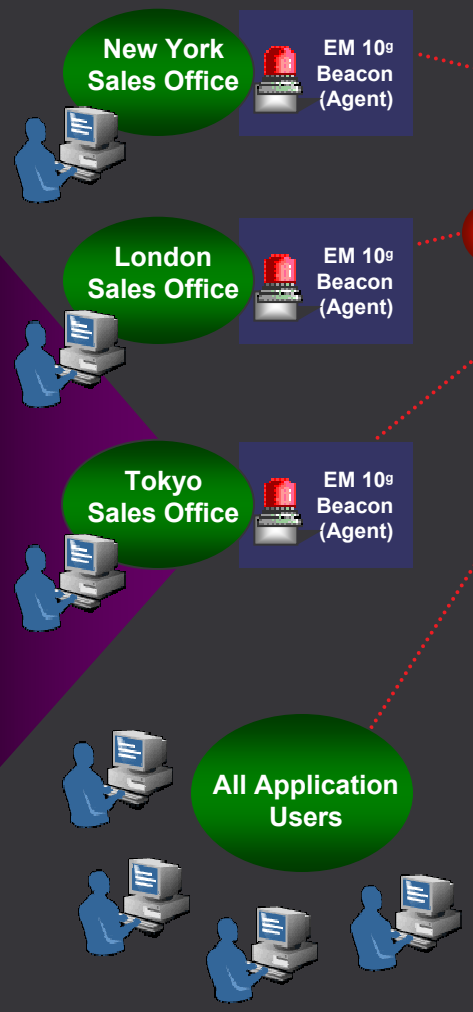
Automated Provisioning & Administration

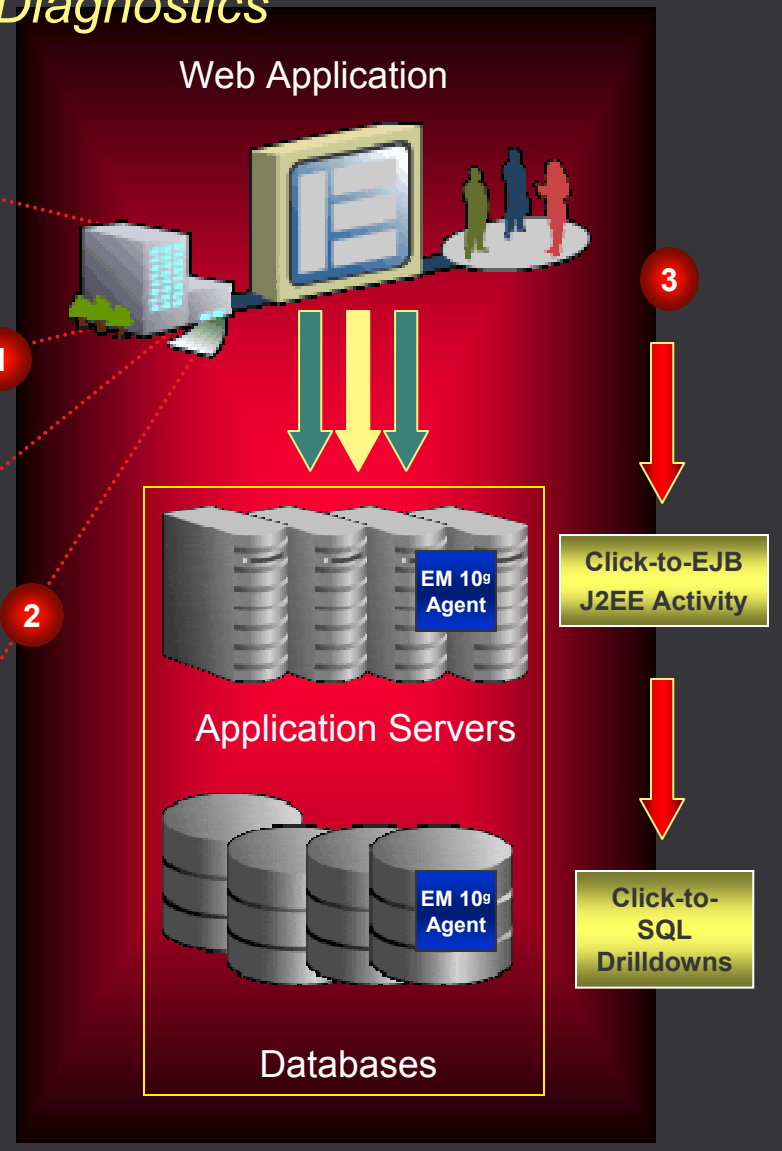


Application Service Level Mgmt

End-to-End Performance, Availability & Diagnostics

1. **Monitor Key Business Transactions**
   - ✓ Availability
   - ✓ Performance
2. **Monitor Real End User Performance**
   - ✓ All Users
   - ✓ All Pages
   - ✓ All the Time
3. **Diagnose Root Cause of Performance Problems**
   - ✓ Interactive Transaction Tracing
   - ✓ Historical Cross-Tier Page Performance
   - ✓ Application Performance Correlation
4. **Complete End-to-End Application Service Level Management**
   - ✓ Management across Oracle Ecosystem Stack





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Application Service Level Mgmt

ORACLE Enterprise Manager 10g
Grid Control

Setup | Preferences | Help | Logout

Home | Targets | Deployments | Alerts | Jobs | Management System

Databases | Hosts | Application Servers | **Web Applications** | Groups | All Targets

Web Application: Petstore

Home | **Transaction Performance** | Page Performance | Components | Administration

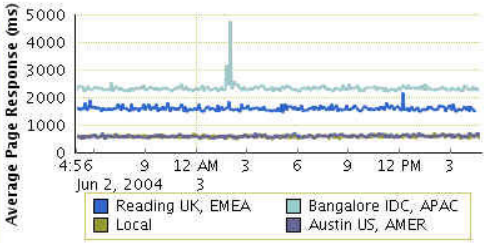
Page Refreshed **Jun 3, 2004 4:55:04 PM**

Availability Transaction Response

Availability Transaction Online purchase

Define Availability

Beacon	Total Transaction Response (ms)	Average Page Response (ms)	Slowest Page (ms)	Transaction Status	Collection Time
Local	**6699**	**609**	**3041**	⇧	**Jun 3, 2004 4:47:23 PM**
Reading UK, EMEA	17053	1550	3049	⇧	Jun 3, 2004 4:31:52 PM
Bangalore IDC, APAC	24987	2271	4719	⇧	Jun 3, 2004 4:41:58 PM
Austin US, AMER	6510	591	2207	⇧	Jun 3, 2004 4:44:37 PM



