



P r o f e s s i o n a l E x p e r t i s e D i s t i l l e d

BPEL PM and OSB Operational Management with Oracle Enterprise Manager 10g Grid Control

Manage the operational tasks for multiple BPEL and OSB environments centrally

Narayan Bharadwaj

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BIRMINGHAM - MUMBAI

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I am constantly inspired by the two women in my life—my mother and my wife. Thank you for being there for me.

About the Reviewers

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Hans has been a technical reviewer for a number of Packt Publishing books, including "*Mastering Oracle Scheduler in Oracle 11g Databases*," "*Oracle 10g/11g Data and Database Management Utilities*," and "*Oracle VM Manager 2.1.2*."

I wish to thank my wife Susanne, and the Edmonton Opera, for their patience while I work on these reviews as well as on my own book.

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I want to thank my family for their patience and the time I borrowed from them during the revision of this book.

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Table of Contents

Preface	1
Chapter 1: Grid Control, BPEL, and OSB Overview	9
Grid Control	10
Architecture and deployment	11
Installing Grid Control	13
Home page	13
Oracle BPEL Process Manager overview	14
Oracle SOA Suite overview	15
Oracle Service Bus overview	16
Summary	16
Chapter 2: Discovering BPEL PM	17
Support for managing BPEL PM	18
BPEL PM target discovery	18
Navigating to application servers	19
Discovering a BPEL PM target	19
Navigating to the BPEL PM target home page	22
Configuring a BPEL PM target	23
Summary	24
Chapter 3: BPEL Process Monitoring	27
Challenges	28
Solution	28
Step-by-step exercises	28
Navigating to the BPEL PM target home page	28
Navigating to the BPEL process home page	29
Creating a SOAP test to monitor a partner link	31
Creating a SOAP test to monitor a BPEL process	35
Testing the SOAP tests	38
Summary	39

Chapter 4: BPEL Infrastructure Management	41
Challenges	42
Solution	43
Step-by-step exercises	43
Creating the BPEL infrastructure service	43
Viewing the BPEL infrastructure service	45
Viewing system alerts and policies	45
Viewing configuration changes	48
Viewing key system metrics	49
Viewing administration tasks	49
Viewing system components	50
Viewing the system dashboard	51
Summary	53
Chapter 5: BPEL Service-Level Management	55
Challenges	56
Solution	57
Step-by-step exercises	57
Viewing the BPEL process availability service	58
Adding service performance metrics	59
Setting service-level expectation (availability)	61
Viewing the service availability definition	62
Viewing the BPEL infrastructure service	63
Adding infrastructure performance metrics	63
Adding infrastructure usage metrics	65
Setting service-level expectation (infrastructure)	66
Viewing the infrastructure availability definition	67
Viewing the BPEL process aggregate service	68
Viewing the aggregate service availability definition	68
Adding aggregate service performance and usage metrics	69
Setting service-level expectation (aggregate service)	70
Summary	72
Chapter 6: BPEL Services Dashboard	73
Challenges	74
Solution	74
Step-by-step exercises	74
Navigating to the Reports tab	74
Creating an SOA services dashboard	75
Viewing the SOA services dashboard	77
Summary	79

Chapter 7: BPEL Deployment Automation	81
Challenges	82
Solution	82
Step-by-step exercises	82
Viewing the Software Library	83
Uploading BPEL suitcases to the Software Library	84
Viewing the BPEL process provisioning deployment procedure	86
Scheduling BPEL suitcase deployment	87
Viewing the status of the scheduled deployment	92
Viewing the deployed processes	93
Summary	94
Chapter 8: BPEL Configuration Management	95
Challenges	96
Solution	96
Step-by-step exercises	97
Navigating to BPEL target configuration management	97
Viewing the last collected configuration	98
Saving a configuration snapshot to the repository	100
Navigating to Oracle Application Server configuration management	101
Viewing last collected configuration	102
Saving a configuration snapshot to the repository	105
Making changes to the BPEL environment	106
Making changes to the Oracle Application Server environment	108
Comparing the current BPEL configuration with a saved baseline	112
Comparing BPEL process versions for the same process	117
Comparing the current Oracle Application Server configuration with a saved baseline	119
Viewing application server target comparison results with a saved baseline	120
Summary	124
Chapter 9: SOA Suite Cloning	125
Challenges	126
Solution	126
Step-by-step exercises	126
Adding an Oracle Application Server Cluster to Grid Control	126
Stopping application server processes	130
Creating a component in the Grid Control Software Library	131
Cloning Oracle Application Server and SOA applications	141
Validating a newly created cluster	153
Summary	157

Chapter 10: Web Application Monitoring	159
Challenges	160
Solution	160
Step-by-step exercises	160
Creating a web application	160
Recording a web transaction as a Service Test	164
Adding Beacons to run the Service Test	170
Adding performance and usage metrics	172
Viewing web transaction playback	178
Summary	181
Chapter 11: Discovery of WebLogic and OSB targets	183
Challenges	184
Solution	184
Step-by-step exercises	184
Adding a WebLogic domain target	184
Navigating to the OSB target home page	187
Summary	188
Chapter 12: OSB Deployment Automation	189
Challenges	190
Solution	190
Step-by-step exercise	190
Viewing the Software Library	190
Uploading projects to the Software Library	191
Viewing the project deployment procedure	194
Scheduling project deployment	196
Summary	201
Chapter 13: OSB Proxy and Business Service Monitoring	203
Challenges	204
Solution	204
Step-by-step exercises	204
Creating an OSB Infrastructure Service	204
Navigating to the OSB proxy service home page	205
Creating the OSB proxy aggregate service	206
Creating a SOAP test to monitor an OSB proxy service endpoint	207
Creating a SOAP test to monitor an OSB business service endpoint	210
Testing the SOAP tests	212
Summary	214

Chapter 14: WebLogic and OSB Configuration Management	215
Challenges	216
Solution	216
Step-by-step exercises	216
Viewing a WebLogic managed server configuration	216
Saving a managed server configuration snapshot	218
Viewing and saving an OSB configuration	219
Comparing the current OSB configuration with a saved baseline	220
Comparing the current managed server configuration with a saved baseline	222
Summary	224
Index	225

Preface

Oracle Enterprise Manager has been around for more than a decade, and many database administrators around the world have used one or more Enterprise Manager products for running their databases more efficiently. Over the past few years, Enterprise Managers have made a big push to manage middleware and applications as well. This has helped change the original market perception that Enterprise Manager was simply a DBA's best friend.

With its flagship Grid Control product release 10.2.0.5 (released on Linux platforms in February 2009), Enterprise Manager has strengthened its previous offerings in the middleware area. Enterprise Manager's strategic direction is consistent with the one charted out by Oracle after completing the BEA acquisition on April 29, 2008. The greatest improvements have been made in managing WebLogic Server, and the Oracle SOA platform that includes Oracle BPEL Process Manager, and Oracle Service Bus (formerly AquaLogic Service Bus).

Enterprise Manager has made several acquisitions in the past two years to complement existing capabilities and provide a complete management solution to users. Auptyma was the first of these acquisitions, which provided deep Java diagnostic capabilities without instrumentation or overhead in production environments. The product was renamed to Application Diagnostics for Java (AD4J). Separately, Moniforce was acquired to manage an end user's experience while interacting with an application and service providers, and the product was renamed to Real User Experience Insight (RUEI). Another key acquisition was ClearApp – a company that provided technology to model and monitor composite applications. The product was renamed to Composite Application Modeler and Monitor (CAMM).

Several integration challenges lie ahead, and many still think of Enterprise Manager as a database management solution. The product has grown considerably faster in the past two years, especially in the middleware, SOA, and application space. Enterprise Manager is one of the top product lines at Oracle, but is still the best kept secret in the Oracle portfolio. With a vast array of product lines, it is important for an Oracle customer's IT to manage these product lines centrally, and with a low cost of ownership. The big four management vendors (CA, IBM, HP, BMC) have broad product offerings that are not optimized for Oracle products. Further, the pure play vendors are focused on niche areas, and do not provide an enterprise management solution. Oracle Enterprise Manager plays an important role for enterprises that have one or more Oracle products in their data center, as well as non-Oracle products.

Who this book is for

If you are involved with Oracle BPEL Process Manager, Oracle SOA Suite, or Oracle Service Bus, then you are the right candidate for this book. You are an even better candidate if you support the operational infrastructure for any of these products. For a long time, application and SOA administrators have longed for visibility into the distributed service-based environment. If you or your team supports any of these products in a production environment, you will know the pain of dealing with day-to-day operational issues. This book will go a long way to alleviate some of those problems using Enterprise Manager capabilities.

If you are an SOA architect or associated with SOA governance in any way (for example, an SOA Center of Excellence), this book will serve as an eye opener to the many features available to gain production assurance in complex SOA environments. This will help you govern the SOA environment in conjunction with other tools such as Oracle Enterprise Repository (OER), Oracle Service Registry (OSR), and Oracle Web Services Manager (OWSM). However, this book shall focus on runtime SOA management with Enterprise Manager Grid Control.

If you like a functional approach to solving your operational problems, this is the right book for you. You will find that the book avoids lecturing on concepts, and takes a direct approach to solving real operational problems.

A general awareness of service-oriented architecture is expected, as well as an awareness of the Oracle SOA products such as BPEL Process Manager and Oracle Service Bus. No specific management or operational expertise is required. This book will help set up the framework for managing the Oracle SOA products using a step-by-step functional-based approach.

What you should find in the book

This book contains details on how to set up and automate various operational tasks essential for the smooth running of Oracle SOA products in production. It will walkthrough step-by-step exercises to assist the administrator in managing these products from a single web-based console. It will relieve the administrator from performing mundane time-consuming repetitive tasks.

What you won't find

The book avoids going through explanations on SOA, BPEL, or Service Bus. This is not the right book if you want to develop BPEL and OSB services from tools such as JDeveloper. Also, it avoids talking about basic Grid Control product issues such as download and installation, other than the first chapter.

What this book covers

The introductory chapter contains basic information that is a prerequisite for the other chapters. You can dive into the other chapters on a need basis, based on what you would like to accomplish. All chapters have a problem statement defined, along with a summary of the solution provided. The solution itself is a step-by-step walkthrough on how to accomplish certain tasks to solve the problem.

The book is divided into three sections. The first section covers the management of BPEL Process Manager with Grid Control. The second section focuses on management of SOA Suite in general. The third section covers management of Oracle Service Bus.

Chapter 1, Grid Control, BPEL, and OSB Overview, gives a basic introduction to Grid Control that includes download, installation, and basic configuration. This is the foundation technology that provides the infrastructure for managing various targets from a single console.

I: BPEL Management

Chapter 2, Discovering BPEL PM, talks about the discovery and configuration of the BPEL Process Manager target. Discovery of BPEL PM as a Grid Control-managed target is the first step before performing other management tasks.

Chapter 3, BPEL Process Monitoring, talks about viewing deployed BPEL processes and their constituent partner links. It goes on to talk about monitoring of BPEL processes and partner links using a combination of metrics and synthetic tests.

Chapter 4, BPEL Infrastructure Management, describes how to manage the underlying infrastructure components such as BPEL Process Manager server, dehydration database, Application Server, host, and so on. Administrators can manage several disparate systems in groups, reducing the time to detect the root cause of system-related problems.

Chapter 5, BPEL Service-Level Management, describes how to set service-level expectations for BPEL Processes, partner links, and tracking those levels through various metrics. This enables the service providers to monitor agreed-upon contractual guarantees with service consumers.

Chapter 6, BPEL Services Dashboard, illustrates that dashboards are important to visualize service-level performance and metrics for key services. This chapter also walks through how to construct a simple dashboard to show all critical services, and their top metrics, including service levels. Operations typically use this to keep a ready eye on services and act on any deviations from expected SLAs.

Chapter 7, BPEL Deployment Automation, shows deployment of BPEL artifacts is a repetitive and time-consuming task. This chapter describes how to deploy BPEL artifacts to multiple servers in an automated fashion. This ensures deployments are conducted in an error-free manner, and reduces overall scheduled downtime.

Chapter 8, BPEL Configuration Management, describes how to manage the configuration settings of the BPEL infrastructure, including setting baselines, and comparisons. This helps to diagnose problems due to configuration changes as well as standardize configurations across the enterprise.

II: SOA Suite Management

Chapter 9, SOA Suite Cloning, discusses cloning as a complex administrative task that needs deep product expertise. This chapter walks through a simple scenario to clone an existing SOA Suite from one instance to another. Administrators can use this to perform critical time-consuming tasks in a standardized, error-free manner.

Chapter 10, Web Application Monitoring, describes how to set and monitor Web services using Grid Control service models, SLA rules, and synthetic tests. Web applications can also be monitored—including the recording and playback of HTTP(s) transactions to troubleshoot problems. Application administrators can proactively monitor applications from an end-user perspective.

III: WebLogic and Oracle Service Bus Management

Chapter 11, Discovery of WebLogic and OSB targets, talks about managing multiple WebLogic domains and OSB instances from a single console, as it is a frequent problem for the middleware administrator. Middleware administrators can use a single console to manage all their installations, perform complex management tasks, and dive into their respective WebLogic or OSB console to perform administrative activities. All of this enables the administrator to standardize management tasks, and hence the behavior of WebLogic and OSB servers, leading to increased uptime.

Chapter 12, OSB Deployment Automation, discusses that deployment of OSB projects and resources to multiple domains can be cumbersome and time consuming. This chapter walks through typical deployment scenarios and how they can be automated using the deployment procedure framework. This enables infrastructure teams to standardize deployments, as well as to track and manage artifacts centrally.

Chapter 13, OSB Proxy and Business Service Monitoring, walks the reader through Oracle Service Bus services that provide a versatile frontend plumbing layer to standardize messages from various sources and differing formats. Any performance bottleneck directly relates to a slowdown in critical backend business processes. This chapter also covers the monitoring capabilities for OSB proxy and business services. These provide the administrator with visibility into the runtime behavior, and take proactive steps to maintain a high-performing environment.

Chapter 14, WebLogic and OSB Configuration Management, describes that configuration changes are a major cause of downtimes in production environments. This chapter also covers WebLogic and OSB configuration tracking, viewing changes, and comparing and saving configurations. This enables administrators to resolve problems quickly and standardize a set of configurations across the enterprise.

What you need for this book

The target product versions used throughout this book are installed on Oracle Enterprise Linux platform and share an Oracle database 10.2.0.2 as the common repository. For the first two sections, Oracle SOA Suite is used as the target. SOA Suite 10.1.3.x is installed in a single node environment on Oracle Application Server 10.1.3.x. The popular SOA Order Booking application is used throughout the book to illustrate various features. Oracle Service Bus 10gR3 installed on WebLogic Server 10gR3 is used as the target for the third section. The Mortgage Broker application is used to illustrate various features.

Enterprise Manager Grid Control 10gR5 or 10.2.0.5 is used in all the exercises. It is installed with a single Oracle Managed Server (OMS) and two agents—one for the SOA Suite and another one for Oracle Service Bus.

Conventions

In this book, you will find a number of styles of text that distinguish between different kinds of information. Here are some examples of these styles, and an explanation of their meaning.

Code words in text are shown as follows: “Select `bpel_parallel_flow.jar` for the current example.”

New terms and **important words** are shown in bold. Words that you see on the screen, in menus or dialog boxes for example, appear in our text like this: “From the BPEL target home page, click on the **Processes** tab”.

 Warnings or important notes appear in a box like this.

 Tips and tricks appear like this.

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1

Grid Control, BPEL, and OSB Overview

Management of hardware, software, and application components is important. In bad economic times, it is critical to get the maximum return from software and hardware investments, and for that an enterprise needs a sound management strategy. A management solution not only helps increase returns on existing investments, but also controls the cost of owning these investments. Enterprises today cannot be successful without such a solution.

In the SOA world, management is even more critical, as it governs distributed services and service infrastructures. The value from SOA investments cannot be realized without a sound management strategy. Operational management is becoming the centerpiece of the SOA Governance framework in most enterprises. Unless there is visibility and control on production environments, SOA project costs will exceed the accrued benefits. Management cannot be a bolt on after the implementation; it has to be a strategic part of the overall solution. It is beneficial to start thinking about the management strategy upfront, and implement it in conjunction with the SOA integrations. Further, all aspects of management need to be analyzed, and the right ones need to be implemented for the SOA integrations in the enterprise. Some of the key management areas are infrastructure monitoring, synthetic monitoring, configuration management, deployment automation, and business process execution monitoring. All of these need to be considered for the success of SOA projects.

In this chapter, we will provide a brief overview of the following products that will be covered throughout this book:

- Grid Control
 - Overview
 - Architecture and deployment
 - Download and install
 - Home page
- Oracle BPEL Process Manager overview
- Oracle SOA Suite overview
- Oracle Service Bus overview

Grid Control

Enterprise Manager Grid Control provides a single interface for managing thousands of disparate targets such as operating systems, databases, application servers, and packaged applications. It determines overall target health, tracks target inventory, automates target deployments, and manages service levels. All the historic monitoring information is stored in a database, and aggregated over time. This is complemented with a reporting and dashboard framework, which provides a summary to administrators as well as IT managers. Grid Control supports monitoring and management of a wide variety of hardware, software, and applications, and is really the tool of choice for Oracle products. It has capabilities for monitoring third-party products as well, either natively, or through plugins and connectors. The Grid Control framework can be extended using either plugins or connectors. This is made possible by a software development kit that comes out of the box with Grid Control. A good example of a plugin is if you want to monitor a specific hardware component that is not supported by Grid Control, you can extend the framework and add logic to monitor your specific hardware component. A connector, on the other hand, can be used to integrate Grid Control with other systems such as incident management systems (for example, Remedy Helpdesk or Oracle Business Activity Monitoring (Oracle BAM)).

Most chapters in this book cut across multiple versions of Grid Control. Concepts such as service-level management, infrastructure management, service-level dashboards, web application management, and configuration management are uniform across multiple Grid Control versions. That being said, this book will focus on Grid Control version 10.2.0.5, also referred to as 10gR5. This version was released on Linux platforms in February 2009, ported to other platforms during the rest of the year. Most of the chapters are valid for the prior version of Grid Control 10.2.0.4 (or 10gR4) as well. The notable exception is the third section that deals with managing the Oracle Service Bus. Enterprise Manager functionality for managing BPEL Process Manager is part of Grid Control 10.2.0.3 and above. The Oracle Service Bus management functionality was introduced with Grid Control 10.2.0.5.

Architecture and deployment

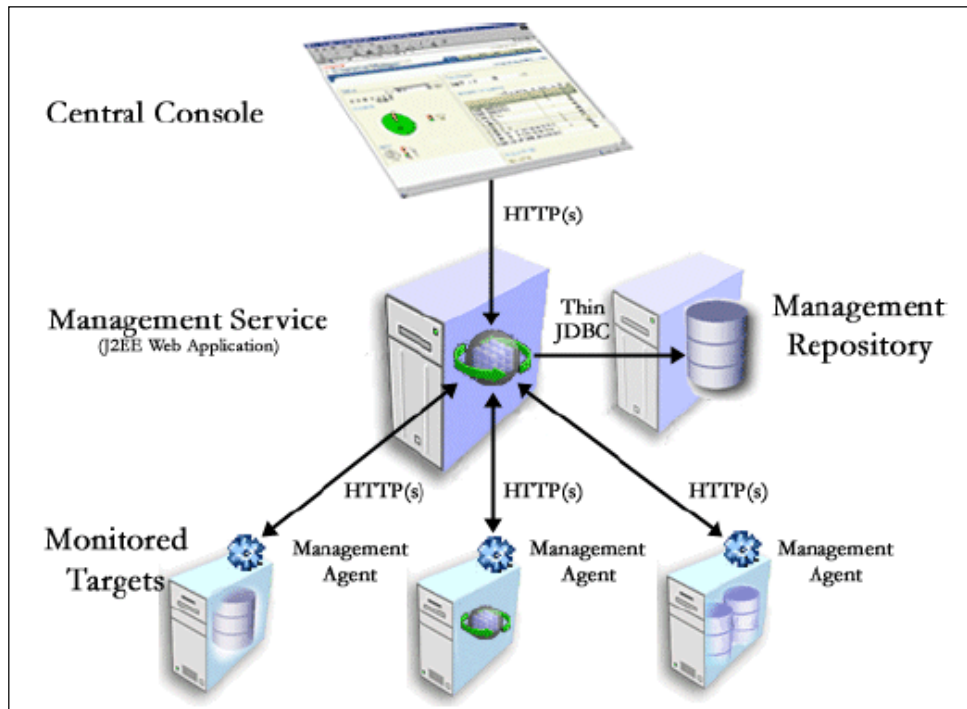
Grid Control has a three-tier architecture. The main components are the **Oracle Management Server (OMS)**, the Management Agents (Agent), and the **Oracle Management Repository (OMR)**. The central web-based console is available through popular browsers. The components are detailed as follows:

- **Oracle Management Server (OMS):** This is the central engine, which accumulates information from all the distributed Management Agents. It provides the data for the web-based console, and persists the data in the Management Repository. Further, the OMS also executes the alerting rule logic, and the notification logic, as well as sending instructions to the agent for management tasks such as deployment.
- **Management Agent:** The agent is a lightweight C-program running on a server or host. This program typically collects all the monitoring and configuration information for the host, and the other targets on that host such as database, application server, SOA suite, and so on. The agent is also suitable for running operations at the host level through scripts. This capability is useful for taking corrective action (when a threshold is violated), or performing complex patching, or other deployment tasks. There is also the option of having remote agents, the only drawback being that the host metrics will not be collected.
- **Oracle Management Repository (OMR):** The repository is a preconfigured Oracle database that comes packaged with Grid Control. No separate license is needed for the OMR. The OMS contains current and historical monitoring and configuration information from various agents. It comes with prebuilt schemas and PL/SQL procedures and functions to aggregate the data over different time periods.

- **Central web console:** The web console provides a window to all the rich information in the OMR. Each target type (for example, application server) has a home page with monitoring, alerting, configuration, and other specific information. The home page displays summary information across multiple targets. Reports and dashboards can be used to create custom views.

This book avoids going into deep discussions on deployments that are already addressed by product documentation or white papers. A basic knowledge of installing and configuring the Grid Control components are assumed. More information on architecture and deployment best practices is available on the Enterprise Manager pages on the **Oracle Technology Network (OTN)** at: http://www.oracle.com/technology/products/oem/ent_mgr/arch_dep.html

The following simple architecture diagram shows the main Grid Control components and their relationships:



Installing Grid Control

The latest version of Grid Control can be downloaded from OTN at:

<http://www.oracle.com/technology/software/products/oem/index.html>

Grid Control documentation including installation, configuration, deployment modes, and so on can be found at: http://download.oracle.com/docs/cd/B16240_01/doc/nav/portal_booklist.htm

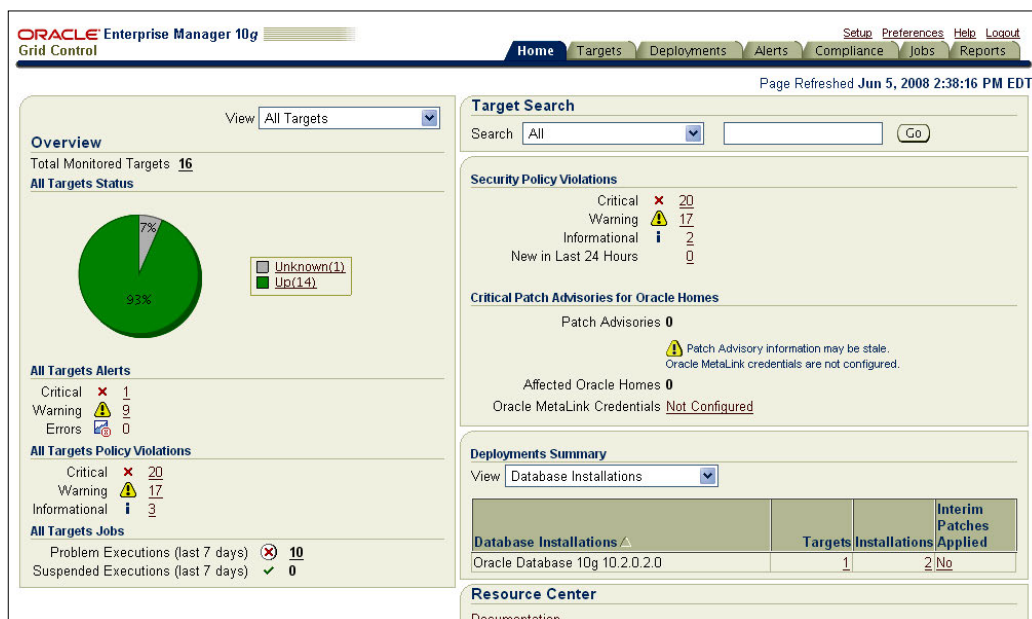
Once Grid Control is installed and configured, the SOA-related targets can be added. The prerequisite is to install a Management Agent (Agent) to the server that hosts the SOA Suite. More details on getting started with Grid Control SOA Management is available at the Oracle Technology Network (OTN) website: http://download.oracle.com/docs/cd/B16240_01/doc/em.102/e12650/toc.htm

Home page

After downloading and installing Grid Control, the first task is to view the home page of Grid Control. To view Grid Control home page on your local browser:

1. Navigate to `http://<your_server_name>:<server_port>/emememem`.
2. Login as `sysman.sysman`. Use the password you set during the installation.

Following is the Enterprise Manager 10g Grid Control entry point or home page. The home page rolls up all the important information (starting in the upper-left corner):



- **All Targets Status:** This section shows the total number of monitored Oracle targets. The pie chart shows their overall SLA availability and corresponding open alerts. This summary page can be rolled up for any target type.
Click on the **View** dropdown and observe the different target types in this enterprise. This is a subset of the target types supported by Grid Control.
- **All Target Alerts:** Violations of thresholds for all metrics for the monitored targets, separated into **Critical** and **Warning** categories. **Errors** are Agent-related problems (Agent unreachable, cannot upload, metric collection error, and so on).
- **All Targets Policy Violations:** Over 300 Oracle best practices (for example, open port on Application Server) are coded in as policies in Grid Control. The Agent checks these policies daily and flag the violations.
- **Target Search:** Quickly access any target by simply typing in part of the target name.
- **Critical Patch Advisories for Oracle Homes:** Push any security alerts that are vital to your systems. Set up a connection to meta link and automatically download patch information for monitored Oracle homes.
- **Deployments Summary:** Enterprise Manager collects information on your entire configuration including software, patches (OS and Oracle software level), hardware, and so on. This is a rollup of all of the hosts, software, and OS(s) in your enterprise.

Oracle BPEL Process Manager overview

Business Process Execution Language (BPEL), short for Web Services Business Process Execution Language (WS-BPEL) is an executable language for specifying interactions with Web Services. Processes in Business Process Execution Language export and import information by using Web Service interfaces exclusively. Source: http://en.wikipedia.org/wiki/Business_Process_Execution_Language

Major vendors such as Oracle, Microsoft, and IBM are onboard with the BPEL standard, which has become the orchestration standard of choice. Oracle acquired a small company called Collaxa in 2005, which had an implementation of the BPEL standard, then renamed the product to BPEL Process Manager and made it the foundation of the SOA Suite. This also became the strategic technology product under the Fusion Middleware umbrella, as well as the Fusion Applications umbrella. Oracle Applications Unlimited (E-Business Suite, PeopleSoft, Siebel, Retek, and so on) use several different workflow technologies such as Oracle Workflow, but the roadmap for all these workflow technologies is to converge into the common BPEL standard, based on the Oracle BPEL Process Manager product. In short, this technology has huge implications not only for the overall middleware market, but also for the packaged applications market. Oracle, with its huge installed base in both the markets, especially after the acquisition of BEA in 2008, is focused on expanding the already large adoption of BPEL within its customer base.

BPEL Process Manager 10.1.2 was the first release after the Collaxa acquisition. Currently, the product is available as part of the Oracle SOA Suite 10.1.3.x. This is a fairly mature release of product, and has enjoyed widespread adoption among customers interested in implementing an SOA strategy. This is also the foundation of the next generation Oracle Fusion Applications.

Oracle SOA Suite overview

Oracle SOA Suite 10.1.3.x consists of three components—Oracle BPEL Process Manager, **Oracle Enterprise Service Bus (OESB)**, and **Oracle Web Services Manager (OWSM)**. Additionally, it also includes **Oracle Service Bus (OSB)**, **Oracle Business Activity Monitoring (BAM)**, and the Rules Engine.

Oracle built an Enterprise Service Bus (OESB) as the plumbing layer to frontend the BPEL-based business processes. The Service Bus is used as the mediator layer to transform messages in different formats to common canonical formats, and route to the backend BPEL processes, or other services. It is a step up from the point-to-point **Enterprise Application Integration (EAI)** methodology that involves frequent changes at both ends of the integration.

Oracle SOA Suite 10.1.3.x is a single installable, and is extremely easy to install and configure with Oracle JDeveloper. As the common IDE to develop BPEL-based business processes, and OESB-based services it provides a great platform for developers and architects to implement SOA projects.

Oracle Service Bus overview

Oracle Service Bus is a proven, lightweight and scalable SOA integration platform that delivers low-cost, standards-based integration for high-volume, mission critical SOA environments. It is designed to connect, mediate, and manage interactions between heterogeneous services, legacy applications, packaged applications and multiple enterprise service bus (ESB) instances across an enterprise-wide service network. Oracle Service Bus is a core component in the Oracle SOA Suite as a backbone for SOA messaging. Source: <http://www.oracle.com/technologies/soa/service-bus.html>

With the acquisition of BEA, the **AquaLogic Service Bus (ALSB)** joined the Oracle family as well. ALSB was renamed to Oracle Service Bus (OSB) post acquisition. On July 1, 2008, Thomas Kurian, the Senior Vice President of Fusion Middleware, announced the strategic roadmap for Oracle middleware and BEA products. He announced that OSB would be the strategic service bus going forward, with its wide customer adoption, and advanced product capabilities.

Summary

With a single management solution to manage SOA services and infrastructure, and products, Grid Control reduces the complexity of an SOA environment. Grid Control is an enterprise-wide solution, so care must be taken to make it into a strategic product. The installation and deployment is not a trivial task. However, it is imperative to set up the management framework to meet the needs of the enterprise.

Grid Control has traditionally been viewed as a database management solution, but this book will highlight the necessity of using this solution for SOA environments.

In this chapter, we looked at some fundamental concepts of the target products, as well as the management solution. In particular, we discussed Enterprise Manager Grid Control as an important management solution. Briefly, we discussed the installation, documentation, and architecture of Grid Control. Then we discussed the SOA products BPEL PM and OSB. We introduced the basic concepts for both products, and a brief background for each.

This was simply an overview of these products. A good administrator should have basic working knowledge of Oracle BPEL PM, SOA Suite, and Service Bus. This book will focus on the next step, which is to manage these products from Grid Control.

The next few chapters will walkthrough hands-on exercises to set up and perform management tasks.

2

Discovering BPEL PM

A management solution needs to locate and identify whatever it needs to manage. This process is called discovery, where the management solution locates and identifies all the targets. This is typically done using management agents that are deployed on servers that contain the targets that need to be managed. Discovery of targets enables administrators to have a picture of the environment along with the various components that need to be managed.

For any small, medium, or large enterprise, the challenge is to manage several disparate targets from a single console. The traditional hardware and software components such as servers, storage devices, operating systems, databases, middleware, and applications have been managed by system management solutions. However, a new breed of BPEL-based applications and infrastructure poses new problems. First, they need to be managed along with existing hardware and software. Second, as the BPEL projects proliferate across the enterprise, the infrastructure team is faced with increasing problems to manage these projects. Third, for the administrators who are new to BPEL, supporting these environments in production poses unknown challenges. Finally, the IT managers want to avoid hiring new administrators with increasing BPEL projects.

Grid Control provides a way to discover the BPEL components, whether it's on production or otherwise. For the infrastructure team, this is a convenient way to manage several installations from one console. Once the agent is installed on each of the servers hosting BPEL PM, the discovery process can be initiated from the console.

In this chapter, we will discuss how to discover and configure a BPEL Process Manager target. Discovery of BPEL PM targets is the first step before performing other management tasks. Further, creating the infrastructure service is mandatory to manage BPEL processes and related infrastructure. The following areas are covered in this chapter:

- Support for managing BPEL PM
- BPEL PM target discovery
 - Navigating to application servers
 - Discovering a BPEL PM target
 - Navigating to the BPEL PM target home page
 - Configuring a BPEL PM target

Support for managing BPEL PM

The BPEL PM product ships with a console that is useful for administration activities such as turning a process on or off, deleting instances, checking the flow of an instance, and so on. However, it cannot provide management capabilities such as monitoring the availability and health of the servers, processes, configuration management, and bulk deployment.

Grid Control introduced BPEL management functionality with the 10.2.0.3 (or 10gR3) version, released in January 2007. The first release provided most of the functionality for monitoring the BPEL infrastructure including the BPEL PM server. Additionally, it had process-level monitoring, error-instance management, and service-level management.

The 10.2.0.4 (10gR4) version, released on Linux platforms in November 2007, brought additional new features for managing BPEL PM. Configuration management, deployment automation, and adapter monitoring were the main features of the release. The 10.2.0.5 (10gR5) version, released on Linux platforms in February 2009, added reporting capabilities for tracking troublesome BPEL instances.

BPEL PM target discovery

This set of step-by-step exercises will walkthrough the discovery of a BPEL PM target and setting up monitoring configuration for the target.

Navigating to application servers

As the SOA Suite and BPEL Process Manager server is hosted on an application server (for example, Oracle Application Server, Oracle WebLogic Server), the first task is to visit the application server home page:

1. Navigate to `http://<Grid_Control_server_name>:<server_port>/em`.
2. Log in as *sysman*. Use the password you set during the installation.
3. Click on the **Targets** tab.
4. Click on the **Middleware** sub-tab.



This is a view showing all of the monitored application servers (Oracle AS, BEA WebLogic, and so on) within the enterprise. For each target, a summary of status with details, alerts, policy violations, CPU usage, and memory usage on the host are tabulated.

Discovering a BPEL PM target

The administrator needs to inform Grid Control to explicitly discover the application server and the associated targets such as BPEL PM. Before attempting discovery, the Grid Control Agent (10.2.0.3 or higher) needs to be installed on the host with the application server software. Note that a remote agent can also be used to discover an application server. The only drawback with a remote agent is the host and operating system metrics for the application server machine will not be picked up.

1. As shown in the following screenshot, from the drop-down list on the right, add an **Oracle Application Server** target. Click on **Go**.

ORACLE Enterprise Manager 10g
Grid Control

Home | **Targets** | Deployments | Alerts | Compliance | Jobs | Reports

Hosts | Databases | Application Servers | Web Applications | Services | Systems | Groups | All Targets

Application Servers

Page Refreshed Jun 5, 2008 2:39:16 PM EDT [Refresh](#)

Search: All [Go](#)

[Remove](#) [Configure](#) [View Flat List](#) Add: Oracle Application Server [Go](#)

[Expand All](#) | [Collapse All](#)

Select	Name	Type	Status	Status Details	Alerts	Policy Violations	CPU Usage (%)	Memory Usage (MB)
☐	▼ All Application Servers							
☒	▶ EnterpriseManager01.qcsoa.us.oracle.com	Oracle Application Server		5 (↑5)			2.01	585.51

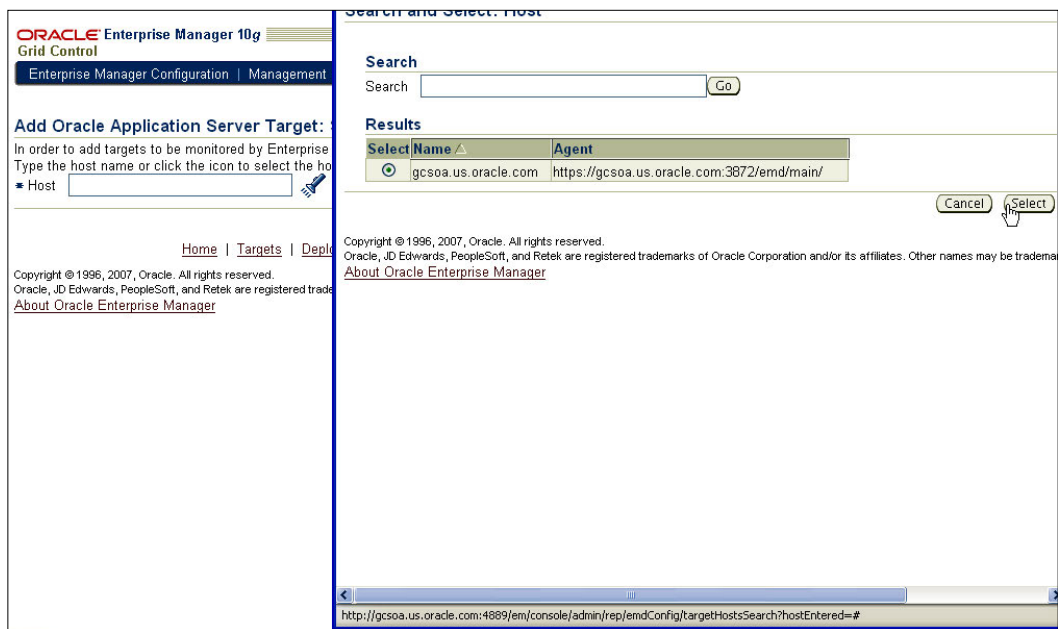
TIP For an explanation of the icons and symbols used in this page, see the [Icon Key](#).

Related Links
[Customize Table Columns](#)

Home | **Targets** | Deployments | Alerts | Compliance | Jobs | Reports | Setup | Preferences | Help | Logout

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[About Oracle Enterprise Manager](#)

2. On the **Add Application Server** page:
 - Click on the *flashlight* icon to pick a host.
 - In the pop-up window, select the radio button for the host and click on **Select**, as shown in the following screenshot:



3. On the **Add Application Server** page, click on **Continue** on the right.
4. On the **Discover Application Server: Results** page, click on **OK**.
5. In a very short time, you should get a confirmation page. Click on **OK**.
6. On the **Application Servers** page, click on **Expand All** and view your application server.



Notice the components of this application server. Notice the two OC4J targets, as well as the Oracle BPEL Process Manager target.

View Flat List Add Oracle Application Server Go

Remove Configure

Expand All Collapse All

Select	Name	Type	Status	Status Details	Alerts	Policy Violations	CPU Usage (%)	Memory Usage (MB)
☐	▼ All Application Servers							
☒	▼ EnterpriseManager0.qcsoa.us.oracle.com	Oracle Application Server	⊕	5 (↑5)	0 0	0 0	1.7	605.14
☐	EnterpriseManager0.qcsoa.us.oracle.com HTTP Server	Oracle HTTP Server	⊕	↑	0 0	0 0	1.22	132.22
☐	EnterpriseManager0.qcsoa.us.oracle.com home	OC4J	⊕	↑	0 0	1 0	0.089	54.32
☐	EnterpriseManager0.qcsoa.us.oracle.com OC4J EM	OC4J	⊕	↑	0 0	1 0	0.2	293.79
☐	EnterpriseManager0.qcsoa.us.oracle.com OC4J EMPROV	OC4J	⊕	↑	0 0	1 0	0.069	77.14
☐	EnterpriseManager0.qcsoa.us.oracle.com Web Cache	Web Cache	⊕	↑	0 0	0 0	0.023	41.34
☐	▼ soa.qcsoa.us.oracle.com	Oracle Application Server	⊕	4 (↑4)	0 0	0 0		
☐	soa.qcsoa.us.oracle.com HTTP Server	Oracle HTTP Server	⊕	↑	0 0	0 0	0.13	246.13
☐	soa.qcsoa.us.oracle.com home	OC4J	⊕	↑	0 0	0 0		
☐	soa.qcsoa.us.oracle.com oc4j_soa	OC4J	⊕	↑	0 0	0 0	1.3	332.65
☐	soa.qcsoa.us.oracle.com bpel	Oracle BPEL Process Manager	↑	↑	0 0	0 0		

Remove Configure

TIP For an explanation of the icons and symbols used in this page, see the [Icon Key](#).

Related Links

[Customize Table Columns](#)

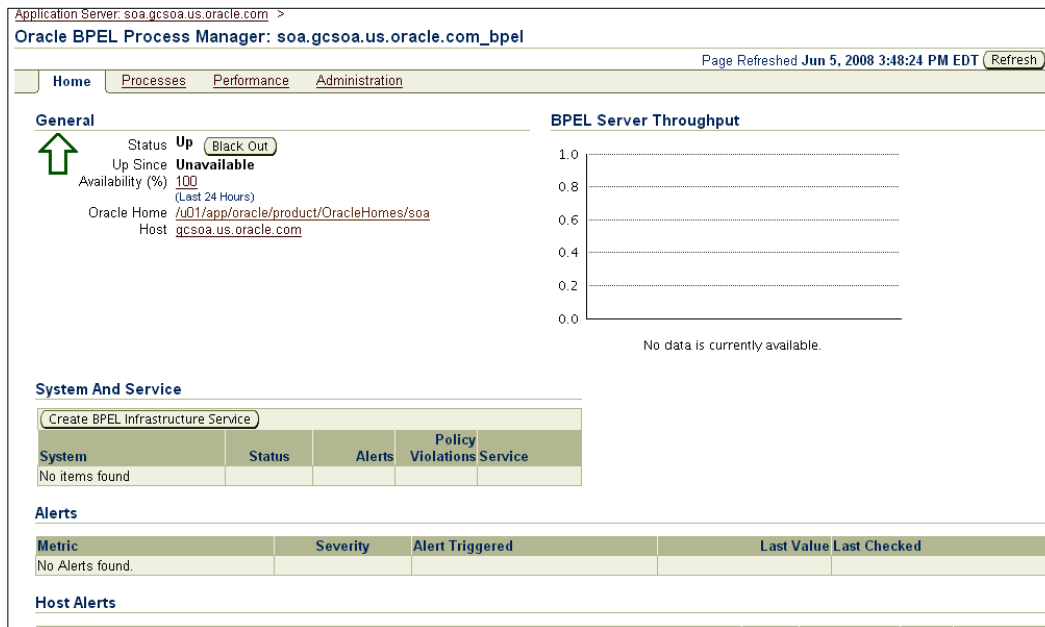
[Home](#) | [Targets](#) | [Deployments](#) | [Alerts](#) | [Compliance](#) | [Jobs](#) | [Reports](#) | [Setup](#) | [Preferences](#) | [Help](#) | [Logout](#)

Navigating to the BPEL PM target home page

The BPEL PM target is a child target of the application server target. There are multiple ways to navigate to the home page of the BPEL PM target; the most common path is to click on the Oracle BPEL Process Manager target name hyperlink.



On the Oracle BPEL Process Manager home pages, you will see the **Status** label, which shows the availability status of the BPEL PM server, **Availability (%)** (last 24 hours), **Oracle Home**, and **Host**.



Configuring a BPEL PM target

Once the BPEL PM target is discovered, the administrator needs to provide the target with basic configuration information. This enables the BPEL target in Grid Control to talk to the BPEL PM server. This communication is needed because the BPEL target collects out-of-box monitoring metric data by polling the BPEL PM server through APIs.

1. Under the **Related Links** section at the bottom, click on **Monitoring Configuration**.
2. Enter the administrator username for BPEL Process Manager as **oc4jadmin**.
3. Enter the password for the administrator as *welcome1*.
4. Enter the **Initial Context Factory** as **com.evermind.server.rmi.RMIInitialContextFactory**.
5. Enter the **Context Provider URL** as
opmn:ormi://<Application_Server_Host_Name>:6003:oc4j_soa/orabpel.

6. Leave the other fields blank and click on **OK**, as shown in the following screenshot:

Name	Value
Oracle Home	/u01/app/oracle/product/OracleHomes/soa
Username for BPEL Process Manager	oc4jadmin
Password for BPEL Process Manager	*****
Initial Context Factory	com.evermind.server.rmi.RMIInitialContextFactory
Context Provider URL	opmn:ormi://gcsoa.us.oracle.com:6003:oc4j_soa/ora
HTTPMachine Host name	
OPMN port number	
HTTP Port number	
URL filename	
Query parameters	
Use system default proxy	
Proxy host for the target	
Proxy port for the target	
Realm for Basic authorization	
Username for Basic authorization	
Password for Basic authorization	
Component that will start OC4J BPEL	
Internal Name for DMS and OPMN	OraBPEL
Host name	gcsoa.us.oracle.com
IAS name	soa.gcsoa.us.oracle.com
OC4J name	oc4j_soa

This concludes the discovery and configuration of the BPEL PM target deployed on Oracle Application Server.