All Transactions

Group By Transaction Go

Manage Transactions

Expand All | Collapse All

Transaction	Beacon	Total Transaction Time (ms)	Average Page Response (ms)	Slowest Page (ms)	Transaction Status	Collection Time
Transactions						
Online Search	**Local**	**840.0**	**280.0**	**711.0**	⇧	**Jun 3, 2004 4:47:19 PM**
	Austin US, AMER	552.0	184.0	471.0	⇧	Jun 3, 2004 4:44:46 PM
	Bangalore IDC, APAC	9922.0	3307.0	4965.0	⇧	Jun 3, 2004 4:40:29 PM
	Reading UK, EMEA	5455.0	1818.0	2838.0	⇧	Jun 3, 2004 4:31:00 PM
Online purchase	**Local**	**6699.0**	**609.0**	**3041.0**	⇧	**Jun 3, 2004 4:47:23 PM**
	Austin US, AMER	6510.0	591.0	2207.0	⇧	Jun 3, 2004 4:44:37 PM
	Bangalore IDC, APAC	24987.0	2271.0	4719.0	⇧	Jun 3, 2004 4:41:58 PM
	Reading UK, EMEA	17053.0	1550.0	3049.0	⇧	Jun 3, 2004 4:31:52 PM
browse petstore	**Local**	**1791.0**	**255.0**	**764.0**	⇧	**Jun 3, 2004 4:47:34 PM**
	Austin US, AMER	1004.0	143.0	461.0	⇧	Jun 3, 2004 4:40:14 PM
	Bangalore IDC, APAC	14308.0	2044.0	5021.0	⇧	Jun 3, 2004 4:40:39 PM
	Reading UK, EMEA	7086.0	1012.0	2807.0	⇧	Jun 3, 2004 4:32:23 PM
homepage	**Local**	**58.0**	**58.0**	**58.0**	⇧	**Jun 3, 2004 4:47:23 PM**
	Austin US, AMER	24.0	24.0	24.0	⇧	Jun 3, 2004 4:44:44 PM
	Bangalore IDC, APAC	2138.0	2138.0	2138.0	⇧	Jun 3, 2004 4:41:07 PM
	Reading UK, EMEA	1139.0	1139.0	1139.0	⇧	Jun 3, 2004 4:31:51 PM

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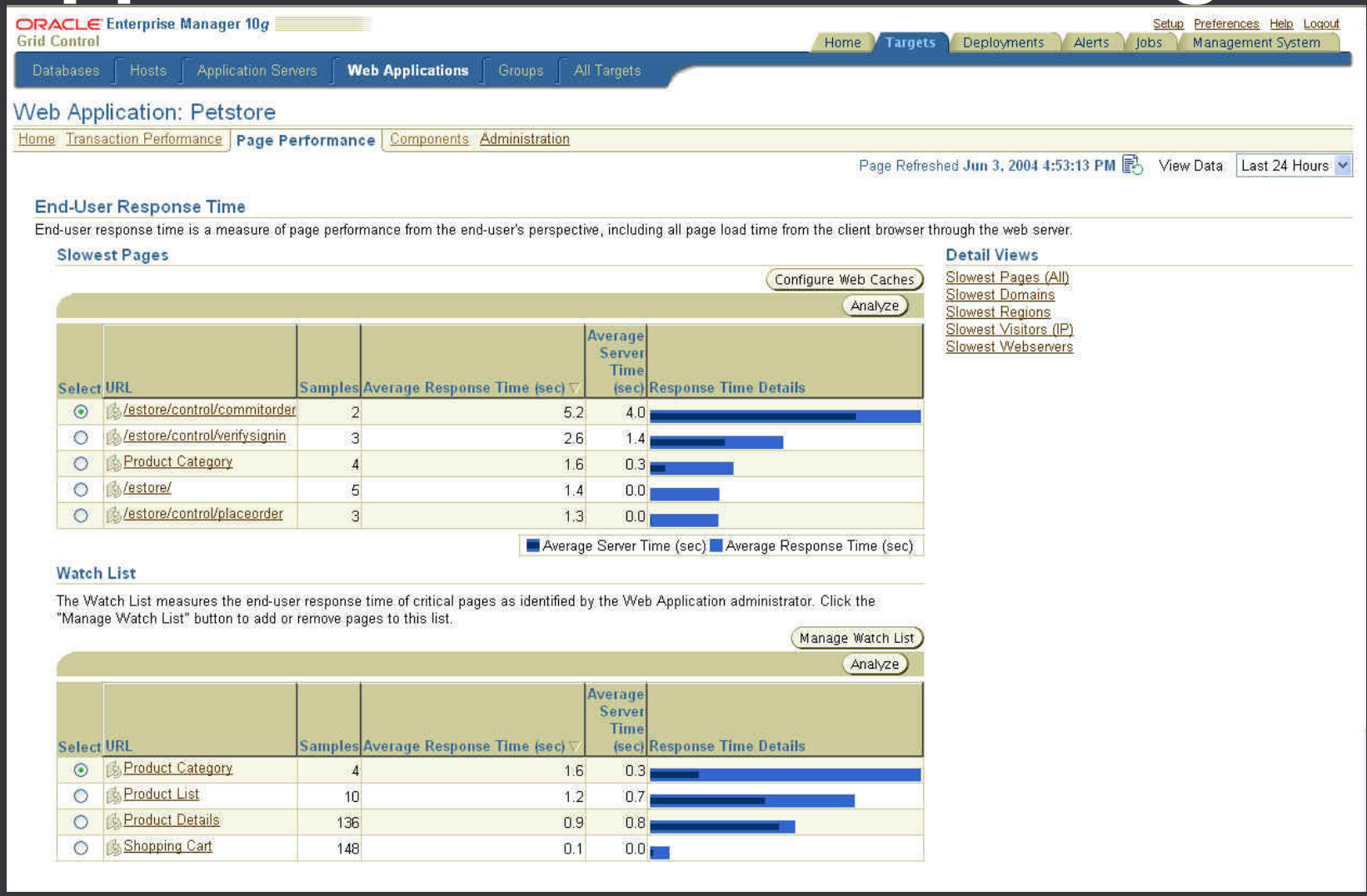
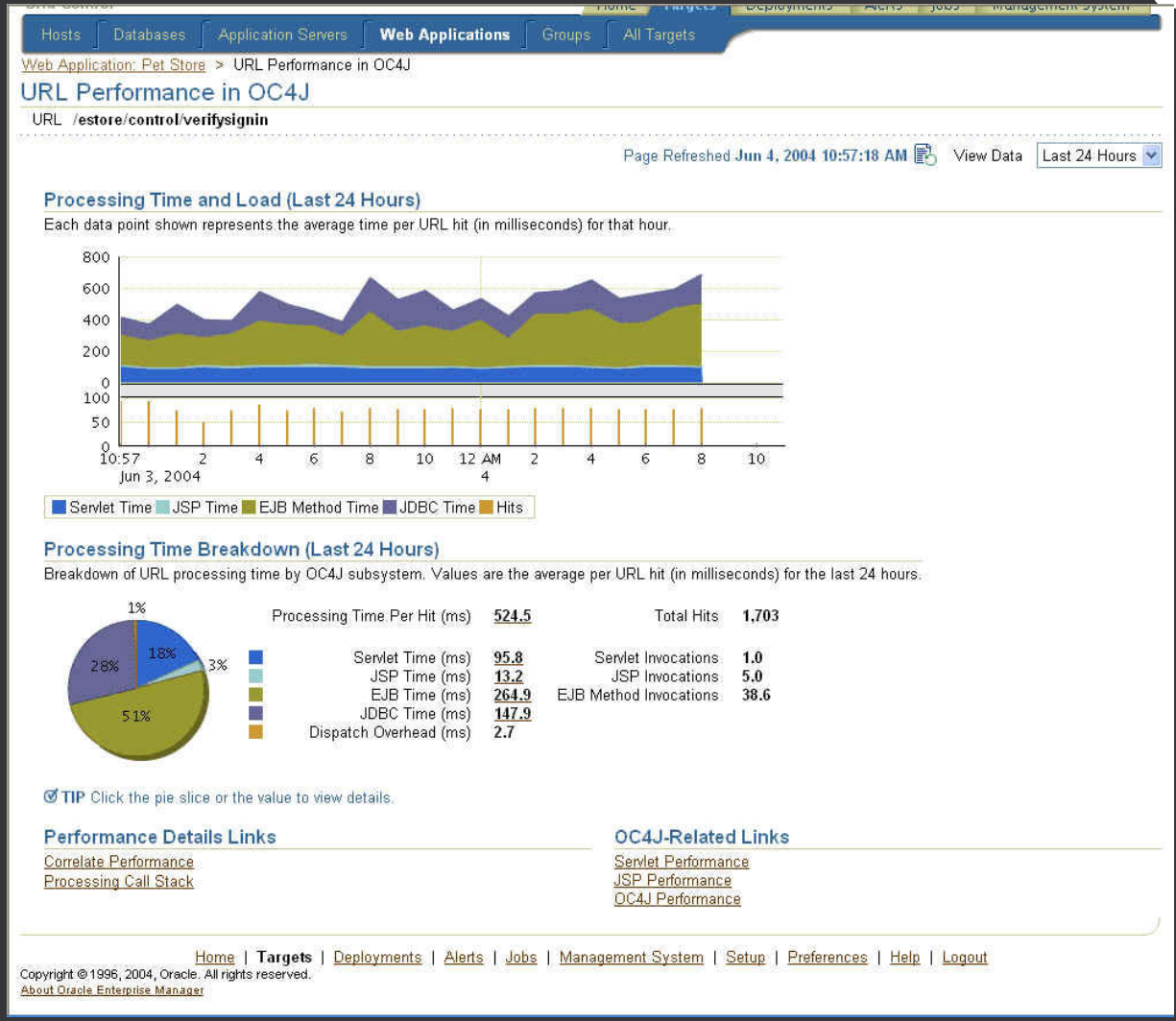
Application Service Level Mgmt



Application Service Level Mgmt



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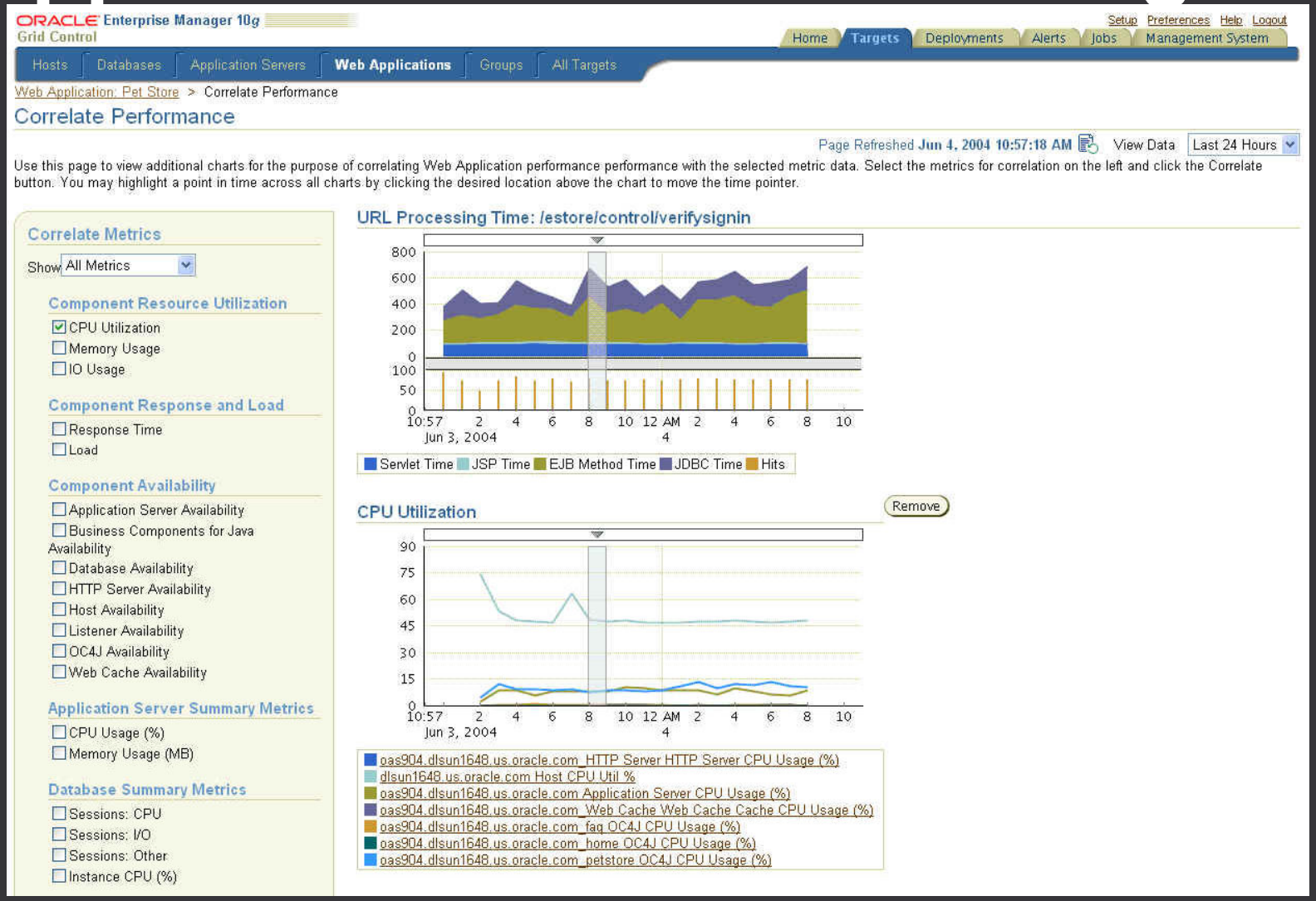
Application Service Level Mgmt