Summary

Discovery is the first step to manage a target in the enterprise. Discovering and managing multiple targets from a single console is a powerful way to ramp up on new projects while maintaining a standardized management platform. This avoids hiring new administrators for new projects that increase the number of managed targets.

In this chapter, we looked at how to discover and configure the BPEL PM target.

These are mandatory steps to enable subsequent management tasks. We discovered the BPEL PM target indirectly by discovering the application server (in this case Oracle Application Server). Note that the discovery process is similar for discovering BPEL PM targets installed on WebLogic and WebSphere application servers. Detailed discovery information (including 10.2.0.4 patches) for WebLogic and WebSphere application server-based BPEL PM is listed in the following document on Oracle Technology Network:

http://download.oracle.com/docs/cd/B16240_01/doc/em.102/e12650/toc.htm.

The next few chapters will walkthrough hands-on exercises to set up and perform additional management tasks for the discovered BPEL PM target.

3

BPEL Process Monitoring

It is important to understand the complexity of a BPEL process that creates the additional need for active operational monitoring. BPEL processes are the new generation of workflow. They are SOA enabled, which means they orchestrate interactions between different systems using a common **Web Service Invocation Framework (WSIF)**. WSIF enables BPEL to build a façade to interact with any system that is Web service enabled. The Web service interactions are called "partner links" in the BPEL framework. This is quite powerful for orchestrating complex business processes that involve new and legacy systems. It provides IT with an automated framework for enterprise-wide business processes. Monitoring BPEL processes is important for business analysts and administrators to maintain business visibility and resolve problems quickly. This chapter talks about viewing deployed BPEL processes and their constituent partner links. Further, monitoring of BPEL processes and partner links using a combination of metrics and synthetic tests is covered.

Grid Control provides means to monitor critical BPEL processes, partner links, and Web services through service tests to determine availability and response time. Grid Control also provides a means of measuring critical metrics for actual requests initiated against each of the Web services deployed on the container. With a combined end-user and request perspective, Grid Control can determine the service availability of all monitored services.

- Challenges
- Solution
- Step-by-step exercises:
 - Navigating to the BPEL PM target home page
 - Navigating to the BPEL process home page
 - Creating the BPEL process aggregate service
 - Creating a SOAP test to monitor a partner link
 - Creating a SOAP test to monitor a BPEL process
 - Testing the SOAP tests

Challenges

Once BPEL processes are deployed into a staging, preproduction, or a production environment, administrators find it difficult to track the health of these key processes. There is a paucity of tools and operational skills in the BPEL area, so it becomes difficult to understand where to look, and what to look for, when faced with a problem. These processes frequently are the automated representation of critical business functions, and they are required to work as expected. Each process could spawn hundreds or thousands of instances daily. If any process is not performing as expected, in terms of availability or performance, the administrators need to step in and resolve the problem. Administrators are required to fix problems as soon as possible, and typically spend most time triaging the problem to understand potential root causes. Further, in most cases, end users report these problems, whether they are consumers via the Internet or key business partners. If that is the case, the enterprise has already lost revenue or credibility, or both.

Solution

Grid Control provides means to monitor critical BPEL processes, partner links, and Web services, through service tests to determine availability and response time. Grid Control also provides a means of measuring critical metrics for actual requests initiated against each of the Web services deployed on the container. Grid Control can determine the service availability of all monitored services by utilizing its active end-user monitoring capabilities.

Step-by-step exercises

This set of step-by-step exercises will walkthrough the discovery of a BPEL process home page, and setting up monitoring for the process and partner links.

Navigating to the BPEL PM target home page

Grid Control can monitor several types of targets. The first task is to get to the BPEL PM target home page. All the BPEL-specific monitoring views can be viewed from the target home page.

1. Navigate to the Grid Control home page.
2. In the **Target Search** region on the right, click on the **Search** dropdown.
3. Scroll down to locate and click on the **BPEL Process Manager target** type.
4. Click on the **Go** button.
5. A list of discovered BPEL Process Manager targets is displayed. Click on the one target name of choice. This takes you to the BPEL PM target home page.



If a single BPEL Process Manager target is discovered, the Go button will automatically take you to that target's home page.

Navigating to the BPEL process home page

The BPEL target home page is mainly an infrastructure view. There is a section within the target home page to view the list of BPEL processes and their monitoring metrics.

1. From the BPEL target home page, click on the Processes tab.



All the BPEL processes deployed on the server are discovered and displayed here. Note that the processes are displayed within the domain they are deployed in. Summary throughput process instance information is also displayed in the table. These metrics are gathered by default from the BPEL PM server at a preset polling frequency (collection interval). One can easily change the default polling frequency, as well as set thresholds for these out-of-the-box metrics so that alerts and notifications (with notification rules) can be fired.

Oracle Enterprise Manager (SYSMAN) - Oracle BPEL Process Manager: Oracle bpel - Mozilla Firefox

File Edit View History Delicious Bookmarks Tools Help

ORACLE Enterprise Manager 10g

Grid Control

Home Targets Deployments Alerts Compliance Jobs Reports

Hosts | Databases | Application Servers | Web Applications | Services | Systems | Groups | All Targets

Application Server: soa.gcssoa.us.oracle.com >

Oracle BPEL Process Manager: Oracle bpel

Page Refreshed Jun 17, 2008 4:57:48 PM EDT Refresh

Home Processes Performance Administration

Process List

List of processes for the BPEL PM instance. The partner link associated to a process can be viewed by selecting the BPEL process in the list. To manage a process or domain through the BPEL Console, select the process and click 'Launch BPEL Console'.

(View) (Launch BPEL Console)

Select Name	Lifecycle Stage	State	Error Instances Since Last Collection	Opened Instances Since Last Collection	Total Opened Instances	Closed Instances Since Last Collection	Total Closed Instances
▼ All BPEL Domains							
▼ default			0	0	2	0	879
DHLShipment(v.1.0)	Active	On	0	0	0	0	0
SelectManufacturer(v.1.0)	Active	On	0	0	0	0	435
SOAOrderBooking(v.1.0)	Active	On	0	0	2	0	443
TaskActionHandler(v.1.0)	Active	On	0	0	0	0	1
TaskManager(v.1.0)	Active	On	0	0	0	0	0

Home Processes Performance Administration

Done

Now: Mostly Sunny, 64° F Tue: 69° F Wed: 72° F

- Click on the BPEL process name under the default domain, for example **SOAOrderBooking(v1.0)**.



This is the individual BPEL process page. Note the process-specific instance throughput graph. At the bottom, note that all the partner links (at the bottom) for the BPEL process are discovered along with the port type, operation, and WSDL information.

Create the BPEL process aggregate service. Note that you need to create the BPEL Infrastructure Service before you attempt to create the BPEL process aggregate service. Instructions on doing this are provided in *Chapter 4*.

- From the BPEL process page, click on the **Create Service** button, as shown in the following screenshot:

General

Lifecycle: **Active**
 State: **On**
 Error Instances: 0 (since last collection)
 Version: **1.0**
 Deploy Time: **Thu Jun 19 13:43:12 EDT 2008**

Process Throughput

Graph showing throughput over time (Jun 21, 2008). Legend: Closed Instances Since Last Collection, Error Instances Since Last Collection, Opened Instances Since Last Collection.

Services

Provides details about the services that have been created for this Oracle BPEL Process.

[Create Service](#)

Name	Service Type	Status	Usage Alert	Performance Alert	Policy Violations
No items found					

Partner Links

Provides details about the partner links associated with the selected process. Add SOAP Test allows you to add SOAP tests for the selected partner link. To enable Add SOAP Test, create a service for this process.

[Add SOAP Test](#)

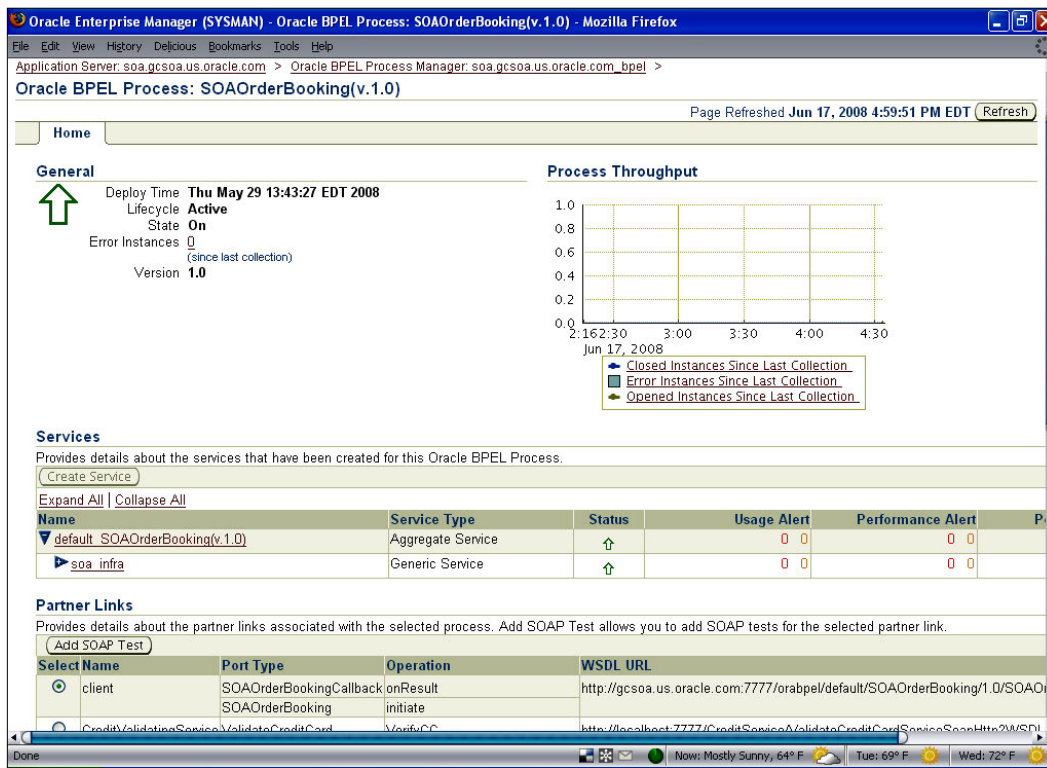
Select	Name	Port Type	Operation	WSDL URL
☒	client	LoanServiceCallback	onResult	http://gcsoa.us.oracle.com:7777/orabpel/default/UnitedLoan/v1.0/LoanService?wsdl
☐		LoanService	initiate	

Related Links

- Observe the confirmation message for the aggregate service creation.



The aggregate service that was created is listed under the **Services** section. The previously created infrastructure service has automatically been associated with the aggregate service. In the **Services** section, starting from the left, you see the service name, type of service, status, and other alerts. The top-level service is the aggregate service. The next service is the infrastructure service—a subservice of the aggregate.

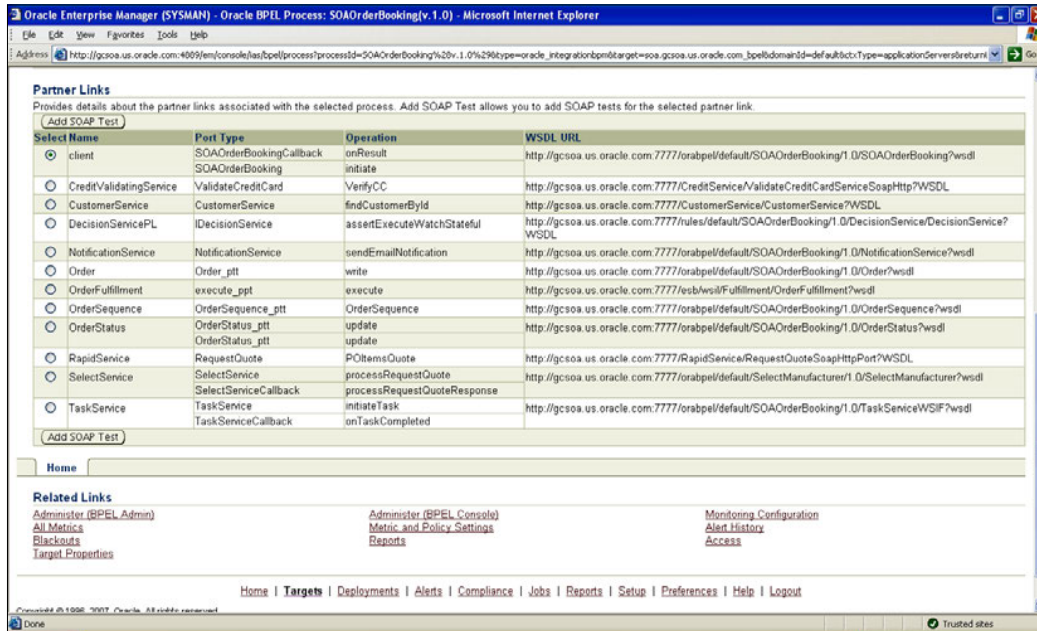


Creating a SOAP test to monitor a partner link

A synthetic transaction is a proactive way to emulate end user (or client) behavior and catch problems before the end user (or client). A BPEL process typically invokes one or more web services through a partner link framework, usually via SOAP. A synthetic check for testing the BPEL partner link availability and performance is a great way to uncover problems before the service consumers do.

1. Scroll down and select a partner link name from the radio button list, for instance, **SelectService**.

- Click on the **Add SOAP Test** button to create a SOAP test for that partner link.



- Enter the **SOAP Test Name** as **SelectService_test**.
- Enter the test interval for the **Collection Frequency (minutes)** as **15**.
- Select Web service port from the **Port Types** drop-down list as **SelectServiceCallbackPort**.
- Enter input parameters in the HTML input fields, for example, **SupplierPrice {String}** as **12345** and **SupplierName {String}** as **2**.
- Leave the **Basic Authentication Credentials** section empty.
- Click on **OK** to continue after the fields on the **Create SOAP Test** page are filled as shown in the following screenshot:

Oracle Enterprise Manager (SYSMAN) - Microsoft Internet Explorer

File Edit View Favorites Tools Help

ORACLE Enterprise Manager 10g Grid Control

Home Targets Deployments Alerts Compliance Jobs Reports

Hosts | Databases | Application Servers | Web Applications | Services | Systems | Groups | All Targets

Application Server: soa.qcsoa.us.oracle.com > Oracle BPEL Process Manager: soa.qcsoa.us.oracle.com bpej > Oracle BPEL Process: SOAOrderBooking(v.1.0) >

Create SOAP Test

Cancel OK

By default, Enterprise Manager Grid Control provides an auto-generated name for the SOAP Test that is being created. If you want to change its name, then modify the default name. The SOAP Test that is being created gets added to the same service that was created earlier for the first SOAP Test.

Service Name **SOAOrderBooking(v.1.0)_availability**

* SOAP Test Name

* Collection Frequency (minutes)

Port Types

Operations

Select one operation from the following list. These operations are supported and are exposed by the web service.

☒ processRequestQuoteResponse [void processRequestQuoteResponse(POItemsQuoteResponse)]

Input Parameters

Enter values for input parameters for the selected operation. You can also enter the pregenerated SOAP Envelope by selecting XML Source option.

☒ HTML Form ☐ XML Source

Parameter 1

POItemsQuoteResponse

return

SupplierPrice (String)

SupplierName (String)

Basic Authentication Credentials

These credentials will be used to make a HTTP call on the selected Web Service operation.

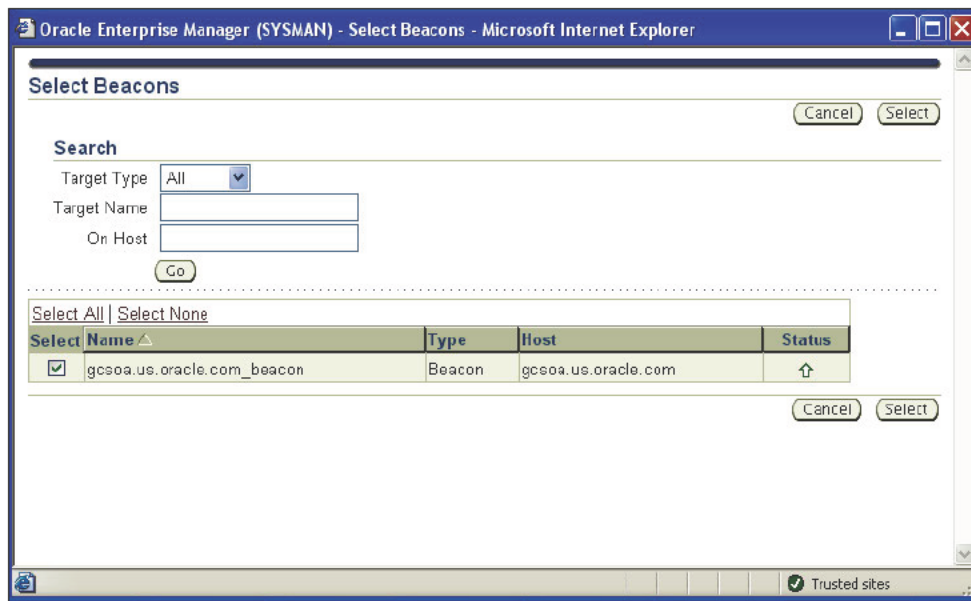
Realm

Done Trusted sites

9. Add a beacon. Click on the **Add** button.
10. From the pop-up window, check and select the available beacon(s), shown in the next screenshot:



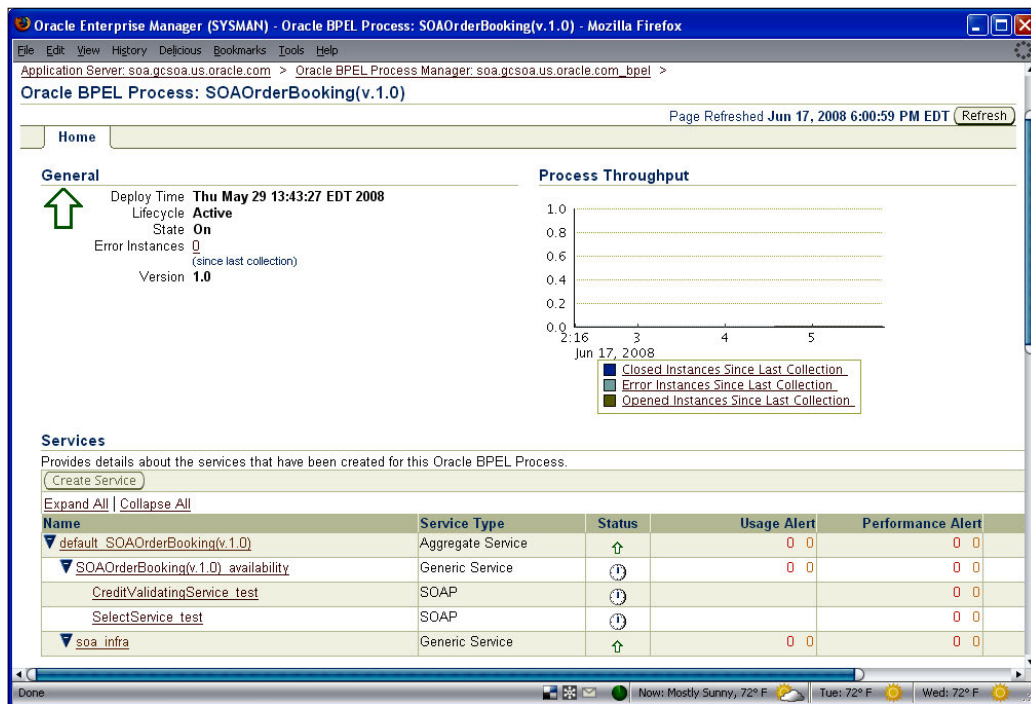
Beacons are agents that have been configured to issue synthetic tests to test websites, Web services, mail servers, FTP sites, and so on. A beacon is typically installed outside the firewall from a location where users access the website or Web service. A beacon thus "emulates" end user behavior and informs the administrator proactively about any problem with the website or Web service. You can read more about beacons and service management in the Grid Control documentation on the Oracle Technology Network—<http://otn.oracle.com>.



11. Click on **OK** to save the SOAP test and beacon settings.
12. Verify availability process creation and view SOAP test. On the BPEL process home page, note the availability Generic Service that was automatically created.
13. Expand the process availability service. For example, **SOAOrderBooking(v1.0)_availability** and verify that the SOAP test that you just created, for example **SelectService_test**, has been added.



The availability service for the BPEL process is formed when the first SOAP test is created. Note the status of each test, and how it is rolled up (configurable) to determine process availability. The status of the SOAP test will take some time to show up, based on the frequency set for the test.

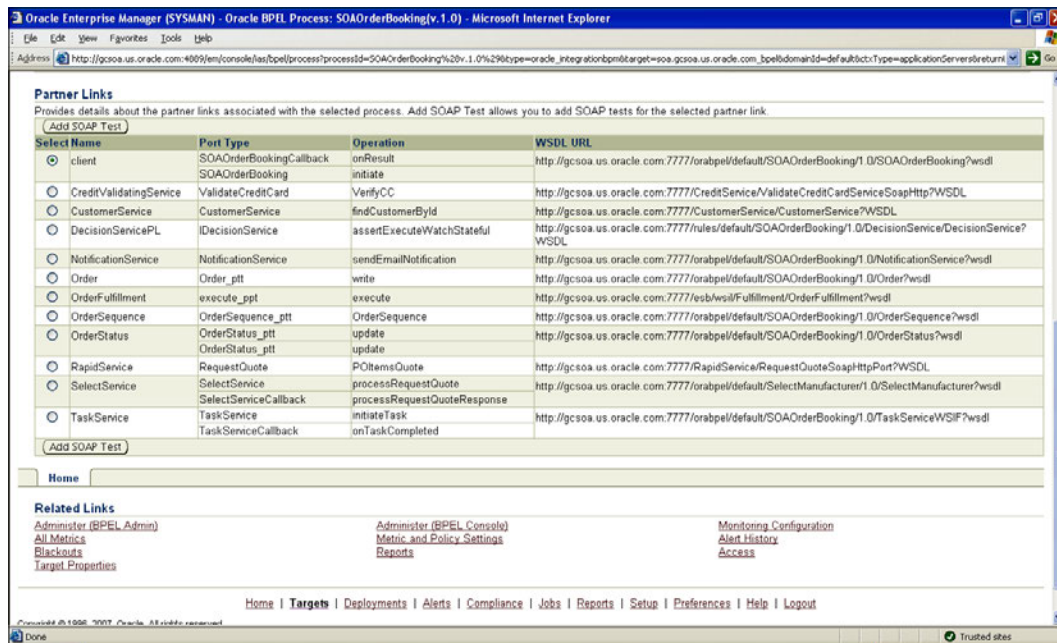


Creating a SOAP test to monitor a BPEL process

Similar to monitoring partner links through synthetic checks, the overall BPEL process can also be monitored in the same manner. A BPEL process is typically invoked by a SOAP client. This can be tested at a desired frequency to ensure that the BPEL process can be instantiated at all times by clients:

1. Go to the BPEL process home page.
2. Scroll down and locate the radio button for **client** in the **Partner Links** section.

- Click on **Add SOAP Test** to create a SOAP test for the client, as shown in the following screenshot:



- Select the desired port type as **SOAOrderBookingPort**.
- Select the radio button for the input parameters as **XML Source**.
- Enter the SOAP envelope, including any headers. You can copy this SOAP envelope from existing BPEL instances (from the BPEL Control). Copy and paste the SOAP payload provided in the input XML source.

Oracle Enterprise Manager (SYSMAN) - Microsoft Internet Explorer

Address: http://gcsoa.us.oracle.com:4009/em/console/les/bpel/createSoapTest?processId=SOAOrderBooking%2Bv.1.0%29type=oracle_integrationbpmltarget=soa.gcsoa.us.oracle.com_bpeldomainId=default&aggregateService=default...

Application Server: soa.gcsoa.us.oracle.com > Oracle BPEL Process Manager: soa.gcsoa.us.oracle.com_bpel > Oracle BPEL Process: SOAOrderBooking(v.1.0) >

Create SOAP Test

By default, Enterprise Manager Grid Control provides an auto-generated name for the SOAP Test that is being created. If you want to change its name, then modify the default name. The SOAP Test that is being created gets added to the same service that was created earlier for the first SOAP Test.

Service Name: **SOAOrderBooking(v.1.0)_availability**

SOAP Test Name:

Collection Frequency (minutes):

Port Types:

Operations

Select one operation from the following list. These operations are supported and are exposed by the web service.

☒ Initiate [void initiate(SOAOrderBookingProcessRequest)]

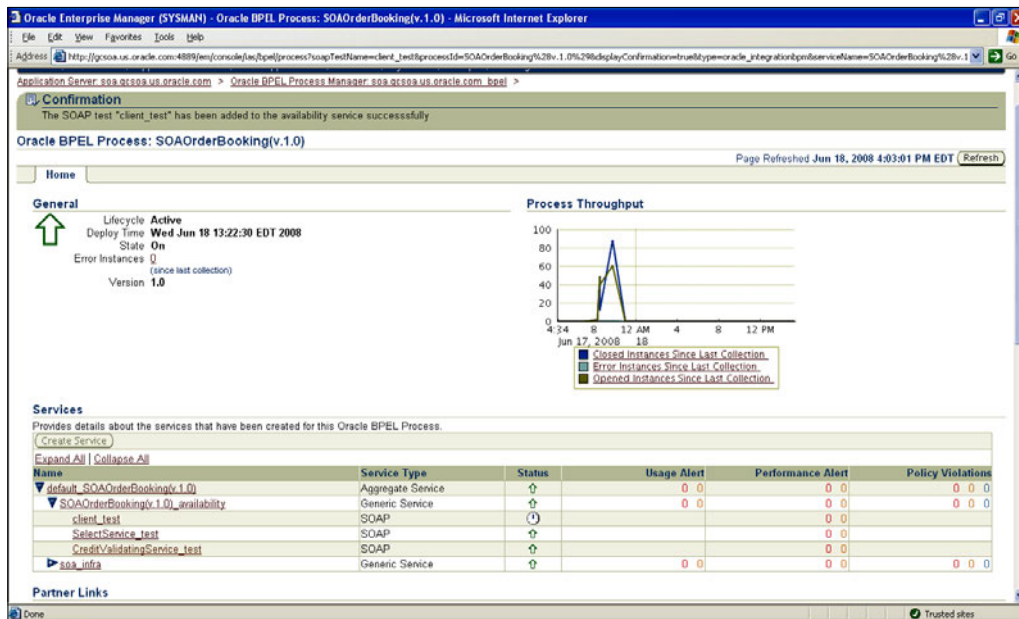
Input Parameters

Enter values for input parameters for the selected operation. You can also enter the pregenerated SOAP Envelope by selecting XML Source option.

☐ HTML Form ☒ XML Source

```
<?xml version='1.0' encoding='UTF-8' ?>
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Header/>
  <soap:Body xmlns:ns1="http://www.globalcompany.com/ns/OrderBooking">
    <ns1:SOAOrderBookingProcessRequest xmlns:ns2="http://www.globalcompany.com/ns/order">
      <ns2:PurchaseOrder xmlns:ns1="http://www.globalcompany.com/ns/order">
        <ns2:CustID>10</ns2:CustID>
        <ns2:ID>506</ns2:ID>
        <ns2:UserContact>
          <ns2:PhoneNumber>10000000000</ns2:PhoneNumber>
          <ns2:EmailAddress>sking@soademo.org</ns2:EmailAddress>
        </ns2:UserContact>
        <ns2:OrderItems>
          <ns2:Item>
            <ns2:ProductNames>Box 360 Video Game System</ns2:ProductNames>
            <ns2:itemType>Games</ns2:itemType>
            <ns2:partnum>218407</ns2:partnum>
            <ns2:price>299</ns2:price>
            <ns2:Quantity>1</ns2:Quantity>
          </ns2:Item>
        </ns2:OrderItems>
      </ns1:PurchaseOrder>
    </ns1:SOAOrderBookingProcessRequest>
  </soap:Body>
</soap:Envelope>
```

7. Click on **OK** to complete the creation of the client test.
8. Observe the confirmation message.
9. Expand the availability service to view the SOAP tests.



Testing the SOAP tests

There should be a way to track the historical availability and performance of SOAP tests and alert on any deviation from normal behavior via thresholds. When an alert is fired, the on-call person must test whether the reported problem is still in effect. Instantaneous on-demand testing is a great way to achieve this goal.

1. Click on one of the SOAP tests that you created. The test page shows the test availability, beacons that run this test, and alerts associated with this test. The following graph shows the test response times from the beacon:



2. Click on the **Verify Service Test** button.
3. Click on the **Perform Test** to run the test instantaneously and view the results.



One or more beacons could be used to test the service, potentially from multiple geographic locations that emulate the user base. This is useful for measuring availability and response time as experienced by the end user. It can be used proactively as well as reactively to replicate problems reported by users.



This concludes the step-by-step exercises to set up and view monitoring of BPEL processes from Grid Control.

Summary

Monitoring is key to guaranteeing the health of key business processes in the enterprise. In this chapter, we looked at how to monitor partner links and BPEL processes using synthetic tests. In particular, we looked at challenges related to monitoring BPEL processes, and the solutions provided by Grid Control.

We looked at the basic BPEL process monitoring provided out of the box. Further, we were able to set up specific proactive checks to test the availability and performance of BPEL processes. These synthetic checks had the ability to notify the administrator based on preset thresholds. Further the administrator had the capability to run these synthetic checks on-demand and view the results.

Proactive monitoring can avoid loss of credibility with end users who interact with these business processes. Sometimes everything might be working fine within the firewall, but end users are still unable to access these processes. In this scenario, it is imperative to have an agent sitting outside the firewall to ensure that user behavior can be replicated frequently, and administrators can be notified. In most cases, these agents notify the administrators before end users.

The next chapter will walkthrough hands-on exercises to set up and perform additional management tasks for the BPEL infrastructure, such as the BPEL Process Manager Server, application server, database, and host.

4

BPEL Infrastructure Management

BPEL installations involve several pieces of software. For a basic single node installation, there are four components. The first one is the dehydration database that persists the BPEL metadata and the BPEL instance information, including instances that are currently being executed ("in-flight" instances). The second component is the application server that provides the platform for BPEL. BPEL is supported on Oracle WebLogic Server, Oracle Application Server, IBM WebSphere, and JBoss. The application server consists of various components such as a **Java Virtual Machine (JVM)** and a web server. The latest certification of application server platform listing can be found here:

http://www.oracle.com/technology/software/products/ias/files/oracle_soa_certification_101310.html.

The third component is the BPEL PM server itself, which is fundamentally a Java application. This application is packaged with the Oracle Application Server as part of the SOA Suite installation. The last component is the hardware server and the operating system that hosts the application server and database.

Being an integration product, BPEL orchestrates services that reside on other infrastructure (different from its own infrastructure). This creates a nightmare for the administrators who are tasked with supporting BPEL orchestrations and failures associated with them.

Monitoring the BPEL and the extended infrastructure is important for IT to maintain visibility, get notified, and resolve problems quickly. This chapter talks about managing the BPEL infrastructure by monitoring, viewing configuration changes, and best practice policy violations. Specifically, this chapter talks about:

- Challenges
- Solution
- Step-by-step exercises:
 - Creating the BPEL infrastructure service
 - Viewing the BPEL infrastructure service
 - Viewing system alerts and policies
 - Viewing configuration changes
 - Viewing key system metrics
 - Viewing administration tasks
 - Viewing system components
 - Viewing the system dashboard

Challenges

Critical business processes can often go down due to a failure in a dependent infrastructure. Administrators find it hard to manage BPEL infrastructure along with other existing infrastructure systems. As a BPEL process dehydrates by storing state constantly in its database, any outages or performance problems in the database affect BPEL dehydration and rehydration. There are other infrastructure components such as web server, application server, and host that need to be functioning well for BPEL processes to run smoothly. An administrator who does not have BPEL knowledge or training may not understand what the critical infrastructure pieces are or how to manage them. Further best practices associated with the infrastructure components may not be known or difficult to implement. SOX and COBIT standards have become vital for IT administrators to not only be aware of, but also implement and monitor.

Solution

Grid Control monitors the availability of the BPEL infrastructure components. Both current and historic availability of targets (such as BPEL PM server) are recorded for troubleshooting and root cause analysis. The BPEL infrastructure system and service availability is also recorded. Administrators can be notified when any of the components go down, or troubleshoot after the fact via topology maps to understand which component was responsible for the service failure. By allowing administrators to "manage many-as-one", management of large numbers of components is significantly simplified. By combining BPEL-related targets in systems, administrators can benefit from a wealth of system management features, such as ability to proactively monitor availability through the System Monitoring Dashboard. Administrators can view operational best practice policy violations that help with SOX and COBIT compliance.

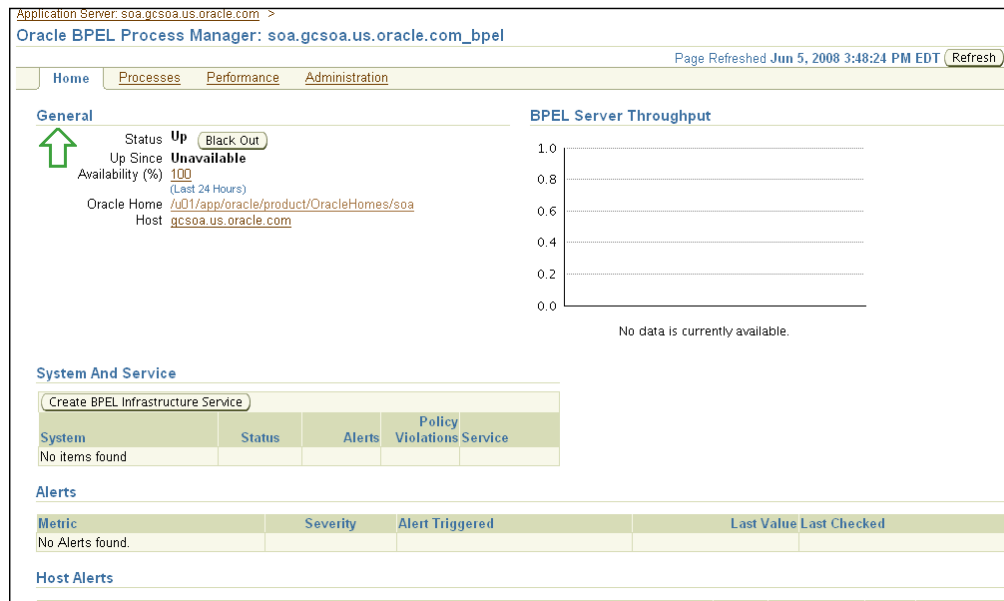
Step-by-step exercises

This set of step-by-step exercises will walkthrough the discovery of a BPEL process home page, and setting up monitoring for the process and partner links.

Creating the BPEL infrastructure service

Creating a logical representation of the infrastructure components is the first step to set up effective monitoring. Grid Control helps the administrator to understand the relationships between the infrastructure components.

1. From the BPEL target page, click on the **Create BPEL Infrastructure Service** button.



2. On the **Create Service** page, enter a **Service Name** and click on **OK**, as shown in the following screenshot:

ORACLE Enterprise Manager 10g

Grid Control

[Home](#) [Targets](#) [Deployments](#) [Alerts](#) [Compliance](#) [Jobs](#) [Reports](#) [Setup](#) [Preferences](#) [Help](#) [Logout](#)

[Hosts](#) | [Databases](#) | [Application Servers](#) | [Web Applications](#) | [Services](#) | [Systems](#) | [Groups](#) | [All Targets](#)

Create Service

Please provide a name for the System and Service.

[Cancel](#) [OK](#)

Specify a unique Name for the System and Service.

Application Name [soa.gcsoa.us.oracle.com_bpel](#)

OC4J Name [soa.gcsoa.us.oracle.com_oc4j_soa](#)

TIP By creating a service, you are checking for a service dependency to identify the infrastructure components on which the selected target depends. Once this is done, a system is automatically created with those components, and then a service is created and associated with the selected target. The system is assigned a default name that has the convention <servicename>_system.

[Cancel](#) [OK](#)

[Home](#) | [Targets](#) | [Deployments](#) | [Alerts](#) | [Compliance](#) | [Jobs](#) | [Reports](#) | [Setup](#) | [Preferences](#) | [Help](#) | [Logout](#)

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[About Oracle Enterprise Manager](#)

3. You should get a confirmation message. Click on **OK**.



Observe the newly created system and service, status of system and service, alerts, and policy violations.

Viewing the BPEL infrastructure service

Once the infrastructure service has been created, it's useful to view and understand the underlying components of the service.

1. Navigate to the BPEL target home page.
2. Under the **System and Service** section, click on **System**.

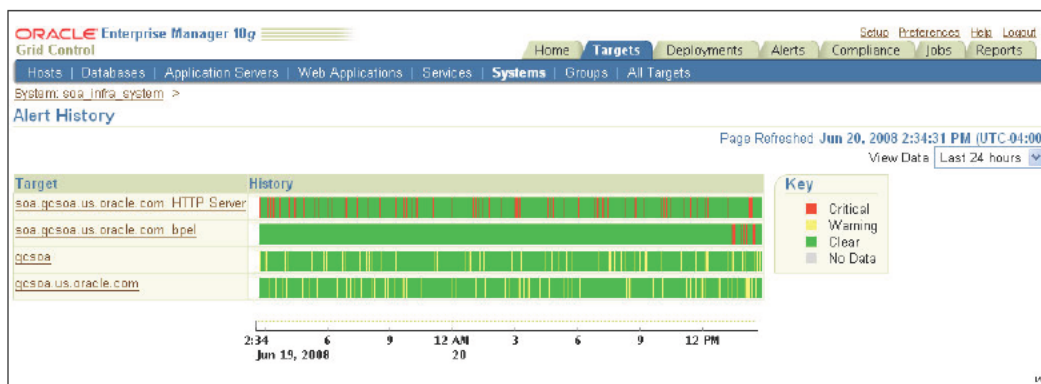


This is the System home page. Notice the pie chart that displays the status of the system components. Notice the alerts, policy violations, and security policy violations on the right. These have been rolled up for all the system components. Observe the services dependent on this system, their status, alerts, violations, and so on. At the bottom, observe the latest configuration changes for the system components.

Viewing system alerts and policies

Grid Control monitors individual system components and tracks all the alerts for the components, as well as different types of policy violations.

1. On the System home page, click on the **Alert History** button. Notice the warning and critical alert history for each system component.



2. Click on the **System** breadcrumb to go back to the System home page.
3. Click on a current **Critical** (red cross) or **Warning** (yellow triangle) number.

Oracle Enterprise Manager 10g
Grid Control

Home Targets Deployments Alerts Compliance Jobs Reports

Hosts Databases Application Servers Web Applications Services Systems Groups All Targets

System: soa_infra_system >

Status Report - Critical Alerts

Page Refreshed Jun 20, 2008 2:37:42 PM (UTC-04:00)

View Data Open Alerts

TIP Alerts are only listed for targets that are up.

Target	Type	Open Since	Message
soa.qcsoa.us.oracle.com_bpel	Oracle BPEL Process Manager	Jun 20, 2008 1:33:27 PM	Number of closed instances since last collection is 66
soa.qcsoa.us.oracle.com_HTTP Server	Oracle HTTP Server	Jun 17, 2008 2:07:39 AM	The percentage of requests that resulted in errors is 35.37%

4. Notice the alerts for the different target types. Notice the dropdown to view current alerts as well as historical ones.
5. View Policies (Best Practices) for the system.



An Enterprise Manager Policy is an operational best practice that ensures proper monitoring of Oracle targets based on Oracle best practices. An example of a database security policy is that the SYSTEM password must be changed every three months. If this is not done, the Agent will flag the database target(s) that violate this policy. There are over 300 policies for database, application server, and applications that are monitored by Grid Control out of the box. With Grid Control 10.2.0.5, custom policies can be added to the library and attached to targets as well.

6. Navigate to the System home page using the breadcrumb.
7. Under **Policy Violations** section, click on the **Violation count**.
8. Notice the different Oracle "best practice" violations for the system components.

Oracle Enterprise Manager (SYS...) Overview

Policy Violations

Violations Library Associations Errors

Advanced Search

Target Type is All Policy Rule contains

Target Name contains

Target Property Deployment Type

Member of is exactly soa_infra_system

Category is All

Severity is All

Most Recent Violation within Days

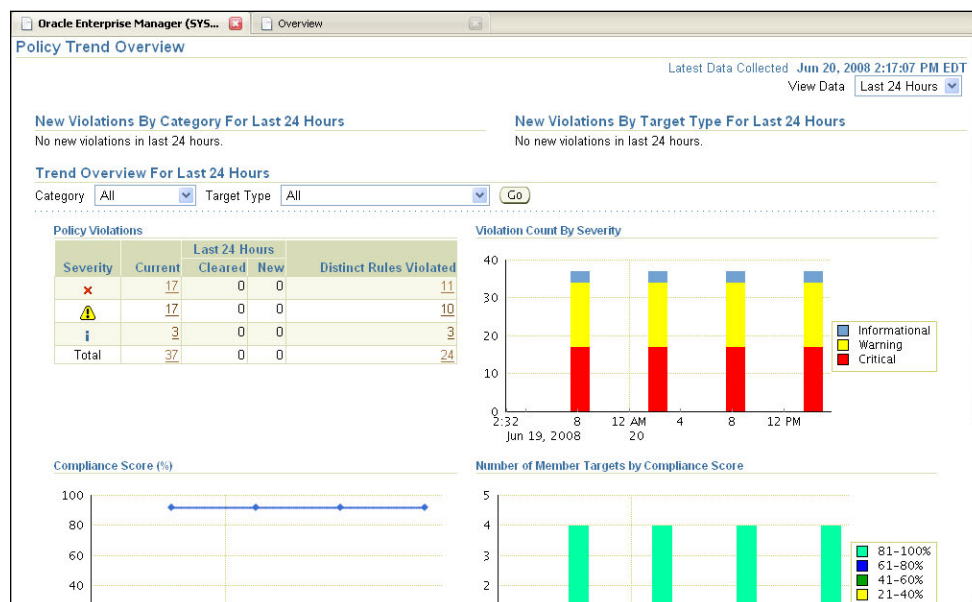
Non-Compliant for at least Days

☒ Ignore suppressed violations

Go Clear Simple Search

Severity	Violation Count	Policy Rule	Target	Type	Most Recent Violation	Category	Compliance Score (%)	Non-Compliant Since
✖	2	Password Complexity Verification Function Usage	qcssoa	Database Instance	May 30, 2008 8:35:40 PM EDT	Security	26	May 30, 2008 8:35:40 PM EDT
⚠	3	Default Passwords	qcssoa	Database Instance	May 30, 2008 8:35:40 PM EDT	Security	76	May 30, 2008 8:35:40 PM EDT
i	1	Installation of JAccelerator (NCOMP)	qcssoa	Database Instance	May 30, 2008 5:38:00 PM EDT	Configuration	97	May 30, 2008 5:38:00 PM EDT
⚠	1	Naming Database Links	qcssoa	Database Instance	May 30, 2008 5:13:01 PM EDT	Security	76	May 30, 2008 5:13:01 PM EDT
i	1	Enable Database Auditing	qcssoa	Database Instance	May 30, 2008 5:13:01 PM EDT	Security	97	May 30, 2008 5:13:01 PM EDT
⚠	1	Use of SQL92 Security Features	qcssoa	Database Instance	May 30, 2008 5:13:00 PM EDT	Security	76	May 30, 2008 5:13:00 PM EDT
⚠	1	Using Externally Identified Accounts	qcssoa	Database Instance	May 30, 2008 5:13:00 PM EDT	Security	76	May 30, 2008 5:13:00 PM EDT

9. Click on a **Policy Rule** to get further information on the "best practice".
10. Use the browser **Back** button twice to navigate to the System home page.
11. Under the **Policy Violations** section, click on **Policy Trend Overview**.
12. Notice the trend overview data for the three policy categories.



Viewing configuration changes

Grid Control collects configuration information for all its managed targets. This is a great asset for the administrator to understand and troubleshoot problems related to changes in the infrastructure.

1. Click on the *System* breadcrumb to go to the System home page.
2. Under the **Configuration Changes** section, click on **All Target Types**.
3. View the **Configuration History** section for all the system components.



Notice the changes across all the system components; drill down into specific target types to see the changes. There is a separate chapter on configuration management later.

Configuration History

Enterprise Manager automatically collects configuration information for targets such as hosts and databases. Changes to these configurations are recorded and may be viewed from this page. Page Refreshed Jun 20, 2008 4:13:30 PM EDT Search Using SQL

Category: All
Changing the category clears any existing results.

Search

Target Name: contains [] Change Discovered after: 6/12/08 (Example: 12/15/02) 12:00 AM PM
Target Property: Deployment Type [] Change Discovered before: (Example: 12/15/02) 12:00 AM PM
On Host: contains []
Member Of: is exactly soa_infra_system
Type of Change: is All
Go Clear

View History Records Show All Save to File

Previous 1-25 of 354 Next 25

Change Discovered	Target Name	On Host	Category	Key	Value	Descriptor
Jun 19, 2008 11:44:30 PM EDT	soa.qcsoa.us.oracle.com oc4j soa.qcsoa.us.oracle.com		OC4J Configuration Files	Name	\$ORACLE_HOME/j2ee/\$OC4J_NAME/config/default-web-site.xml	
Jun 19, 2008 11:44:30 PM EDT	soa.qcsoa.us.oracle.com oc4j soa.qcsoa.us.oracle.com		OC4J Configuration Files	Name	\$ORACLE_HOME/j2ee/\$OC4J_NAME/config/server.xml	
Jun 19, 2008 11:44:30 PM EDT	soa.qcsoa.us.oracle.com oc4j soa.qcsoa.us.oracle.com		OC4J Configuration Files	Name	\$ORACLE_HOME/j2ee/\$OC4J_NAME/config/wsrmgmt.xml	

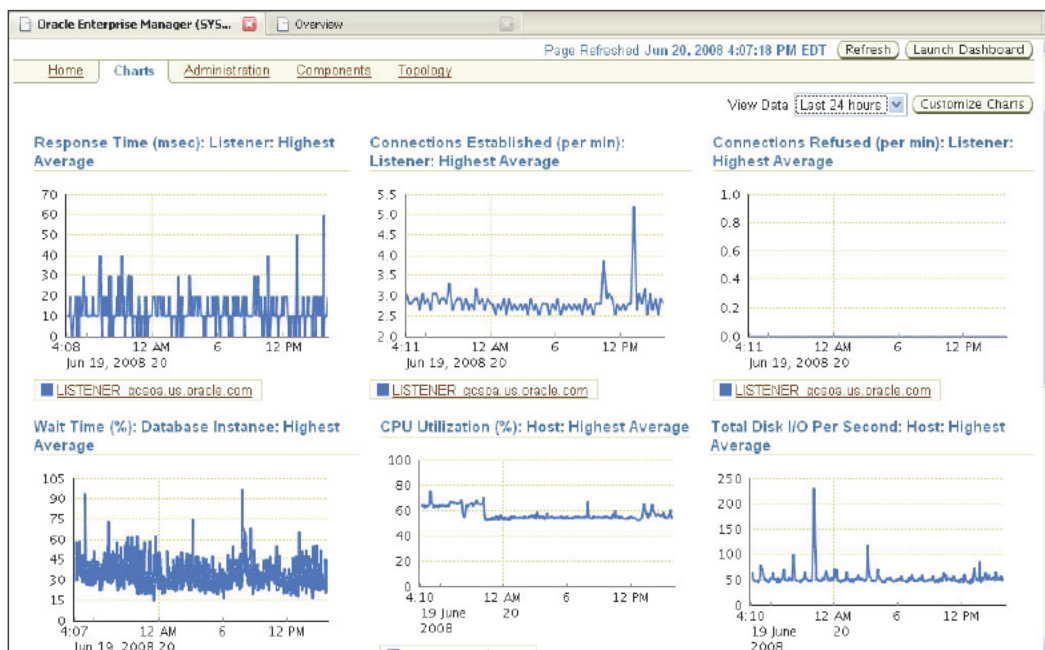
Viewing key system metrics

Grid Control's default system views capture the key metrics for the system and display it for the administrator.

1. Click on the **Back** button on your web browser to go to the System home page.
2. Click on the **Charts** sub-tab.



Note the key metrics for the system components graphed on this page. A dropdown is provided to change the time range of the graphs. The set of metrics to display on this page is configurable.



Viewing administration tasks

The administrator can launch several other administrative tasks from Grid Control.

1. Click on the **Administration** tab.



Notice the **Job Activity** for the system components, as well as other administration tasks that can be launched directly from this page.

Oracle Enterprise Manager (SYS) Overview

System: soa_infra_system

Page Refreshed Jun 20, 2008 4:09:19 PM EDT Refresh Launch Dashboard

Home Charts Administration Components Topology

Job Activity

Create Job Log Rotation Go

Job executions scheduled to start no more than 7 days ago

Status	Submitted to the System	Submitted to any member
Scheduled	0	0
Running	0	0
Suspended	0	0
Problem	0	3

Host Operations

Execute Host Command

Listener Operations

Start Stop View Configuration

Compare Target and Template Settings

There are no applicable templates for this System.

Blackouts

Create

Status	Submitted to the Group	Submitted to any Member
Scheduled	0	0
Active	0	0

Database Operations

Execute SQL Alert Log Content View Backup Report

Deployments Summary

View Database Installations

Database Installations	Targets	Installations	Interim Patches Applied
Oracle Database 10g 10.2.0.2.0	1	1	No

Viewing system components

Viewing the system components lets the administrator figure out what is part of the system, and what affects the overall availability of the system.

1. Click on the **Components** tab.



This page displays all the components of this system. An "and" or an "or" relationship between the system components availability determines the availability of the system itself.

ORACLE Enterprise Manager 10g
Grid Control

Home | **Targets** | Deployments | Alerts | Compliance | Jobs | Reports

Hosts | Databases | Application Servers | Web Applications | Services | Systems | Groups | All Targets

System: **soa_infra_system**

Page Refreshed Jun 20, 2008 2:31:13 PM EDT | Refresh | Launch Dashboard

Home | Charts | Administration | **Components** | Topology

Search: All [Go] Customize Columns

Name	Type	Status	Alerts	Policy Violations
gcsoa	Database Instance		0 5	11 13 3
gcsoa.us.oracle.com	Host		0 6	5 0 0
LISTENER gcsoa.us.oracle.com	Listener		0 0	1 4 0
soa.gcsoa.us.oracle.com bpel	Oracle BPEL Process Manager		1 1	0 0 0
soa.gcsoa.us.oracle.com home	OC4J		0 0	0 0 0
soa.gcsoa.us.oracle.com home JVM 1	OC4J JVM		0 0	0 0 0
soa.gcsoa.us.oracle.com HTTP Server	Oracle HTTP Server		1 0	0 0 0
soa.gcsoa.us.oracle.com oc4j soa	OC4J		0 0	0 0 0
soa.gcsoa.us.oracle.com oc4j soa JVM 1	OC4J JVM		0 0	0 0 0

Home | Charts | Administration | **Components** | Topology

Related Links

Access | Edit System | Reports

Target Properties

Home | **Targets** | Deployments | Alerts | Compliance | Jobs | Reports | Setup | Preferences | Help | Logout

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About Oracle Enterprise Manager

Viewing the system dashboard

The system dashboard is a useful tool for the network operation center analysts to see the current status of the system components and their key metrics.

1. Click on **Launch Dashboard** on the top right.



The system dashboard displays the status and key metrics of the system components at a glance. If there are any alerts, they are also displayed at the bottom. This is a useful view for an IT Manager who is interested in a summary view of key system components, their status, and downtime information.

ORACLE Enterprise Manager 10g
Grid Control

System: soa_infra_system Page Refreshed: Jun 20, 2008 4:05:16 PM EDT Refresh

Target	Type	Status	Alerts	Policy Violations
qcssoa.us.oracle.com	Host	↑	0	0
qcssoa	Database Instance	↑	0	11 13 2
soa.qcssoa.us.oracle.com:oc4j_soa	OC4J	↓	0	0
soa.qcssoa.us.oracle.com:HTTP_Server	Oracle HTTP Server	↑	0	0
soa.qcssoa.us.oracle.com:home	OC4J	↓	0	0
soa.qcssoa.us.oracle.com:bpel	Oracle BPEL Process Manager	↓	0	0
LISTENER_qcssoa.us.oracle.com	Listener	↑	0	1 4 0

Alerts 5 0 11

Previous 1-10 of 15 Next 5

Severity	Target	Date	Message	Latest Comment
↓	soa.qcssoa.us.oracle.com:bpel	Jun 20, 2008 3:48:15 PM	The BPEL instance is down.	: The following notifications will be sent: 1 e-mail messages
↓	soa.qcssoa.us.oracle.com:oc4j_soa_2/M_1	Jun 20, 2008 3:41:39 PM	OC4J J/M is down	
↓	soa.qcssoa.us.oracle.com:home_2/M_1	Jun 20, 2008 3:41:34 PM	OC4J J/M is down	
↓	soa.qcssoa.us.oracle.com:bpel	Jun 20, 2008 2:48:27 PM		
↓	qcssoa.us.oracle.com	Jun 19, 2008 2:50:51 PM	Memory Utilization is 81.12%, crossed warning (80) or critical (95) threshold.	
↓	qcssoa	Jun 16, 2008 5:22:44 PM	Metrics "Current Open Cursors Count" is at 1567.	
↓	qcssoa	Jun 11, 2008 12:45:05 AM	ORA-00904: invalid identifier 'C:\Program Files\Oracle\product\10.1.0.1\sql\bin\sqlplus.exe' loaded in	
↓	qcssoa	Jun 4, 2008 2:03:00 AM	1 job(s) are broken.	

Summary

Monitoring the BPEL infrastructure effectively is essential to the success of SOA projects. Enterprise Manager provides a way to monitor BPEL infrastructure components effectively with existing infrastructure components. We looked at the basic challenges, solution, and step-by-step exercises to address different areas. In particular, we created a BPEL infrastructure service and viewed the service, its underlying system and components, as well as alerts, metrics, and configuration changes. Finally, we viewed the systems components in a system dashboard.

Understanding the key components and creating a system to represent them is the first key step to enabling system management. This allows IT departments to monitor, manage changes, and implement best practice policies to comply with SOX and COBIT standards.

The next few chapters will walkthrough hands-on exercises to set up and perform additional service-level management tasks for the BPEL processes and BPEL infrastructure.

5

BPEL Service-Level Management

Service providers are faced with increasingly demanding consumers who want services that are faster, more available, and perform better. An increasing number of key business services such as e-mail, storage, servers, and databases are used as services, so that consumers do not have to worry about owning and maintaining the software and hardware. Consumers expect high availability and performance regardless of intranet or Internet services. A service downtime could prove detrimental through loss in revenues for the service provider and consumer, and a loss in credibility for both. Further, several service providers have to comply with IT frameworks such as **Information Technology Infrastructure Library (ITIL)**, **Control Objectives for Information and Related Technology (COBIT)**, and **Statement on Auditing Standards 70 (SAS 70)**. These frameworks demand that IT measure service availability and performance for auditing, contractual obligations, and customer satisfaction.

In an environment where services not only abound, but also interact with each other, it becomes a nightmare to govern service availability and quality. A BPEL environment involves several services that are being orchestrated. All the participating services need to be governed within the contractual terms of use. This is extremely important in business to business (or partner) contracts as well as business to consumer contracts. Most service providers have money-back guarantees in contracts that can be invoked by consumers if the quality of service falls beneath mutually agreed availability and performance expectations.

Monitoring BPEL processes and partner links with a common set of service-level expectations is important for IT to monitor service expectations, and resolve problems to ensure service-level agreements are met. This chapter talks about managing the BPEL process and partner link expectations by setting and monitoring service levels. Specifically, this chapter talks about:

- Challenges
- Solution
- Step-by-step exercises:
 - Viewing the BPEL process availability service
 - Adding service performance metrics
 - Setting service-level expectation (availability)
 - Viewing the service availability definition
 - Viewing the BPEL infrastructure service
 - Adding infrastructure performance metrics
 - Adding infrastructure usage metrics
 - Setting service-level expectation (infrastructure)
 - Viewing the infrastructure availability definition
 - Viewing the BPEL process aggregate service
 - Viewing the aggregate service availability definition
 - Adding aggregate service performance and usage metrics
 - Setting service-level expectation (aggregate service)

Challenges

In an increasingly service-oriented environment, service and system availability and response times have a direct and tangible impact on the provider's and consumer's bottom line. BPEL business processes, online banking, online store, and online stock trading are all examples of business applications that need to be monitored and available to partners and end-users. Typically, when any of these services are being used, some common problems faced by the administrators are:

- Guaranteeing availability of a service
- Performance of the service and whether it meets the expectations of the end users

Poor application and infrastructure performance can result in costs to your business, which may include the loss of customer loyalty and sales opportunities.

Solution

Grid Control solves these issues by automatically defining one or more service models that represent the business processes that run in an enterprise. Automated service models overlying business processes are created when one or more service tests (SOAP tests) for partner links are created. Using these service tests (that simulate end-user functionality), administrators can measure the performance and availability of critical partner links or external Web services, receive alerts when there is a problem, identify common issues, and diagnose causes of failures. Monitoring a service helps you ensure that the operational goals and service-level agreements are met.

Step-by-step exercises

This set of step-by-step exercises will walkthrough setting service levels for the BPEL process, and setting up availability and performance metrics to monitor the service levels for the BPEL process and associated availability, infrastructure, and aggregate services. Some key service definitions are listed:

- **Generic Service:** This is a Grid Control representation of any service that is provided to a consumer. There are special services for web applications. For Web services and BPEL processes, the Generic Service is used as a wrapper in order to inherit the Grid Control service capabilities.
- **Availability Service:** This is the representation of a BPEL process in Grid Control to measure the operational availability and response time of the process. Further service level goals can be set and measured at the service level.
- **System:** This is a group of related infrastructure components such as database, application server, JVM, BPEL PM, and so on.
- **Infrastructure Service:** This models the system into a service representation so that service level goals can be set and measured for the overall system.
- **Aggregate Service:** This is a higher-level service that consists of one or more Generic Services.
- **Service-Level Agreement (SLA):** This is the contractual agreement between a provider and a consumer. Typically, it consists of an availability (for example, 99.99% service uptime per quarter) and performance (for example, Login page should return under three seconds) metrics. Frequently, there are money-back guarantees in the SLA contracts, which can be invoked by the consumer when faced with poor service availability and performance.

- **Service Test:** A Grid Control service can be tested for availability and performance using synthetic checks that emulate end users. As the SLAs are typically measured from a end-user perspective, service tests are extremely useful and used extensively for SLAs.

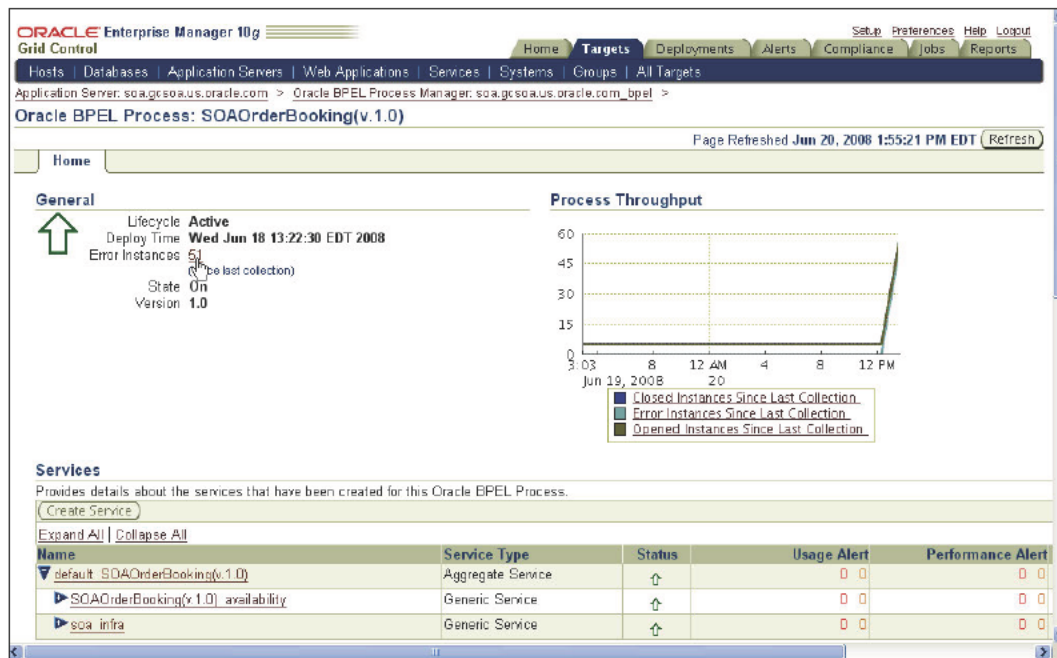
Viewing the BPEL process availability service

Grid Control creates an internal service representation of a BPEL process automatically. This is useful because normal Grid Control service functionality can be applied. The first step is to navigate to the BPEL process availability service:

1. From the BPEL target page, click on the **BPEL Processes** tab.
2. Click on the BPEL process name <process_name> under the default domain, that is, **SOAOrderBooking(v1.0)**.



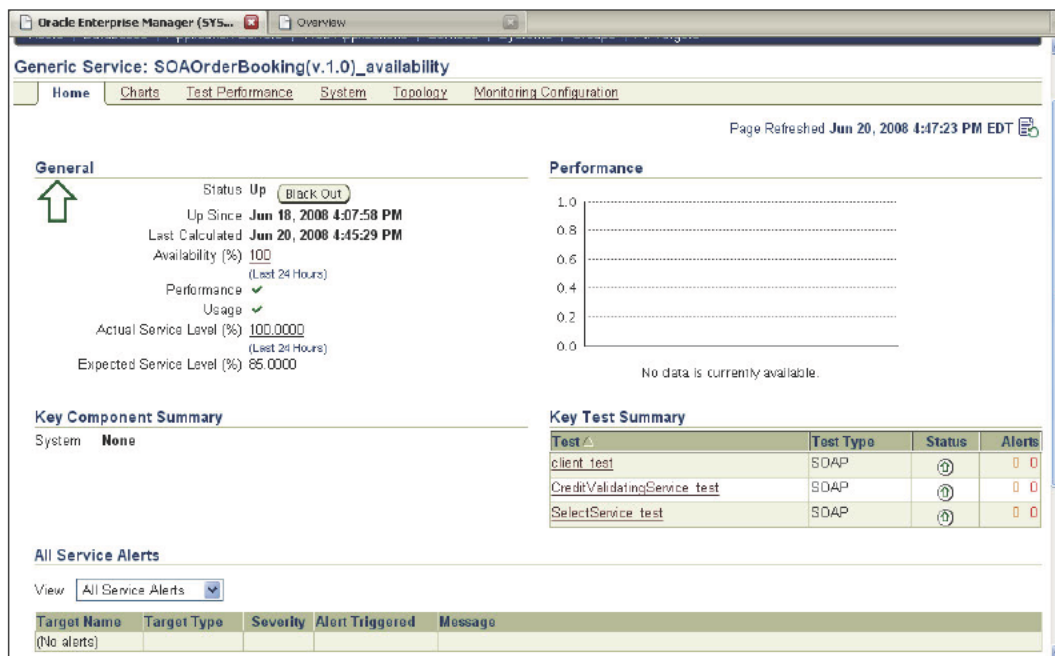
The Aggregate Service, Availability Service, Generic Service, and the Infrastructure Service may already have been created. If not, please follow the steps in prior chapters to create these services.



- Click on the <process_name_availability> service name—**SOAOrderBooking(v1.0)_availability**.



This is the service home page. Notice the **Availability (%)** for the past 24 hours, the **Actual Service Level (%)**, and the **Expected Service Level (%)** for this service. Notice the **Key Test Summary** details for this service. The SOAP tests that were instrumented in a prior chapter show up here.



Adding service performance metrics

A Grid Control service can not only be measured on availability but also on performance. Performance metrics such as response time are useful to measure and alert on (based on thresholds), so the operational staff gets alerted before consumers complain.

- On the service home page, click on **Monitoring Configuration** tab.
- Click on the **Performance Metrics** link.
- Add a performance metric based on service test, and click on **Go**.

- For each **Service Test** in the first dropdown, pick the **Response Time (ms)** as metric from the second dropdown, as shown in the following screenshot:

The screenshot shows the Oracle Enterprise Manager 10g interface. The breadcrumb trail is: Generic Service: SOAOrderBooking(v.1.0)_availability > Performance Metrics >. The dialog title is "Add Performance Metric based on Service Test". It contains the following fields and options:

- Service Test:** CreditValidatingService_test
- Test Type:** SOAP
- Metric:** A dropdown menu with "Status" selected. A secondary dropdown menu is open, showing "Response Time (ms)" as the selected option.
- Beacons:** A list of beacons with checkboxes. The first beacon, "gcsoa.us.oracle.com_beacon", is checked.
- Aggregate Function:** Maximum
- Buttons:** "Cancel" and "Continue" at the top right and bottom right.

At the bottom of the window, there is a copyright notice: "Copyright © 1996, 2007, Oracle. All rights reserved. Oracle, JD Edwards, PeopleSoft, and Retek are registered trademarks of Oracle Corporation and/or its affiliates. Other names may be trademarks of their respective owners. About Oracle Enterprise Manager".

- Click on **Continue**.
- Edit the metric name from **Service_Test Response Time (ms)** to **Credit Validating Response Time (ms)**.
- Enter a **Warning Threshold** and **Critical threshold** time in ms, that is, **3000** and **5000** respectively. Click on **OK**, as shown in the following screenshot:

The screenshot shows the Oracle Enterprise Manager 10g Grid Control interface. The breadcrumb trail is: Home > Targets > Deployments > Alerts > Compliance > Jobs > Reports. The selected target is 'Generic Service: SOAOrderBooking(v1.0)_availability'. The page title is 'Performance Metrics'. Below the title, there is a text box with instructions: 'Define the metrics used to measure your service's performance. Performance metrics are based on either the service test or the system. Once you've added metrics, you can define thresholds, which, when exceeded, will generate alerts. You can also select the metric whose graph you want to show in the Home Page for this service.' Below this, there is a table with columns: 'Select Metric Name', 'Comparison Operator', 'Warning Threshold', and 'Critical Threshold'. The table contains one row: 'Credit Validating Response Time (ms)', '>', '3000', and '5000'. Below the table, there is a section 'Chart on Home Page' with a dropdown menu set to 'Response Time (ms)'. At the bottom, there is a footer with copyright information and links to 'Home', 'Targets', 'Deployments', 'Alerts', 'Compliance', 'Jobs', 'Reports', 'Setup', 'Preferences', 'Help', and 'Logout'.

8. Redo steps 3-7 to add performance metrics for the other service tests' response times if needed.

Setting service-level expectation (availability)

For service providers, Grid Control provides a way to set service-level expectations and measure against those expectations. A service-level expectation can be defined in terms of availability and performance yardsticks over a range of time.

1. From the **Related Links** section at the bottom, click on **Edit Service Level Rule**.
2. Change the **Expected Service Level** from the default value to the value that is required for this service, that is, **99.0**.
3. Observe the default values in the **Actual Service Level** section.
4. Within the **Business Hours** section, change **Start Time** and **End Time** to the required business window that has been discussed with, or is expected by, consumers; for example, **Start Time 08:00** and **End Time 18:00**.
5. Change the default **Availability Criteria** to conform to the business standard. Think about scheduled downtimes (blackout) and whether they are considered as up time for calculations.

6. Under **Performance Criteria**, select one or more metrics from **Available Performance Metrics**.
7. Click on **OK**, as shown in the following screenshot:

The screenshot shows the 'Edit Service Level Rule' dialog box. At the top, there's a breadcrumb trail: 'Hosts | Databases | Application Servers | Web Applications | Services | Systems | Groups | All Targets'. Below that, it says 'Generic Service: BOAOrderBookingV1.0_availability >'. The main title is 'Edit Service Level Rule'. A description states: 'Service Level is a measure of service quality. Service Level is calculated as percentage of time during business hours a service meets specified availability and performance criteria. The actual Service Level will be calculated for different time periods, but the same criteria will apply for all these time periods.' There are 'Cancel' and 'OK' buttons. The 'Expected Service Level' is set to '99.0'. The 'Actual Service Level' section has a 'Business Hours' subsection with checkboxes for days of the week (Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday) and time slots (Start Time: 08:00, End Time: 18:00, Service Time Zone: (UTC-05:00) US Eastern Time (EST)). The 'Availability Criteria' subsection has checkboxes for 'Up', 'Under Blackout', and 'Unknown (Pending, Agent Unreachable, Metric Error)'. The 'Performance Criteria' subsection has two lists: 'Available Performance Metrics' and 'Selected Performance Metrics'. The 'Selected Performance Metrics' list contains 'Select Service Response Time (ms)', 'Client Response Time (ms)', and 'Credit Validating Response Time (ms)'.

Viewing the service availability definition

The availability definition can be defined based on one or more key tests, such as login test and a response time test. It depends on the contract between provider and consumer. Grid Control is flexible to let the provider code in any formula based on the contractual requirements.

1. Click on the **Monitoring Configuration** tab.
2. Click on **Availability Definition**.

 Note the basis for determining availability based on service tests. By default, all service tests are set to "key" service tests. A "key" test is used to determine availability. Non-key test data is also collected historically, but is not used for availability determination.

3. Click on **Cancel**.

Viewing the BPEL infrastructure service

The BPEL infrastructure service encapsulates the infrastructure components that are required for BPEL processes to run.

1. Click on the **Target Services** tab.
2. Locate the infrastructure service (generic service) created in a previous chapter.
3. Click on the infrastructure service to go to the service home page.

Generic Service: soa_infra

Home Charts Test Performance System Topology Monitoring Configuration

Page Refreshed Jun 21, 2008 12:43:18 AM GMT

General


 Status **Up** Black Out
 Up Since Jun 20, 2008 5:17:52 PM
 Last Calculated Jun 20, 2008 5:41:55 PM
 Availability (%) **80.7**
 (Last 24 Hours)
 Performance 
 Usage 
 Actual Service Level (%) **80.7106**
 (Last 24 Hours)
 Expected Service Level (%) 85.0000

Key Component Summary

System **soa_infra_system** (Topology)
 Status  **9**
 Alerts  **1**  **11**

Key Test Summary

Test	Test Type	Status	Alerts
No Test Defined.			

All Service Alerts

View All Service Alerts

Target Name	Target Type	Severity	Alert Triggered	Message
(No alerts)				

Home Charts Test Performance System Topology Monitoring Configuration

Related Links

[Access](#)
[Alert History](#)
[All Metrics](#)

Adding infrastructure performance metrics

Not only are service test metrics important, but infrastructure metrics can also be used to represent service disruptions.

1. Click on the **Monitoring Configuration** tab.
2. Click on the **Performance Metrics** link.

3. As shown in the next screenshot, for the default performance metrics already listed, enter **Warning Threshold** and **Critical Threshold** for some of these metrics as follows :
- **OC4J Instance - Request Processing Time (seconds):** 3 and 5
 - **Number of Transactions (per second):** 20 and 50
 - **Highest number of active threads [default]:** 5 and 10
 - **CPU Utilization (%):** 80 and 95
 - **Average Synchronous Process Latency (msecs) [default]:** 3000 and 5000
 - **Average Asynchronous Process Latency (msecs) [default]:** 3000 and 5000

Grid Control

Home Targets Deployments Alerts Compliance Jobs Reports

Hosts Databases Application Servers Web Applications Services Systems Groups All Targets

Generic Service: soa_infra >

Performance Metrics

Define the metrics used to measure your service's performance. Performance metrics are based on either the service test or the system. Once you've added metrics, you can define thresholds, which, when exceeded, will generate alerts. You can also select the metric whose graph you want to show in the Home Page for this service.

Cancel OK

Select	Metric Name	Comparison Operator	Warning Threshold	Critical Threshold
☒	SQL Response Time (%)	>		
☐	OC4J Instance - Request Processing Time (seconds)	>	3	5
☐	OC4J Instance - Heap Usage (MB)	>		
☐	Number of Transactions (per second)	>	20	50
☐	JMS - Messages Dequeued Rate (per second)	>		
☐	Highest number of active threads[default]	>	5	10
☐	Free Memory (%)	>		
☐	CPU Utilization (%)	>	80	95
☐	Average Synchronous Process Latency (msecs)[default]	>	3000	5000
☐	Average Asynchronous Process Latency (msecs)[default]	>	3000	5000

Delete Edit Add Based on System Go

4. Change the chart on home page dropdown to show CPU utilization.
5. Click on **OK** and click on **Yes** on the confirmation screen.

Adding infrastructure usage metrics

Usage metrics are not counted toward availability, but are useful to evaluate the growth of a service. Performance and usage are usually indicators that are viewed side by side.

1. Click on the **Usage Metrics** link.
2. For the default **Usage Metrics** already listed, enter **Warning Threshold** and **Critical Threshold** for some of these metrics as follows:
 - **Opened Instances Since Last Collection [default]: 20 and 50**
 - **OC4J Instance - Active Sessions: 5 and 10**
 - **OC4J Instance - Active Requests: 20 and 50**
 - **Closed Instances Since Last Collection [default]: 20 and 50**
3. Change the chart on home page dropdown to show **OC4J Instance - Active Requests**, as shown in the following screenshot:

ORACLE Enterprise Manager 10g
Grid Control

Home **Targets** Deployments Alerts Compliance Jobs Reports

Hosts | Databases | Application Servers | Web Applications | Services | Systems | Groups | All Targets

Generic Service: soa_infra >

Usage Metrics Cancel OK

Usage metrics measure user demand for your service. You can define usage metrics based on the metrics of one or more system components. Once you've added metrics, you can define thresholds, which, when exceeded, will generate alerts. You can also select the metric whose graph you want to show in the Home Page for this service.

Select Metric Name	Comparison Operator	Warning Threshold	Critical Threshold
☒ Opened Instances Since Last Collection [default]	>	20	50
☐ OC4J Instance - Active Sessions	>	5	10
☐ OC4J Instance - Active Requests	>	20	50
☐ Closed Instances Since Last Collection [default]	>	20	50

Chart on Home Page: OC4J Instance - Active Requests

Cancel OK

Home | **Targets** | Deployments | Alerts | Compliance | Jobs | Reports | Setup | Preferences | Help | Logout

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4. Click on **OK** and click on **Yes** on the confirmation screen.

Setting service-level expectation (infrastructure)

Similar to how expectations for a service can be set and measured, an expectation and measurement can also be done for a collection of logical infrastructure components.

1. From the **Related Links** section at the bottom, click on **Edit Service Level Rule**.
2. Change the **Expected Service Level** from the default value to the value that is required for this service, that is, **99.0**.
3. Observe the default values in the **Actual Service Level** section.
4. Within the **Business Hours** section, change the start and end time to the required business window that has been discussed with, or is expected by consumers; for instance, **Start Time** as **08:00** and **End Time** as **18:00**.
5. Change the default **Availability Criteria** to conform to the business standard. Think about scheduled downtimes (blackout) and whether they are considered as up time for calculations.
6. Under **Performance Criteria**, select one or more metrics from **Available Performance Metrics**.
7. Refer to the following screenshot for the preceding steps and click on **OK**.

Generic Service: soa_infra >
Edit Service Level Rule

Service Level is a measure of service quality. Service Level is calculated as percentage of time during business hours a service meets specified availability and performance criteria. The actual Service Level will be calculated for different time periods, but the same criteria will apply for all these time periods. Cancel OK

Expected Service Level
 Specify the percentage of time during business hours that you expect your service to meet the availability and performance criteria described below.
 Expected Service Level

Actual Service Level

Business Hours
 Days: ☒ Monday ☒ Tuesday ☒ Wednesday ☒ Thursday ☒ Friday ☐ Saturday ☐ Sunday
 Start Time : End Time :
 Service Time Zone **(UTC+00:00) (GMT)**

Availability Criteria
 For Service Level calculations, specify the availability states during which the Service will be considered UP.
☒ Up ☐ Under Blackout
☒ Unknown (Pending, Agent Unreachable, Metric Error)

Performance Criteria
 Optionally select performance metrics that will be evaluated when computing Service Level. A critical alert on any of the selected metrics will count as a Service Level violation.

Available Performance Metrics

- Average Asynchronous Process Latency (msecs)[default]
- Number of Transactions (per second)
- Average Synchronous Process Latency (msecs)[default]
- Free Memory (%)
- JMS - Messages Dequeued Rate (per second)
- OC4J Instance - Heap Usage (MB)
- SQL Response Time (%)

Selected Performance Metrics

- CPU Utilization (%)
- Highest number of active threads[default]
- OC4J Instance - Request Processing Time (seconds)**

Move Move All Remove

Viewing the infrastructure availability definition

This is similar to viewing the definition for the service availability except the underlying component availability is used to measure availability rather than service tests.

1. Click on the **Monitoring Configuration** tab.
2. Click on the **Availability Definition**.



Note the basis for determining availability based on system components. By default, all components are set to "key" components. A "key" component is used to determine availability. Non-key component data is also collected historically, but is not used for availability determination.

Availability Definition

You can define the service's availability based on either the execution of the service test by the key beacons or the availability of key components in the system. Cancel OK

Define availability based on: System

☒ All key components are up
☐ At least one key component is up

▶ **Service Tests**

▶ **Beacons**

▼ **System**

Component	Type	Key Component
soa.gcsoa.us.oracle.com_oc4j_soa_JVM_1	OC4J JVM	☒
soa.gcsoa.us.oracle.com_oc4j_soa	OC4J	☒
soa.gcsoa.us.oracle.com_home_JVM_1	OC4J JVM	☒
soa.gcsoa.us.oracle.com_home	OC4J	☒
soa.gcsoa.us.oracle.com_bpel	Oracle BPEL Process Manager	☒
soa.gcsoa.us.oracle.com_HTTP Server	Oracle HTTP Server	☒
gcsoa.us.oracle.com	Host	☒
gcsoa	Database Instance	☒
LISTENER_gcsoa.us.oracle.com	Listener	☒

Related Links

[Service Tests and Beacons](#)
[System Configuration](#)

Cancel OK

3. Click on **Cancel**.

Viewing the BPEL process aggregate service

The aggregate service is a collection of the availability service and the infrastructure service. When many services are present in the enterprise, this logical grouping makes it easy to view and monitor these services.

1. Click on the **Target | Services** tab.
2. Locate the aggregate service created earlier.
3. Click on the aggregate service to go to the service home page.

Aggregate Service : default_SOAOrderBooking(v.1.0) Page Refreshed Jun 20, 2008 9:18:27 PM EDT

Home Charts Topology

General

 Status **Up** (Black Out)
 Up Since Jun 20, 2008 8:17:52 PM
 Last Calculated Jun 20, 2008 9:17:03 PM
 Availability (%) 80.3 (Last 24 Hours)
 Performance 
 Usage 
 Actual Service Level (%) 80.3000 (Last 24 Hours)
 Expected Service Level (%) 85.0000

Subservices

Name	Type	Status	Performance Alerts	Usage Alerts	Policy Violations	System	
						Name	Key Components
default_SOAOrderBooking(v.1.0)	Aggregate Service	(U)	0 0	0 0	0 0 0	n/a	n/a n/a
SOAOrderBooking(v.1.0) availability	Generic Service	(U)	0 0	0 0	0 0 0	n/a	n/a n/a
soa_infra	Generic Service	(U)	0 0	0 0	0 0 0	soa_infra system	↓ 0 ↑ 9 1 13

Alerts

View: All Alerts

Target Name	Target Type	Severity	Alert Triggered	Message
No alerts found				

Home Charts Topology

Viewing the aggregate service availability definition

The availability definition for the aggregate service depends on the underlying component services.

1. Under **Related Links** at the bottom, click on **Edit Service**.



Notice the dependency of this aggregate service on the subservices. Notice the availability definition based on an AND relationship of the two subservices.

Adding aggregate service performance and usage metrics

The underlying service metrics can be promoted to the Aggregate Service level to ensure that the key metrics are visible for network operations control administrators, as well as executives.

1. Click on the **Performance** tab within **Edit Service** mode.
2. Click on the **Add** button to promote subservice metrics.
3. Select the **Based on statistical aggregate from multiple services** option.
4. Set the **Function** dropdown to **Maximum**.
5. Add rows for the **Subservice**, that is, **SOAOrderBooking(v.1.0)_availability (Generic Service)**.
6. Select **Metric Name** for the selected **Subservice** metrics as shown in the following screenshot; for example, **Client Response Time (ms)**, **Select Service Response Time (ms)**, and **Credit Validating Response Time (ms)**.

ORACLE Enterprise Manager 10g

Grid Control

Home | **Targets** | Deployments | Alerts | Compliance | Jobs | Reports

Hosts | Databases | Application Servers | Web Applications | Services | Systems | Groups | All Targets

Aggregate Service: default_SOAOrderBooking(v.1.0) > Edit Aggregate Service: default_SOAOrderBooking(v.1.0) >

Add Performance Metric

Cancel Continue

Metric Definition

Define the metric used to measure performance for this service by choosing an available metric from one subservice, or by aggregating metrics from multiple subservices using a function.

☐ Based on component metric from a single subservice

Subservice: SOAOrderBooking(v.1.0)_availability (Generic Service) ▼

Metric: Client Response Time (ms) ▼

☒ Based on statistical aggregate from multiple subservices

Function: Maximum ▼

Define a performance metric for this service by statistically combining any set of metrics from subservices.

Subservice	Metric Name	Remove
SOAOrderBooking(v.1.0)_availability (Generic Service) ▼	Client Response Time (ms) ▼	Remove
SOAOrderBooking(v.1.0)_availability (Generic Service) ▼	Select Service Response Time (ms) ▼	Remove
SOAOrderBooking(v.1.0)_availability (Generic Service) ▼	Credit Validating Response Time (ms) ▼	Remove

Add Another Row

Cancel Continue

Home | **Targets** | Deployments | Alerts | Compliance | Jobs | Reports | Setup | Preferences | Help | Logout

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7. Click on **Continue**.
8. Edit the **Metric Name** to an appropriate name, that is, **Avg BPEL Response Time (ms)**.

9. Enter appropriate warning and critical thresholds; for example, **3000** and **5000**.
10. Add another performance metric. Click on the **Add** button.
11. Select the infrastructure service from the **Subservice** dropdown.
12. Pick a relevant infrastructure metric, that is, **CPU Utilization (%)**.
13. Click on **Continue**, as shown in the following screenshot:

ORACLE Enterprise Manager 10g
Grid Control

Home Targets Deployments Alerts Compliance Jobs Reports

Hosts | Databases | Application Servers | Web Applications | Services | Systems | Groups | All Targets

Aggregate Service: default_SOAOrderBooking(v.1.0) > Edit Aggregate Service: default_SOAOrderBooking(v.1.0) >

Add Performance Metric [Cancel] [Continue]

Metric Definition
Define the metric used to measure performance for this service by choosing an available metric from one subservice, or by aggregating metrics from multiple subservices using a function.

☒ Based on component metric from a single subservice

Subservice: soa_infra (Generic Service)
Metric: CPU Utilization (%)

☐ Based on statistical aggregate from multiple subservices

Function: Maximum

Define a performance metric for this service by statistically combining any set of metrics from subservices.

Subservice	Metric Name	Remove
SOAOrderBooking(v.1.0)_availability (Generic Service)	Client Response Time (ms)	[X]

[Add Another Row]

[Cancel] [Continue]

Home | Targets | Deployments | Alerts | Compliance | Jobs | Reports | Setup | Preferences | Help | Logout

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14. Notice that the warning and critical thresholds have been inherited from the subservice. Leave it at the same levels or modify as appropriate.
15. Click on OK.

Setting service-level expectation (aggregate service)

This is similar to the expectation that was set for the other services.

1. From the **Related Links** section at the bottom, click on **Edit Service Level Rule**.
2. Change the **Expected Service Level** from the default value to the value that is required for this service, for instance, **99.0**.

3. Observe the default values in the **Actual Service Level** section.
4. Within **Business Hours** section, change start and end time to the required business window that has been discussed with, or is expected by consumers, that is, **Start Time** as 08:00 and **End Time** as 18:00.
5. Change the default **Availability Criteria** to conform to the business standard. Think about scheduled downtimes (blackout) and whether they are considered as up time for calculations.
6. Under **Performance Criteria**, select one or more metrics from **Available Performance Metrics**.
7. Click on OK, as shown in the following screenshot:

Grid Control | Home | Targets | Deployments | Alerts | Compliance | Jobs | Reports

Hosts | Databases | Application Servers | Web Applications | Services | Systems | Groups | All Targets

Aggregate Service: default_SOAOrderBooking(V1.0) >

Edit Service Level Rule

Service Level is a measure of service quality. Service Level is calculated as percentage of time during business hours a service meets specified availability and performance criteria. The actual Service Level will be calculated for different time periods, but the same criteria will apply for all these time periods. [Cancel] [OK]

Expected Service Level

Specify the percentage of time during business hours that you expect your service to meet the availability and performance criteria described below.

Expected Service Level: 99.0

Actual Service Level

Business Hours

Days: ☒ Monday ☒ Tuesday ☒ Wednesday ☒ Thursday ☒ Friday ☐ Saturday ☐ Sunday

Start Time: 08:00 End Time: 18:00

Service Time Zone: (UTC-05:00) US Eastern Time (EST)

Availability Criteria

For Service Level calculations, specify the availability states during which the Service will be considered UP.

☒ Up ☐ Under Blackout

☒ Unknown (Pending, Agent Unreachable, Metric Error)

Performance Criteria

Optionally select performance metrics that will be evaluated when computing Service Level. A critical alert on any of the selected metrics will count as a Service Level violation.

Available Performance Metrics

Selected Performance Metrics

CPU Utilization (%)

Avg BPFL Response Time (ms)

8. From the aggregate service home page, click on the **Charts** tab.



Notice the promoted performance metrics tracked in charts on this page with the thresholds displayed on the charts.

Summary

Monitoring BPEL services effectively is essential in monitoring consumer expectations and maintaining credibility. Grid Control provides a way to monitor BPEL services effectively with infrastructure services, and their associations.

In this chapter, we discussed how Grid Control sets up the service model around a BPEL process and the BPEL infrastructure. The inbuilt service-level expectation and measurement using availability and performance metrics makes it easy to monitor these services. Further, the metrics can be based on service tests or on infrastructure metrics.

Associating the key service components with infrastructure components, and monitoring them from one integrated view is critical for administrators to set and control consumer expectations.

The next few chapters will walkthrough hands-on exercises to set up service dashboards to monitor the services that have been configured for the enterprise.

6

BPEL Services Dashboard

Most IT departments have a service desk or help desk that acts as the single point of contact for customers. The service desk team is responsible for being the first line of communication to log customer-reported incidents. The service desk analyst is responsible for logging customer incidents, verifying service health and availability, and notifying respective IT departments about new issues.

BPEL processes frequently are responsible for key business functions such as billing, expense reports, and order fulfillment. For company-wide services, the service desk needs to keep track of these critical processes. When users call the service desk to complain about these processes, the analyst needs to look at a common dashboard to verify the status of each process. The analyst needs to understand how long the process has been unavailable or non-performant, and whether the preset **Service Level Agreements (SLAs)** have been violated. They need to take swift action to ensure new incidents are logged and rectified quickly by the IT administrator. This chapter talks about creating a dashboard to monitor critical BPEL processes and monitoring key metrics and SLAs for each process. Specifically, this chapter talks about:

- Challenges
- Solution
- Step-by-step exercises:
 - Navigating to the **Reports** tab
 - Creating an SOA services dashboard
 - Viewing the SOA services dashboard

Challenges

A service desk needs a common dashboard to monitor key BPEL processes. Lack of an effective dashboard in most enterprises translates to poor communication between service providers and consumers. Further, without a common dashboard, SLAs cannot be monitored effectively. The lack of transparency leads to lack of trust and the provider's credibility is affected, even though the process availability and performance fall in line with SLAs.

Solution

Grid Control displays the availability and key metrics for the key services via service dashboards. Service desk analysts, IT administrators, as well as IT executives can keep track of current and historic service levels, by using these dashboards. The top-down service dashboards enable IT organizations to manage from an end-user service perspective. Managing by exception enables support staff to drill down into problem services to determine the root cause of failure before customer complaints or before SLA violations.