Application Server Management Features:

Application Server System Management

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Application Server Management Features: Application Server System Management

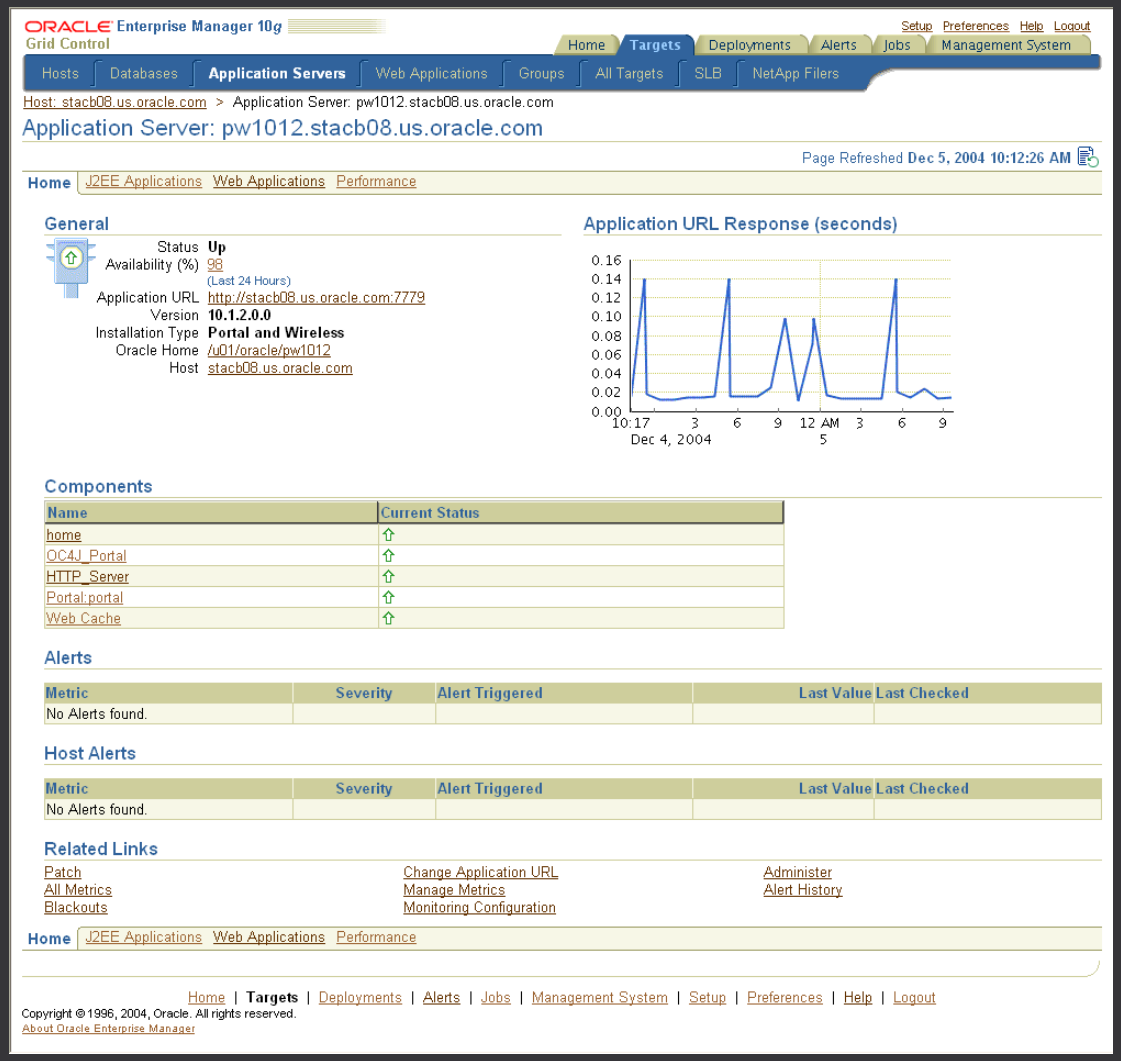
- Application Server Home Page
- Component Management
- Deploying and Maintaining J2EE Applications
- J2EE Application Diagnostics
- Backup and Recovery
- Port Management
- Changing Infrastructure Services
- Accessing Diagnostic Logs

Application Server Home Page

Single starting point for all Application Server management

- Consolidated, at-a-glance view of Application Server information
- Single point for monitoring all components
  - Availability
  - Resource usage
  - Alerts
  - Diagnostics
- Drilldowns to administer all components
  - Start, stop, or restart services
  - Modify server configurations
  - Deploy and monitor J2EE applications
  - Manage ports