Step-by-step exercises

This set of step-by-step exercises will walkthrough creating a service dashboard to monitor critical BPEL processes.

Navigating to the Reports tab

Grid Control has the ability to create, publish, and view standard and custom reports. These reports serve as a window to the monitoring and configuration data stored in the Grid Control repository.

1. From the Grid Control home page, click on the **Reports** tab.
2. Search for **Services Monitoring Dashboard**.



Grid Control provides several out-of-the-box reports for monitoring, security, and compliance. These reports are complements by service dashboards that can be used by the service desk to monitor key services.

Creating an SOA services dashboard

A dashboard is one of many types of reports. Like other Grid Control reports, there are many configurable aspects, such as the source or target(s), what is to be displayed, and the time period for which the display is to be presented. Dashboards can be displayed in different time zones, have an auto-refresh capability, and the ability to display one or more interesting time windows, such as last day, last week, and last month.

1. Select the radio button next to **Services Monitoring Dashboard**.
2. Click on **Create Like**, as shown in the following screenshot:

ORACLE Enterprise Manager 10g
Grid Control

Home Targets Deployments Alerts Compliance Jobs Reports

Report Definitions

Page Refreshed Jun 20, 2008 9:52:34 PM EDT

Search

Title: services monitoring dashb Target Type: All

Owner: All Target Name:

Go

Delete Create Like Edit Create

Expand All Collapse All

Select Title	Description	Date Generated	Owner
☐ Reports			
☐ Monitoring			
☐ Dashboards			
☒ Services Monitoring Dashboard	Displays status, performance, usage and service level information for a set of services.		SYSMAN

Indicates an Oracle-provided report. Oracle-provided reports cannot be edited, but you can use Create Like to create a report that can be edited.

Related Link: [Enterprise Manager Reports](#)

Home | Targets | Deployments | Alerts | Compliance | Jobs | Reports | Setup | Preferences | Help | Logout

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3. Enter **Title** as **SOA Services Dashboard**.
4. Leave the other fields at the defaults.

5. As shown in the following screenshot, under the **Targets** section, select the **Use the specified target** radio button.
6. Click on the **Elements** tab.

ORACLE Enterprise Manager 10g
Grid Control

Home Targets Deployments Alerts Compliance Jobs Reports

Create Report Definition

General Elements Schedule Access

Preview Cancel OK

Title: SOA Services Dashboard

Category: Monitoring

Subcategory: Dashboards

Description: Displays status, performance, usage and service level information for a set of services.

Targets

Either the report viewer can select a target, or your report definition can specify the target. An element-specific target, if specified, overrides any choice below.

☐ A target will be selected by the report viewer when viewing the report

Target Type: Web Application

☒ Use the specified target

Target:

Privileges

The report can be run using the target privileges of either the report viewer or the report owner (SYSMAN). The report is run using the target privileges of the report viewer, unless the following option is checked.

☒ Run report using target privileges of the report owner (SYSMAN)

Time Period

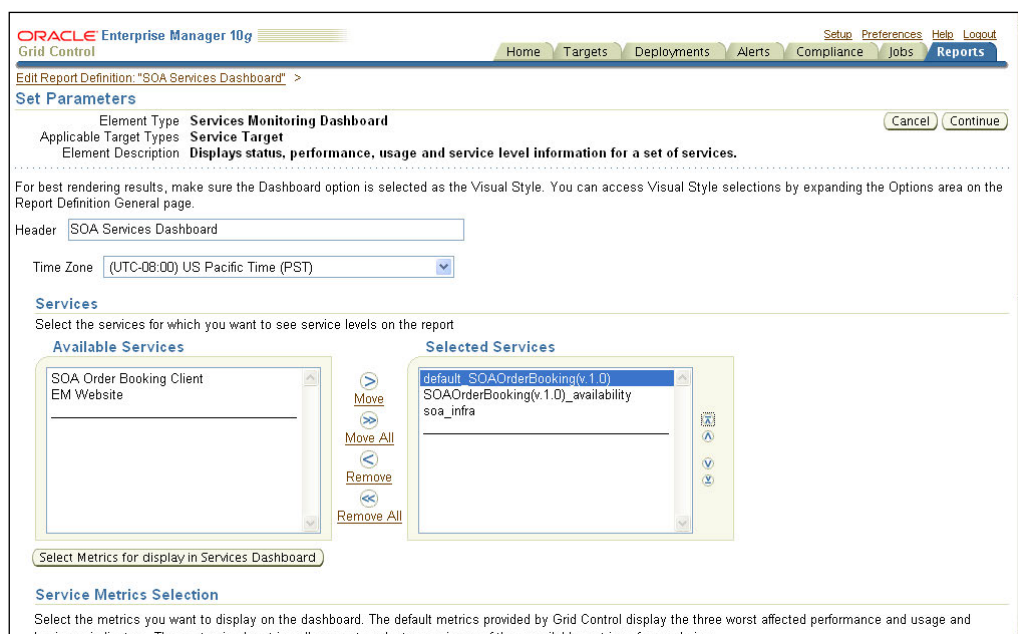
☒ This report has a time period

Time Period: Last 24 Hours EDT

☐ Allow the report viewer to customize the time period

7. Click on **Set Parameters**.
8. Edit the header to be **SOA Services Dashboard**.
9. Change the time zone relevant to your geographic location. For example, **(UTC-08:00) US Pacific Time (PST)**.
10. In the **Services** section, pick all the SOA-related services (except EM service).

11. Move the **default_SOAOrderBooking(v.1.0)** aggregate service to the top of the selected list, as shown in the following screenshot:



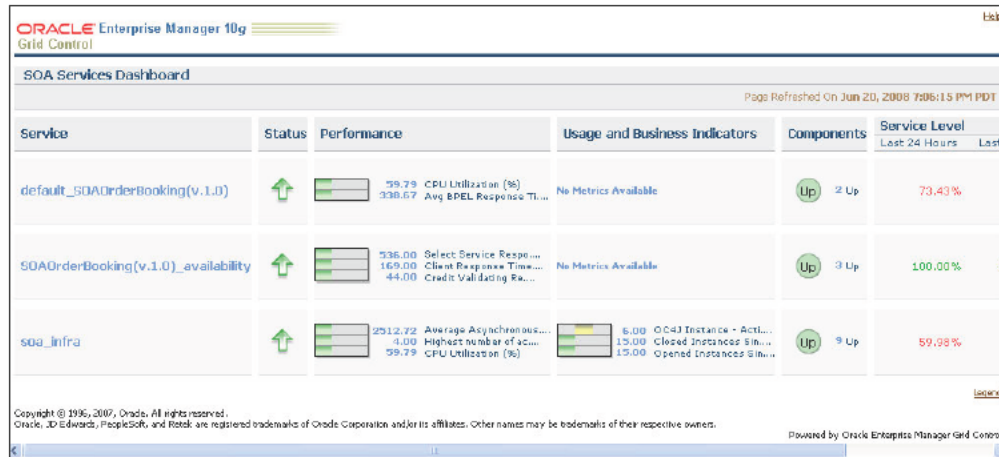
12. Click on **Continue**.
13. Click on **OK** to save the dashboard settings.

Viewing the SOA services dashboard

Once the dashboard has been created, you can view it and look at the status and health of key services. There are red, yellow, and green indicators for each service, which gives a good bird's eye view of all the services.

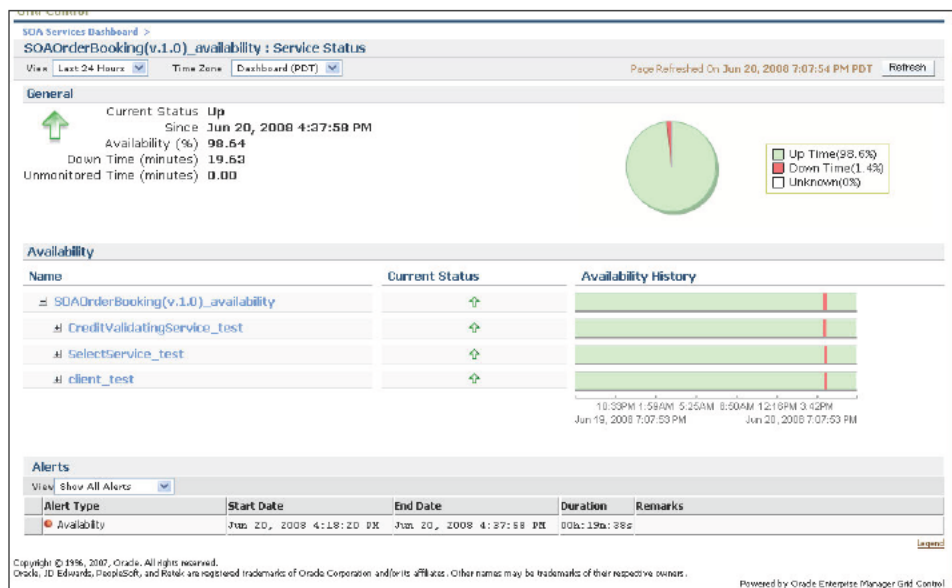
1. Navigate to the **Reports** tab.
2. Search for the title **SOA** and click on **Go**.

3. Click on the SOA Services Dashboard link.

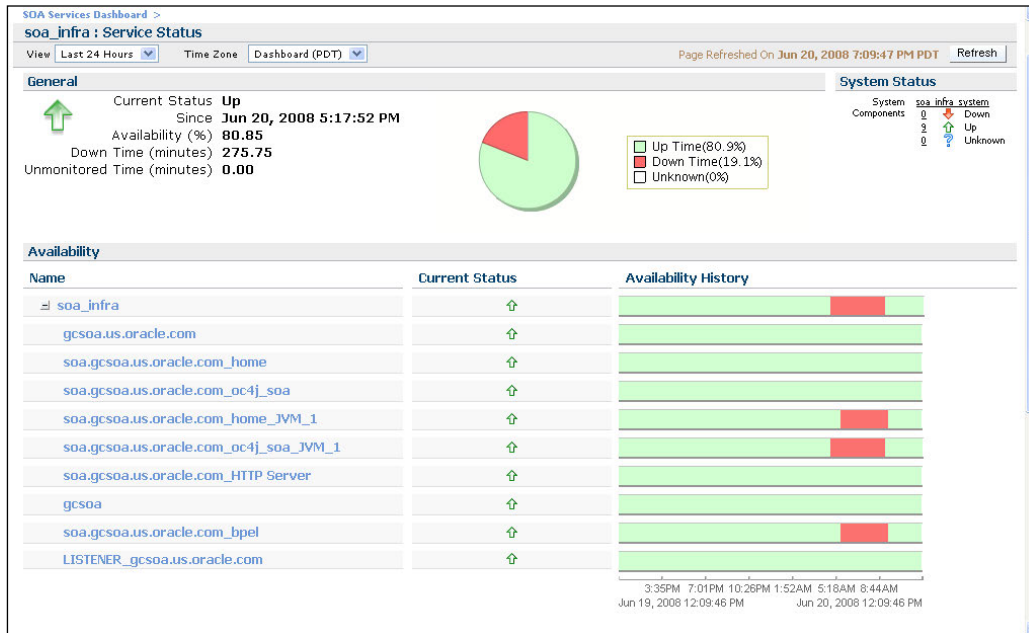


View all the performance and usage metrics for the key SOA services. The services dashboard can be customized to meet the needs of system administrators.

4. Click on the arrow for the SOAOrderBooking(v.1.0)_availability. Expand the availability service to view the underlying service tests and their individual availabilities.



- Click on **Back**, to go back to the SOA services dashboard. Click on the arrow for the infrastructure service. Notice all the components, and rolled-up statistics for the components.



Summary

Service dashboards are essential to any organization that provides services to internal or external consumers. Grid Control lets service desk analysts, IT administrators, and IT executives visualize key service aspects via service dashboards.

In this chapter, we discussed the value of reports as a visualization tool for configuring and monitoring data. We created a new dashboard with the key SOA services, and then viewed the dashboard to look at the status and health of the services.

Note that these service dashboards can be made public for all employees to view a common source for the health and availability of services. This is common for large enterprises for viewing the state of e-mail services, ERP and CRM services, and critical BPEL processes. This is akin to a procedural justice method where the providers and consumers are aware of the common SLA goals, and the level of compliance with those goals.

The next few chapters will walkthrough hands-on exercises to deploy BPEL processes and manage configurations for the BPEL environment.

7

BPEL Deployment Automation

In most medium to large enterprises, application developers write code, and throw it "over the wall" to the operations group. The operations group is now responsible for deploying and maintaining this code in stage and production environments. The development and operations teams typically roll up to separate management chains, and there is little coordination between the two teams.

BPEL process development and deployment follow the same methodology. Administrators have to deal with multiple BPEL process "suitcases", which might be dependent on each other. Typically, the BPEL process deployment should follow the existing methodology in the enterprise. The operational team should centrally maintain the deployment artifacts, and this should be in a different location than the one used by the development team. The deployment itself should be a well-defined procedure with a series of repeatable steps. Further, the set of enterprise best practices should be invoked at deployment time. This chapter talks about deploying multiple BPEL process suitcases to multiple BPEL environments in a standardized manner. Specifically, this chapter talks about:

- Challenges
- Solution
- Step-by-step exercises:
 - Viewing the Software Library
 - Uploading BPEL suitcases to the Software Library
 - Viewing the BPEL process provisioning deployment procedure
 - Scheduling BPEL suitcase deployment
 - Viewing the status of the scheduled deployment
 - Viewing the deployed processes

Challenges

Deploying applications in production environments is a challenge. Administrators have to deploy multiple application files to multiple targets, in a fixed time window. This consumes time and requires expertise on these applications. In a BPEL environment, this is even more challenging when administrators have to deal with *ant scripts* to deploy BPEL suitcases in production environments manually. *Ant* is a great utility for developers when they deal with deployment on developer machines, but administrators do not really have the expertise to customize or build utilities for production-level deployment. Controlling the suitcases centrally is the first challenge, where administrators have to track the suitcases to comply with change and release management guidelines. Next, the deployment itself is a challenge, considering the administrator needs to deploy the processes in a specified order, invoke any custom scripts that might be required, and honor the scheduled maintenance window.

Solution

With Grid Control, administrators can deploy multiple BPEL process suitcases to multiple BPEL PM domains using the Software Library and deployment procedure framework. The administrators' task of gathering deployment information is made simple by Grid Control, which has already discovered the target and knows most of the key properties for the target, such as hostname, application server name, port, and so on. The first step is to upload the BPEL process suitcases into the Software Library for central tracking and deployment. The Software Library also lets the operational team track the maturity and usage of the suitcases, along with other software components, such as operations system images, database, and application server homes. Then, a five-step interview process lets the user pick the source suitcase files, pick the target BPEL PM and domain, set the credentials, and schedule a future deployment using the job system.

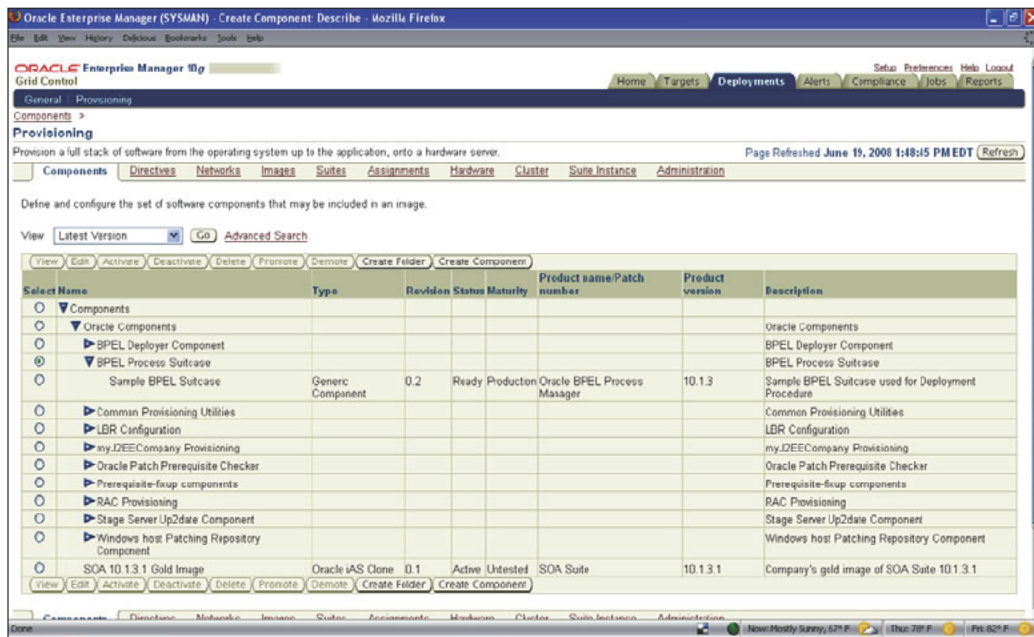
Step-by-step exercises

This set of step-by-step exercises will walkthrough uploading and deploying BPEL process suitcases.

Viewing the Software Library

The Grid Control Software Library is a runtime version control system. After developers are done developing the business processes, the artifacts can be passed on to (or read by) the Software Library for operational tracking and deployment.

1. From the Grid Control home page, click on the **Deployments** tab.
2. Click on the **Provisioning** sub-tab.
3. Expand **Components** to reveal the different component types.



The Software Library contains several objects such as operating system images, Oracle homes for database and application server, deployment artifacts for BPEL, and so on. The library is used to track the maturity of these components as they are used on various monitored targets.

4. Expand **Oracle Component** | **BPEL Process Suitcase**.



A BPEL suitcase is a BPEL process deployment unit. It is a jar file that encapsulates all the components for a BPEL process such as .bpe1, one or more .xsd, and one or more .wsdl files.

5. View the sample BPEL suitcase that is part of the Software Library.

Uploading BPEL suitcases to the Software Library

BPEL process projects are packaged into a "BPEL suitcase", which is a self-contained deployment artifact. This artifact can be used by the administrator to deploy to various environments.

1. Select the radio button for **BPEL Process Suitcase**.
2. Click on the **Create Component** button.
3. Enter the following values in the **Describe** step:
 - Select **Type** as **Generic Component**.
 - Name as **ParallelFlow**.
 - Description as **Parallel Flow Sample**.
 - Leave the other fields blank.
4. Click on **Next**, as shown in the following screenshot:

Oracle Enterprise Manager (SYSMAN) - Create Component: Describe - Mozilla Firefox

ORACLE Enterprise Manager 10g
Grid Control

Home | Targets | Deployments | Alerts | Compliance | Jobs | Reports | Setup | Preferences | Help | Logout

General | Provisioning

Describe | Customize | Upload File | Set Directives | Review

Create Component: Describe

Parent: BPEL Process Suitcase

Provide a name and other details for the Component.

Type: Generic Component

Name: ParallelFlow
The name must be unique within the parent folder

Description: Parallel Flow Sample

Product name/Patch number

Product version

Vendor

Cancel | Save | Step 1 of 5 | Next

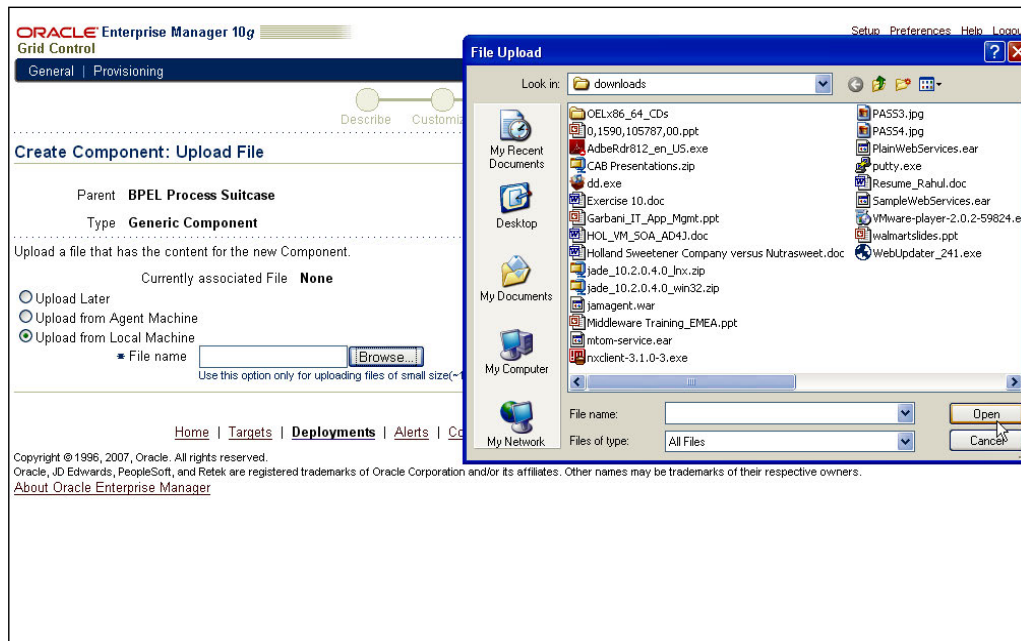
Home | Targets | Deployments | Alerts | Compliance | Jobs | Reports | Setup | Preferences | Help | Logout

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Done

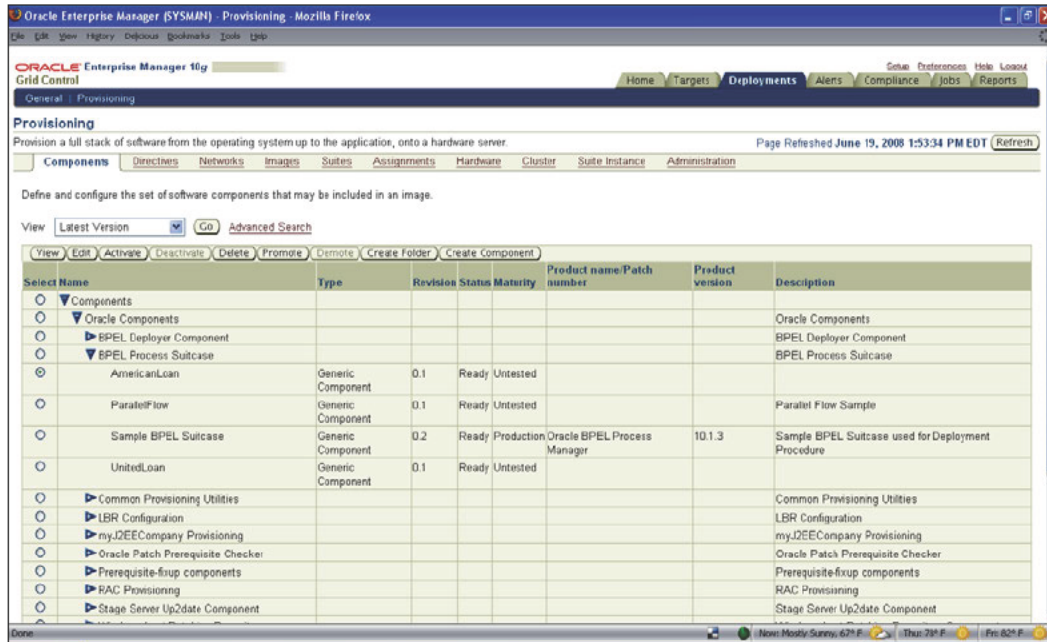
5. In the **Customize** step, leave the defaults and click on **Next**.

6. In the **Upload File** step:
 - Select **Upload from Local Machine**.
 - Click on the **Browse...** button.
 - Locate the BPEL suitcase jar file folder.
 - Select `bpel_parallel_flow.jar` for the current example.



7. Click on **Next**.
8. In the **Set Directives** step, select **Stage** and click on **Next**.
9. In the **Review** step, note the details, and click on **Finish**.
10. Note the confirmation message, and the new BPEL suitcase added.

11. Repeat the preceding steps to add additional BPEL suitcases to the Software Library.



Viewing the BPEL process provisioning deployment procedure

Grid Control consists of several deployment procedures that are used to automate various administrative activities.

1. From the Grid Control home page, click on the **Deployments** tab.
2. Scroll down to locate the **Deployment Procedure Manager** section.
3. Click on the **Deployment Procedures** link.



A deployment procedure is a series of logical steps that automate key administrative tasks related to Oracle products. Most of these complex administrative tasks are listed in the "Enterprise Deployment Guide". Note the various deployment procedures available out of the box – database provisioning, RAC extend, application server provisioning, and so on. These deployment procedures can be customized as well.

4. Click on the **BPEL Process Provisioning** link.

5. Note the steps underlying the procedure:

Procedures >
View Procedure

Edit Create Like Revert Schedule Deployment... Done

Name **BPEL Process Provisioning**
 Description **Procedure for deploying a BPEL Process on a selected Oracle BPEL Process Manager**
 Type **BPEL Provisioning**
 Last Modified By **Oracle**
 Staging Area Path **%emd_root%/EMStage**
 Sudo Command **sudo**
 PAM Command **phrun**
 Preferred Command Interpreter for PAM and sudo
 Environment Variables for sudo or PAM

Last Updated **Oct 13, 2007 6:54:45 AM EDT**
 Enable Notification ☐
 Procedure Status Notification Job Tag
 Status for which Notification is to be Sent
 Note

Expand All | Collapse All

Name	Type	Description
▼ BPEL Process Provisioning		Procedure for deploying a BPEL Process on a selected Oracle BPEL Process Manager
▼ Stage Setup	Parallel	Sets up the BPEL Process and other dependencies
Stage Deployment JAR File	Component	Stage the 'deploy.jar' library file to target host. This is a predefined file shipped with Grid Control and used by BPEL Deployment procedures to perform remote BPEL Process deployment
▼ Deploy Phase	Rolling	Deploys the BPEL Process
▼ Deploy BPEL Process	Rolling	Deploys the BPEL Process
Deploy BPEL Process Suitcase	Component	Executes the script for deploying the BPEL Process on the selected BPEL Process Managers
▼ Clean Setup	Parallel	Cleans up the files and folders staged on individual hosts

Scheduling BPEL suitcase deployment

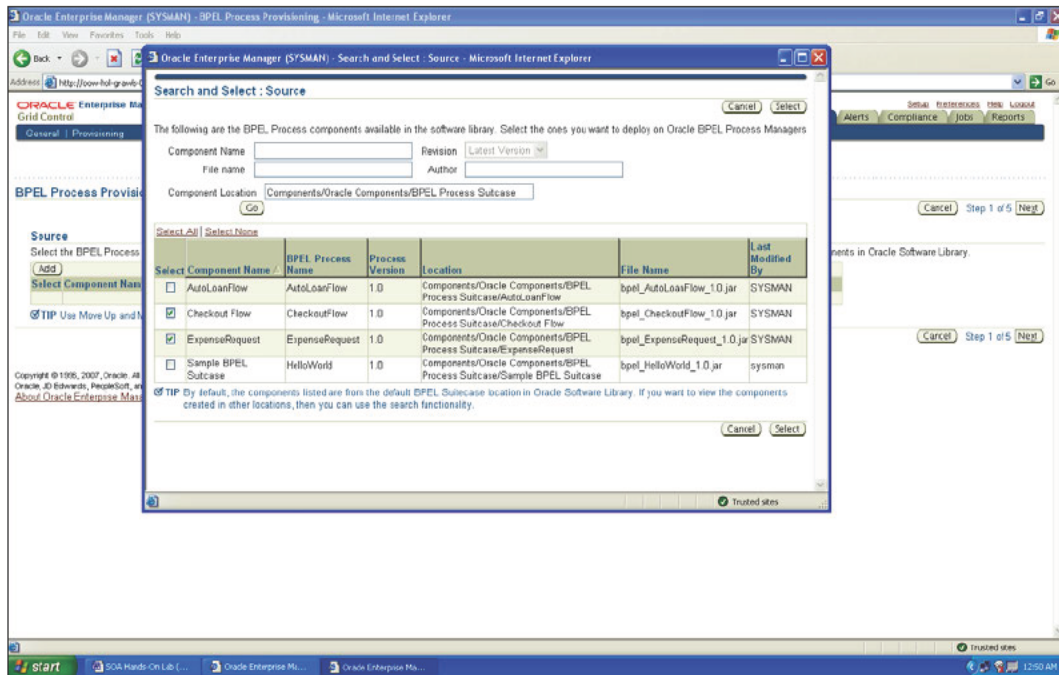
The primary task for the administrator is to schedule the out-of-the-box deployment procedure to run once, or to a schedule.

- Continuing from the previous step, click on the **Schedule Deployment** button.
- In the **Source Selection** step:
 - Click on **Add** to select the source suitcase bundles.



These bundles are stored in the Grid Control Software Library before actual deployment.

- From the existing suitcases, you can select one or more to deploy. For example, select **ParallelFlow**, **UnitedLoan**, and **AmericanLoan**.
- Click on **Select** to continue.



- Use the **Move Up** and the **Move Down** buttons to order the deployment.



Order of deployment is essential in a BPEL environment, where partner links are typically deployed before the BPEL Process that invokes them.

- Click on **Next** to continue.
3. In the **Target Selection** step, follow these steps as shown in the next screenshot:
 - Click on **Add** to select one or more targets from the list of managed BPEL targets; for example, select **gcsoa.us.oracle.com_bpel**.
 - Click on **Select** to continue.

- Select **default** from the **BPEL Domain** dropdown for each BPEL target.
- Click on **Next** to proceed, as shown in the following screenshot:

ORACLE Enterprise Manager 10g
Grid Control

Home Targets **Deployments** Alerts Compliance Jobs Reports

General Provisioning

Source Selection **Target Selection** Credentials Schedule Review

BPEL Process Provisioning: Target Selection

Cancel Back Step 2 of 5 Next

Target

Select Oracle BPEL Process Managers on which you want to deploy the selected BPEL Processes.

Add

BPEL Target Name	Host Name	BPEL Domain	Remove
soa.gcsoa.us.oracle.com_bpel	gcsoa.us.oracle.com	default	

TIP If there are multiple domains available for a BPEL target, then you can select an appropriate domain from the BPEL Domain menu, on which the suitcase files can be deployed

Cancel Back Step 2 of 5 Next

Home Targets **Deployments** Alerts Compliance Jobs Reports Setup Preferences Help Logout

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- In the **Credentials** step, follow these steps as shown in the next screenshot:
 - Provide the credentials for the host under **Application Server Credentials**; that is, **Username** as **oracle** and **Password** as **welcome1**.
 - Click on **Next** to proceed.
 - Under **BPEL Process Manager Credentials**, provide domain level access; that is, **Username** as **oc4jadmin** and **Password** as **welcome1**.



These credentials for host and BPEL Process Manager can be stored in the Grid Control "Preferred Credentials" page and reused.

ORACLE Enterprise Manager 10g
Grid Control

Home Targets Deployments Alerts Compliance Jobs Reports

General Provisioning

Source Selection Target Selection **Credentials** Schedule Review

BPEL Process Provisioning: Credentials

Cancel Back Step 3 of 5 Next

Application Server Credentials
Provide credentials for the application server instances on which the selected Oracle BPEL Process Managers are running

Application Server	Username	Password
soa.gcssoa.us.oracle.com	oracle	*****

☒ **TIP** By default, the fields are prefilled with the preferred credentials that are stored in the Management Repository. You can either use these credentials or edit them to override the preferred credentials with your new credentials.

BPEL Process Manager Credentials
Provide BPEL administrator credentials for the selected Oracle BPEL Process Managers

BPEL 10.1.3 Targets

BPEL Process Manager	Username	Password
soa.gcssoa.us.oracle.com_bpel	oc4jadmin	*****

☒ **TIP** By default, the fields are prefilled with the preferred credentials that are stored in the Management Repository. You can either use these credentials or edit them to override the preferred credentials with your new credentials.

BPEL 10.1.2 Targets

BPEL Process Manager	Password	Username for RMI Access	Password for RMI Access
No targets available			

☒ **TIP** For BPEL 10.1.2 targets, provide the BPEL Admin password. You are also required to provide the RMI access credentials.

- Click on **Next**.
5. In the **Schedule** step, follow these steps as shown in the next screenshot:
- Click on **One Time (Later)** and select a **Start Date** (for example, **June 23, 2008**) and **Start Time** can be anything from a couple of minutes later.
 - Enter **BPEL Process Provisioning** for the **Instance Name** field.
 - Click on **Next** to proceed, as shown in the next screenshot:



Deployment can be scheduled immediately or for a future time, typically during a customer maintenance window. The Grid Control job system takes care of the job scheduling and management.

ORACLE Enterprise Manager 10g [Home](#) [Targets](#) [Deployments](#) [Alerts](#) [Compliance](#) [Jobs](#) [Reports](#) [Setup](#) [Preferences](#) [Help](#) [Logout](#)

General | Provisioning

Source Selection Target Selection Credentials **Schedule** Review

BPEL Process Provisioning: Schedule [Cancel](#) [Back](#) Step 4 of 5 [Next](#)

Schedule

Schedule the BPEL Process Provisioning deployment procedure to run it immediately or at a later point in time.

☐ One Time (Immediately) ☒ One Time (Later)

Time Zone:

Start Date:

Start Time: ☒ AM ☐ PM

Grace Period: ☒ Indefinite ☐ End After Hours Minutes

Deployment Procedure Instance Name

Provide a name for the deployment procedure instance that you are creating to uniquely identify this instance. This instance is the running instance of the actual BPEL Process Provisioning deployment procedure.

Instance Name:

Enter an instance name for this Deployment Procedure execution. Default Value syntax: ProcedureName_UserName_TimeStamp

[Cancel](#) [Back](#) Step 4 of 5 [Next](#)

[Home](#) | [Targets](#) | [Deployments](#) | [Alerts](#) | [Compliance](#) | [Jobs](#) | [Reports](#) | [Setup](#) | [Preferences](#) | [Help](#) | [Logout](#)

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6. In the Review step:

- Review all the information before submitting a deployment job.

- Click on **Finish** when you're ready, as shown in the following screenshot:

BPEL Process Provisioning: Review

Cancel Back Step 5 of 5 Finish

Deployment Procedure Instance Name
Review the name provided for the BPEL Process Provisioning deployment procedure instance
Instance Name **BPEL Process Provisioning**

Source
Review the following BPEL Process suitcases selected for provisioning.

BPEL Process Name	Process Version	BPEL Suitcase Name	Component Location
AmericanLoan	1.0	bpel_AmericanLoan_1.0.jar	Components/Oracle Components/BPEL Process Suitcase/AmericanLoan
106.ParallelFlowSample	1.0	bpel_106.ParallelFlowSample_1.0.jar	Components/Oracle Components/BPEL Process Suitcase/ParallelFlow
UnitedLoan	1.0	bpel_UnitedLoan_1.0.jar	Components/Oracle Components/BPEL Process Suitcase/UnitedLoan

Target
Review the following Oracle BPEL Process Managers on which the selected BPEL Process suitcases will be deployed.

BPEL Target Name	Host Name	BPEL Domain
soa.gcsoa.us.oracle.com_bpel	gcsoa.us.oracle.com	default

Schedule
Review the schedule prepared for running this BPEL Process Provisioning deployment procedure.
One Time (Later)
Start Date **Jun 23, 2008**
Grace Period **Indefinite**

Cancel Back Step 5 of 5 Finish

[Home](#) | [Targets](#) | [Deployments](#) | [Alerts](#) | [Compliance](#) | [Jobs](#) | [Reports](#) | [Setup](#) | [Preferences](#) | [Help](#) | [Logout](#)

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Viewing the status of the scheduled deployment

Grid Control provides means to observe the overall deployment status and individual step status from its jobs page.

1. Continuing from the previous step, find the **BPEL Process Provisioning** job from the **Procedure Completion Status** tab.
2. Click on the **BPEL Process Provisioning** job to view the details, as shown in the following screenshot:

Oracle Enterprise Manager (SYSMAN) - Provisioning Advisor - Microsoft Internet Explorer

Address: http://www-fsl-grw-005.oracleworld.com:4890/em/console/pd/instances

ORACLE Enterprise Manager 10g

Grid Control

Home | Targets | Deployments | Alerts | Compliance | Jobs | Reports

Page Refreshed Nov 6, 2007 11:08:41 PM PST

View Data | Real Time: Manual Refresh

Deployment Procedure Manager

Procedures | Procedure Completion Status | Recycle Bin

All deployment procedures in various stages of their lifecycle are shown below. Set the refresh settings to update the page automatically. Click on the link in the Run column to get more details on that run.

Search Text Fields: Go Advanced Search

Select Run	Status	Procedure	Type	Owner	Last Updated
☒ BPEL Process Provisioning	Scheduled	BPEL Process Provisioning	BPEL Provisioning	SYSMAN	Nov 6, 2007 11:08:50 PM PST
☐ BPEL Process Provisioning	Succeeded	BPEL Process Provisioning	BPEL Provisioning	SYSMAN	Nov 6, 2007 10:37:56 PM PST
☐ Test provisioning	Succeeded	BPEL Process Provisioning	BPEL Provisioning	SYSMAN	Nov 6, 2007 5:03:04 PM PST
☐ BPEL Process Provisioning	Succeeded	BPEL Process Provisioning	BPEL Provisioning	SYSMAN	Nov 6, 2007 3:02:26 PM PST
☐ BPEL Process Provisioning	Completed with Errors	BPEL Process Provisioning	BPEL Provisioning	SYSMAN	Nov 6, 2007 2:53:26 PM PST
☐ BPEL Process Provisioning	Completed with Errors	BPEL Process Provisioning	BPEL Provisioning	SYSMAN	Nov 6, 2007 2:36:25 PM PST
☐ BPEL Process Provisioning	Completed with Errors	BPEL Process Provisioning	BPEL Provisioning	SYSMAN	Nov 6, 2007 2:30:54 PM PST

Home | Targets | Deployments | Alerts | Compliance | Jobs | Reports | Setup | Preferences | Help | Logout

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The job status page shows the details of the scheduled job, including elapsed time and error messages if any.

3. Use the **Refresh** button on the top right to see the progress.
4. Wait for the job to finish successfully.
5. Note the **Status** and **Completed Date** values.

Viewing the deployed processes

Once the deployment has completed successfully, you can verify the new process on the BPEL console:

1. Navigate to the BPEL target home page.
2. Click on the **Processes** tab.
3. Click on the **Refresh** button on the top right.
4. Note the newly deployed processes in the list.

Summary

Deployment is a critical task for operational administrators. With the Grid Control Software Library and deployment procedure capabilities, administrators can manage BPEL suitcases, and schedule and automate deployment.

In this chapter, we discussed how to utilize the out-of-the-box deployment functionality with Grid Control. The administrator can view the deployment procedures, pick the right one, schedule the deploy, and observe the deploy taking place. This is a powerful automation framework that can be utilized for deploying repeatedly and on multiple environments at the same time. There are other variations of these deployments that might be useful, such as running a custom script after the end of the deployment.

With Grid Control release 10gR5, the deployment plan (introduced with BPEL 10.1.3.4) methodology is also supported. In other words, a deployment plan file with details of partner links for test, stage, and production environments can be uploaded to the Software Library. This file can be used while scheduling deployment and the partner link changes will automatically be done. It is also common for customers to create a copy of the out-of-box deployment procedure, and add a few custom steps with home-grown scripts that need to be executed before or after deployment.

The next few chapters will walkthrough hands-on exercises to manage configurations for the BPEL environment.

8

BPEL Configuration Management

Managing the configurations of software and hardware assets in an enterprise is important for several reasons. "Knowing what you have" enables IT managers to make decisions about future investments and retiring old assets, standardize existing assets, manage change across the enterprise, and troubleshoot performance problems related to configurations.

Most configuration management solutions today are compliant with the best practices laid out by the **IT Information Library (ITIL)** framework. All the assets are stored in a central repository called the **Configuration Management Database (CMDB)**. Configuration parameters such as `init.ora` parameters for a database, or `startup` parameters for a WebLogic application server, or port numbers for an HTTP server are stored in the CMDB. Any changes to these parameters are also tracked. It then becomes easy to audit the changes for a specific asset, compare assets to each other (for example `database1` and `database2`), compare different versions of the same asset, save a reference configuration to the CMDB, and use that to standardize across the enterprise. This chapter talks about managing configurations for a BPEL environment. Specifically this chapter talks about:

- Challenges
- Solution
- Step-by-step exercises:
 - Navigating to BPEL target configuration management:
 - Viewing the last collected configuration
 - Saving a configuration snapshot to the repository

- Navigating to Oracle Application Server configuration management:
 - Viewing the last collected configuration
 - Saving a configuration snapshot to the repository
- Making changes to the BPEL environment
- Making changes to the Oracle Application Server environment
- Comparing the current BPEL configuration with a saved baseline
- Comparing BPEL process versions for the same process
- Comparing the current Oracle Application Server configuration with a saved baseline
- Viewing application server target comparison results with a saved baseline

Challenges

It is difficult to track the configurations of all IT systems. Frequently, IT departments resort to Excel spreadsheets to store critical IT system information. This makes an IT department slow in making changes, measuring impact, and identifying performance problems due to incorrect configuration, and increases the costs of managing a data center. With a BPEL environment, it is difficult to baseline a working configuration and compare it with non-working ones. There is no good way to compare successive BPEL Process versions before rolling them out into production.

Solution

With Grid Control, key configuration metrics for BPEL PM server and processes are collected and stored in the Grid Control configuration management database. This is the same database repository that houses the monitoring information. Administrators can view the historic configuration changes across the BPEL environment. They can also baseline a working configuration by saving it in the repository. A BPEL PM server and domain's configuration parameters can be compared with other server and domains. Finally, BPEL Process versions can also be compared to observe the changes across successive deployments.

Step-by-step exercises

This set of step-by-step exercises will walk through managing configurations for the BPEL and application server targets.

Navigating to BPEL target configuration management

Grid Control has rich configuration management functionality for all its managed targets such as database, application server, BPEL PM, and so on.

1. Navigate to the BPEL target home page.
2. Click on the **Administration** tab.
3. Note the links related to configuration management for the target.



Grid Control configuration management framework picks up key configuration parameters for BPEL on a daily basis. These parameters are stored in the Grid Control repository. Key configuration tasks can be accessed from here.

The screenshot displays the Oracle Enterprise Manager 10g Grid Control interface. The top navigation bar includes links for Home, Targets, Deployments, Alerts, Compliance, Jobs, Reports, Setup, Preferences, Help, and Logout. Below this, a breadcrumb trail shows the path: Hosts | Database | Application Servers | Web Applications | Services | Systems | Groups | All Targets. The main content area is titled "Oracle BPEL Process Manager: Oracle bpe1" and features a tabbed interface with Home, Processes, Performance, and Administration. The Administration tab is active, showing a "Configuration" section with links for Compare Configuration, Compare to Multiple Configurations (Job), Last Collected Configuration, Saved Configurations, and History. A "Related Links" section at the bottom provides quick access to various administrative tasks. A sidebar on the right contains an "Administration" section with a brief description of the tasks available.

Configuration

- [Compare Configuration](#)
- [Compare to Multiple Configurations \(Job\)](#)
- [Last Collected Configuration](#)
- [Saved Configurations](#)
- [History](#)

Related Links

Access	Administer (BPEL Admin)	Administer (BPEL Console)
Alert History	All Metrics	Blackouts
Deploy BPEL Suitcase	Metric and Policy Settings	Monitoring Configuration
Reports	Target Properties	

Administration

To perform administration tasks on this Oracle BPEL Process Manager instance (for example, to control the life cycle stage of a BPEL process), click the Administer (BPEL Admin) link in the Related Links section.

Home | **Targets** | Deployments | Alerts | Compliance | Jobs | Reports | Setup | Preferences | Help | Logout

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 About Oracle Enterprise Manager

Viewing the last collected configuration

The Grid Control agent collects configuration metrics at a regular interval (default once in 24 hours) and uploads to the configuration management repository. This enables Grid Control to track the configuration history of the managed target. There are several ways to look at the configuration history, one of them being the last collected configuration.

1. Click on **Last Collected Configuration** to view configuration parameters.
2. View the configuration settings on the **Last Collected Configuration** page.
3. The **Process Manager** tab shows generic information about the server including URLs, dehydration store, and cluster parameters.