Application Server Home Page



Component Management

Lower learning curve with consistent, unified management across all components

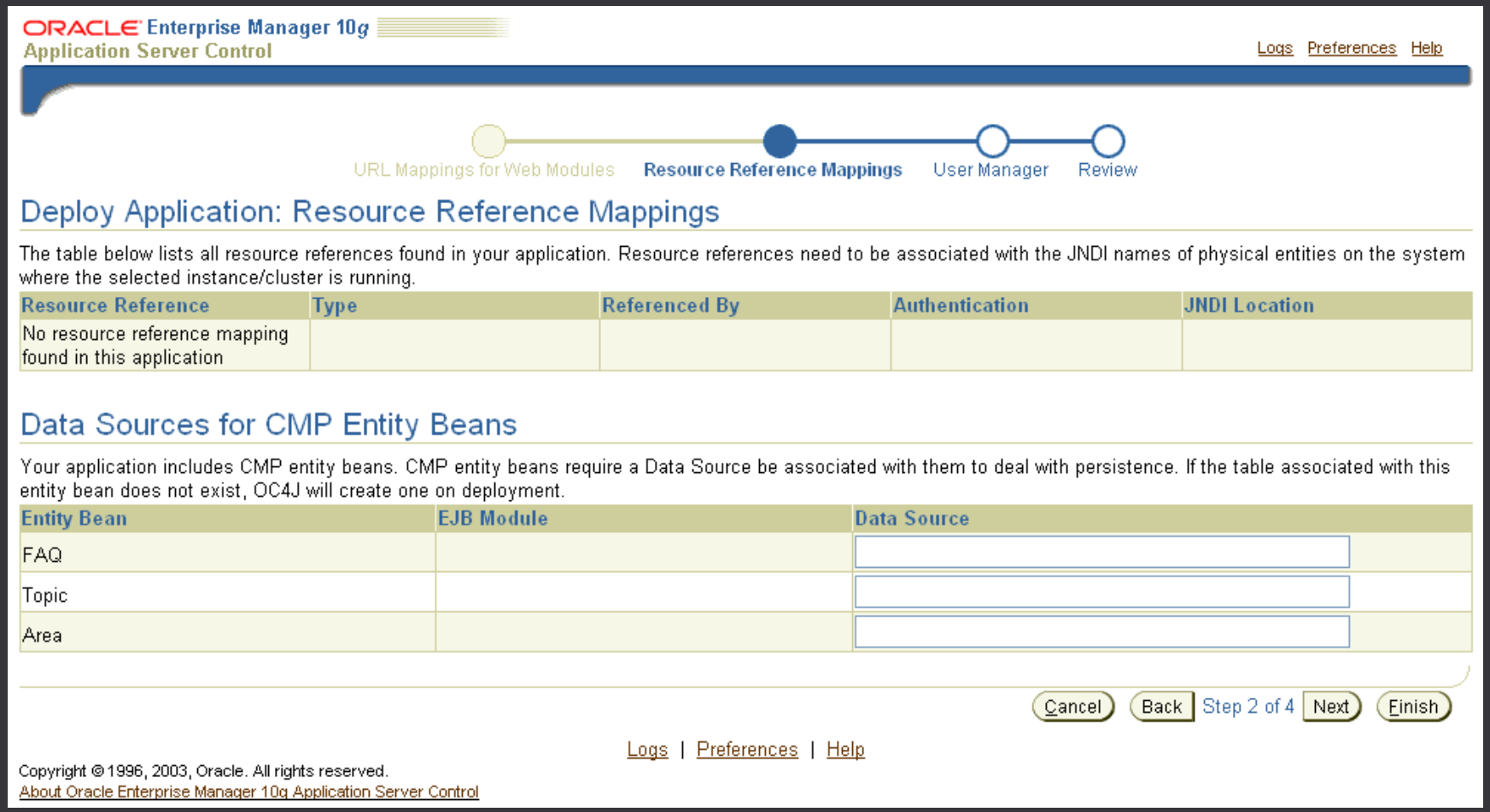
- Support for management of all components:
  - HTTP Server
  - OC4J
  - Web Cache
  - Portal
  - Wireless
  - Business Intelligence
  - Integration
- Consistency across all components
  - Common look-and-feel
  - Consistent level of management
    - Administration
    - Monitoring

Deploying & Maintaining J2EE Apps

Deploy and manage apps without needing to be a J2EE expert

- Intuitive deployment Wizard
- Consolidated view of deployed J2EE applications
  - Per OC4J instance
  - Across all OC4J instances
- Un-deploy or re-deploy an application
- Configure Java Messaging Services for J2EE applications
- Configure and monitor Message Driven Beans

Deploying & Maintaining J2EE Apps

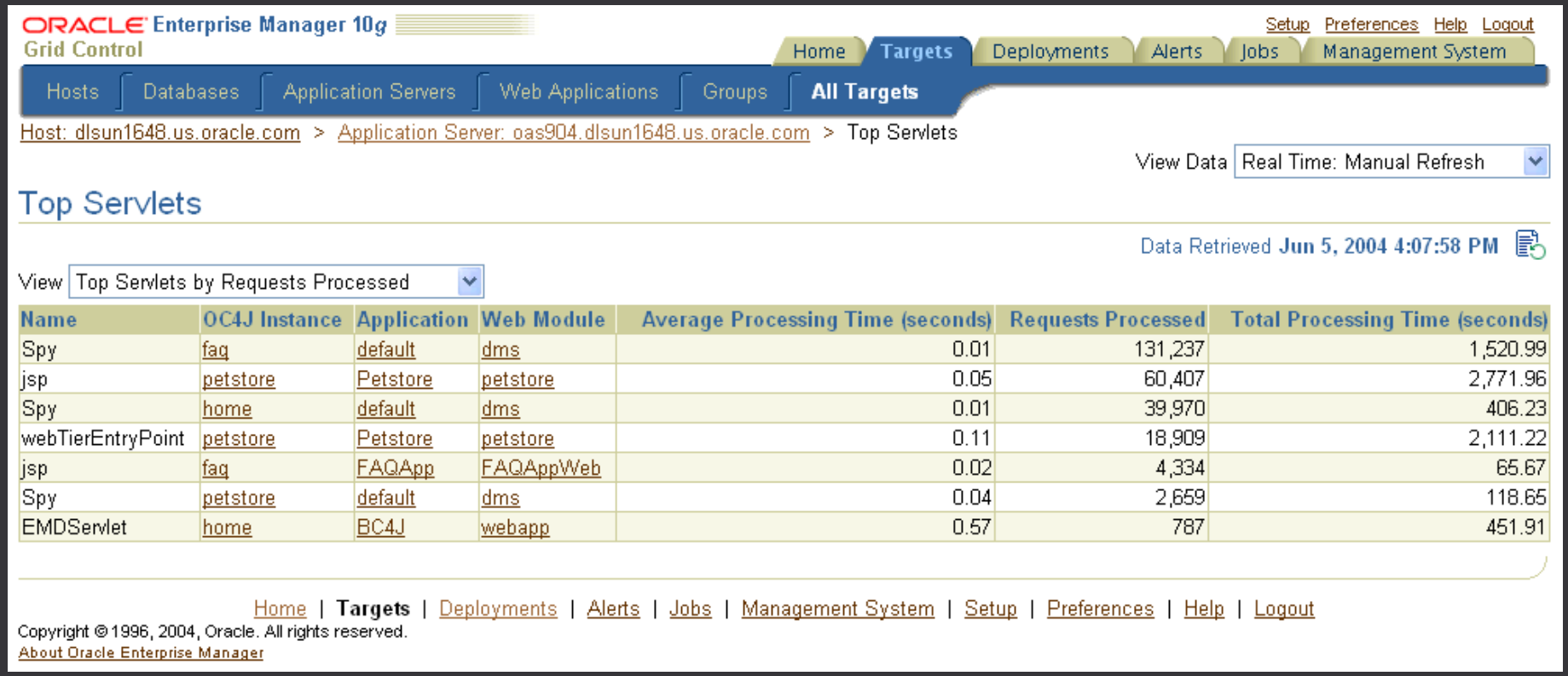


J2EE Application Diagnostics

Quickly diagnose application performance problems

- Flexible “top” diagnostic reports
  - Top Applications
  - Top Servlets
  - Top EJBs
- Based on real-time or historical data

J2EE Application Diagnostics

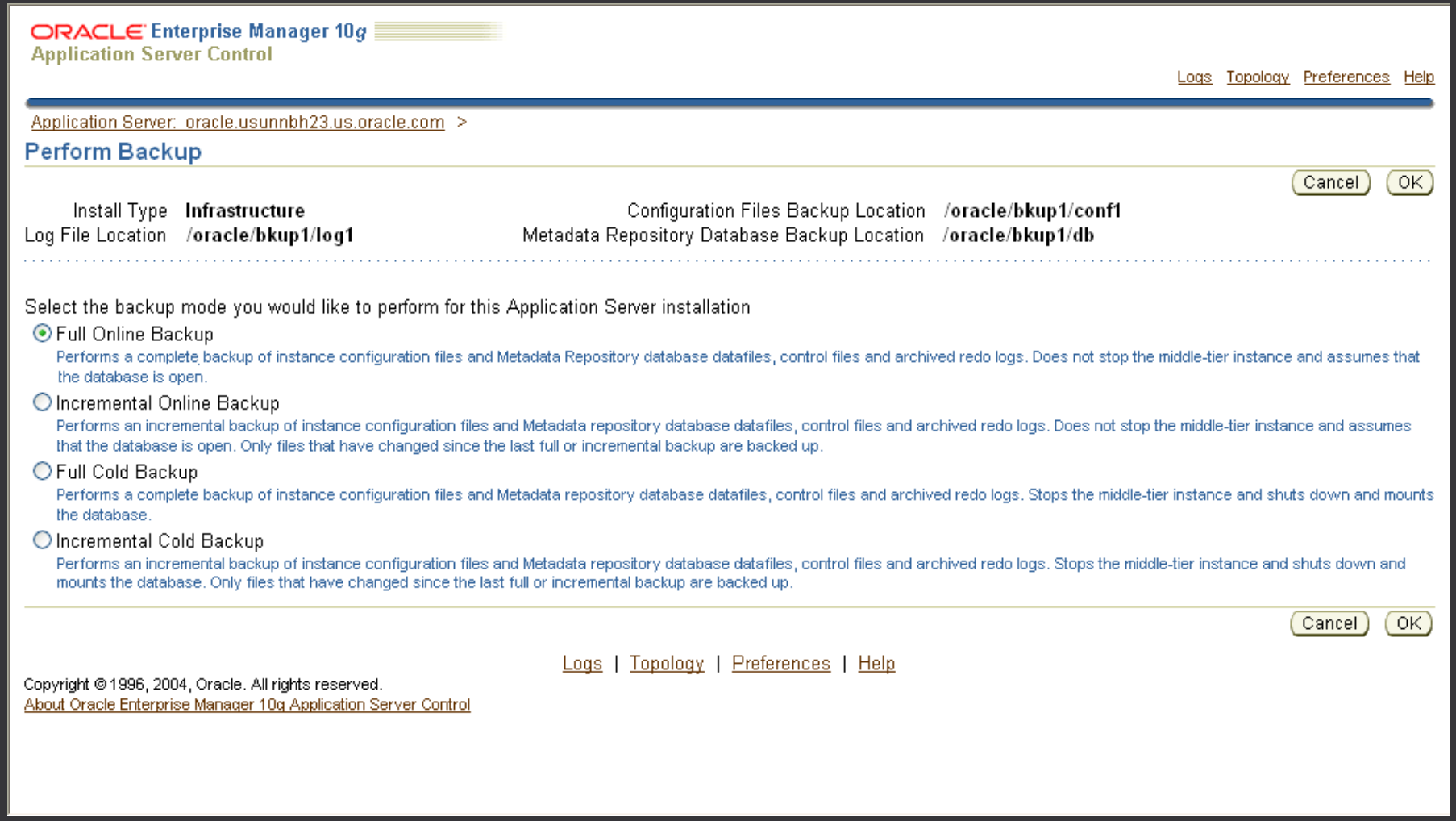


Backup & Recovery

Automate and simplify Application Server backup and recovery

- Configure backup & recovery settings
- Supported install types
  - J2EE & Web Cache
  - Portal & Wireless
  - Oracle Content Management SDK
  - Infrastructure
  - Identity Management
  - Metadata Repository (via wizard in Database Control Console)
- Online or cold, full or incremental backups available for all supported install types
- Restore to any backup available for all supported install types