The screenshot displays the Oracle Enterprise Manager 10g Grid Control interface. The top navigation bar includes links for Home, Targets, Deployments, Alerts, Compliance, Jobs, and Reports. The breadcrumb trail shows the path: Application Server: soa.gcsoa.us.oracle.com > Oracle BPEL Process Manager: soa.gcsoa.us.oracle.com_bpel > Last Collected Configuration. The page title is 'Last Collected Configuration'. Below the title, there are buttons for 'Save', 'Compare', and 'Compare Multiple'. A status bar indicates 'Collected From Target Jun 22, 2008 10:02:33 PM EDT' with a 'Refresh' button. The main content area is divided into four tabs: 'Process Manager' (selected), 'Domains', 'Processes', and 'Configuration Files'. Under the 'Process Manager' tab, there are three sections: 'General', 'Dehydration Store', and 'Cluster'. The 'General' section shows 'BPEL SOAP Server URL' as 'http://gcsoa.us.oracle.com:7777' and 'BPEL SOAP Server Callback URL' as 'http://gcsoa.us.oracle.com:7777'. The 'Dehydration Store' section shows 'Host' as 'gcsoa.us.oracle.com', 'Port' as '1522', 'Service Name' as 'gcsoa', 'Connection Pool Name' as 'BPELPM_CONNECTION_POOL', and 'Datasource' as 'jdbcBPELServerDataSourceWorkflow'. The 'Cluster' section shows 'Cluster Enabled' as 'false', 'Cluster Name' as 'gcsoa.us.oracle.com:7777', 'Multicast Address' as '228.8.15.24', and 'Multicast Port' as '45788'. At the bottom, there is a 'Related Links' section with links for 'Saved Configurations' and 'Configuration History'. The bottom of the page has buttons for 'Save', 'Compare', and 'Compare Multiple'.

4. Click on the **Domains** sub-tab. The **Domains** tab lists the BPEL domains and important configuration parameters for each domain.

ORACLE Enterprise Manager 10g Setup Preferences Help Logout

Grid Control Home **Targets** Deployments Alerts Compliance Jobs Reports

Hosts | Databases | Application Servers | Web Applications | Services | Systems | Groups | All Targets

Application Server: soa.gcssoa.us.oracle.com > Oracle BPEL Process Manager: soa.gcssoa.us.oracle.com_bpel >

Last Collected Configuration Save Compare Compare Multiple

Collected From Target Jun 22, 2008 10:02:33 PM EDT Refresh

Process Manager **Domains** Processes Configuration Files

General

Domain	Datasource JNDI	Transaction JNDI	Delivery Persist Policy	Audit Threshold
default	jdbc/BPELServerDataSourceWorkflow	jdbc/BPELServerDataSource	on	60k

Dispatcher Details

Domain	Maximum Threads	Minimum Threads	Maximum Request Depth	Invocation Thread Allocation Factor
default	6	2	600	0.4

Process Manager **Domains** Processes Configuration Files

Related Links

[Saved Configurations](#)
[Configuration History](#)

Save Compare Compare Multiple

Home | **Targets** | Deployments | Alerts | Compliance | Jobs | Reports | Setup | Preferences | Help | Logout

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- Click on **Processes** sub-tab. The **Processes** tab shows a list of deployed processes with version information, underlying files, and last modified time.

Process Manager	Domains	Processes	Configuration Files
Expand All Collapse All			
Name	Modification Time	File Size(bytes)	
▼ All BPEL Processes			
▼ AmericanLoan			
▼ 1.0			
AutoLoanTypes.xsd	Jun 19, 2008 1:43:33 PM EDT	1,784	
bpel.xml	Jun 19, 2008 1:43:33 PM EDT	487	
LoanService.wsdl	Jun 19, 2008 1:43:33 PM EDT	2,030	
▼ 1.2			
AutoLoanTypes.xsd	Jun 21, 2008 5:48:48 PM EDT	1,784	
bpel.xml	Jun 21, 2008 5:48:48 PM EDT	487	
LoanService.wsdl	Jun 21, 2008 5:48:48 PM EDT	2,030	
▼ DHLShipment			
▼ 1.0			
bpel.xml	Jun 18, 2008 12:18:20 AM EDT	499	
DHLShipment.bpel	Jun 18, 2008 12:18:20 AM EDT	3,988	
DHLShipment.wsdl	Jun 18, 2008 12:18:20 AM EDT	2,299	
DHLShipment.xsd	Jun 18, 2008 12:18:20 AM EDT	638	
▼ FlowSample			
▶ 1.0			
▶ 1.2			
▼ SelectManufacturer			
▶ 1.0			
▼ SOAOrderBooking			
▶ 1.0			
▼ TaskActionHandler			
▶ 1.0			
▼ TaskManager			
▶ 1.0			
▼ UnitedLoan			
▶ 1.0			

- Click on **Configuration Files**. Key configuration files from the BPEL server are now stored in the Grid Control repository and displayed on this tab. You can click on the file to view the contents in read-only mode.

The screenshot displays the Oracle Enterprise Manager 10g Grid Control interface. The top navigation bar includes links for Home, Targets, Deployments, Alerts, Compliance, Jobs, Reports, Setup, Preferences, Help, and Logout. Below this, a breadcrumb trail shows the path: Hosts | Databases | Application Servers | Web Applications | Services | Systems | Groups | All Targets. The main content area is titled 'Last Collected Configuration' and features a table of configuration files. The table has three columns: File Name, Modification Time, and File Size(bytes). The files listed are: \$ORACLE_HOME/bpel/domains/default/config/domain.xml (modified Jun 21, 2008 12:22:27 AM EDT, size 9,211 bytes), \$ORACLE_HOME/bpel/system/config/collaxa-config.xml (modified May 27, 2008 6:55:59 PM EDT, size 6,879 bytes), and \$ORACLE_HOME/bpel/system/config/groups-protocol.xml (modified Oct 9, 2006 8:55:30 AM EDT, size 2,896 bytes). Below the table, there are links for Process Manager, Domains, Processes, and Configuration Files. At the bottom, there are links for Related Links, Saved Configurations, and Configuration History. The footer contains copyright information for Oracle and its affiliates.

File Name	Modification Time	File Size(bytes)
\$ORACLE_HOME/bpel/domains/default/config/domain.xml	Jun 21, 2008 12:22:27 AM EDT	9,211
\$ORACLE_HOME/bpel/system/config/collaxa-config.xml	May 27, 2008 6:55:59 PM EDT	6,879
\$ORACLE_HOME/bpel/system/config/groups-protocol.xml	Oct 9, 2006 8:55:30 AM EDT	2,896

Saving a configuration snapshot to the repository

In a large enterprise it is important to standardize configuration across a target type. This helps in ease of maintenance and is also important for compliance reasons. To standardize configurations, Grid Control provides a way to create a "gold" configuration based on an existing target configuration, and then use that to standardize against other targets:

- Click on the **Save** button on the top right.
- Select the option **Save to EM Repository**.

3. Enter a description such as **GCSOA_<date>_BPEL_Baseline**, as shown in the following screenshot:

ORACLE Enterprise Manager 10g

Grid Control

Home Targets Deployments Alerts Compliance Jobs Reports

Hosts Databases Application Servers Web Applications Services Systems Groups All Targets

Save Configuration

A saved configuration serves as a point-in-time historical record which can be referenced in the future for viewing or comparison.

☒ Save To Enterprise Manager Repository
Allows sharing with other administrators, and can be referenced later using the Saved Configurations page.
Description:

☐ Export to File
Allows sharing of the configuration to other Enterprise Manager environments that use a different repository.

Cancel OK

Home Targets Deployments Alerts Compliance Jobs Reports Setup Preferences Help Logout

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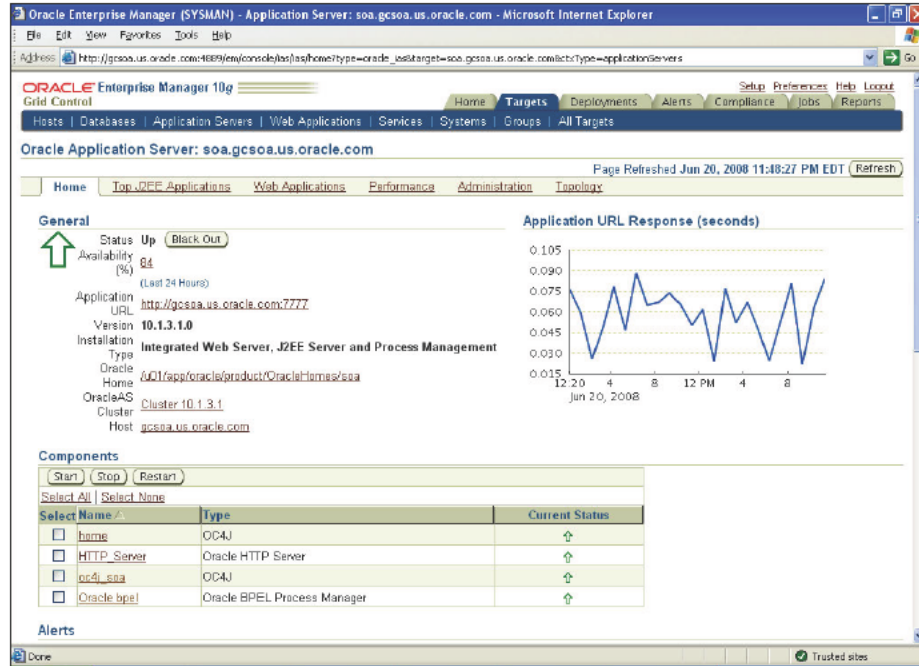
4. Click on **OK** to save the current configuration to the Grid Control repository.
5. Note the confirmation message and the saved configuration with timestamp, name, description, saved date, and owner.

Navigating to Oracle Application Server configuration management

It is useful to look at an Oracle application server configuration as well because BPEL is hosted by the application server:

1. From the Grid Control home page, click on the **Targets** tab.
2. Select the **Application Servers** sub-tab.
3. Click on the name of the application server such as **soa.gcsoa.us.oracle.com**.

4. This takes you to the home page for the application server.



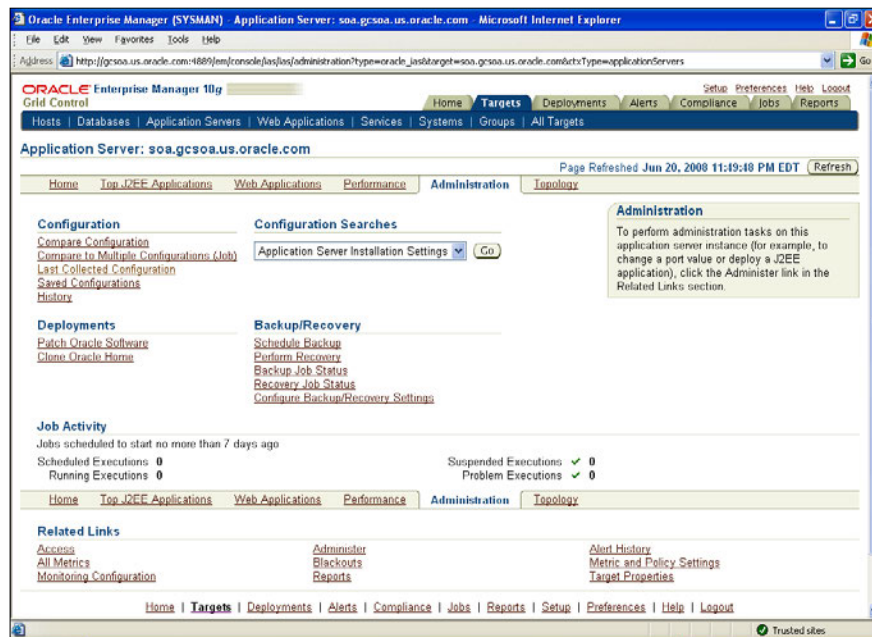
5. Click on the **Administration** tab.

 Grid Control configuration management framework picks up key configuration parameters for all Oracle Application Server targets and individual components (web server, OC4J, BPEL PM, and many more) on a daily basis. These parameters are stored in the Grid Control repository.

Viewing last collected configuration

Often, the first thing the administrators want to see is the current configuration of a target. This typically corresponds to the "last collected configuration" in Grid Control, and can be refreshed to initiate an on-demand collection for up-to-date information.

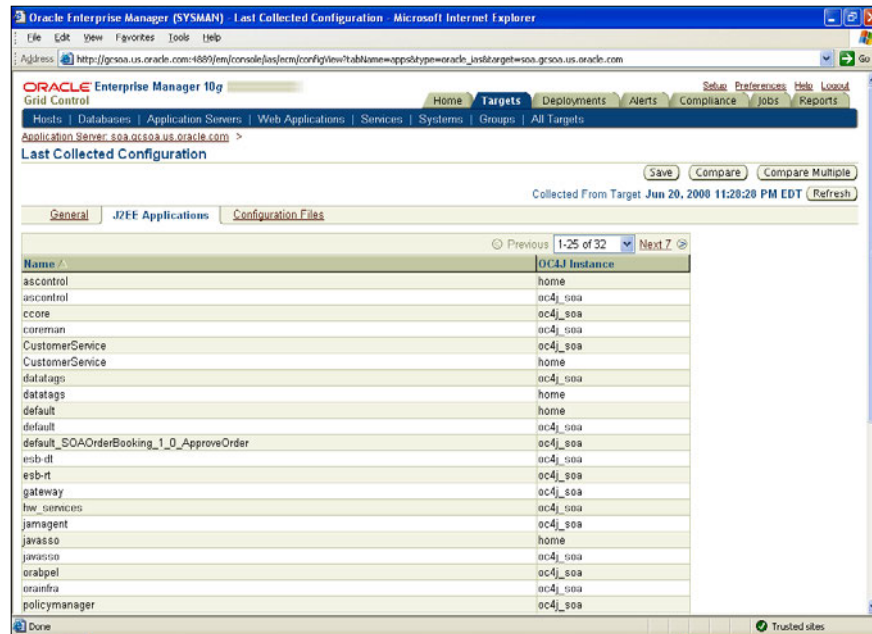
1. Select the **Last Collected Configuration** link, as shown in the following screenshot:



- The current configuration of the application server is displayed. The **General** tab displays key components of the application server and also some key configuration parameters, as shown in the following screenshot:



- Click on the **J2EE Applications** tab to view all the J2EE applications deployed on this application server.



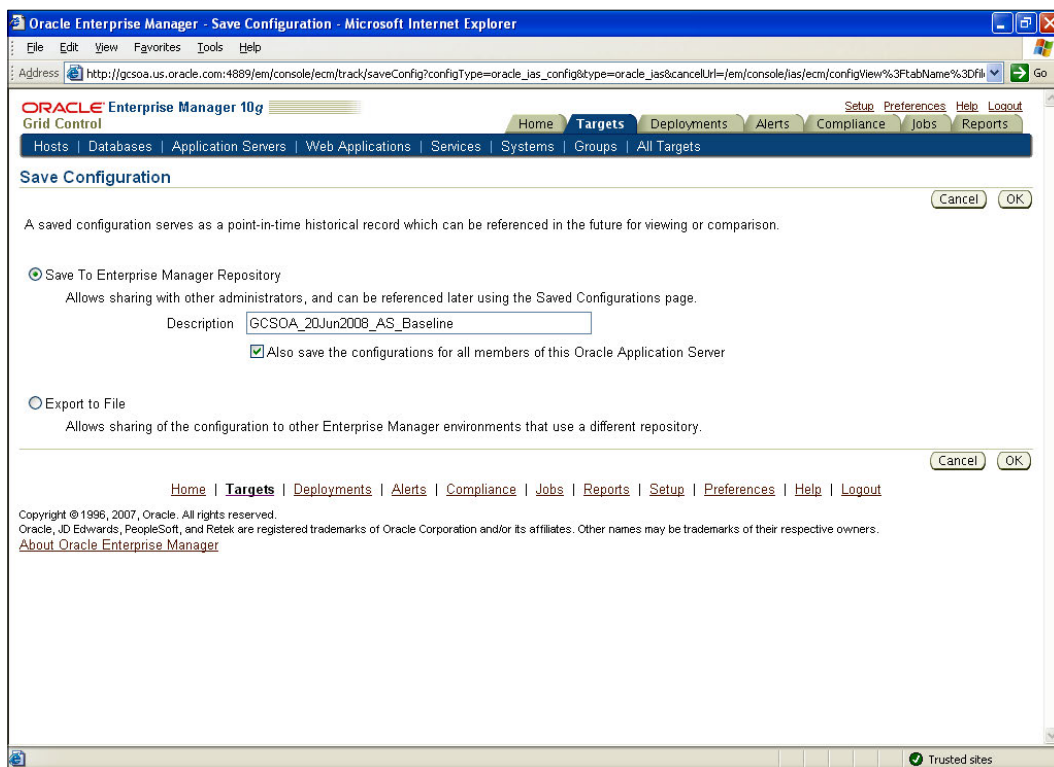
- Click on the **Configuration Files** tab to view the key configuration files. You can click on the files to view a read-only version of the files.



Saving a configuration snapshot to the repository

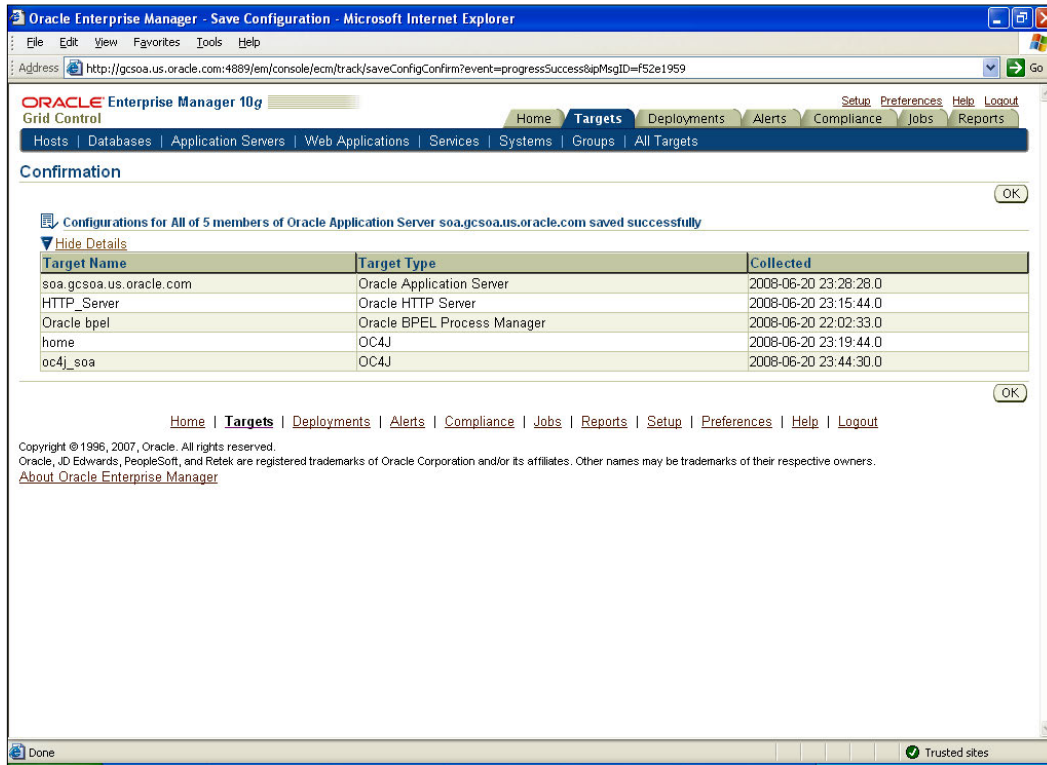
Similar to the BPEL configuration snapshot, the application server configuration can also be saved to the Grid Control repository in order to standardize across the enterprise:

1. Click on the **Save** button to save the current configuration.
2. Select the option **Save to the EM Repository**.
3. Provide a description such as **GCSOA_<date>_AS_Baseline**.
4. Select the checkbox for saving all the configuration of the application server components, as shown in the following screenshot:



5. Click on **OK** to save the current configuration to the Grid Control repository.

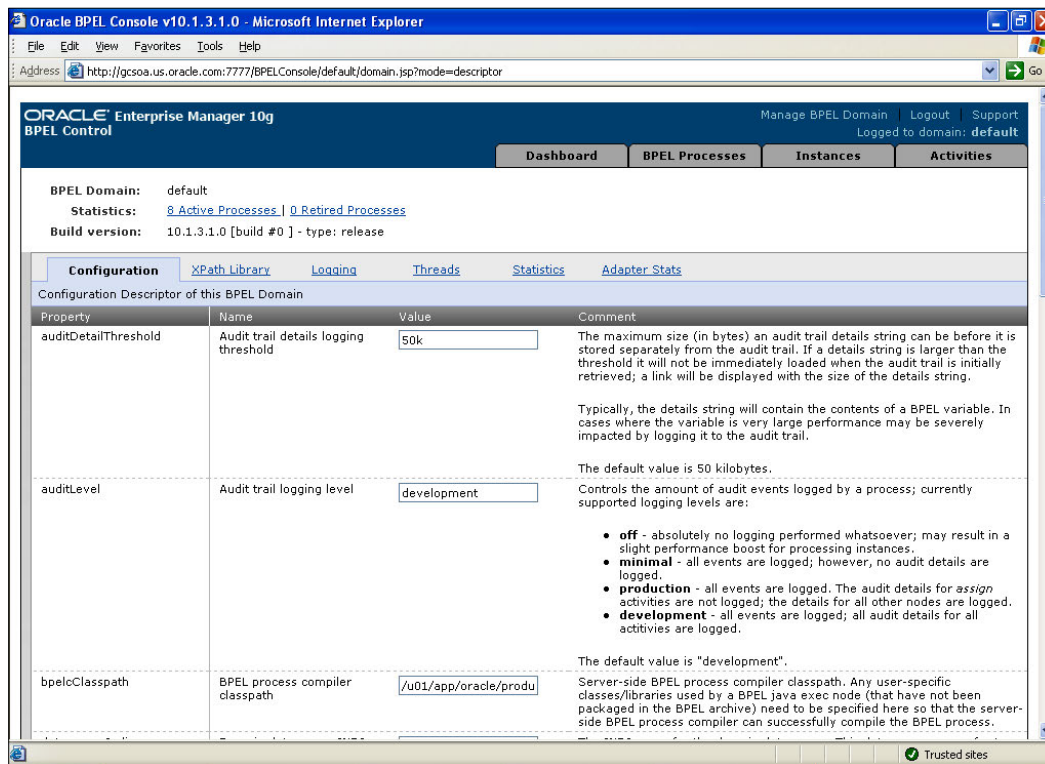
6. Note the confirmation message, and the saved configuration with target name, type, and timestamp.



Making changes to the BPEL environment

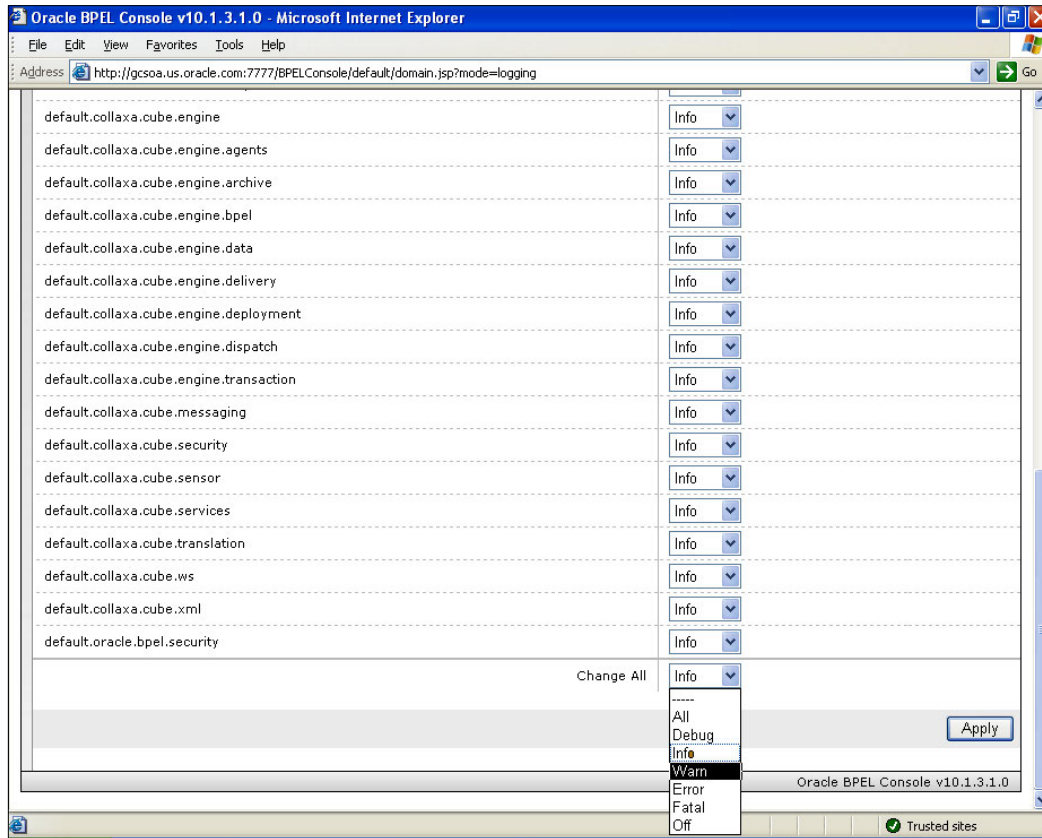
The Grid Control console is the management interface for one or more BPEL PMs, as well as other target types. For administrative functions such as start/stop, changing configuration properties, and so on, the administrator needs to utilize the product console, in this case BPEL console.

1. Navigate to the BPEL target home page.
2. Under **Related Links**, click on **Administer (BPEL Console)**.
3. Log in using the **Username** as **oc4jadmin** and **Password** as **welcome1**.
4. Click on the **Manage BPEL Domain** link.
5. This takes you to the admin page for BPEL where you can set domain-level parameters. Select the **Configuration** tab.



6. Change the following properties:
 - **AuditDetailThreshold** to 60k
 - **dspMaxThreads** to 6
 - **dspMinThreads** to 2
 - **LargeDocumentThreshhold** to 60k
7. Click on the **Apply** button to save the changes.

8. Select the **Logging** tab and select the dropdown to change the logging level for all to **Warn**. The debug level of warn indicates warning messages that are logged to some log, but the application is able to carry on without a problem.



9. Click on **Apply** to save the changes.
10. Select **Logout** to exit the BPEL Control.

Making changes to the Oracle Application Server environment

Similar to the BPEL Console, the application server also comes with its own administrative console to make configuration changes.

1. From the Grid Control home page, click on the **Targets** tab.
2. Select the **Application Servers** sub-tab.

3. Click on the name of the application server – **soademo.gcsoa.us.oracle.com**.
4. This takes you to the home page for the application server.
5. Click on the **Administer** link at the bottom, under the **Related Links** section.
6. Log in to the AS Control console by using the username as **oc4jadmin** and password as **welcome1**.
7. Click on the **oc4j_soa** link to go to the home page for this *oc4j* instance, as shown in the following screenshot:

The screenshot shows the Oracle Enterprise Manager 10g Cluster Topology page in a Microsoft Internet Explorer browser. The page title is "Oracle Enterprise Manager (oc4jadmin) - Cluster Topology - Microsoft Internet Explorer". The address bar shows "http://gcsoa.us.oracle.com:7777/em/console/ias/cluster/topology".

The page displays the "Cluster Topology" section with a "Page Refreshed Jun 21, 2008 12:10:12 AM EDT" and a "View Data Manual Refresh" dropdown. The "Overview" section shows statistics: Hosts 1, Application Servers 1, OC4J Instances 2, and HTTP Server Instances 1.

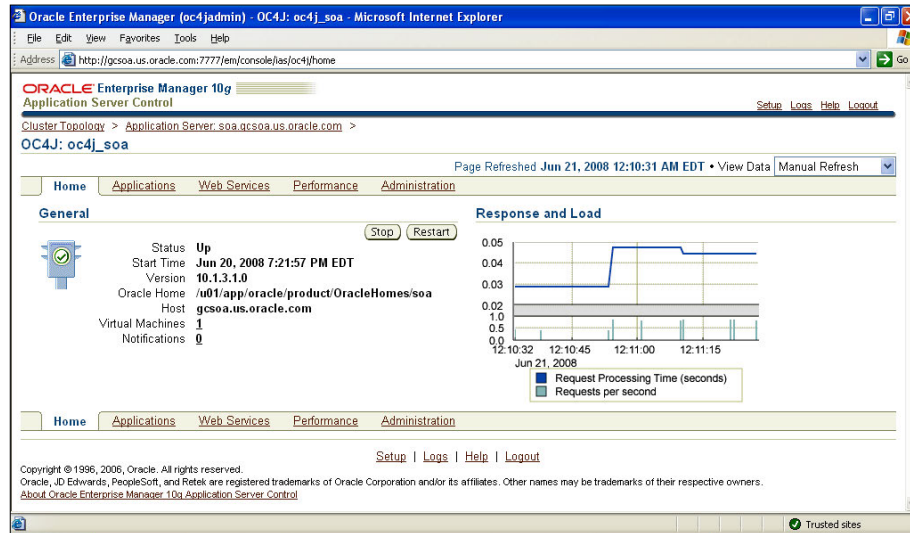
The "Members" section is expanded, showing a list of application servers. The table below represents the data shown in the screenshot:

Select	Focus	Name	Status	Type	Category	Host	CPU (%)	Memory (MB)
☐		▼ All Application Servers						
☐		▼ soa.gcsoa.us.oracle.com		Application Server		gcsoa.us.oracle.com		
☐		▶ home (JVMs: 1)	↑	OC4J			1.18	387.06
☐		HTTP_Server	↑	Oracle HTTP Server			4.90	298.18
☐		▶ oc4j_soa (JVMs: 1)	↑	OC4J			49.48	492.65

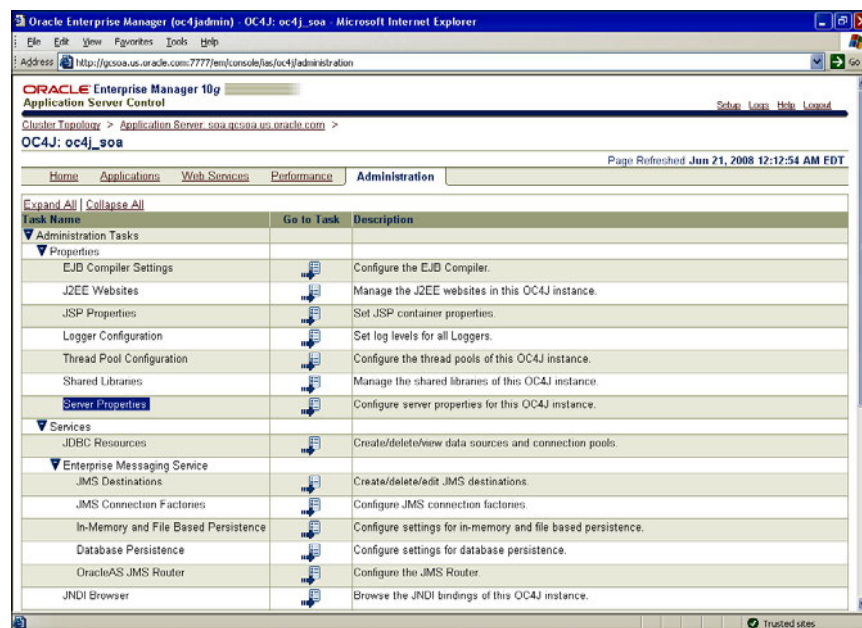
Below the table, there is a note: "Indicates the active ASControl instance." and a tip: "TIP If a parent topology member is selected all contained members are implicitly selected."

The "Groups" section is also visible, showing a table with columns "Select", "Name", "OC4J Instance", and "Status Application Server". The table contains one entry: "default_group" with OC4J Instance "oc4j_soa" and Status Application Server "soa.gcsoa.us.oracle.com".

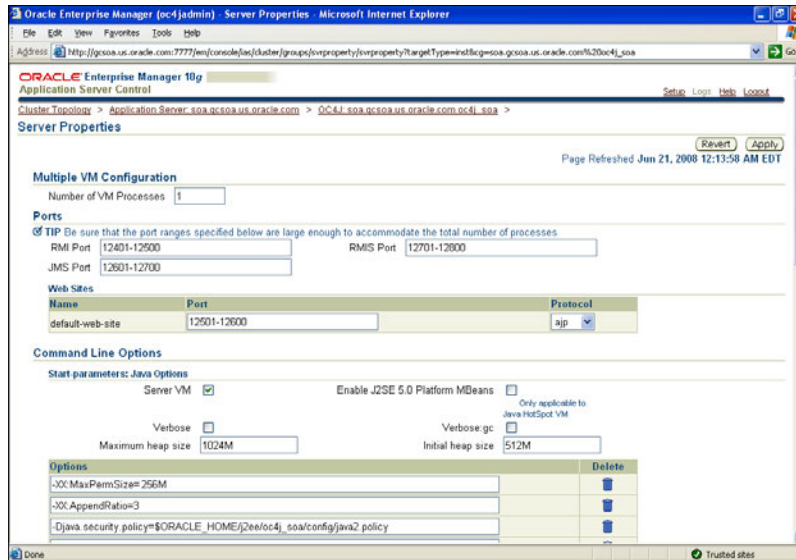
8. The **oc4j_soa** home page displays key availability and performance metrics for this oc4j instance.



9. Click on the **Administration** tab.
10. Click on the **Go to Task** button next to the **Server Properties** task name, as shown in the following screenshot:



11. Change the **MaxPermSize** value from 126M to 256M.

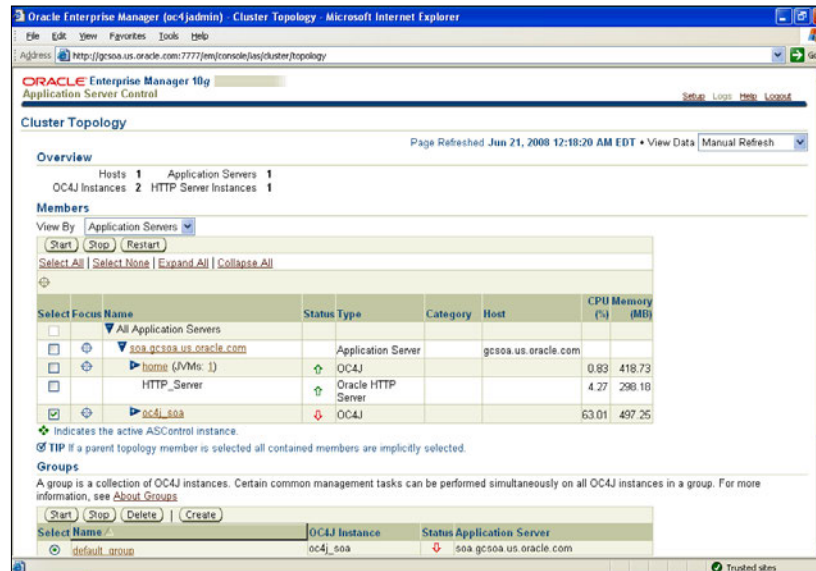


12. Click on **Apply** to save the changes. Note the confirmation message.

13. Click on the **Cluster Topology** breadcrumb.

14. Check the box next to the **oc4j_soa**

15. Click on the **Restart** button to restart this oc4j container to make the changes permanent.

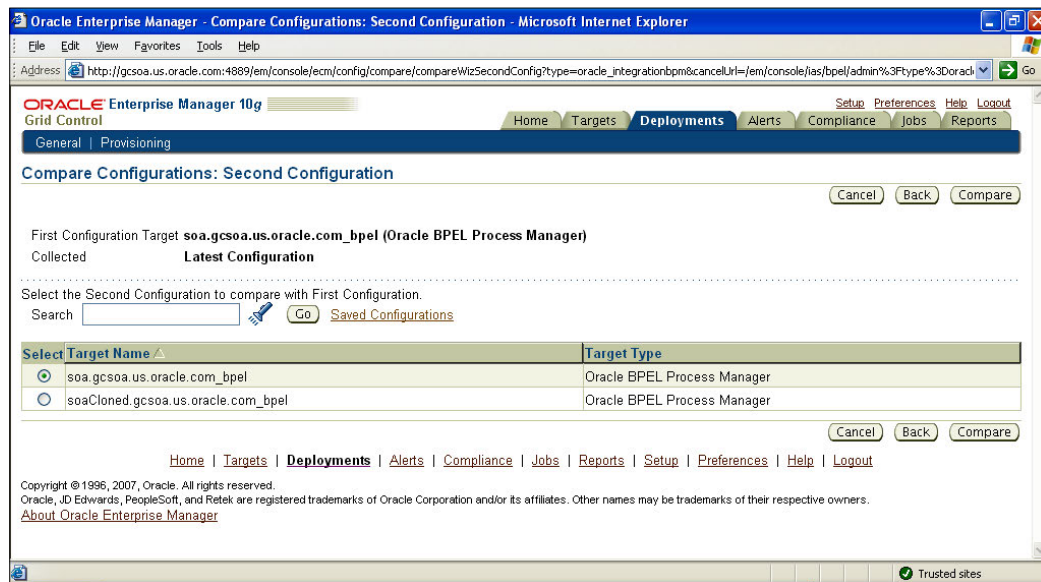


16. Click on **Yes** to restart oc4j_soa. Note the confirmation message.
17. Log out of the EM Application Server control after the restart completes.
You have now successfully made some changes to the application server properties.

Comparing the current BPEL configuration with a saved baseline

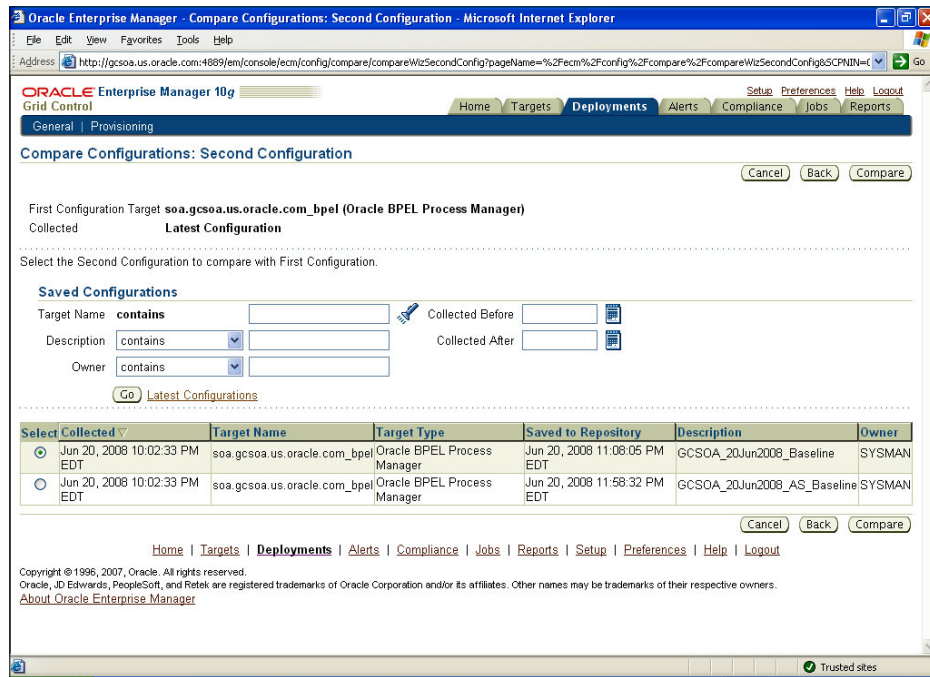
Comparisons are a useful way to detect configuration differences between two or more targets. It is useful to observe the similarities in configuration and, more importantly, the differences in case of a performance problem, or for standardization purposes.

1. Navigate to the BPEL target home page.
2. Click on the **Administration** tab.
3. Click on **Last Collected Configuration**.
4. Click on the **Refresh** button to get the latest configurations updated and wait for sometime.
5. Click on the **Compare** button to start a comparison between the current configuration of the BPEL target and a saved (Production Baseline) configuration.

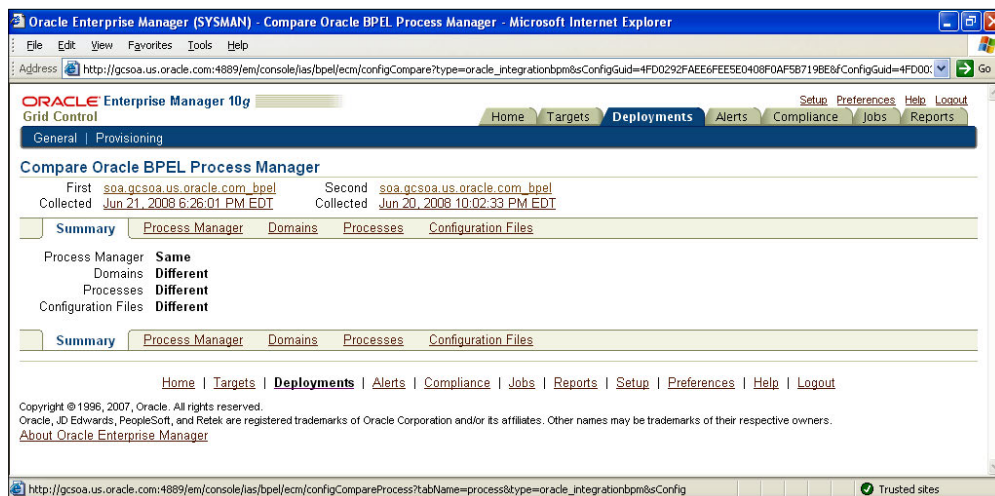


6. Click on the **Saved Configuration** link.

7. Select the **GCSOA_<date>_BPEL_Baseline** for comparison.
8. Click on **Compare** to generate the comparison results.



9. View the BPEL target comparison results with a saved baseline.
10. The comparison results between the BPEL targets are presented in four categories. The **Summary** tab lists the status of the four categories.



- Click on the **Process Manager** tab. The **Process Manager** tab lists the differences or similarities in the general parameters for the targets, including dehydration store and cluster parameters.

Compare Oracle BPEL Process Manager

First [soa.gcsoa.us.oracle.com_bpel](#) Collected [Jun 21, 2008 12:54:50 AM EDT](#) Second [soa.gcsoa.us.oracle.com_bpel](#) Collected [Jun 20, 2008 10:02:33 PM EDT](#)

[Summary](#) [Process Manager](#) [Domains](#) [Processes](#) [Configuration Files](#)

General

Result	Property	Jun 21, 2008 12:54:50 AM EDT	Jun 20, 2008 10:02:33 PM EDT
	BPEL SOAP Server URL	http://gcsoa.us.oracle.com:7777	http://gcsoa.us.oracle.com:7777
	BPEL SOAP Server Callback URL	http://gcsoa.us.oracle.com:7777	http://gcsoa.us.oracle.com:7777

Dehydration Store

Result	Property	Jun 21, 2008 12:54:50 AM EDT	Jun 20, 2008 10:02:33 PM EDT
	Host	gcsoa.us.oracle.com	gcsoa.us.oracle.com
	Port	1522	1522
	Service Name	gcsoa	gcsoa
	Connection Pool Name	BPELPM_CONNECTION_POOL	BPELPM_CONNECTION_POOL
	Datasource	jdbc/BPELServerDataSourceWorkflow	jdbc/BPELServerDataSourceWorkflow

Cluster

Result	Property	Jun 21, 2008 12:54:50 AM EDT	Jun 20, 2008 10:02:33 PM EDT
	Cluster Enabled	false	false
	Cluster Name	gcsoa.us.oracle.com:7777	gcsoa.us.oracle.com:7777
	Multicast Address	228.8.15.24	228.8.15.24
	Multicast Port	45788	45788

[Summary](#) [Process Manager](#) [Domains](#) [Processes](#) [Configuration Files](#)

[Home](#) | [Targets](#) | [Deployments](#) | [Alerts](#) | [Compliance](#) | [Jobs](#) | [Reports](#) | [Setup](#) | [Preferences](#) | [Help](#) | [Logout](#)

- Click on the **Domains** tab. The **Domains** tab lists the various domains in the two targets.

Compare Oracle BPEL Process Manager

First [soa.gcsoa.us.oracle.com_bpel](#) Collected [Jun 21, 2008 12:54:50 AM EDT](#) Second [soa.gcsoa.us.oracle.com_bpel](#) Collected [Jun 20, 2008 10:02:33 PM EDT](#)

[Summary](#) [Process Manager](#) [Domains](#) [Processes](#) [Configuration Files](#)

General

Result	Jun 21, 2008 12:54:50 AM EDT	Jun 20, 2008 10:02:33 PM EDT
	default	default

Dispatcher Details

Result	Jun 21, 2008 12:54:50 AM EDT	Jun 20, 2008 10:02:33 PM EDT
	default	default

[Summary](#) [Process Manager](#) [Domains](#) [Processes](#) [Configuration Files](#)

[Home](#) | [Targets](#) | [Deployments](#) | [Alerts](#) | [Compliance](#) | [Jobs](#) | [Reports](#) | [Setup](#) | [Preferences](#) | [Help](#) | [Logout](#)

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13. Click on the *inequality* sign in the **Result** column to view the differences.