Backup & Recovery

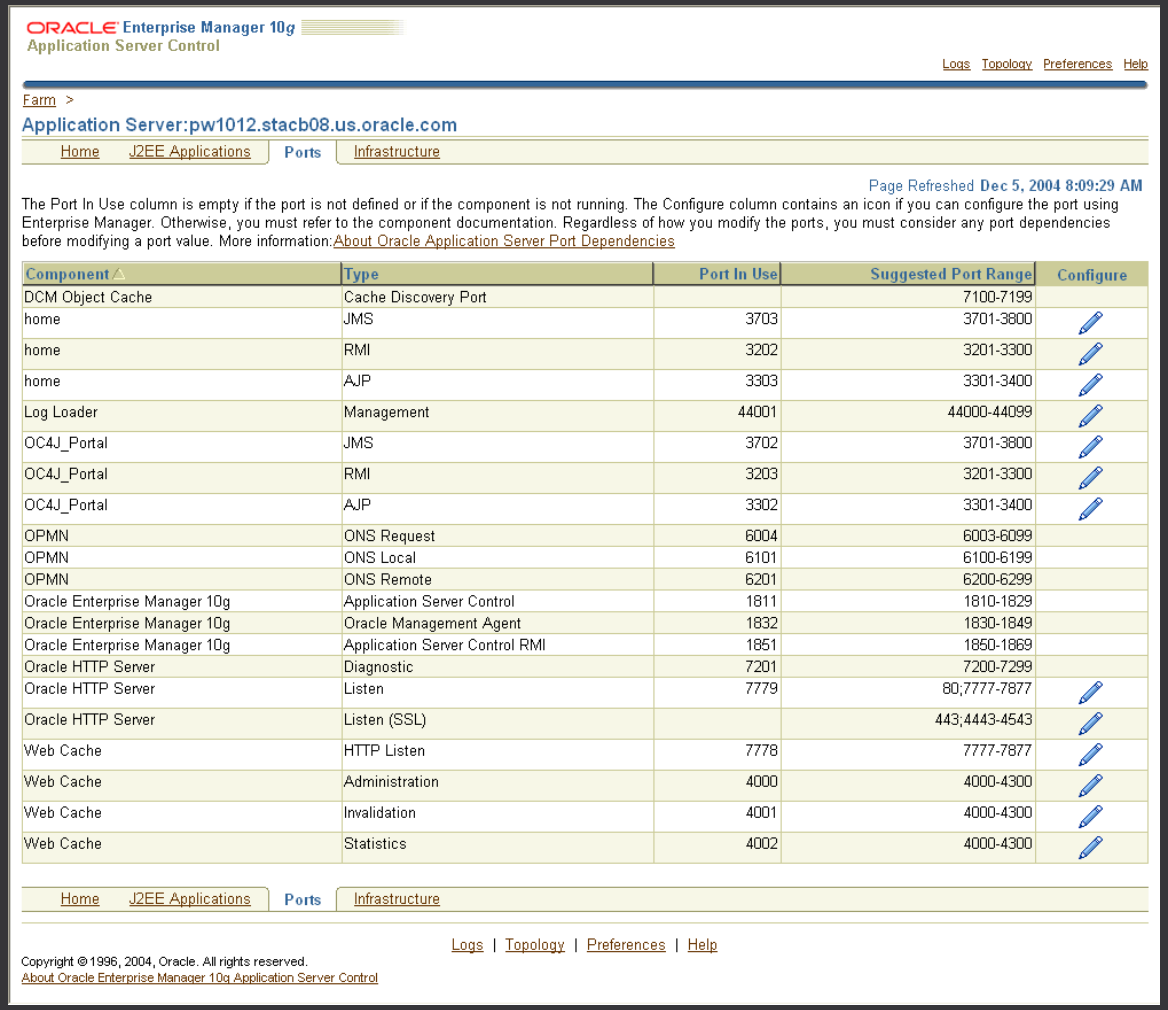


Port Management

Centralize and simplify administration of ports

- View port ranges and ports in use across all components
- Configure ports from central location
  - Access port dependency info via online help and documentation

Port Management



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Application Server Control

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Farm >

Application Server:pw1012.stacb08.us.oracle.com

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Page Refreshed Dec 5, 2004 8:09:29 AM

The Port In Use column is empty if the port is not defined or if the component is not running. The Configure column contains an icon if you can configure the port using Enterprise Manager. Otherwise, you must refer to the component documentation. Regardless of how you modify the ports, you must consider any port dependencies before modifying a port value. More information: About Oracle Application Server Port Dependencies

Component	Type	Port In Use	Suggested Port Range	Configure
DCM Object Cache	Cache Discovery Port		7100-7199	
home	JMS	3703	3701-3800	
home	RMI	3202	3201-3300	
home	AJP	3303	3301-3400	
Log Loader	Management	44001	44000-44099	
OC4J_Portal	JMS	3702	3701-3800	
OC4J_Portal	RMI	3203	3201-3300	
OC4J_Portal	AJP	3302	3301-3400	
OPMN	ONS Request	6004	6003-6099	
OPMN	ONS Local	6101	6100-6199	
OPMN	ONS Remote	6201	6200-6299	
Oracle Enterprise Manager 10g	Application Server Control	1811	1810-1829	
Oracle Enterprise Manager 10g	Oracle Management Agent	1832	1830-1849	
Oracle Enterprise Manager 10g	Application Server Control RMI	1851	1850-1869	
Oracle HTTP Server	Diagnostic	7201	7200-7299	
Oracle HTTP Server	Listen	7779	80;7777-7877	
Oracle HTTP Server	Listen (SSL)		443;4443-4543	
Web Cache	HTTP Listen	7778	7777-7877	
Web Cache	Administration	4000	4000-4300	
Web Cache	Invalidation	4001	4000-4300	
Web Cache	Statistics	4002	4000-4300	

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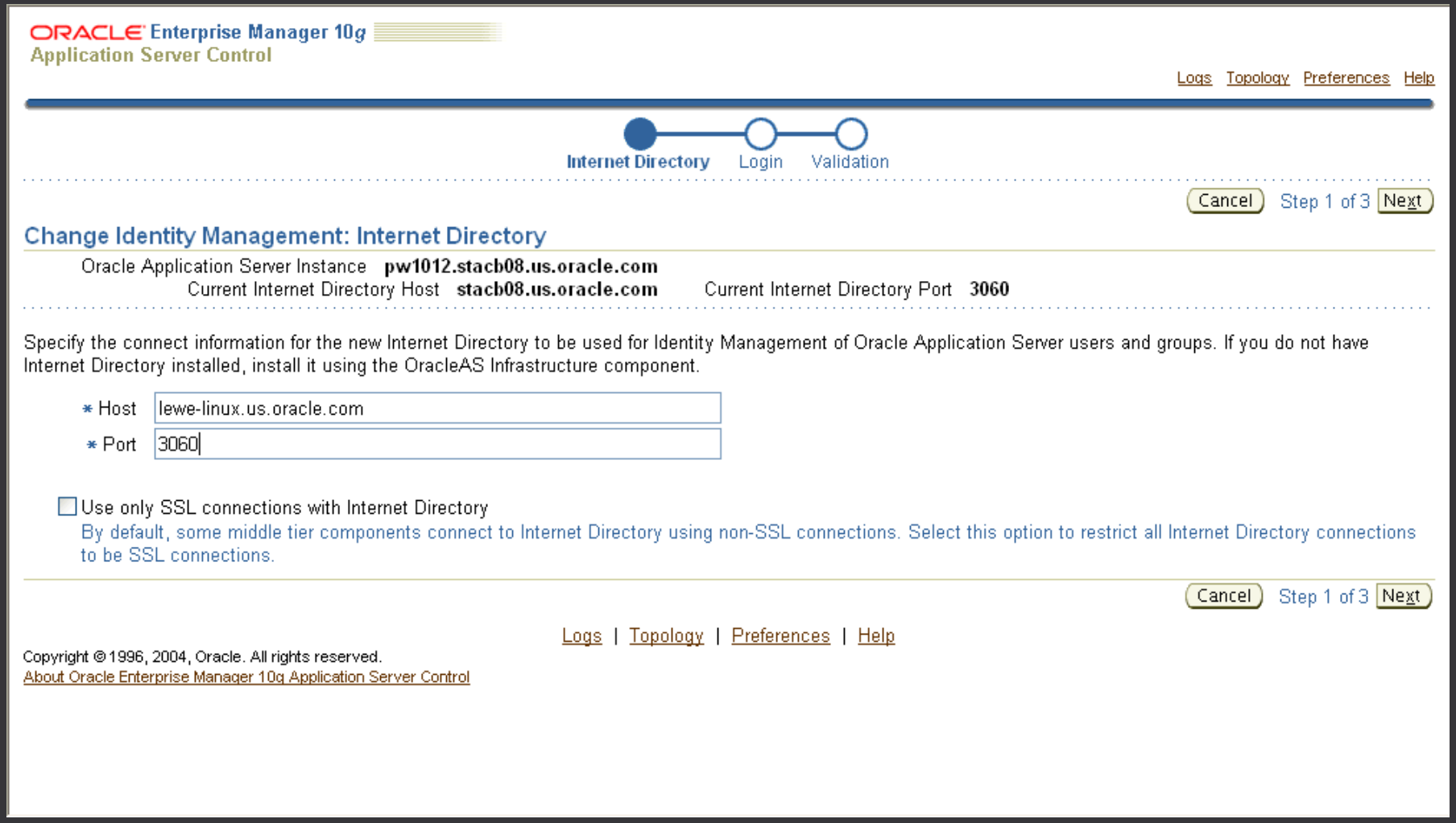
About Oracle Enterprise Manager 10g Application Server Control