Oracle Enterprise Manager 10g - Compare Domain - Microsoft Internet Explorer

Address: http://gcsoa.us.oracle.com:4889/em/console/ias/bpel/ecm/config/compareDomain?tabName=domaintype=oracle_integrationbpms&configGuid=4FD0292FAEE6FEE5E0408F0AF58719BE8

General | Provisioning

Compare Oracle BPEL Process Manager

Compare Domain

First Collected: soa.gcsoa.us.oracle.com_bpel, Jun 21, 2008 12:54:50 AM EDT

Second Collected: soa.gcsoa.us.oracle.com_bpel, Jun 20, 2008 10:02:33 PM EDT

Result	Property	Jun 21, 2008 12:54:50 AM EDT	Jun 20, 2008 10:02:33 PM EDT
	Domain	default	default
	DataSource JNDI	jdbc/BPELServerDataSourceWorkflow	jdbc/BPELServerDataSourceWorkflow
	Transaction JNDI	jdbc/BPELServerDataSource	jdbc/BPELServerDataSource
	Delivery Persist Policy	on	on
	Audit Threshold	60k	50k

Dispatcher Details

Result	Property	Jun 21, 2008 12:54:50 AM EDT	Jun 20, 2008 10:02:33 PM EDT
	Domain	default	default
	Maximum Threads	6	5
	Minimum Threads	2	1
	Maximum Request Depth	600	600
	Invocation Thread Allocation Factor	0.4	0.4

Home | Targets | Deployments | Alerts | Compliance | Jobs | Reports | Setup | Preferences | Help | Logout

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14. Click on the **Compare BPEL Process Manager** breadcrumb.
15. Click on the **Processes** tab. The **Processes** tab compares all the deployed processes. The underlying files within a process are compared.
16. Click on the **Configuration Files** tab, which lists the results of the file comparison.

Oracle Enterprise Manager (SYSMAN) - Compare Oracle BPEL Process Manager - Microsoft Internet Explorer

Address: http://gcsoa.us.oracle.com:4889/em/console/ias/bpel/ecm/config/compareFiles?tabName=files&type=oracle_integrationbpms&configGuid=4FD0292FAEE6FEE5E0408F0AF58719BE8

General | Provisioning

Compare Oracle BPEL Process Manager

First Collected: soa.gcsoa.us.oracle.com_bpel, Jun 21, 2008 12:54:50 AM EDT

Second Collected: soa.gcsoa.us.oracle.com_bpel, Jun 20, 2008 10:02:33 PM EDT

Summary | Process Manager | Domains | Processes | Configuration Files

☒ TIP The comparison results below are based only on file size and modification time. To compare file contents, select a file and click Compare File Contents.

(Compare File Contents)

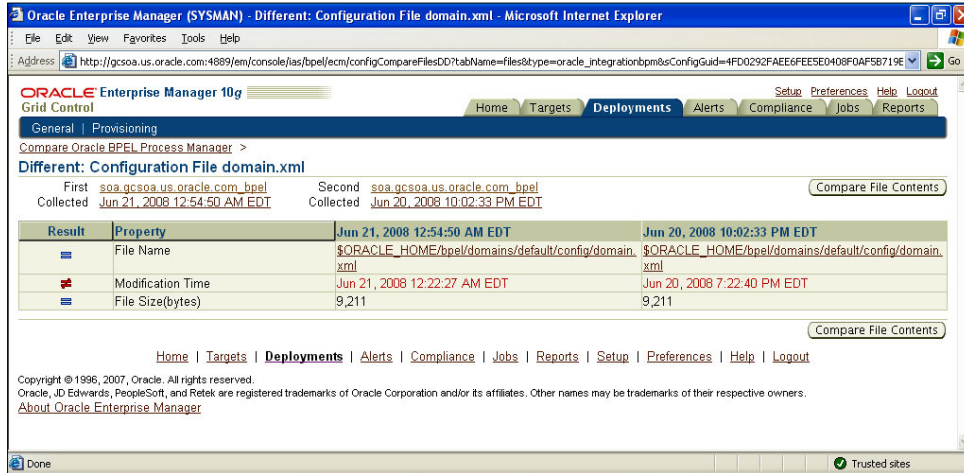
Select Result	Jun 21, 2008 12:54:50 AM EDT	Jun 20, 2008 10:02:33 PM EDT
☒	\$ORACLE_HOME/bpel/domains/default/config/domain.xml	\$ORACLE_HOME/bpel/domains/default/config/domain.xml
☐	\$ORACLE_HOME/bpel/system/config/collaxa-config.xml	\$ORACLE_HOME/bpel/system/config/collaxa-config.xml
☐	\$ORACLE_HOME/bpel/system/config/groups-protocol.xml	\$ORACLE_HOME/bpel/system/config/groups-protocol.xml

Summary | Process Manager | Domains | Processes | Configuration Files

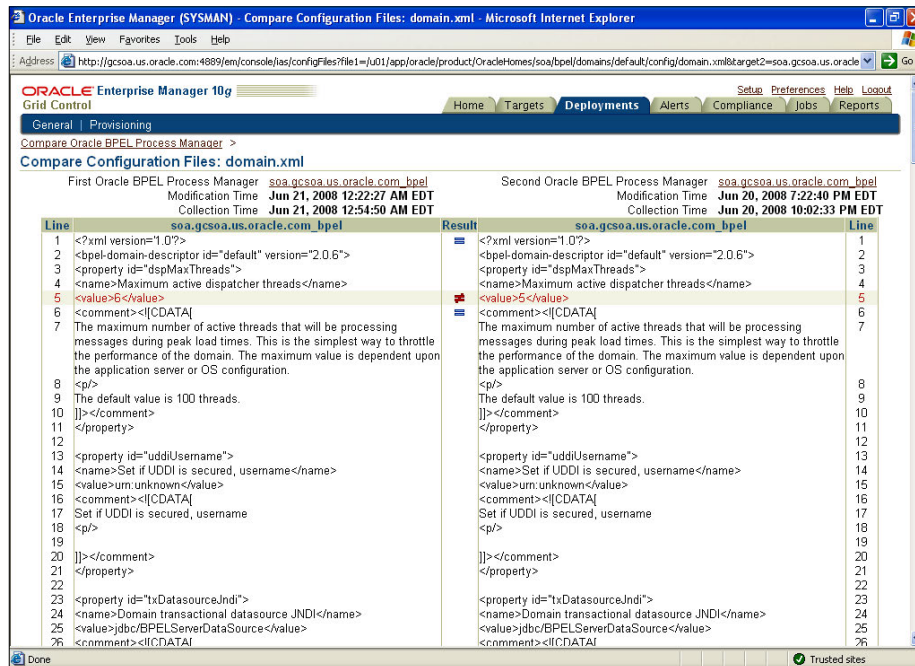
Home | Targets | Deployments | Alerts | Compliance | Jobs | Reports | Setup | Preferences | Help | Logout

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About Oracle Enterprise Manager

17. Click on the *inequality* sign in the **Result** column to view the differences in file size and modified time.



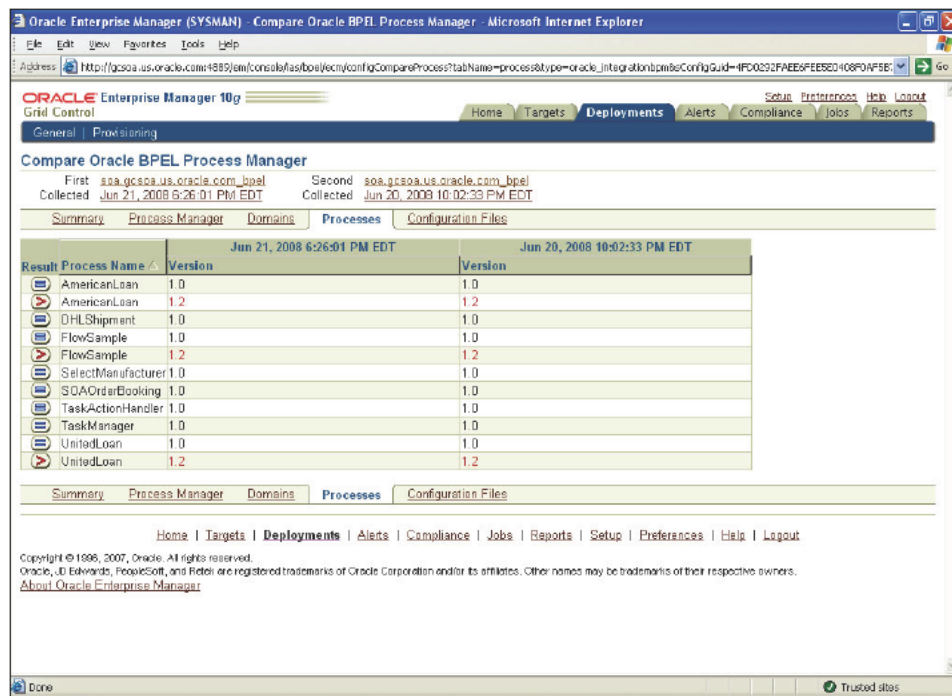
18. Click on the **Back** button of the browser.
19. Click on **Compare File Contents**.
20. View the differences between files on the compare file contents page.



Comparing BPEL process versions for the same process

Grid Control can provide target comparisons for different target types. One of the more interesting comparisons in the BPEL world is to compare successive versions of a BPEL process, or similar BPEL processes on different environments. Grid Control enables the administrator or developer to do just that, thereby assisting with change management and impact analysis.

1. In our current scenario, we will compare two versions of the same BPEL process on the same server.
2. Click the **Compare BPEL Process Manager** breadcrumb.
3. Click on the **Processes** tab.



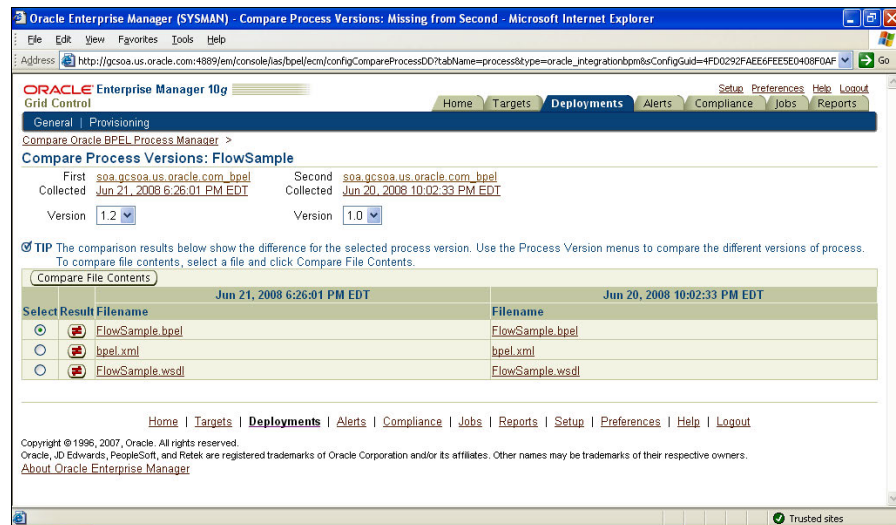
Result	Process Name	Version	Target
	AmericanLoan	1.0	Jun 21, 2008 6:26:01 PM EDT
	AmericanLoan	1.2	Jun 20, 2008 10:02:33 PM EDT
	DHLShipment	1.0	Jun 21, 2008 6:26:01 PM EDT
	DHLShipment	1.0	Jun 20, 2008 10:02:33 PM EDT
	FlowSample	1.0	Jun 21, 2008 6:26:01 PM EDT
	FlowSample	1.2	Jun 20, 2008 10:02:33 PM EDT
	SelectManufacturer	1.0	Jun 21, 2008 6:26:01 PM EDT
	SelectManufacturer	1.0	Jun 20, 2008 10:02:33 PM EDT
	SOAOrderBooking	1.0	Jun 21, 2008 6:26:01 PM EDT
	SOAOrderBooking	1.0	Jun 20, 2008 10:02:33 PM EDT
	TaskActionHandler	1.0	Jun 21, 2008 6:26:01 PM EDT
	TaskActionHandler	1.0	Jun 20, 2008 10:02:33 PM EDT
	TaskManager	1.0	Jun 21, 2008 6:26:01 PM EDT
	TaskManager	1.0	Jun 20, 2008 10:02:33 PM EDT
	UnitedLoan	1.0	Jun 21, 2008 6:26:01 PM EDT
	UnitedLoan	1.2	Jun 20, 2008 10:02:33 PM EDT



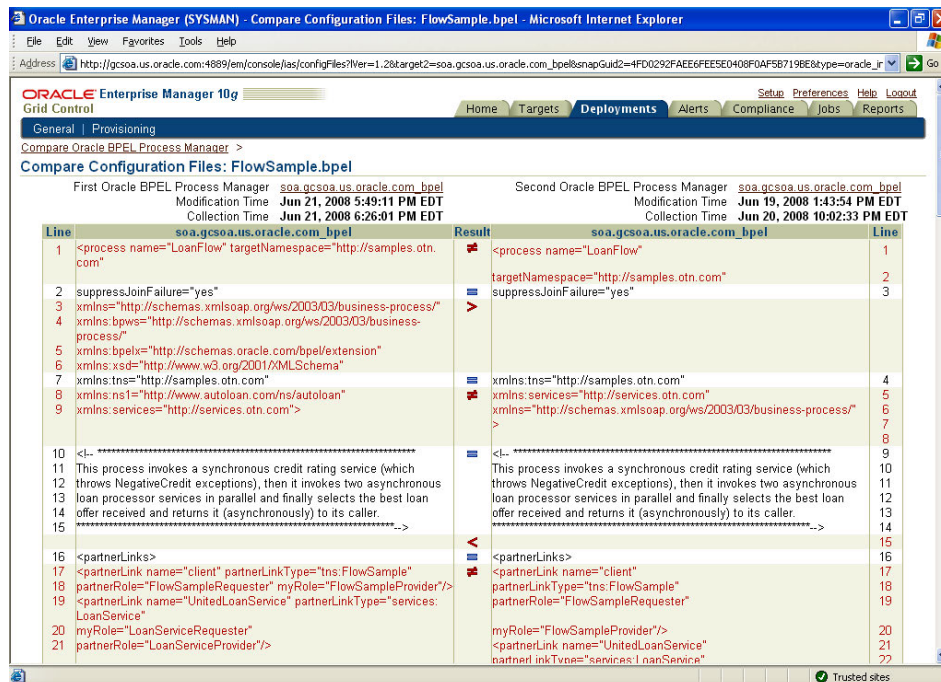
Notice the differences in the processes across the two targets. You can see that newer versions of the BPEL processes are available for **FlowSample**, **AmericanLoan**, and **UnitedLoan**.

4. Click on the *greater than* sign for the **FlowSample** process.
5. This takes you to the compare process page where you can compare different versions of the process.

6. From the **Version** drop-down list, pick two different versions for the same process.
7. Click on **Compare File Contents**, as shown in the following screenshot:



8. Note the differences in the files underlying these processes.

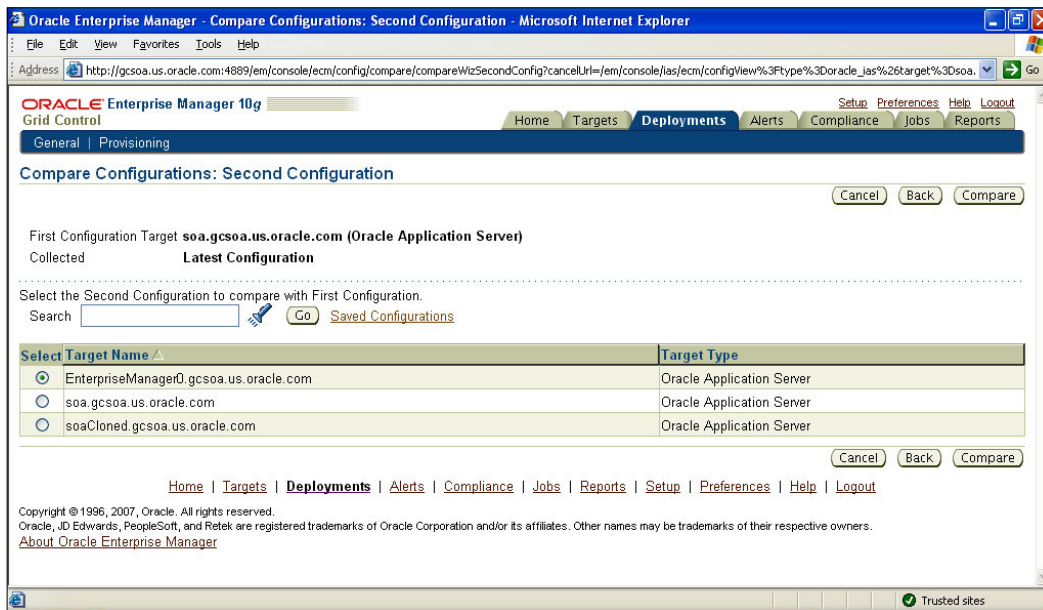


- By scrolling down, you can see that an additional section has been added to the version 1.2 of the process.

Comparing the current Oracle Application Server configuration with a saved baseline

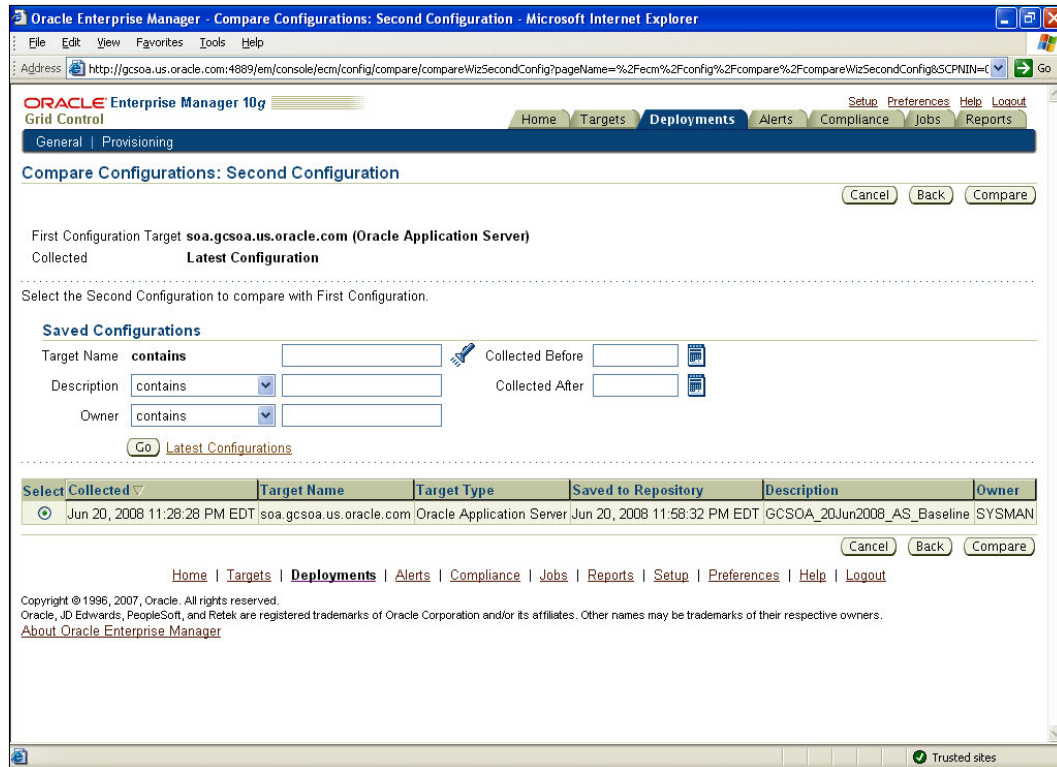
The same approach can be used for the Oracle application server target as well:

- Navigate to the home page for the Oracle Application Server target.
- Select the **Targets** tab and then select the **Application Server** sub-tab.
- Click on the link for the application server name, such as **soademo.gcsoa.us.oracle.com**, to take you to the application server home page.
- Click on the **Administration** tab.
- Click on the **Last collected Configuration**.
- Click on the **Refresh** button to get the latest configurations updated.
- Click on the **Compare** button to start a comparison between the current configuration of the application server target and a saved (Production Baseline) configuration.



- Click on the **Saved Configurations** link.
- Select the **GCSOA_<date>_AS_Baseline** for comparison.

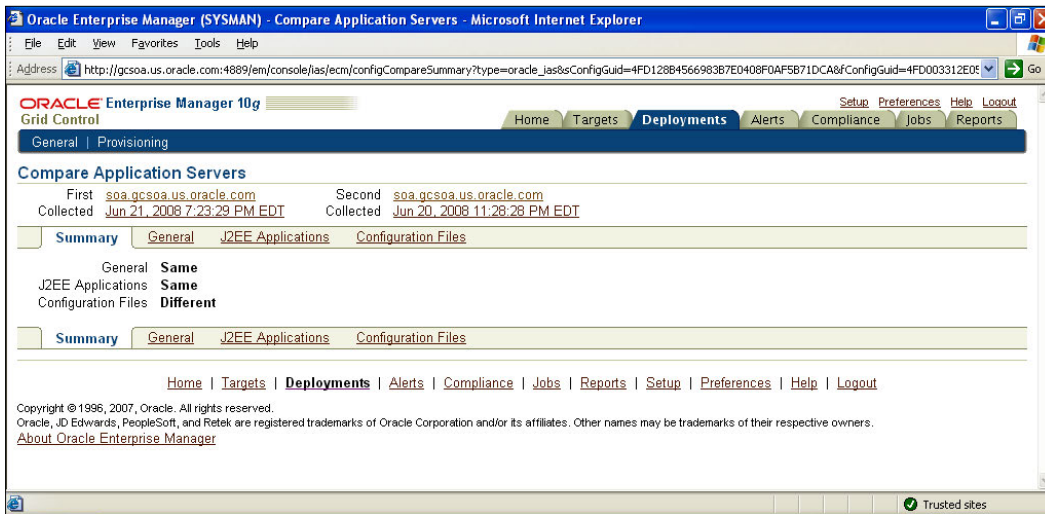
10. Click **Compare** to generate the comparison results.



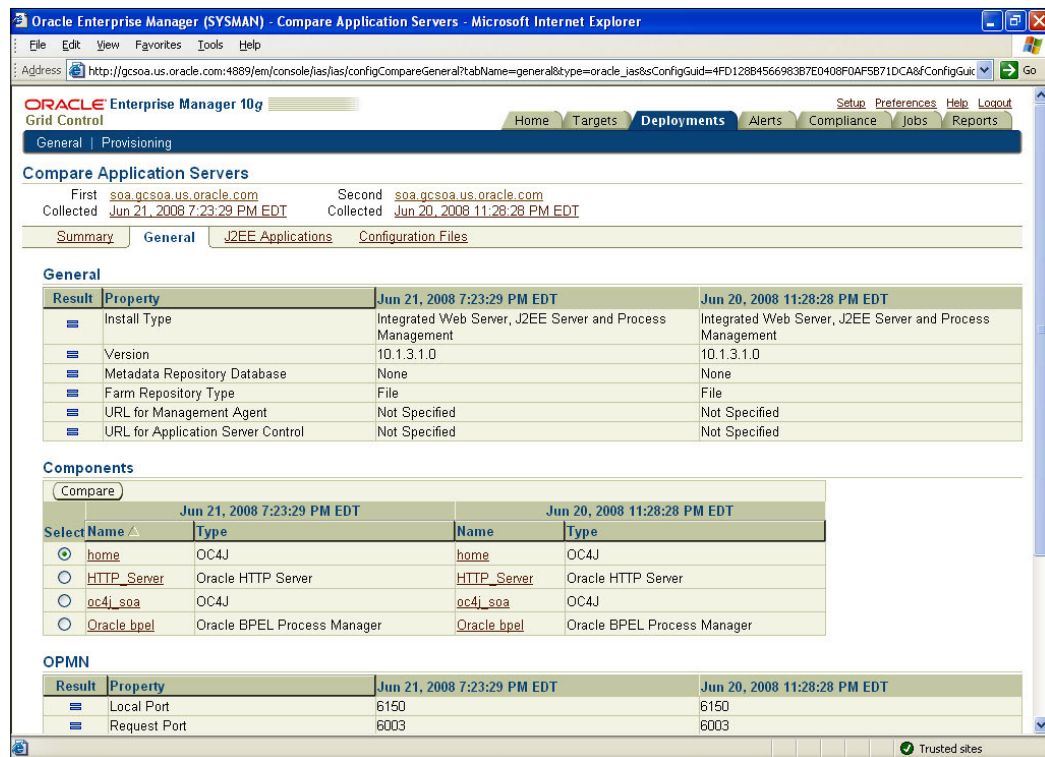
Viewing application server target comparison results with a saved baseline

Once the comparisons have been initiated, the similarities and differences can be observed on the Grid Control user interface:

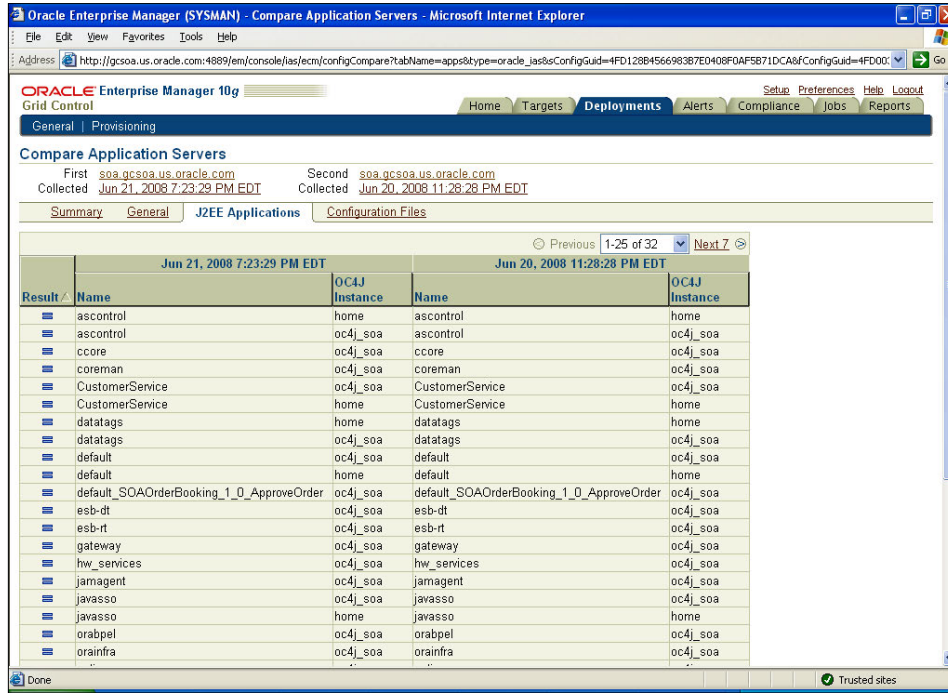
1. The comparison results between the application server targets are presented in four categories. The **Summary** tab lists the status of the four categories.



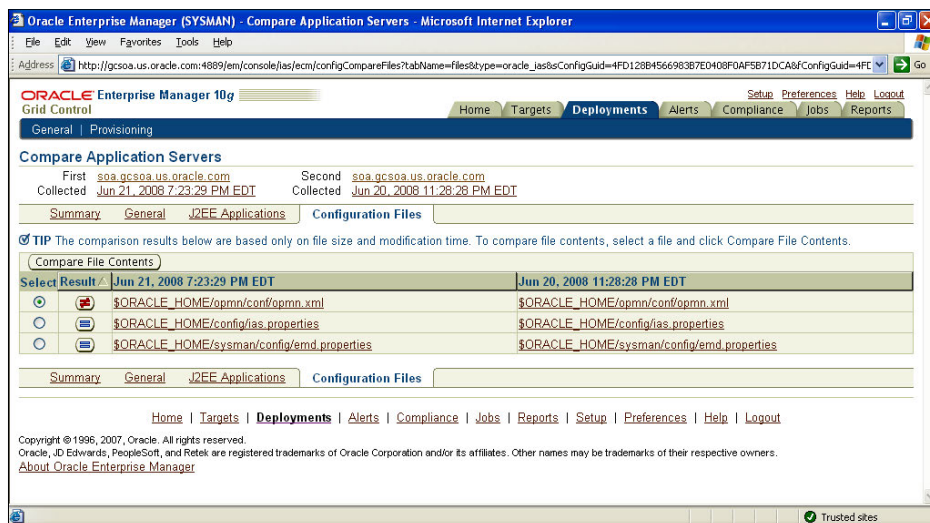
- Click on the **General** tab to view key parameters values and changes from the baseline.



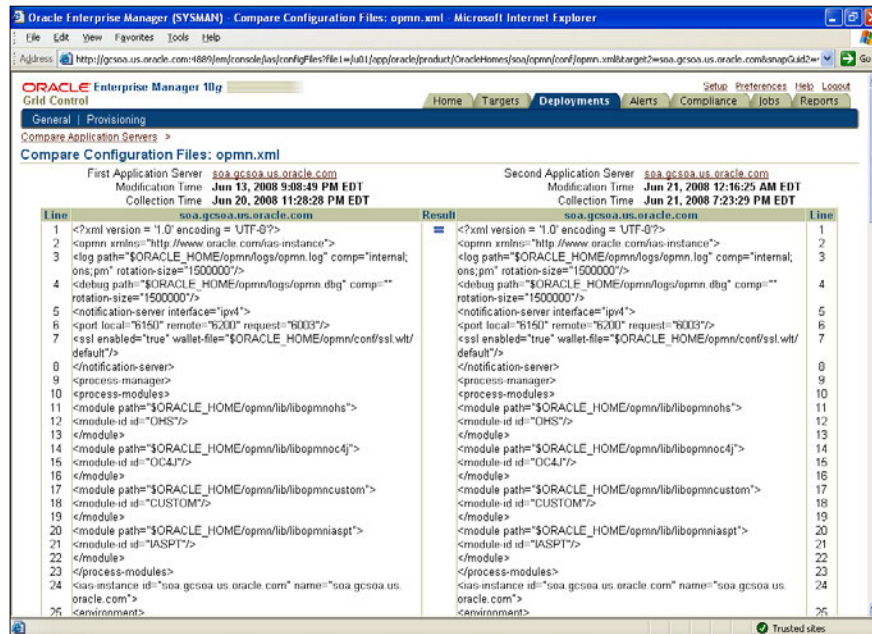
- Click on the **J2EE Applications** tab to look for any changes.



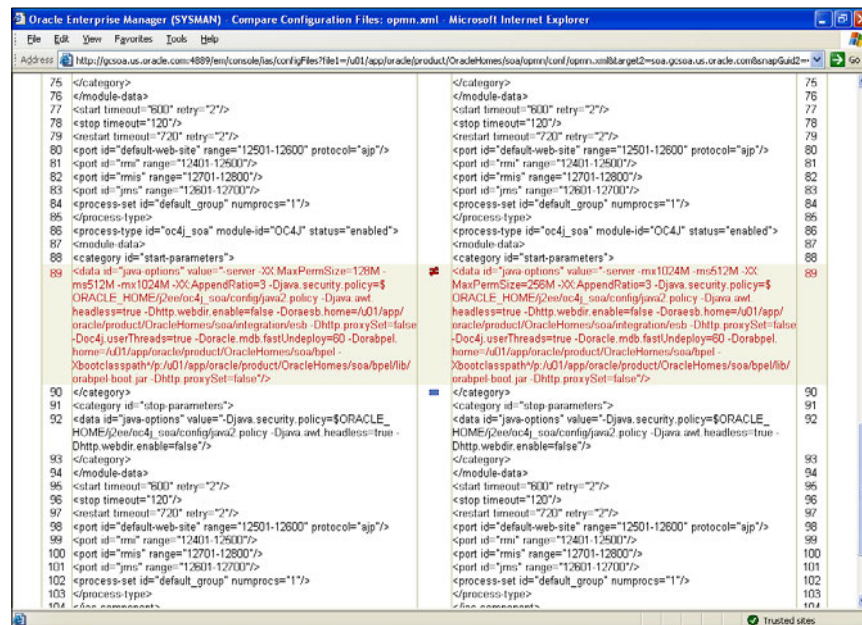
- Click on the **Configuration Files** tab to look for key changes to the configuration files.
- Click on the radio button next to the *inequality* sign displayed.



- Click on **Compare File Contents** to view the actual changes from the baseline version.



- Observe changes to the **MaxPermSize**.



Summary

Configuration management is critical for administrators to control change within the environment and troubleshoot problems associated with changing configurations. With Grid Control's configuration management capabilities, administrators can manage change and reduce time to troubleshoot problems.

In this chapter, we discussed configuration management and how it applies to BPEL PM and the application server target. We discussed the configuration overview for both target types, looked at the most recent configuration information, and saved a reference "gold" configuration snapshot to the Grid Control repository. Then we proceeded to make a few configuration changes via the individual product consoles. It was fairly simple to observe these changes in Grid Control, as well as compare the changes with the "gold" standard. Further, it was also useful to compare BPEL process versions and note the changes across successive versions.

Configuration management has been extended with Enterprise Manager's acquisition of two new products, namely **Configuration Change Console (CCC)** and **Application Change Console (ACC)**. With these two products, administrators can view changes actively as they happen, as well as roll back and roll forward to a desired configuration.

The next few chapters will walkthrough SOA suite provisioning and cloning.

9

SOA Suite Cloning

Software maintenance often accounts for 70 percent of overall cost and that includes licensing. Enterprises have to worry about maintaining their software, which includes product updates, security updates, hardware updates, and environment refreshes. These are time-consuming tasks that require human expertise in several areas. As the software ages, an enterprise still needs to maintain this human expertise for legacy software that, while critical to the business, can be expensive and sometimes negate the overall business value by increasing the cost of ownership.

More and more enterprises are turning to automated lifecycle management tools to help with this heavy lifting related to software lifecycle maintenance. It is important to have the right strategy in place to plan for maintenance. Maintenance should be part of the overall strategy, not an afterthought.

This chapter covers:

- Challenges
- Solution
- Step-by-step exercises:
 - Adding an Oracle Application Server Cluster to Grid Control
 - Stopping application server processes
 - Creating a component in the Grid Control Software Library
 - Cloning an Oracle Application Server and SOA applications
 - Validating a newly created cluster

Challenges

In today's data centers, services often need to be provisioned in short order. These services could consist of complex multitier configurations, such as Oracle Application Server and SOA application software. An administrator has to go through multiple steps to clone an SOA Suite from one installation to another. The steps include cloning copied files, configuring them, and making changes to reflect the new installation. Several Oracle administrators have database cloning skills, but most do not possess the expertise to clone Application Server, let alone the SOA Suite. Manual installations of such services are often time consuming and error prone.

Solution

Grid Control provides a flexible and scalable way to clone tested images to multiple hosts. Specifically, Grid Control offers a predefined, fully customizable procedure for cloning Oracle Application Server and SOA applications. The procedure enables administrators to either create a new Oracle Application Server instance or Oracle Application Server Cluster based on an existing, reference application server or cluster; thereby automating common IT tasks such as creating a production SOA Suite environment based on a test or stage, or such as extending an existing Oracle Application Server Cluster to accommodate an increase in load.

Step-by-step exercises

This set of step-by-step exercises will walkthrough cloning an Oracle SOA Suite 10.1.3.x deployed on Oracle Application Server 10.1.3.x.

Adding an Oracle Application Server Cluster to Grid Control

The first step is to create the application server cluster target in order to clone it later.



In order to create a new cluster via cloning, Grid Control must be aware of an existing, installed cluster from which to clone.

1. From the Grid Control home page, click on the **Targets | Middleware** tab.



In the table, you should see a minimum of two Oracle Application Server targets: one hosting the Grid Control application and the other hosting the SOA Suite, as discussed in previous chapters. While the Oracle Application Server instance hosting the SOA Suite has been discovered in Enterprise Manager, the cluster in which it is a member has not yet been discovered.

2. From the **Add** drop-down menu, select **Oracle Application Server Cluster** and click on **Go**, as shown in the following screenshot:

ORACLE Enterprise Manager 10g
Grid Control

Home | **Targets** | Deployments | Alerts | Compliance | Jobs | Reports

Hosts | Databases | Application Servers | Web Applications | Services | Systems | Groups | All Targets

Application Servers

Page Refreshed Jun 17, 2008 2:01:10 AM EDT [Refresh](#)

Search All [Go](#)

[View Flat List](#) Add Oracle Application Server Cluster [Go](#)

[Remove](#) [Configure](#)

[Expand All](#) [Collapse All](#)

Select	Name	Type	Status	Status Details	Alerts	Policy Violations	CPU Usage (%)	Memory Usage (MB)
☐	All Application Servers							
☒	EnterpriseManager01.gcsoa.us.oracle.com	Oracle Application Server	(6)	5 (↑5)	0 0	0 0 0	3.87	964.18
☐	soa.gcsoa.us.oracle.com	Oracle Application Server	(6)	4 (↑4)	0 0	0 0 0	4.15	88.39

TIP For an explanation of the icons and symbols used in this page, see the [Icon Key](#).

Related Links

[Customize Table Columns](#)

[Home](#) | [Targets](#) | [Deployments](#) | [Alerts](#) | [Compliance](#) | [Jobs](#) | [Reports](#) | [Setup](#) | [Preferences](#) | [Help](#) | [Logout](#)

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3. A page appears prompting for information on the existing cluster. Provide a name for the cluster, such as **Cluster 10131**.

- To specify an application server instance that is a member of the cluster, click on the *flashlight* icon.

ORACLE Enterprise Manager 10g Grid Control

Home | **Targets** | Deployments | Alerts | Compliance | Jobs | Reports | Setup | Preferences | Help | Logout

Hosts | Databases | Application Servers | Web Applications | Services | Systems | Groups | All Targets

Add Oracle Application Server Cluster

In order to add an Oracle Application Server Cluster to Grid Control for monitoring and central management, you must specify the name of an Oracle Application Server (version 10.1.3 or higher) instance that is a member of the Oracle Application Server Cluster to be added. Cancel OK

* Oracle Application Server Cluster Name
Enter a unique name for the Oracle Application Server Cluster.

* Application Server Name
Specify the name of an application server instance that is part of the Oracle Application Server Cluster to be added.

OPMN Request Port
If left blank, the OPMN request port value will be automatically determined.

Application Server Control URL

TIP The application server instance name and its OPMN request port are used to contact the application server, and query its Oracle Application Server Cluster membership. Based on the application server instance selected, Enterprise Manager specifies the default value for the OPMN request port. If the port value specified by Enterprise Manager is incorrect, then review the application server's opmn.xml file (i.e. \$ORACLE_HOME\opmn\config\opmn.xml) to obtain the correct value.

Cancel OK

Home | **Targets** | Deployments | Alerts | Compliance | Jobs | Reports | Setup | Preferences | Help | Logout

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- On the **Search and Select: Targets** page, select the name of an application server instance that is a member of the cluster and click on the **Select** button, as shown in the following screenshot:

Search and Select: Targets Cancel Select

Search

Target Type: ▼

Target Name:

Go

The following application server instances are not currently members of an Oracle Application Server Cluster recognized by Grid Control.

Select	Name ▲	Host
☒	soa.gcsoa.us.oracle.com	gcsoa.us.oracle.com

Cancel Select

- The remaining fields on the **Add Oracle Application Server Cluster** page are automatically populated based on your selection, as shown in the next screenshot. Click on **OK**.

ORACLE Enterprise Manager 10g Grid Control

Home Targets Deployments Alerts Compliance Jobs Reports

Hosts | Databases | Application Servers | Web Applications | Services | Systems | Groups | All Targets

Add Oracle Application Server Cluster

In order to add an Oracle Application Server Cluster to Grid Control for monitoring and central management, you must specify the name of an Oracle Application Server (version 10.1.3 or higher) instance that is a member of the Oracle Application Server Cluster to be added. Cancel OK

* Oracle Application Server Cluster Name
Enter a unique name for the Oracle Application Server Cluster.

* Application Server Name
Specify the name of an application server instance that is part of the Oracle Application Server Cluster to be added.

OPMN Request Port
If left blank, the OPMN request port value will be automatically determined.

Application Server Control URL

☒ **TIP** The application server instance name and its OPMN request port are used to contact the application server, and query its Oracle Application Server Cluster membership. Based on the application server instance selected, Enterprise Manager specifies the default value for the OPMN request port. If the port value specified by Enterprise Manager is incorrect, then review the application server's opmn.xml file (i.e. \$ORACLE_HOME\opmn\config\opmn.xml) to obtain the correct value.

Cancel OK

[Home](#) | [Targets](#) | [Deployments](#) | [Alerts](#) | [Compliance](#) | [Jobs](#) | [Reports](#) | [Setup](#) | [Preferences](#) | [Help](#) | [Logout](#)

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7. A confirmation message appears at the top of the screen to confirm that the cluster was successfully added to Enterprise Manager, and **Cluster 10.1.3.1** appears as a new target in the table with the **soa.gcsoa.us.oracle.com** application server shown as a member of that cluster, as shown in the following screenshot:

ORACLE Enterprise Manager 10g Grid Control

Home Targets Deployments Alerts Compliance Jobs Reports

Hosts | Databases | Application Servers | Web Applications | Services | Systems | Groups | All Targets

Confirmation

The Oracle Application Server Cluster Cluster 10.1.3.1 has been successfully added and is now being monitored by Grid Control.

Application Servers

Page Refreshed Jun 17, 2008 2:03:11 AM EDT Refresh

Search Go

View Flat List Add Go

Remove Configure

[Expand All](#) | [Collapse All](#)

Select	Name	Type	Status	Status Details	Alerts	Policy Violations	CPU Usage (%)	Memory Usage (MB)
☐	▼ All Application Servers							
☒	▼ Cluster 10.1.3.1	Oracle Application Server Cluster	n/a	4 (↑4)	0 0	0 0 0		
☐	▶ soa.gcsoa.us.oracle.com	Oracle Application Server	⊕	4 (↑4)	0 0	0 0 0	4.15	88.39
☐	▶ EnterpriseManager0.gcsoa.us.oracle.com	Oracle Application Server	⊕	5 (↑5)	0 0	0 0 0	3.87	964.18

☒ **TIP** For an explanation of the icons and symbols used in this page, see the [Icon Key](#).

Related Links

[Customize Table Columns](#)

[Home](#) | [Targets](#) | [Deployments](#) | [Alerts](#) | [Compliance](#) | [Jobs](#) | [Reports](#) | [Setup](#) | [Preferences](#) | [Help](#) | [Logout](#)

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Now that an Oracle Application Server Cluster has been added to Grid Control, you can use the cluster as a reference or source for performing a wide range of operations. For the purpose of this exercise, we will use the discovered cluster to create a "gold image" component in the Grid Control Software Library, and then use the gold image component in the library to create a new Oracle Application Server Cluster target.

Stopping application server processes

Stopping the application server processes is recommended in order to take a copy of the data and the configuration.



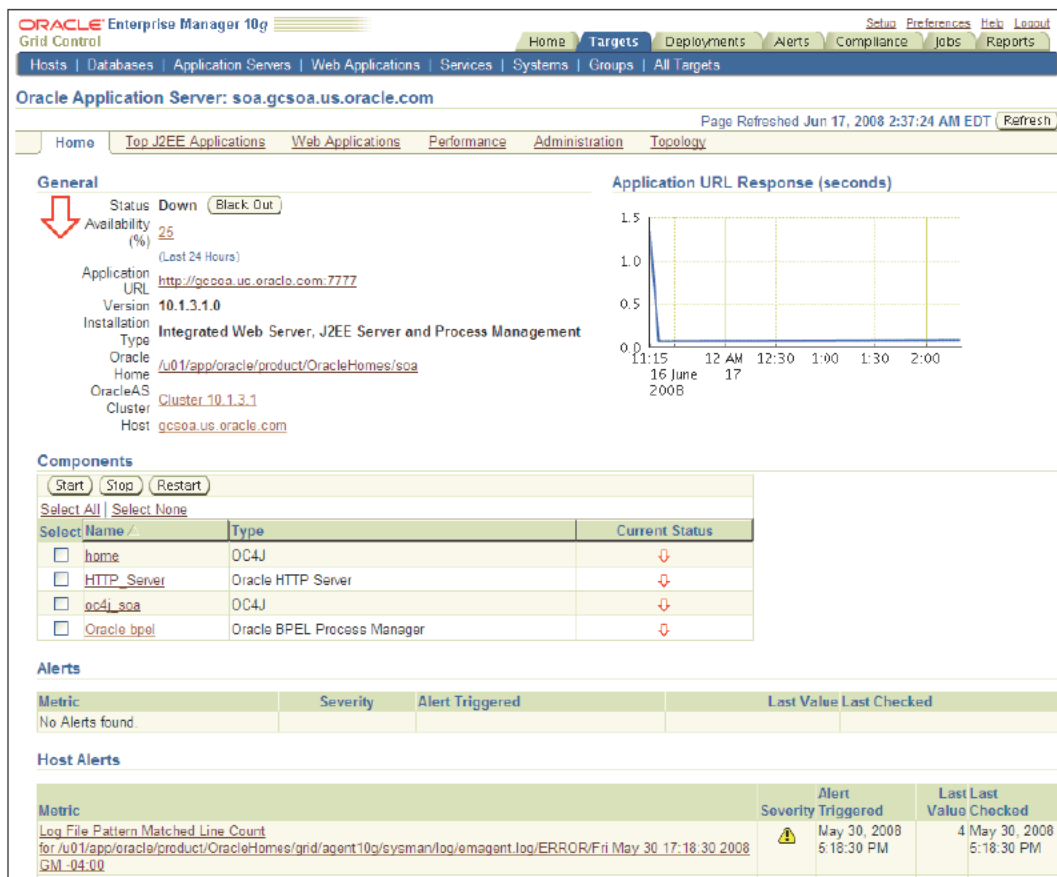
Prior to creating a gold image component or creating a new cluster via cloning, you should first stop the existing, installed application server processes already running on the machine.

To stop the Oracle Application Server processes, follow these steps:

1. Log in as the application server owner on the Linux or Windows machine (for example, oracle).
2. Navigate to the bin directory, that is,
`cd/u01/app/oracle/product/OracleHomes/soa/opmn/bin.`
3. Stop the application server processes by using: `./opmnctl stopall.`
4. From the application server home page, you can validate that all components of the instance have been stopped.



If the application server instance status continues to read **Up**, click on the **Refresh** icon on the page.



Creating a component in the Grid Control Software Library

Grid Control allows you to clone Oracle Application Server software directly from an existing install base, or from a component stored in the Software Library. In this exercise, we will clone from a component stored in the Software Library.



Prior to creating components in the Software Library, you must first configure the Software Library. For information on how to configure the Software Library outside of exercise, refer to section 18.7 *Setting Up and Configuring a Software Library with Oracle Enterprise Manager in the Oracle Enterprise Manager Advanced Configuration 10g Release 4* guide posted on the Oracle Technology Network.

1. Navigate to the **Deployments** tab and click on the **Provisioning** sub-tab.

ORACLE Enterprise Manager 10g
Grid Control

Home | Targets | **Deployments** | Alerts | Compliance | Jobs | Reports | Setup | Preferences | Help | Logout

General | Provisioning

Deployments

Critical Patch Advisories for Oracle Homes

Patch Advisories 0

⚠ Patch Advisory information may be stale.
Oracle MetaLink credentials are not configured.

Affected Oracle Homes 0

Oracle MetaLink Credentials [Not Configured](#)

Deployments Summary

View Database Installations ▾

Database Installations ▲	Targets	Installations	Interim Patches Applied
Oracle Database 10g 10.2.0.2.0	1	1	No

Overview

Enterprise Manager maintains detailed information about hosts and their operating systems, as well as software installations. The Deployments Summary table provides a high level view of this information, as well as allowing you to explore the details by selecting the individual components. This information is also available on the Configuration page for a host. Using the Deployments tools, you can:

- Perform searches on the detailed information.
- Compare the detailed information of hosts and databases.
- Search Oracle MetaLink for patches, and subsequently manage their deployment.
- Clone a database or Oracle home to an alternative location.
- Manage the configuration collection process.
- Orchestrate Provisioning and Patching through Deployment Procedures.

Configuration

[Search](#)
[Compare Configuration](#)
[Compare to Multiple Configurations\(Job\)](#)
[View Saved Configurations](#)
[Download Policy Groups](#)

[Import Configuration](#)
[Host Configuration Collection Problems](#)
[Refresh Host Configuration](#)
[Configuration History](#)

Patching

[Patching through Deployment Procedures](#)
[View/Upload Patch](#)
[Patch Linux Hosts](#)
[Patch Agent](#)

Agent Installation

[Install Agent](#)
[Agent Installation Status](#)

Cloning

[Clone Database](#)
[Clone Oracle Home](#)

Client Configurations

[Getting Started With Client System Analyzer](#)
[Failed Collections](#)
[Client System Analyzer in Grid Control](#)

[Client Configurations](#)
[Collection Tag Associations](#)

Deployment Procedure Manager

[Getting Started with Deployment Procedure Manager](#)
[Deployment Procedures](#)
[Database Provisioning Procedures](#)
[Extend Cluster Database](#)
[Download Deployment Procedures](#)

[Procedure Completion Status](#)
[Application Server Provisioning Procedures](#)
[RAC Provisioning Procedures](#)
[Patch Procedures](#)

Home | Targets | **Deployments** | Alerts | Compliance | Jobs | Reports | Setup | Preferences | Help | Logout

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2. On the **Components** property page, click on the **Create Component** button located directly above the table on the far right-hand side, shown in the following screenshot:

ORACLE Enterprise Manager 10g Setup Preferences Help Logout

Grid Control Home Targets **Deployments** Alerts Compliance Jobs Reports

General | Provisioning

Provisioning

Provision a full stack of software from the operating system up to the application, onto a hardware server. Page Refreshed June 16, 2008 11:53:43 PM EDT Refresh

Components Directives Networks Images Suites Assignments Hardware Cluster Suite Instance Administration

Define and configure the set of software components that may be included in an image.

View Latest Version Go Advanced Search

Select	Name	Type	Revision	Status	Maturity	Product name/Patch number	Product version	Description
☐	Components							
☐	Oracle Components							Oracle Components

Components Directives Networks Images Suites Assignments Hardware Cluster Suite Instance Administration

[Home](#) | [Targets](#) | [Deployments](#) | [Alerts](#) | [Compliance](#) | [Jobs](#) | [Reports](#) | [Setup](#) | [Preferences](#) | [Help](#) | [Logout](#)

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- The **Create Component** wizard appears with the **Describe** page displayed. Ensure that the component selected in the **Type** drop-down menu is **Oracle iAS Clone**, and supply a name for the component to be created, such as **SOA 10.1.3.1 Gold Image**. The remaining fields are optional. Click on **Next**, as shown in the following screenshot:

ORACLE Enterprise Manager 10g Setup Preferences Help Logout

Grid Control Home Targets **Deployments** Alerts Compliance Jobs Reports

General | Provisioning

Describe Customize Upload File Set Directives Review

Create Component: Describe Cancel Save Step 1 of 5 Next

Parent Components

Provide a name and other details for the Component.

Type

* Name
The name must be unique within the parent folder

Description

Product name/Patch number

Product version

Vendor

Cancel Save Step 1 of 5 Next

[Home](#) | [Targets](#) | [Deployments](#) | [Alerts](#) | [Compliance](#) | [Jobs](#) | [Reports](#) | [Setup](#) | [Preferences](#) | [Help](#) | [Logout](#)

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- The **Configure** page of the **Create Component** wizard appears. Click on the *flashlight* icon to select a host name on which the existing software has been installed.

ORACLE Enterprise Manager 10g
Grid Control

Home Targets **Deployments** Alerts Compliance Jobs Reports

General | Provisioning

Describe Configure Set Directives Review

Create Component: Configure

Cancel Save Back Step 2 of 4 Next

Parent Components

Type Oracle iAS Clone

Configure the new Component.

* Host
The fully qualified domain name of the host where the Oracle home is located

* Home Location
Click the image next to the host field to select an Oracle Home.

* Username

* Password
Enter the username and password for the for the host.

* Working Directory
Enter a working directory on the host in which you have permissions to write.

Files to Exclude
Enter a comma-separated list of files to exclude (for example *.dbf,*.log).

Internet Directory Username

Internet Directory Password
Enter the username and password for the Oracle Internet Directory. Leave this empty if the home is not connected to an Oracle Internet Directory.

Cancel Save Back Step 2 of 4 Next

[Home](#) | [Targets](#) | [Deployments](#) | [Alerts](#) | [Compliance](#) | [Jobs](#) | [Reports](#) | [Setup](#) | [Preferences](#) | [Help](#) | [Logout](#)

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- From the **Select Clone Source** page, select the host on which the Oracle Application Server SOA Suite 10.1.3.1.0 product has been installed. This will be the source Oracle home that will be zipped up, compressed, and stored in the Software Library. It will be used later in the hands-on lab as the gold, reference image from which to clone. Click on **OK**.

ORACLE Enterprise Manager 10g
Grid Control

Home Targets **Deployments** Alerts Compliance Jobs Reports

General | Provisioning

Components > Create Component >

Select Clone Source

Search Column: Host Value: Go Cancel OK

Select Host	Home Location	Platform	Targets	Products
☒ gcsoa.us.oracle.com	/u01/app/oracle/product/OracleHomes/soa (oracleas1)	Enterprise Linux Enterprise Linux AS release 4 (October Update 5)	soa.gcsoa.us.oracle.com, soa.gcsoa.us.oracle.com_HTTP Server, soa.gcsoa.us.oracle.com_bpel, soa.gcsoa.us.oracle.com_home, soa.gcsoa.us.oracle.com_home_JVM_1, soa.gcsoa.us.oracle.com_oc4j_soa, soa.gcsoa.us.oracle.com_oc4j_soa_JVM_1	Oracle Application Server SOA Suite 10.1.3.1.0

Cancel OK

Home | Targets | **Deployments** | Alerts | Compliance | Jobs | Reports | Setup | Preferences | Help | Logout

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- Provide the following information on the **Configure** page of the wizard:
Username: oracle
Password: welcome1
Working Directory: /tmp
- Leave the **Internet Directory Username** and **Internet Directory Password** fields blank, unless you are using an Oracle Internet Directory. Click on **Next**, as shown in the following screenshot:

ORACLE Enterprise Manager 10g
Grid Control

Home Targets **Deployments** Alerts Compliance Jobs Reports

General | Provisioning

Describe **Configure** Set Directives Review

Create Component: Configure

Cancel Save Back Step 2 of 4 Next

Parent Components

Type **Oracle iAS Clone**

Configure the new Component.

* Host:
The fully qualified domain name of the host where the Oracle home is located

* Home Location:
Click the image next to the host field to select an Oracle Home.

* Username:

* Password:
Enter the username and password for the host.

* Working Directory:
Enter a working directory on the host in which you have permissions to write.

Files to Exclude:
Enter a comma-separated list of files to exclude (for example *.dbf,*.log).

Internet Directory Username:

Internet Directory Password:

Enter the username and password for the Oracle Internet Directory. Leave this empty if the home is not connected to an Oracle Internet Directory.

Cancel Save Back Step 2 of 4 Next

8. No inputs or edits are required on the **Set Directives** page of the **Create Component** wizard. Click on **Next**, shown in the following screenshot:

ORACLE Enterprise Manager 10g
Grid Control

Home Targets **Deployments** Alerts Compliance Jobs Reports

General | Provisioning

Describe Configure **Set Directives** Review

Create Component: Set Directives

Cancel Save Back Step 3 of 4 Next

Parent Components

Type Oracle iAS Clone

Select the directives that will stage and install instances of the Component.

Select Directives

Select the Directives participating in this Component.

Edit Properties Choose Directives Clear

Select Name	Library Path	Revision	Maturity	Status
☒ Stage				
☐ Pre-Install				
☐ Install				
☐ Post-Install				

Cancel Save Back Step 3 of 4 Next

Home | Targets | **Deployments** | Alerts | Compliance | Jobs | Reports | Setup | Preferences | Help | Logout

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9. Review the content on the **Review** page of the wizard to ensure the inputted data is accurate. Click on **Finish**, as shown in the next screenshot:

ORACLE Enterprise Manager 10g Setup Preferences Help Logout

Grid Control Home Targets Deployments Alerts Compliance Jobs Reports

General | Provisioning

Describe Configure Set Directives **Review**

Create Component: Review Cancel Save Back Step 4 of 4 Finish

Parent Components

Type **Oracle iAS Clone**

Review the configuration for the Component. If there is a job associated with this Component, then clicking on the Finish button will save the Component and also trigger off the job, while the Save button will only save the Component. If no job is associated with this Component, then both the buttons behave the same way.

Describe

Type **Oracle iAS Clone**

Name **SOA 10.1.3.1 Gold Image**

Description **Company's gold image of SOA Suite**

Status

Maturity **Untested**

Product name/Patch number **SOA Suite**

Product version **10.1.3.1**

Vendor **Oracle**

Last Modified

Last Modified By

Configure

* Host **gcsoa.us.oracle.com**
The fully qualified domain name of the host where the Oracle home is located

* Home Location **/u01/app/oracle/product/OracleHomes/soa**
Click the image next to the host field to select an Oracle Home.

* Username **oracle**

* Working Directory **/tmp**
Enter a working directory on the host in which you have permissions to write.

Files to Exclude **centralagents.lst**
Enter a comma-separated list of files to exclude (for example *.dbf,*.log).

NAME_OIDUsername

Set Directives

Select Directives

Select the Directives participating in this Component.

Name	Library Path	Revision	Maturity	Status
Stage				
Pre-Install				
Install				
Post-Install				

Cancel Save Back Step 4 of 4 Finish

Home Targets **Deployments** Alerts Compliance Jobs Reports Setup Preferences Help Logout

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10. A confirmation message will appear at the top of the page indicating that a job was submitted to create the Oracle Application Server 10.1.3.1 SOA Suite component in the Grid Control Software Library. To track progress of the job, click on the link identifying the job execution ID in the confirmation message.

The screenshot shows the Oracle Enterprise Manager 10g Grid Control interface. At the top, there's a navigation bar with links like Home, Targets, Deployments, Alerts, Compliance, Jobs, and Reports. Below this, a 'Confirmation' message states: 'Created Component, SOA 10.1.3.1 Gold Image, beneath folder, Components. A Job has been triggered to create the component. It will be ready to use after successful completion of the job. The job execution id is 4FD1952D1EA8C37FE0408F0AF5B77E4B'. Below the confirmation, the 'Provisioning' section is active, showing a table of components. The table has columns for Select, Name, Type, Revision, Status, Maturity, Product name/Patch number, Product version, and Description. One component is listed: 'SOA 10.1.3.1 Gold Image' of type 'Oracle iAS Clone' with revision '0.1' and status 'Incomplete Untested'. The product name is 'SOA Suite' and the version is '10.1.3.1'. The description is 'Company's gold image of SOA Suite'.

Select	Name	Type	Revision	Status	Maturity	Product name/Patch number	Product version	Description
☐	Components							
☐	Oracle Components							Oracle Components
☒	SOA 10.1.3.1 Gold Image	Oracle iAS Clone	0.1	Incomplete	Untested	SOA Suite	10.1.3.1	Company's gold image of SOA Suite

11. The **Summary** wizard of the **Job Run** page appears. Ensure that the job completes successfully. This might take several minutes to complete, depending on the nature of the Oracle Application Server configuration.

ORACLE Enterprise Manager 10g Grid Control

Home | Targets | Deployments | Alerts | Compliance | **Jobs** | Reports

Job Activity | Job Library

Job Run: CREATEIASCLONECOMPONENT TUE JUN 17 00:00:37 EDT 2008

Page Refreshed Jun 17, 2008 12:01:08 AM EDT [Delete Run](#) [Edit](#) [View Definition](#)

Summary

The Stop and Suspend operations will wait for the current step to complete. A suspended job can be resumed later, at the next step. [Stop](#) [Suspend](#)

Status Running	Type Create Software Library Component for Application Server
Scheduled Jun 17, 2008 12:00:37 AM (UTC-04:00)	Owner Oracle Home
Started Jun 17, 2008 12:00:37 AM (UTC-04:00)	Description SYSMAN
Ended	Component oracle.defaultService.em.provisi...
Elapsed Time	URN
Notification No	Files to Exclude centralagents.lst
	Home Location /u01/app/oracle/product/OracleHo...
	Source *****
	Password *****
	Source *****
	Username
	Target Name gcsoa.us.oracle.com
	Scratch
	Location /tmp

Targets:
 Status: All [Go](#)

[Expand All](#) | [Collapse All](#)

Name	Targets	Status	Started	Ended	Elapsed Time (seconds)
▼ Execution: gcsoa.us.oracle.com	gcsoa.us.oracle.com	Running	Jun 17, 2008 12:00:37 AM (UTC-04:00)		30
Step: prepareSource	gcsoa.us.oracle.com	Running	Jun 17, 2008 12:00:43 AM (UTC-04:00)		25

[Delete Run](#) [Edit](#) [View Definition](#)

Home | Targets | Deployments | Alerts | Compliance | **Jobs** | Reports | Setup | Preferences | Help | Logout

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12. Use the web browser's **Refresh** button to refresh the job's status until you see that the job status has changed from **Running** to **Succeeded**.

ORACLE Enterprise Manager 10g Grid Control

Home | Targets | Deployments | Alerts | Compliance | **Jobs** | Reports

Job Activity | Job Library

Job Run: CREATEIASCLONECOMPONENT TUE JUN 17 00:00:37 EDT 2008

Page Refreshed Jun 17, 2008 12:10:26 AM EDT [Delete Run](#) [Edit](#) [View Definition](#)

Summary

Status Succeeded

Scheduled Jun 17, 2008 12:00:37 AM (UTC-04:00)

Started Jun 17, 2008 12:00:37 AM (UTC-04:00)

Ended Jun 17, 2008 12:08:38 AM (UTC-04:00)

Elapsed Time 481 seconds

Notification No

Type Create Software Library Component for Application Server

Owner Oracle Home

Description SYSMAN

Component oracle.defaultService.em.provisi...

URN

Files to Exclude centralagents.lst

Home Location /u01/app/oracle/product/OracleHo...

Source *****

Password *****

Source *****

Username

Target Name gcsoa.us.oracle.com

Scratch

Location /tmp

Targets:
 Status: All [Go](#)

[Expand All](#) | [Collapse All](#)

Name	Targets	Status	Started	Ended	Elapsed Time (seconds)
▼ Execution: gcsoa.us.oracle.com	gcsoa.us.oracle.com	Succeeded	Jun 17, 2008 12:00:37 AM (UTC-04:00)	Jun 17, 2008 12:08:38 AM (UTC-04:00)	481
Step: prepareSource	gcsoa.us.oracle.com	Succeeded	Jun 17, 2008 12:00:43 AM (UTC-04:00)	Jun 17, 2008 12:05:36 AM (UTC-04:00)	293
Step: insertComponentInSWLibrary	gcsoa.us.oracle.com	Succeeded	Jun 17, 2008 12:05:39 AM (UTC-04:00)	Jun 17, 2008 12:08:32 AM (UTC-04:00)	173
Step: removeSourceTempFiles	gcsoa.us.oracle.com	Succeeded	Jun 17, 2008 12:08:36 AM (UTC-04:00)	Jun 17, 2008 12:08:38 AM (UTC-04:00)	2

[Delete Run](#) [Edit](#) [View Definition](#)

Home | Targets | Deployments | Alerts | Compliance | **Jobs** | Reports | Setup | Preferences | Help | Logout

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13. Return to the **Provisioning** sub-tab under the **Deployments** tab to see the newly created component in the Software Library table. In order to use the component during a clone operation, you must activate the component. Select the newly created Oracle Application Server 10.1.3.1 SOA Suite component in the table and click on the **Activate** button along the top of the table.

ORACLE Enterprise Manager 10g
Grid Control

Home Targets **Deployments** Alerts Compliance Jobs Reports

General | Provisioning

Provisioning
Provision a full stack of software from the operating system up to the application, onto a hardware server. Page Refreshed June 17, 2008 12:25:40 AM EDT (Refresh)

Components Directives Networks Images Suites Assignments Hardware Cluster Suite Instance Administration

Define and configure the set of software components that may be included in an image.

View Latest Version (Go) Advanced Search

View Edit Activate Deactivate Delete Promote Demote Create Folder Create Component

Select	Name	Type	Revision	Status	Maturity	Product name/Patch number	Product version	Description
☐	▼ Components							
☐	▶ Oracle Components							Oracle Components
☒	SOA 10.1.3.1 Gold Image	Oracle iAS Clone	0.1	Active	Untested	SOA Suite	10.1.3.1	Company's gold image of SOA Suite

Components Directives Networks Images Suites Assignments Hardware Cluster Suite Instance Administration

Home | Targets | **Deployments** | Alerts | Compliance | Jobs | Reports | Setup | Preferences | Help | Logout

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An active, gold image component for the existing cluster is now in the Software Library and, as such can be used as the source image from which to create a new application server instance and cluster.

Cloning Oracle Application Server and SOA applications

Now we are ready to clone the Oracle Application Server with the underlying SOA applications, using the out-of-box deployment procedures:

1. Navigate to the **General** sub-tab from under the **Deployments** tab. Click on the **Application Server Provisioning Procedures** link in the **Deployment Procedure Manager** section at the bottom of the page.
2. A list of out-of-the-box application server-related deployment procedures appears. Select the procedure named **Application Server Deployment 10.1.3.SOA** and click on **Schedule Deployment**.

ORACLE® Enterprise Manager 10g
Grid Control

Home Targets **Deployments** Alerts Compliance Jobs Reports

General | Provisioning

Deployment Procedure Manager

Procedures Procedure Completion Status Recycle Bin

Deployment procedures are best practices provided by Oracle for various Provisioning and Patching tasks. Procedures created by Oracle cannot be edited, but can be extended using 'Create Like', so that you can customize the procedure to fit your environment. For more details click Help.

Search Text Fields Go [Advanced Search](#)

View Schedule Deployment... Edit Create Like Revert Delete Upload

Select	Procedure	Type	Description	Last Modified By	Version	Last Updated
☒	Application Server Deployment 10.1.3.SOA	AS Provisioning	This procedure installs or clones and configures a standard Web and Application tier for a multi-tier application server topology. D	Oracle	4.1	Jun 2, 2008 10:22:35 PM EDT
☐	Application Server Deployment 10.1.3	AS Provisioning	This procedure installs or clones and configures a standard Web and Application tier for a multi-tier application server topology. D	Oracle	4.0	Oct 13, 2007 3:54:17 AM EDT
☐	Application Server Deployment (myJ2EE) 10.1.2.0.2	AS Provisioning	This procedure installs and configures a standard Web and Application Tier for a multi-tier application server topology. It follows the installation and configuration of the 'myJ2EE' best practice topology, as specified by the Oracle Application Server Enterprise Deployment Guide. D	Oracle	4.0	Oct 13, 2007 3:54:15 AM EDT

Home | Targets | **Deployments** | Alerts | Compliance | Jobs | Reports | Setup | Preferences | Help | Logout

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3. A multi-step wizard appears to guide you through scheduling the cloning operation. As stated earlier, when you clone Oracle Application Server, you have the choice to clone from a source that is already installed and discovered in the Enterprise Manager environment or to clone from a source that is stored in the Software Library. Because we created a gold image component in the Software Library earlier in the exercise, select the **Select from Software Library** option. Because the only component that we created in the Software Library was the Application Tier, we will only clone the Application Tier from the Software Library in this hands-on lab. Click on the *flashlight* icon associated with the **Source for App Tier** section.

ORACLE Enterprise Manager 10g
Grid Control

Home | Targets | Deployments | Alerts | Compliance | Jobs | Reports | Setup | Preferences | Help | Logout

General | Provisioning

Source Selection | Target List | Credentials/Schedule | Application and Web Tier | Identity Management | Library Step Properties | More

Application Server Deployment 10.1.3.1 SOA: Source Selection

Cancel Step 1 of 7 Next

This procedure installs or clones and configures a standard Web and Application Tier for a multi-tier application server topology. The database tier is not installed by this procedure. However, this procedure facilitates the configuration of Java Authentication and Authorization Service (JAAS) provider (also called as JAZN) with an existing data tier. Click 'Help' for more details. [H](#)

Select a source to deploy or clone Application Tier and Web Tier.

Source Selection

Select the source either from an existing Oracle Home or Software Library

Select the source Oracle Homes from the installed Cluster Environment

☐ Select from Installed Cluster Environment

Select Cluster

Product	Host Name	Location	Files to Exclude	Working Directory
Web Tier				
Application Tier				

☒ TIP Files to Exclude : Separate file using comma. Use * for wildcard. Eg *.log, *.dif

☒ TIP A working directory is required to stage files for cloning. Eg. For Unix machines it could be /tmp

☐ Save to Software Library

Select the Gold Image of an Oracle Home or a shippable from the Software Library

☒ Select from Software Library

Source for Web Tier

Name

Component Location

Source for App Tier

Name

Component Location

Cancel Step 1 of 7 Next

Home | Targets | Deployments | Alerts | Compliance | Jobs | Reports | Setup | Preferences | Help | Logout

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4. From the **Select Component for Application Tier** page, select the **Component Name** as the one that we created earlier (the recommended name is **SOA 10.1.3.1 Gold Image**) and click on the **Select** button, as shown in the following screenshot:

Select Component for Application Tier Cancel Select

Information
 If you are unable to find the zipped up shiphome or Gold Image of an Oracle Home, you can upload the Component now by clicking [Upload](#) link. This opens up a new window which allows to upload your component and displays all the components in the software library. You may return to the current window and press the Refresh button to see the newly uploaded components

This page allows you to select a zipped up shiphome or Gold Image of an Oracle Home from the Software Library

Search

Component Name Revision
 Subtype File name
 Status

Select	Component Name	Location	Vendor	Revision	Status	Product Version
☒	SOA 10.1.3.1 Gold Image	Components/SOA 10.1.3.1 Gold Image	Oracle	0.1	Active	10.1.3.1

☒ **TIP** The selected components must be of version 10.1.3 or above.

Cancel Select

5. You are then returned to the **Source Selection** page of the wizard with the details for the **Source for App Tier** automatically populated for you. Click on **Next**, as shown in the following screenshot:

ORACLE Enterprise Manager 10g Home Targets Deployments Alerts Compliance Jobs Reports Setup Preferences Help Logout

Grid Control

General | Provisioning

Source Selection | Target List | Credentials/Schedule | Application and Web Tier | Identity Management | Library Step Properties | More

Application Server Deployment 10.1.3.1 SOA: Source Selection Cancel Step 1 of 7 Next

This procedure installs or clones and configures a standard Web and Application Tier for a multi-tier application server topology. The database tier is not installed by this procedure. However, this procedure facilitates the configuration of Java Authentication and Authorization Service (JAAS) provider (also called as JAZN) with an existing data tier. Click 'Help' for more details. [H](#)

Select a source to deploy or clone Application Tier and Web Tier.

Source Selection

Select the source either from an existing Oracle Home or Software Library

Select the source Oracle Homes from the installed Cluster Environment

☐ Select from Installed Cluster Environment

Select Cluster

Product	Host Name	Location	Files to Exclude	Working Directory
Web Tier				
Application Tier				

☒ **TIP** Files to Exclude : Separate file using comma. Use * for wildcard. Eg *.log, *.dif
☒ **TIP** A working directory is required to stage files for cloning. Eg: For Unix machines it could be /tmp

☐ Save to Software Library

Select the Gold Image of an Oracle Home or a shiphome from the Software Library

☒ Select from Software Library

Source for Web Tier

Name
 Component Location

Source for App Tier

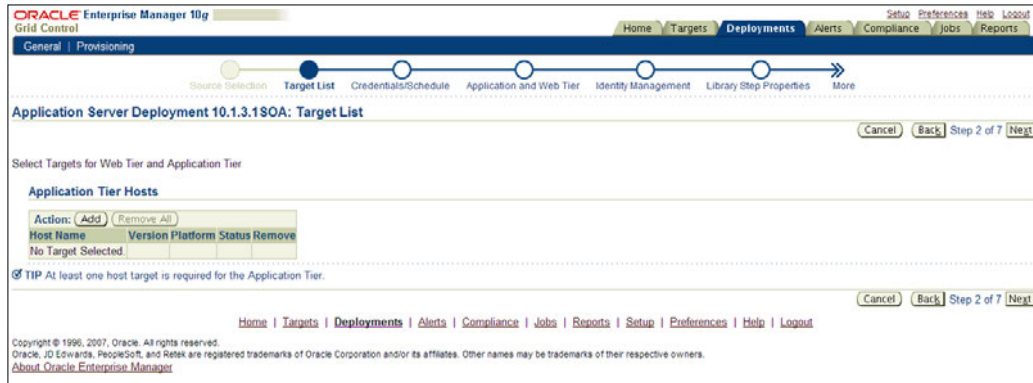
Name
 Component Location

Cancel Step 1 of 7 Next

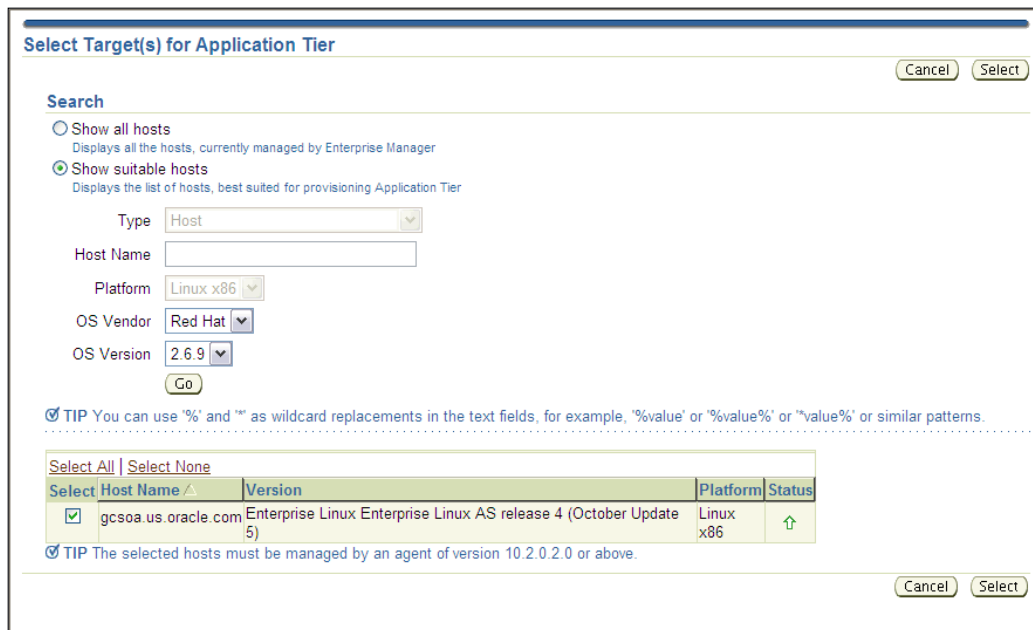
[Home](#) | [Targets](#) | [Deployments](#) | [Alerts](#) | [Compliance](#) | [Jobs](#) | [Reports](#) | [Setup](#) | [Preferences](#) | [Help](#) | [Logout](#)

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- On the **Target List** page of the wizard, click on the **Add** button, as seen on the following screenshot:



- On the **Select Target(s) for Application Tier** page, select the **Host Name** (for example, **gcsoa.us.oracle.com**) as the destination machine to clone the cluster to. Click on the **Select** button, as seen in the next screenshot:



- You are then returned to the **Target List** page of the wizard with the details for the **Application Tier Hosts** automatically populated for you. Click on **Next**, as shown in the following screenshot:

ORACLE Enterprise Manager 10g
Grid Control

Home | Targets | Deployments | Alerts | Setup | Preferences | Help | Logout

General | Provisioning

Source Selection | **Target List** | Credentials/Schedule | Application and Web Tier | Identity Management | Library Step Properties | More

Application Server Deployment 10.1.3.1SOA: Target List

Cancel | Back | Step 2 of 7 | Next

Select Targets for Web Tier and Application Tier

Application Tier Hosts

Action: [Add](#) [Remove All](#)

Host Name	Version	Platform	Status	Remove
gcsoa.us.oracle.com	Enterprise Linux Enterprise Linux AS release 4 (October Update 5)	Linux x86	✓	Remove

TIP At least one host target is required for the Application Tier.

Cancel | Back | Step 2 of 7 | Next

Home | Targets | Deployments | Alerts | Compliance | Jobs | Reports | Setup | Preferences | Help | Logout

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9. On the **Credentials/Schedule** page of the wizard, specify the following information concerning the host credentials for the destination machine:

Host Credentials: Same for all Oracle Homes

Username: oracle

Password: welcome1

10. Because the deployment procedure leverages the Enterprise Manager Job System, you can schedule the cloning operation immediately or at a future date and time. For the purposes of this exercise, keep the default selection as **One Time (Immediately)**, as seen in the next screenshot. Click on **Next**.

ORACLE Enterprise Manager 10g
Grid Control

Home | Targets | Deployments | Alerts | Setup | Preferences | Help | Logout

General | Provisioning

Source Selection | Target List | **Credentials/Schedule** | Application and Web Tier | Identity Management | Library Step Properties | More

Application Server Deployment 10.1.3.1SOA: Credentials/Schedule

Cancel | Back | Step 3 of 7 | Next

Provide credentials and choose a time to schedule this procedure.

Target Host Credentials

☐ Use Preferred Credentials ☒ Override Preferred Credentials

Host Credentials: Same for all Oracle Homes

• Username: oracle

• Password: *****

TIP Preferred Credentials will be enabled only when the credentials for all the targets are available. You may set the Preferred Credentials by selecting 'Preferences' link in Enterprise Manager.

Schedule

☒ One Time (Immediately) ☐ One Time (Later)

Grace Period: ☒ Indefinite

☐ End After: _____ Hours _____ Minutes

Cancel | Back | Step 3 of 7 | Next

Home | Targets | Deployments | Alerts | Compliance | Jobs | Reports | Setup | Preferences | Help | Logout

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11. On the **Application and Web Tier** page of the wizard, specify the following information, as shown in the next screenshot:

- **Cluster Details** section:
 - **Cluster Name:** myJ2EECluster
 - **App Tier Install Base Directory :** /u01/app/oracle/product/OracleHomes/soa_clone
 - **Multicast Address:** 227.0.0.1
 - **Multicast Port:** 6789



In this exercise, the source and destination Oracle homes are on the same machine. However, you need to ensure that the Application Tier Install Base Directory you specify is unique. The existing installation's directory /u01/app/oracle/product/OracleHomes/soa is specified as the default value. So you must change the default value to make it unique.

- **Instance Details** section:
 - **Application Tier Instance Name:** soaCloned
 - **Source OC4J Admin Password:** welcome1
 - **OC4J Admin Password:** *welcome1*
 - **Confirm OC4J Admin Password:** *welcome1*
- **Port Details** section:

Port: 8888
- In the **Additional Parameters** section, leave the **Application Tier** field blank.
- In the **Identity Management Configuration** section, select the **None** option.

12. Click on **Next**.

ORACLE Enterprise Manager 10g
Grid Control

Home Targets Deployments Alerts Setup Preferences Help Logout
Compliance Jobs Reports

General Provisioning

Source Selection Target List Credentials Schedule Application and Web Tier Identity Management Library Step Properties More

Application Server Deployment 10.1.3.1 SOA: Application and Web Tier

(Cancel) (Back) Step 4 of 7 (Next)

Specify the configuration parameters for this install operation.

Cluster Details

Cluster Name: myJ2EECluster

Application Tier Install Base Directory: cle/product/OracleHomes/soa_clone

Source OC4J Admin Password: 227.0.0.1

Multicast Address: 227.0.0.1
Example: 225.0.0.1 Multicast address should be within the range of 224.0.0.0 to 229.255.255.255

Multicast Port: 6789
Example: 6709

Cluster Information

- 'Create new Cluster' creates a new cluster using the source Oracle Homes from the 'Source Selection' page
- 'Extend existing cluster' scales up the cluster selected in the 'Source Selection' page with the targets selected in 'Target List' page.

Instance Details

Application Tier Instance Name: soaCloned

Source OC4J Admin Password: *****

OC4J Admin Password: *****
Password must be from 5 to 30 alphanumeric characters including underscore (_), dollar (\$) or pound (#). It should start with an alphabet and should contain at least one number.

Confirm OC4J Admin Password: *****

OC4J Instance Name: home
Default OC4J instance that will be created. OC4J instances with identical names form Groups within a cluster.

Instance Information

- All Oracle Application Server 10g instances installed on a host must have unique names. The hostname and domain name of the host are appended to the instance name.
- Each Oracle Application Server 10g instance has its own password, regardless of which user performed the installation. Passwords are not shared across instances, even if the instances were installed by the same user.

Port Details

Application Server Control

Port: 8888

Additional Parameters

Application Tier:
Eg: -invPrtLoc/home/soa/inst.loc (to use a non-default oracle inventory location)

Identity Management Configuration

☐ Configure Java Authentication and Authorization Service (JAAS) with a LDAP-based provider

13. On the **Library Step Properties** page of the wizard, provide the following information concerning the dehydration store to be affiliated with the new cloned application server instance:

- **Database Vendor:** oracle
- **Database User Name:** sys
- **Database Password:** <Enter your database system password>
- **Database Hostname and Port:** gcsoa.us.oracle.com:1522
- **Service Name:** gcsoa



To successfully clone, specifying "sys" as the database username is not required. However, the database username provided must have been granted the DBA role. This user is leveraged to ensure that the database is valid (can connect to it, correct version, correct edition, and that the relevant SOA-related schemas exist).

14. Click on Next.

ORACLE Enterprise Manager 11g
Grid Control

Home | Targets | **Deployments** | Alerts | Compliance | Jobs | Reports

General | Provisioning

Provisioning | Identify Management | Library Step Properties | Review

Application Server Deployment 10.1.3.1SOA: Library Step Properties

Cancel Back Step 6 of 7 Next

Please provide values for the following variables that are not known.

Expand All | Collapse All

Library Step	Property Value
▼ All Library Steps	
▼ Install	
* Database Vendor	oracle * Specify a value for Database Vendor. Eg. oracle
* Database User Name	sys Enter a valid database user name
* Database Password	***** Enter a valid Database Password
* Database Hostname and Port	gcsoa.us.oracle.com:1522 Enter Database Hostname and Port. Example for a single instance database: Host:1521. Example for 10g Real Application Cluster Database: oracle:virtual_hostname_of_node1:1521/virtual_hostname_of_node2:1521. Example for a 9i Real Application Clusters database: Host1:1521/Host2:1521.
* Service Name	gcsoa Example: ssoa.example.com

Cancel Back Step 6 of 7 Next

Home | Targets | **Deployments** | Alerts | Compliance | Jobs | Reports | Setup | Preferences | Help | Logout

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15. Review the content displayed on the Review page of the wizard to ensure inputs were supplied properly. Click on Finish.

ORACLE Enterprise Manager 10g Grid Control

Home | Targets | **Deployments** | Alerts | Compliance | Jobs | Reports

General | Provisioning

Previous Identity Management Library Step Properties **Review**

Application Server Deployment 10.1.3.1SOA: Review

Cancel Back Step 7 of 7 Finish

Review your selections in the summary displayed below.

Source Selection

Source for App Tier

Name	SOA 10.1.3.1 Gold Image
Component Location	Components/SOA 10.1.3.1 Gold Image

Target List

Application Tier Hosts

Host Name	Version	Platform	Status
gcsoa.us.oracle.com	Enterprise Linux Enterprise Linux AS release 4 (October Update 5)	Linux x86	↑

Application and Web Tier

Cluster Details

Cluster Name	myJ2EECluster
Application Tier Install Base Directory	/u01/app/oracle/product/OracleHomes/soa_clone
Multicast Address	227.0.0.1
Multicast Port	6789

Instance Details

Application Tier Instance Name	soaCloned
OC4J Instance Name	home

Port Details

Application Server Control	Port 8888
----------------------------	-----------

Library Step Properties

Expand All | Collapse All

Library Step	Property Value
▼ All Library Steps	
▼ Install	
* Database Vendor	oracle
* Database User Name	sys
* Database Password	*****
* Database Hostname and Port	gcsoa.us.oracle.com:1522
* Service Name	gcsoa

Credentials/Schedule

Target Host Credentials

Product	Host Name	Oracle Home	User Name
Application Tier	gcsoa.us.oracle.com	/u01/app/oracle/product/OracleHomes/soa_clone	oracle

Schedule

Start Date	One Time (Immediately)
Grace Period	Indefinite

Cancel Back Step 7 of 7 Finish

Home | Targets | **Deployments** | Alerts | Compliance | Jobs | Reports | Setup | Preferences | Help | Logout

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16. The **Procedure Completion Status** property page on the **Deployment Procedure Manager** page appears. This shows you the Job Run that was just submitted for creating a new Oracle Application Server based on the gold image component stored in the Software Library. Click on the link for the Job Run that was submitted.

Oracle Enterprise Manager 10g
Grid Control
Home | Targets | **Deployments** | Alerts | Compliance | Jobs | Reports
Setup | Preferences | Help | Logout
Page Refreshed: Jun 16, 2008 6:39:17 PM EDT (Refresh)
View Data | Real Time: Manual Refresh

Deployment Procedure Manager

Procedures | Procedure Completion Status | Recycle Bin

All deployment procedures in various stages of their lifecycle are shown below. Set the refresh settings to update the page automatically. Click on the link in the Run column to get more details on that run.

Search Text Fields: [Advanced Search](#)

Select Run	Status	Procedure	Type	Owner	Last Updated
myJ2EECluster_2008-06-16_06:39:16PM	Scheduled	Application Server Deployment 10.1.3.15OA	AS Provisioning	SYSMAN	Jun 16, 2008 6:39:16 PM EDT

Home | Targets | **Deployments** | Alerts | Compliance | Jobs | Reports | Setup | Preferences | Help | Logout

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17. The **Status** page for this Job Run will appear displaying the status of each step within the deployment procedure. To track progress of the cloning operation, change the refresh interval in the **View Data** drop-down list to **Real Time: 30 Second Refresh**. The page will automatically refresh with the updated status.