Changing Infrastructure Services

Simplify configuration of Infrastructure services

- Reconfiguration of infrastructure services
  - Identity Management
    - Supports changing of OID, SSO, or both
  - Metadata Repository
    - Change performed at DB instance level
  - Farm Repository
- Intuitive wizards to guide user through change

Changing Infrastructure Services

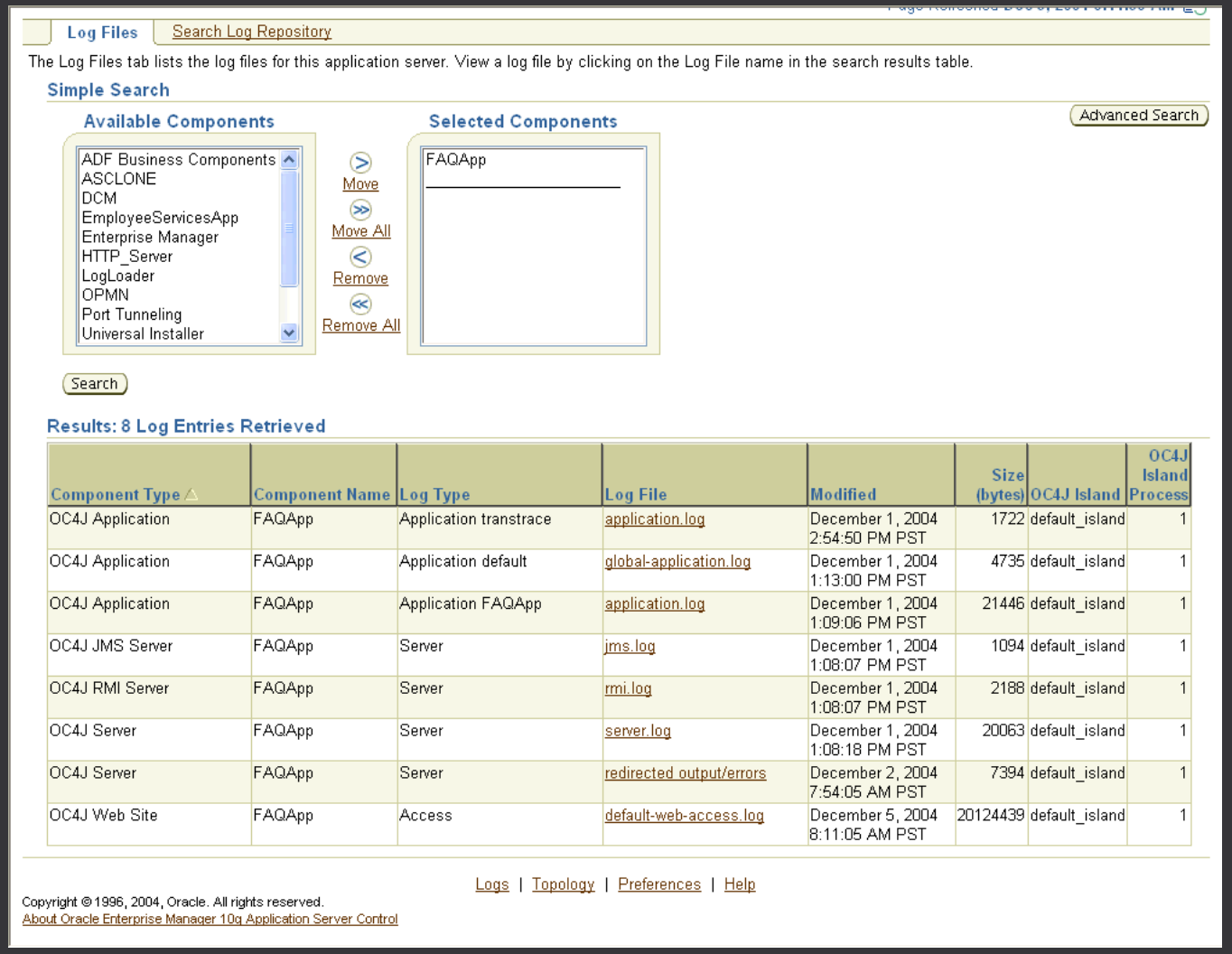


Accessing Diagnostic Logs

Diagnose problems more quickly with centralized log file access

- Log Viewer
  - Access all application server log files from single location
- Log Loader
  - Automatically load log file data into repository for easier investigation
  - Enables cross-correlation queries

Accessing Diagnostic Logs



Log Files | Search Log Repository

The Log Files tab lists the log files for this application server. View a log file by clicking on the Log File name in the search results table.

Simple Search

Advanced Search

Available Components

ADF Business Components
ASCLONE
DCM
EmployeeServicesApp
Enterprise Manager
HTTP_Server
LogLoader
OPMN
Port Tunneling
Universal Installer

Move
Move All
Remove
Remove All

Selected Components

FAQApp

Search

Results: 8 Log Entries Retrieved

Component Type	Component Name	Log Type	Log File	Modified	Size (bytes)	OC4J Island	OC4J Island Process
OC4J Application	FAQApp	Application transtrace	application.log	December 1, 2004 2:54:50 PM PST	1722	default_island	1
OC4J Application	FAQApp	Application default	global-application.log	December 1, 2004 1:13:00 PM PST	4735	default_island	1
OC4J Application	FAQApp	Application FAQApp	application.log	December 1, 2004 1:09:06 PM PST	21446	default_island	1
OC4J JMS Server	FAQApp	Server	jms.log	December 1, 2004 1:08:07 PM PST	1094	default_island	1
OC4J RMI Server	FAQApp	Server	rmi.log	December 1, 2004 1:08:07 PM PST	2188	default_island	1
OC4J Server	FAQApp	Server	server.log	December 1, 2004 1:08:18 PM PST	20063	default_island	1
OC4J Server	FAQApp	Server	redirected output/errors	December 2, 2004 7:54:05 AM PST	7394	default_island	1
OC4J Web Site	FAQApp	Access	default-web-access.log	December 5, 2004 8:11:05 AM PST	20124439	default_island	1

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