ORACLE Enterprise Manager 10g Grid Control

Home Targets Deployments Alerts Compliance Jobs Reports

General | Provisioning

Procedure Completion Status >

Page Refreshed Jun 16, 2008 5:24:01 PM EDT [Refresh](#)

View Data Real Time: 30 Second Refresh [▼](#)

Status [Delete](#) [Schedule Deployment...](#) [Stop](#) [Suspend](#) [Resume](#) [Retry](#) [Done](#)

General Information

Run	myJ2EECluster_2008-06-16_05:17:53PM	Created On	Jun 16, 2008 5:17:55 PM EDT
Procedure	Application Server Deployment 10.1.3.1SOA	Scheduled	Jun 16, 2008 5:17:59 PM EDT
Procedure Version	4.1	Start Date	Jun 16, 2008 5:17:59 PM EDT
Error Handling Mode	Stop On Error	Last Updated	Jun 16, 2008 5:19:44 PM EDT
Status	Running	Completed Date	
Owner	SYSMAN	Elapsed Time	362 Seconds

Status Detail [Steps](#) [Job Details](#) [OMS Log](#)

[Expand All](#) | [Collapse All](#)

Name	Status	Type	Description	Run Privilege	Run Privilege Command	Error Handling Mode
Application Server Deployment 10.1.3.1SOA	Running		This procedure installs or clones and configures a standard Web and Application tier for a multi-tier application server topology.			Stop On Error
Initialize	Succeeded	Computational	Initializes the runtime. Do not disable or delete this step.			Stop On Error
Verify Application Tier system requirements	Succeeded	Parallel				Stop On Error
Verify Application Tier system requirements		Component	Verifies system requirements for Application Tier	Normal		Stop On Error
Verify and fix Application Tier system requirements	Succeeded	Component	Verifies and fixes system requirements for Application Tier (requires sudo privileges as root)	sudo		Stop On Error
Verify Application Tier system requirements for Windows	Succeeded	Parallel				Stop On Error
Verify Application Tier system requirements	Skipped	Component	Verifies system requirements for Application Tier	Normal		Stop On Error
Verify Web Tier system requirements	Skipped	Parallel				Stop On Error
Verify Web Tier system requirements		Component	Verifies system requirements for Web Tier	Normal		Stop On Error
Verify and fix Web Tier system requirements		Component	Verifies and fixes system requirements for Web Tier (requires sudo privileges as root)	sudo		Stop On Error
Verify Web Tier system requirements for Windows	Skipped	Parallel				Stop On Error
Verify Web Tier system requirements		Component	Verifies system requirements for Web Tier	Normal		Stop On Error
Prepares source Oracle Home(s) for Cloning	Skipped	Parallel				Stop On Error
Prepares source Oracle Home(s) for Cloning		Component	Generates the configuration and zip file(s) in source Oracle Home(s) specified	Normal		Stop On Error
Upload the Gold Image to Software Library		Computational	Uploads the Gold Image of the source Oracle Home(s) to the Software Library of Enterprise Manager, if the user has chosen to save the Oracle homes from the source cluster as a Gold Image to the software library			Stop On Error
Transfers the Gold Image from Source to target machine	Succeeded	Parallel				Stop On Error
Transfers the Gold Image from Source to target machine		Job	Transfers the Gold Image from Source Oracle Home to a temporary location on the target machine	Normal		Stop On Error
Application Tier deployments	Running	Parallel	Application Tier deployments			Stop On Error
Stage Application Tier Targets to be Cloned	Skipped	Directive	Extracts Gold Image from the source Oracle homes to the target	Normal		Stop On Error
Stage		Component	Extracts Application Tier source on the target	Normal		Stop On Error
Install		Component	Installs the Application Tier	Normal		Stop On Error
Run root scripts		Directive	Run root scripts (requires sudo privileges as root)	sudo		Stop On Error
Configure		Directive	Configures the Application Tier	Normal		Stop On Error
Verify		Directive	Verifies the Application Tier deployment	Normal		Stop On Error
Register Application Tier		Directive	Registers the Application Tier target and ensures that the home is discovered by the Agent for ECM Collections	Normal		Stop On Error
Refresh Host Configuration		Job		Normal		Stop On Error
Web Tier deployment		Parallel	Web Tier deployment			Stop On Error
Stage Web Tier Targets to be Cloned		Directive	Extracts Gold Image from the source Oracle homes to the target	Normal		Stop On Error
Stage Web Tier		Component	Extracts the Web Tier source on the target	Normal		Stop On Error
Install		Directive	Installs the Web Tier	Normal		Stop On Error
Run root scripts		Directive	Run root scripts (requires sudo privileges as root)	sudo		Stop On Error
Configure		Directive	Configures and starts the Web Tier	Normal		Stop On Error
Register Web Tier		Directive	Registers the Web Tier target and ensures that the home is discovered by the Agent for ECM Collections	Normal		Stop On Error
Refresh Host Configuration		Job		Normal		Stop On Error
Copy Configuration Details to Gateway Server of Application Tiers		Parallel	Copy Configuration Details of Targets to Gateway Server of Application Tiers			Stop On Error
Copy Configuration Details to Gateway Server of Application Tiers		Job	Copy Configuration Details of Targets to Gateway Server of Application Tiers	Normal		Stop On Error
Copy Configuration Details to Gateway Server of Web Tiers		Parallel	Copy Configuration Details of Targets to Gateway Server of Web Tiers			Stop On Error
Copy Configuration Details to Gateway Server of Web Tiers		Job	Copy Configuration Details of Targets to Gateway Server of Web Tiers	Normal		Stop On Error
Configure the Gateway Server		Parallel	Configures the Gateway Server for Application Tier and WebTier			Stop On Error
Configure the Gateway Server		Directive	Configures the Gateway Server for Application Tier and WebTier	Normal		Stop On Error
Configure Load Balancer		Parallel	Configures the Load Balancer for the Web Tiers selected			Stop On Error
Load balancer setup		Component	Configures the load balancer to direct requests to the Web Tiers	Normal		Stop On Error
Register Cluster		Computational	Registers the Oracle Application Server Cluster with the Grid Control			Stop On Error
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			Stop On Error
Register Application Tier with Oracle Internet Directory (OID)		Component	Registers Application Tier with Oracle Internet Directory (OID)	Normal		Stop On Error

18. When the **Status** refreshes to **Succeeded**, the clone operation has finished. In this exercise, this takes about 21 minutes.

ORACLE Enterprise Manager 10g Grid Control

Home Targets Deployments Alerts Compliance Jobs Reports

Setup Preferences Help Logout

General | Provisioning

Procedure Completion Status >

Page Refreshed Jun 16, 2008 7:14:09 PM EDT (Refresh)

View Data Real Time: 30 Second Refresh

Status

Delete Schedule Deployment Stop Suspend Resume Retry Done

General Information

Run myJ2EECluster_2008.06.16.06.39.16PM
 Procedure Application Server Deployment 10.1.3.1SOA
 Procedure Version 4.1
 Error Handling Mode Stop On Error
 Status Succeeded
 Owner SYSMAN

Created On Jun 16, 2008 6:39:16 PM EDT
 Scheduled Jun 16, 2008 6:39:20 PM EDT
 Start Date Jun 16, 2008 6:39:20 PM EDT
 Last Updated Jun 16, 2008 6:59:48 PM EDT
 Completed Date Jun 16, 2008 6:59:48 PM EDT
 Elapsed Time 1228 Seconds

Status Detail

Steps Job Details OMS Log

Expand All Collapse All

Name	Status	Type	Description	Run Privilege	Run Command	Error Handling Mode
Application Server Deployment 10.1.3.1SOA	Succeeded		This procedure installs or clones and configures a standard Web and Application tier for a multi-tier application server topology.			Stop On Error
Initialize	Succeeded	Computational	Initializes the runtime. Do not disable or delete this step.			Stop On Error
Verify Application Tier system requirements	Succeeded	Parallel				Stop On Error
Verify Application Tier system requirements	Succeeded	Component	Verifies system requirements for Application Tier	Normal		Stop On Error
Verify and fix Application Tier system requirements	Succeeded	Component	Verifies and fixes system requirements for Application Tier (requires sudo privileges as root)	sudo		Stop On Error
Verify Application Tier system requirements for Windows	Succeeded	Parallel				Stop On Error
Verify Application Tier system requirements	Skipped	Component	Verifies system requirements for Application Tier	Normal		Stop On Error
Verify Web Tier system requirements	Skipped	Component	Verifies system requirements for Web Tier	Normal		Stop On Error
Verify and fix Web Tier system requirements	Skipped	Component	Verifies and fixes system requirements for Web Tier (requires sudo privileges as root)	sudo		Stop On Error
Verify Web Tier system requirements for Windows	Skipped	Parallel				Stop On Error
Verify Web Tier system requirements	Skipped	Component	Verifies system requirements for Web Tier	Normal		Stop On Error
Prepares source Oracle Home(s) for Cloning	Skipped	Parallel				Stop On Error
Prepares source Oracle Home(s) for Cloning	Skipped	Component	Generates the configuration and zip file(s) in source Oracle Home(s) specified	Normal		Stop On Error
Upload the Gold Image to Software Library	Skipped	Computational	Uploads the Gold Image of the source Oracle Home(s) to the Software Library of Enterprise Manager, if the user has chosen to save the Oracle homes from the source cluster as a Gold Image to the software library			Stop On Error
Transfers the Gold Image from Source to target machine	Succeeded	Parallel				Stop On Error
Transfers the Gold Image from Source to target machine	Succeeded	Job	Transfers the Gold Image from Source Oracle Home to a temporary location on the target machine	Normal		Stop On Error
Application Tier deployments	Succeeded	Parallel	Application Tier deployments			Stop On Error
Stage Application Tier Targets to be Cloned	Skipped	Directive	Extracts Gold Image from the source Oracle homes to the target	Normal		Stop On Error
Stage	Succeeded	Component	Extracts Application Tier source on the target	Normal		Stop On Error
Install	Succeeded	Component	Installs the Application Tier	Normal		Stop On Error
Run root scripts	Succeeded	Directive	Run root scripts (requires sudo privileges as root)	sudo		Stop On Error
Configure	Succeeded	Directive	Configures the Application Tier	Normal		Stop On Error
Verify	Succeeded	Directive	Verifies the Application Tier deployment	Normal		Stop On Error
Register Application Tier	Succeeded	Directive	Registers the Application Tier target and ensures that the home is discovered by the Agent for ECM Collections	Normal		Stop On Error
Refresh Host Configuration	Succeeded	Job		Normal		Stop On Error
Web Tier deployment	Skipped	Parallel	Web Tier deployment			Stop On Error
Stage Web Tier Targets to be Cloned	Skipped	Directive	Extracts Gold Image from the source Oracle homes to the target	Normal		Stop On Error
Stage Web Tier	Skipped	Component	Extracts the Web Tier source on the target	Normal		Stop On Error
Install	Skipped	Directive	Installs the Web Tier	Normal		Stop On Error
Run root scripts	Skipped	Directive	Run root scripts (requires sudo privileges as root)	sudo		Stop On Error
Configure	Skipped	Directive	Configures and starts the Web Tier	Normal		Stop On Error
Register Web Tier	Skipped	Directive	Registers the Web Tier target and ensures that the home is discovered by the Agent for ECM Collections	Normal		Stop On Error
Refresh Host Configuration	Skipped	Job		Normal		Stop On Error
Copy Configuration Details to Gateway Server of Application Tiers	Succeeded	Parallel	Copy Configuration Details of Targets to Gateway Server of Application Tiers			Stop On Error
Copy Configuration Details to Gateway Server of Application Tiers	Succeeded	Job	Copy Configuration Details of Targets to Gateway Server of Application Tiers	Normal		Stop On Error
Copy Configuration Details to Gateway Server of Web Tiers	Succeeded	Parallel	Copy Configuration Details of Targets to Gateway Server of Web Tiers			Stop On Error
Copy Configuration Details to Gateway Server of Web Tiers	Succeeded	Job	Copy Configuration Details of Targets to Gateway Server of Web Tiers	Normal		Stop On Error
Configure the Gateway Server	Succeeded	Parallel	Configures the Gateway Server for Application Tier and WebTier			Stop On Error
Configure the Gateway Server	Succeeded	Directive	Configures the Gateway Server for Application Tier and WebTier	Normal		Stop On Error
Configure Load Balancer	Skipped	Parallel	Configures the Load Balancer for the Web Tiers selected			Stop On Error
Load balancer setup	Skipped	Component	Configures the load balancer to direct requests to the Web Tiers	Normal		Stop On Error
Register Cluster	Succeeded	Computational	Registers the Oracle Application Server Cluster with the Grid Control			Stop On Error
Register the Application Tier with Oracle Internet Directory (OID) and deploy sample application	Succeeded	Parallel	Registers the Application Tiers with the Oracle Internet Directory (OID) Specified and deploys your application on the Application Tiers			Stop On Error
Register Application Tier with Oracle Internet Directory (OID)	Succeeded	Component	Registers Application Tier with Oracle Internet Directory (OID)	Normal		Stop On Error

Validating a newly created cluster

After the deployment procedure completes, we need to validate the newly created application server instance. For the purpose of this exercise, we will verify that the new Oracle Application Server target appears in Enterprise Manager and then login to the BPEL Console:

1. Navigate to the **Targets | Middleware** sub-tab.
2. The newly created Oracle Application Server target named **soaCloned.gcsoa.us.oracle.com** appears in the table. Click on that name, as shown in the following screenshot:

ORACLE Enterprise Manager 10g
Grid Control

Home Targets Deployments Alerts Compliance Jobs Reports

Hosts Databases Application Servers Web Applications Services Systems Groups All Targets

Application Servers

Page Refreshed Jun 17, 2008 3:06:29 AM EDT Refresh

Search All Go

View Flat List Add Oracle Application Server Go

Remove Configure

Expand All Collapse All

Select	Name	Type	Status	Status Details	Alerts	Policy Violations	CPU Usage (%)	Memory Usage (MB)
☐	▼ All Application Servers							
☒	▼ Cluster 10.1.3.1	Oracle Application Server Cluster	n/a	4 (↓4)	0 0	0 0 0		
☐	▶ soa.gcsoa.us.oracle.com	Oracle Application Server	⊕	4 (↓4)	1 0	0 0 0		
☐	▶ EnterpriseManager0.gcsoa.us.oracle.com	Oracle Application Server	⊕	5 (↑5)	0 0	0 0 0	13.37	992.95
☐	▶ soaCloned.gcsoa.us.oracle.com	Oracle Application Server	⊕	4 (↑4)	0 0	0 0 0	5.04	759.59

✓ TIP For an explanation of the icons and symbols used in this page, see the [Icon Key](#).

Related Links

[Customize Table Columns](#)

Home Targets Deployments Alerts Compliance Jobs Reports Setup Preferences Help Logout

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- The Oracle Application Server home page for the new instance appears. Ensure that identical components (that is, **home**, **HTTP_Server**, **oc4j_soa**, **Oracle bpel**) appear in the **Components** table as existed for the source Oracle Application Server target. Click on the **Oracle bpel** component, as seen in the next screenshot:

ORACLE Enterprise Manager 10g Grid Control Home Targets Deployments Alerts Compliance Jobs Reports Setup Preferences Help Logout

Hosts | Databases | Application Servers | Web Applications | Services | Systems | Groups | All Targets

Oracle Application Server: soaCloned.gcsoa.us.oracle.com Page Refreshed Jun 17, 2008 3:08:07 AM EDT (Refresh)

General Home Top J2EE Applications Web Applications Performance Administration Topology

Status **Up** Black Out
Availability **100** (%) (Last 24 Hours)
Application URL <http://gcsoa.us.oracle.com:7780>
Version **10.1.3.1.0**
Installation Type **Integrated Web Server, J2EE Server and Process Management**
Oracle Home [/u01/app/oracle/product/OracleHomes/soa_clone/10gAppTier](#)
Host [gcsoa.us.oracle.com](#)

Application URL Response (seconds)

Components Start Stop Restart

Select All | Select None

Select	Name	Type	Current Status
☐	home	OC4J	↑
☐	HTTP_Server	Oracle HTTP Server	↑
☐	oc4j_soa	OC4J	↑
☐	Oracle bpel	Oracle BPEL Process Manager	↑

Alerts

Metric	Severity	Alert Triggered	Last Value	Last Checked
No Alerts found.				

Host Alerts

Metric	Severity	Alert Triggered	Last Value	Last Checked
Log File Pattern Matched Line Count for /u01/app/oracle/product/OracleHomes/grid/agent10g/sysman/log/emagent.log/ERROR/Fri May 30 17:18:30 2008 GM -04:00	Warning	May 30, 2008 5:18:30 PM	4	May 30, 2008 5:18:30 PM
Log File Pattern Matched Line Count for /u01/app/oracle/product/OracleHomes/grid/agent10g/sysman/log/emagent.log/ERROR/Thu May 29 17:48:30 2008 GM -04:00	Warning	May 29, 2008 5:48:30 PM		
Log File Pattern Matched Line Count for /u01/app/oracle/product/OracleHomes/grid/agent10g/sysman/log/emagent.log/ERROR/Thu May 29 16:52:00 2008 GM -04:00	Warning	May 29, 2008 4:51:59 PM		
Log File Pattern Matched Line Count for /u01/app/oracle/product/OracleHomes/grid/agent10g/sysman/log/emagent.log/ERROR/Wed May 28 23:24:30 2008 GM -04:00	Warning	May 28, 2008 11:24:30 PM		
Log File Pattern Matched Line Count for /u01/app/oracle/product/OracleHomes/grid/agent10g/sysman/log/emagent.log/ERROR/Wed May 28 21:27:55 2008 GM -04:00	Warning	May 28, 2008 9:27:54 PM		

Related Links

Administer	Patch	Change Application URL
Monitoring Configuration	All Metrics	Metric and Policy Settings
Alert History	Blackouts	Reports
Access	Target Properties	

Home Top J2EE Applications Web Applications Performance Administration Topology

[Home](#) | [Targets](#) | [Deployments](#) | [Alerts](#) | [Compliance](#) | [Jobs](#) | [Reports](#) | [Setup](#) | [Preferences](#) | [Help](#) | [Logout](#)

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4. The **Oracle BPEL Process Manager** home page appears. In the **Related Links** section at the bottom of the page, click on **Administer (BPEL Console)**, as seen in the following screenshot:

ORACLE Enterprise Manager 10g Grid Control

Home | **Targets** | Deployments | Alerts | Compliance | Jobs | Reports

Hosts | Databases | Application Servers | Web Applications | Services | Systems | Groups | All Targets

Application Server: [soaCloned.gcsoa.us.oracle.com](#) >

Oracle BPEL Process Manager: soaCloned.gcsoa.us.oracle.com_bpel

Page Refreshed Jun 17, 2008 3:09:01 AM EDT (Refresh)

Home | **Processes** | Performance | Administration

General

Status: **Up** (Black Out)

Up Since: **Unavailable**

Availability: **100** (%) (Last 24 Hours)

Oracle Home: [/u01/app/oracle/product/OracleHomes/soa_clone/10gAppTier](#)

Host: [gcsoa.us.oracle.com](#)

BPEL Server Throughput

1.0
0.8
0.6
0.4
0.2
0.0

No data is currently available.

System And Service

Create BPEL Infrastructure Service

System	Status	Alerts	Policy Violations	Service
No items found				

Alerts

Metric	Severity	Alert Triggered	Last Value	Last Checked
No Alerts found.				

Host Alerts

Metric	Severity	Alert Triggered	Last Value	Last Checked
Log File Pattern Matched Line Count for /u01/app/oracle/product/OracleHomes/grid/agent10g/sysman/log/emagent.log/ERROR/Fri May 30 17:18:30 2008 GM -04:00	Warning	May 30, 2008 5:18:30 PM	4	May 30, 2008 5:18:30 PM
Log File Pattern Matched Line Count for /u01/app/oracle/product/OracleHomes/grid/agent10g/sysman/log/emagent.log/ERROR/Thu May 29 17:48:30 2008 GM -04:00	Warning	May 29, 2008 5:48:30 PM		
Log File Pattern Matched Line Count for /u01/app/oracle/product/OracleHomes/grid/agent10g/sysman/log/emagent.log/ERROR/Thu May 29 16:52:00 2008 GM -04:00	Warning	May 29, 2008 4:51:59 PM		
Log File Pattern Matched Line Count for /u01/app/oracle/product/OracleHomes/grid/agent10g/sysman/log/emagent.log/ERROR/Wed May 28 23:24:30 2008 GM -04:00	Warning	May 28, 2008 11:24:30 PM		
Log File Pattern Matched Line Count for /u01/app/oracle/product/OracleHomes/grid/agent10g/sysman/log/emagent.log/ERROR/Wed May 28 21:27:55 2008 GM -04:00	Warning	May 28, 2008 9:27:54 PM		

Related Links

Administer (BPEL Admin)	Administer (BPEL Console)	Deploy BPEL Suitcase
Monitoring Configuration	All Metrics	Metric and Policy Settings
Alert History	Blackouts	Reports
Access	Target Properties	

Home | **Processes** | Performance | Administration

Home | **Targets** | Deployments | Alerts | Compliance | Jobs | Reports | Setup | Preferences | Help | Logout

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5. On the BPEL console login page, provide the following information:

Username: oc4jadmin

Password: welcome1

6. The BPEL Control console appears, and on the page several **Deployed BPEL Processes** are listed. Ensure that these processes on the target server are the same as the ones on the source server.

ORACLE Enterprise Manager 10g BPEL Control		Manage BPEL Domain Logout Support Logged to domain: default	
Dashboard		BPEL Processes	Instances
Activities			
Deployed BPEL Processes		In-Flight BPEL Process Instances 1 - 2	
Name	Instance	BPEL Process	Last Modified ↑
DHLShipment	30007 : Instance #30007 of SOAOrderBooking	SOAOrderBooking (v. 1.0)	6/16/08 9:01:32 PM
SOAOrderBooking	30005 : Instance #30005 of SOAOrderBooking	SOAOrderBooking (v. 1.0)	6/16/08 8:58:44 PM
SelectManufacturer			
TaskActionHandler			
TaskManager			
Recently Completed BPEL Process Instances (More...)			
✓ 30009 : Instance #30009 of SOAOrderBooking	SOAOrderBooking (v. 1.0)	6/16/08 9:06:36 PM	
✓ 30010 : Instance #30010 of SelectManufacturer	SelectManufacturer (v. 1.0)	6/16/08 9:06:34 PM	
✓ 30008 : Instance #30008 of SelectManufacturer	SelectManufacturer (v. 1.0)	6/16/08 9:01:33 PM	
✓ 30006 : Instance #30006 of SelectManufacturer	SelectManufacturer (v. 1.0)	6/16/08 8:58:44 PM	
✓ 30001 : Instance #30001 of SOAOrderBooking	SOAOrderBooking (v. 1.0)	6/16/08 8:52:32 PM	

Deploy New Process

Oracle BPEL Console v10.1.3.1.0

Summary

Managing the lifecycle of software and services is a time-consuming and error-prone task. Administrators can spend several days and weeks planning and implementing provisioning and patching tasks. Grid Control greatly simplifies these complex tasks so that administrators can focus on more strategic areas, and the enterprise can be more agile in managing the lifecycle of software and services.

In this chapter, we discussed the steps to clone Oracle Application Server and SOA Suite. Specifically, we discussed adding an Oracle Application Server cluster to Grid Control, stopping application server processes, making a copy of the application server and storing it in the Grid Control Software Library, cloning the application server and SOA Suite, and finally validating the newly created cluster. It's important to note that Grid Control copies the data and the configurations from the source to the target cluster. The provisioning and cloning solutions are complemented by patching solutions. New features include similar coverage for the SOA Suite on Oracle WebLogic server, post the BEA acquisition, which provides administrators relief in managing SOA deployments on WebLogic server.

10

Web Application Monitoring

Measuring and managing end users' performance has become increasingly important to ensure customer satisfaction. While services and infrastructure might be healthy and available within the data centre's firewalls, consumers may still have problems accessing services externally via the Internet. This then becomes a guessing game to isolate the problem to the customer's Internet Service Provider, or to the provider's faulty service. Further, in the age of Twitter and Facebook, providers are increasingly at risk with distributed denial-of-service-type attacks. A lot of providers today, such as Amazon, Google, and Salesforce.com, provide publicly available information about the current and historical status of their services.

Increasingly, service-level agreements are tied to the end user's experience of interacting with a service. If the end users cannot access a service, then a simple "tweet" on Twitter can lead to a rapid chain reaction of user complaints that may quickly become a source of negative publicity for the provider. In today's world, provider's have no place to hide when consumers are faced with unavailable or poorly performing services. In some cases, this may lead to money-back requests based on contractual obligations.

This chapter talks about:

- Challenges
- Solution
- Step-by-step exercises:
 - Creating a web application
 - Recording a web transaction as a Service Test
 - Adding Beacons to run the Service Test
 - Adding performance and usage metrics
 - Viewing web transaction playback

Challenges

A web application administrator wants to have better visibility into the availability or performance as seen by end users. The administrator wants to closely watch a list of critical URLs that are "always expected to be alive and responsive" or monitor the performance of web applications from various regions, domains, or of a specific set of visitors, to ensure that the consumers are receiving optimal performance. The ability to understand the impact of the performance problems is critical. It is also useful to learn about the pages, visitors, domains, and regions impacted by performance problems.

Solution

Grid Control comes with a transaction-recording capability that lets you record web transactions that emulates end users. Grid Control tracks all response times of all URLs for all visitors that have accessed your application. Grid Control can not only emulate web traffic, but also emulates tnsping, IMAP, SQL, and several other protocols. By monitoring the number of hits combined with performance metrics, and analyzing the response times by URL, domain, region, visitor, and web server, you can clearly assess the impact of performance degradation problems on your user base. Further drilldowns provide you with Web server response time and load distribution information to help you efficiently balance server resources.

Step-by-step exercises

This set of step-by-step exercises will walkthrough managing web applications.

Creating a web application

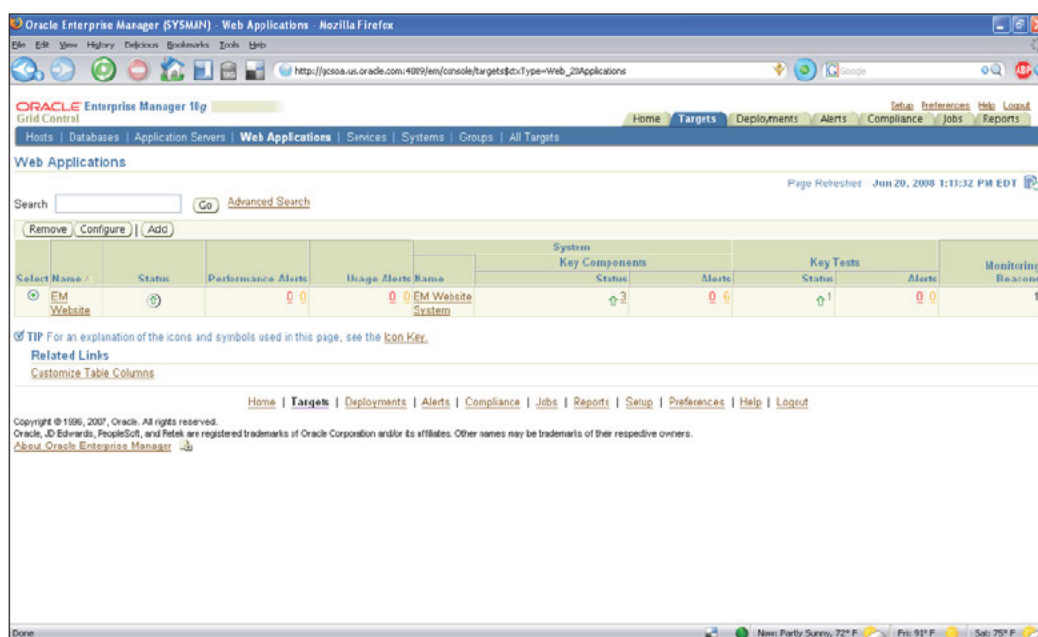
A web application is a specific target type in Grid Control used to monitor one or more URLs for availability, performance, and SLA reporting.



Please perform this exercise only on Internet Explorer. You need to be connected to the Internet for this exercise to download Microsoft libraries for the web transaction recorder.

1. From the Grid Control home page, click on the **Targets | Web Applications** tab.
2. Click on the **Add** button to add a new web application, as seen in the next screenshot.

 Web application is a special service in Grid Control. There are other service types such as generic service, aggregate service, and so on.



3. On the **General** step, as shown in the following screenshot:
 - Enter the web application name as **SOA Order Booking Client**.
 - Select **Time Zone** as **Use System Time Zone**.
 - Enter the **Homepage URL** as `http://gcsoa.us.oracle.com:7777/soademo`.

Web Application Monitoring

Oracle Enterprise Manager (SYSMAN) - Create Web Application: General - Mozilla Firefox

Grid Control

Home | Targets | Deployments | Alerts | Compliance | Jobs | Reports

Hosts | Databases | Application Servers | Web Applications | Services | Systems | Groups | All Targets

General | Availability | Service Test | Beacons | Performance Metrics | Usage Metrics | More

Create Web Application: General

Define a service to model and monitor a business process or application.

Name: SOA Order Booking Client

Time Zone: Use System Time Zone

Properties

Homepage URL: http://gcsoa.us.oracle.com:7777/soademo

System

Select a system target that hosts this service, then mark the system's key components -- the targets critical for running this service.

System: None (Select System)

Time Zone:

Component	Type	Key Component
No system selected		

Tip

A "system" is the infrastructure used to host one or more services. A system consists of components such as hosts, databases, and other targets.

The system components that you mark as "Key Components" may be used to determine service availability, or, in case of service failure, to perform root cause analysis.

Click Help for details.

Cancel | Review | Step 1 of 7 | Next

- Click on **Select System**.
- Select the radio button for **soa_infra_system** in the pop-up window.
- Click on **Select**, as shown in the next screenshot:

[ A System is a collection of targets in Grid Control. A System has to be created from the **Systems** tab, before a web application (or other service) can be based on that System.]

http://gcsoa.us.oracle.com:4889 - Oracle Enterprise Manager (SYSMAN) - Search and Select: Systems - Mozilla Firefox

Search and Select: Systems

Cancel | Select

Search

Target Type: All

Target Name:

On Host: ☐

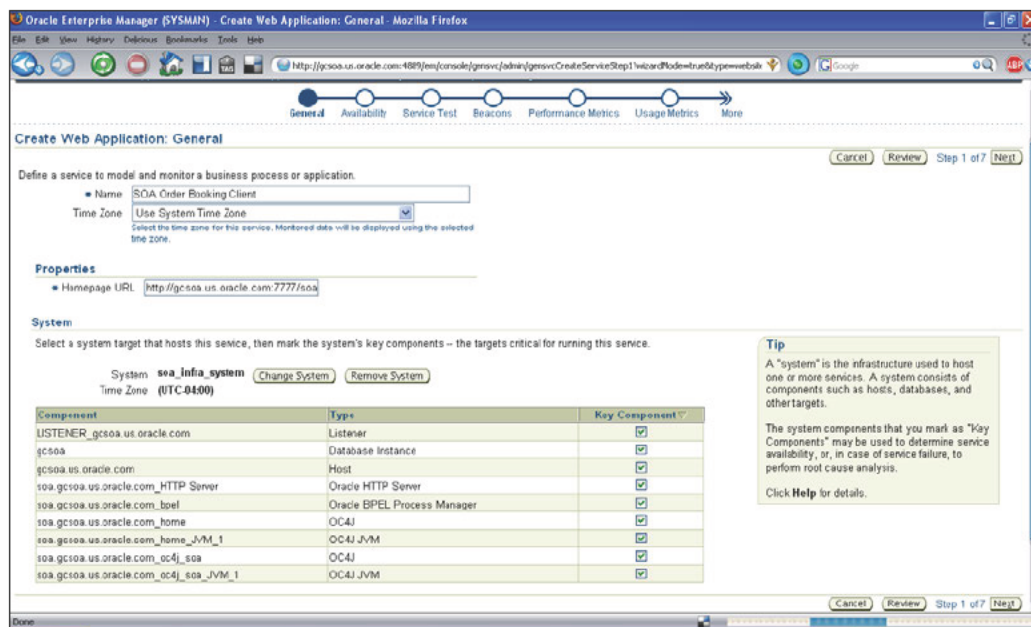
Go

Select	Name	Type
☐	EM Website System	System
☒	soa_infra_system	System

Cancel | Select

Done

- Review the key components for the System. You can uncheck certain components on which the **SOA Order Booking Client** does not depend.
- Click on **Next**, as shown in the following screenshot:

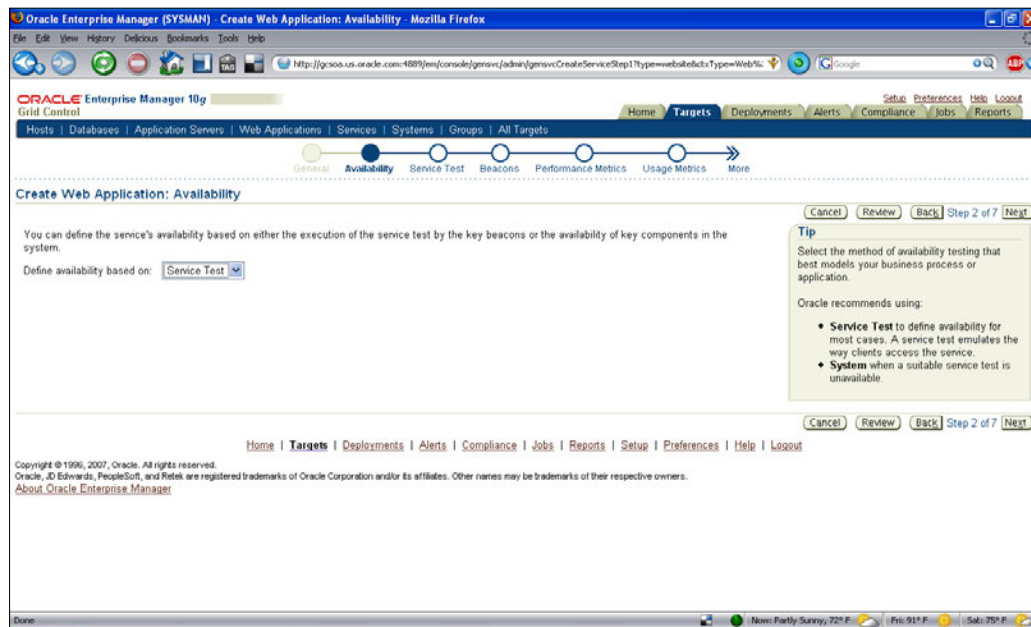


4. On the **Availability** step:

- Select to define availability based on **Service Test**.
- Click on **Next**, as shown in the next screenshot:



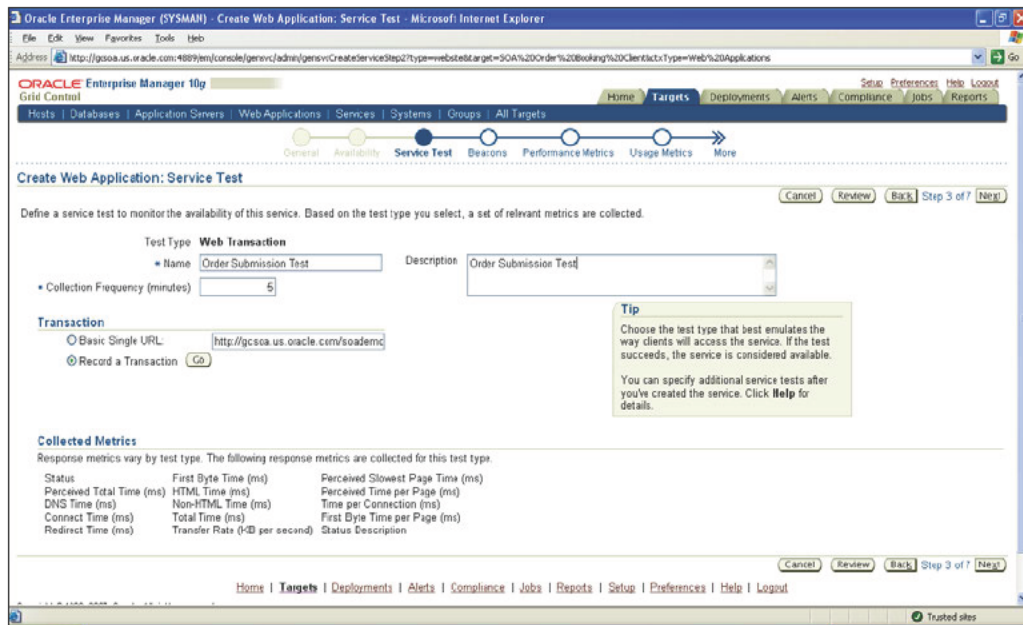
Availability can be defined based on Service Test or System. Further, availability can be defined based on up/down status as well as usage metrics. Service Test-based availability can be defined as the status of one or more recorded web transactions as tested by one or more agents (Beacons). System-based availability is determined on the status of the underlying system components—either all or one component can be up based on the requirement.



Recording a web transaction as a Service Test

Once the web application target type has been created, we can start to record end-user-type web transactions using an inbuilt recorder:

1. On the **Service Test** step, fill in the following fields as shown in the next screenshot:
 - Select a Service Test name as **Order Submission Test**.
 - Select the radio button for **Record a transaction**.
 - Click on **Go**.



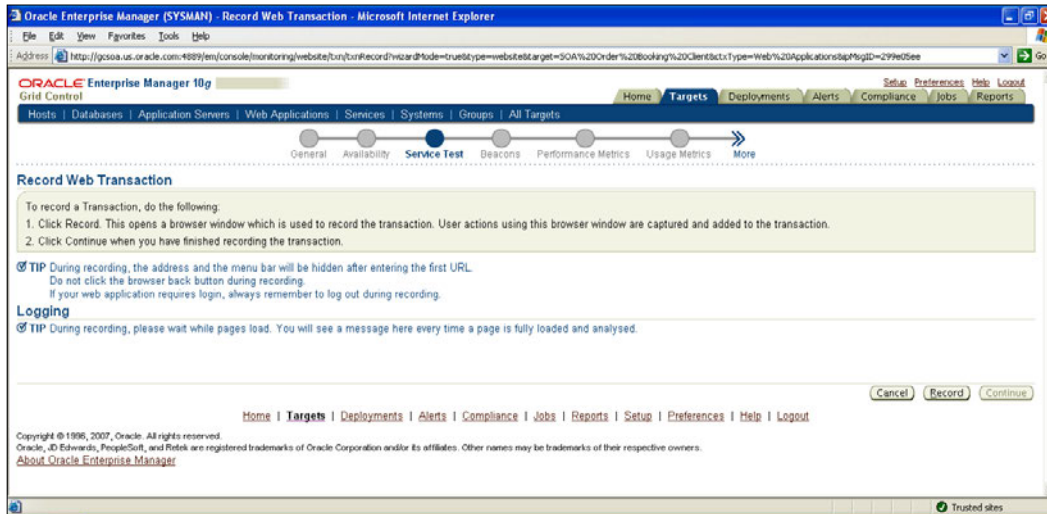
- A recorder will be downloaded. Please click on **Install**.



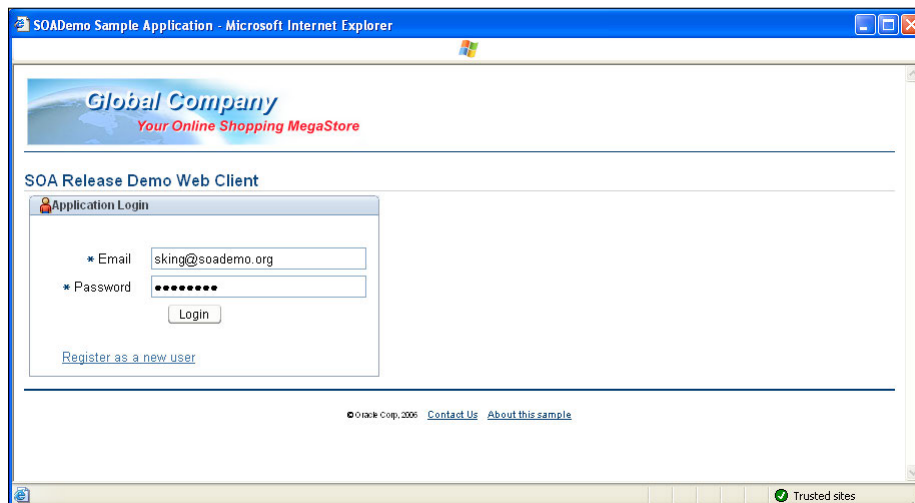
If the Active X settings are set to high security, download will not happen. To change ActiveX-related settings in Internet Explorer, go to **Tools | Internet Options | Security | Custom level...** and find and change all ActiveX-related settings to **Enable** or **Prompt**.



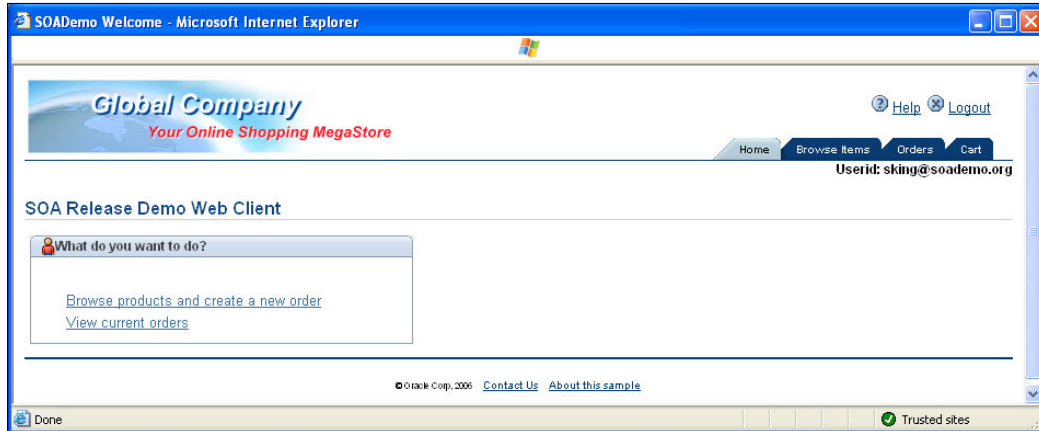
- After the installation, you will be taken to the recording main page.



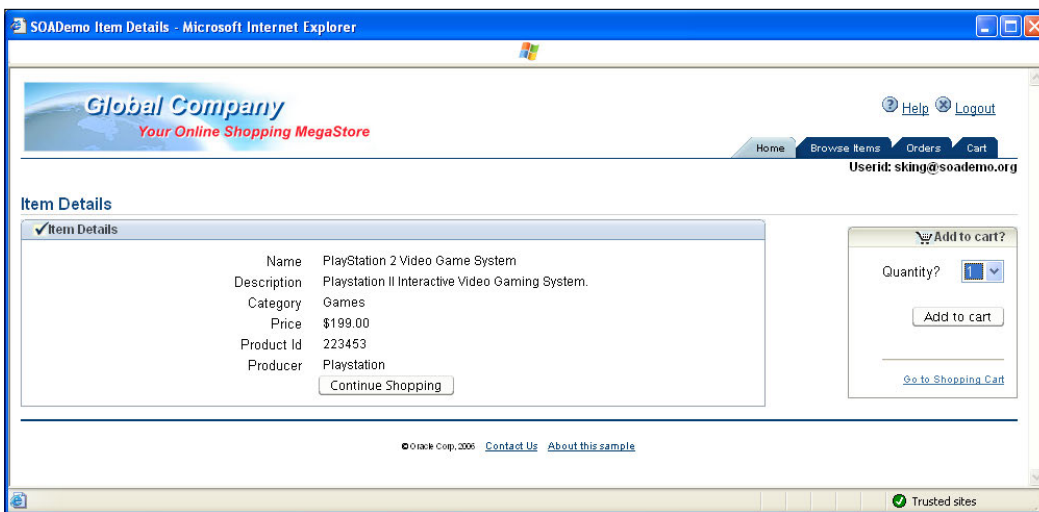
2. Click on the **Record** button to start recording a transaction. This opens a browser window, which is used to record the transaction. User actions using this browser window are captured and added to the transaction.
3. Enter the URL as `http://gcsoa.us.oracle.com:7777/soademo` in the browser window.
4. Enter the **Email** as `sking@soademo.org` and **Password** as `welcome1`, and click on **Login**, as shown in the following screenshot:



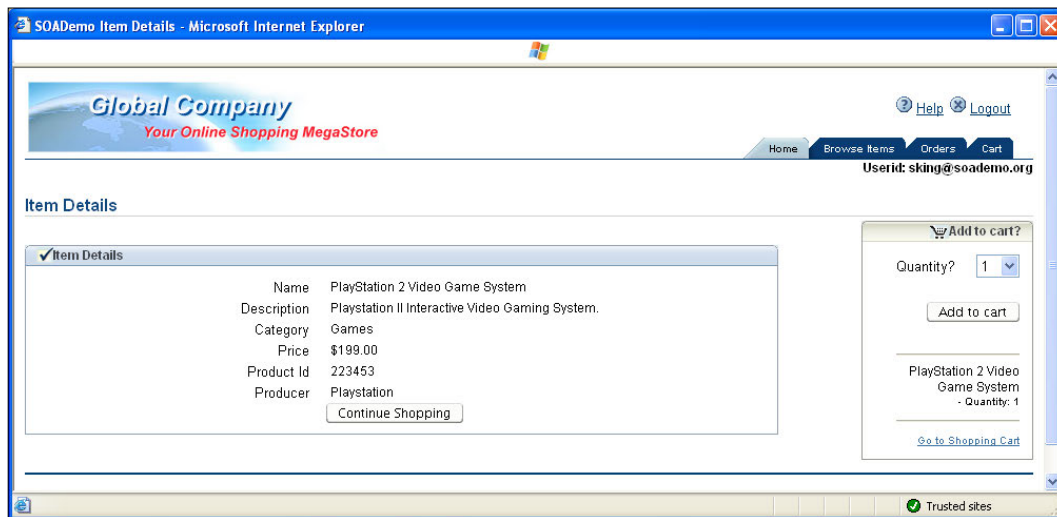
5. On successful login, you will see the screen in the following screenshot:



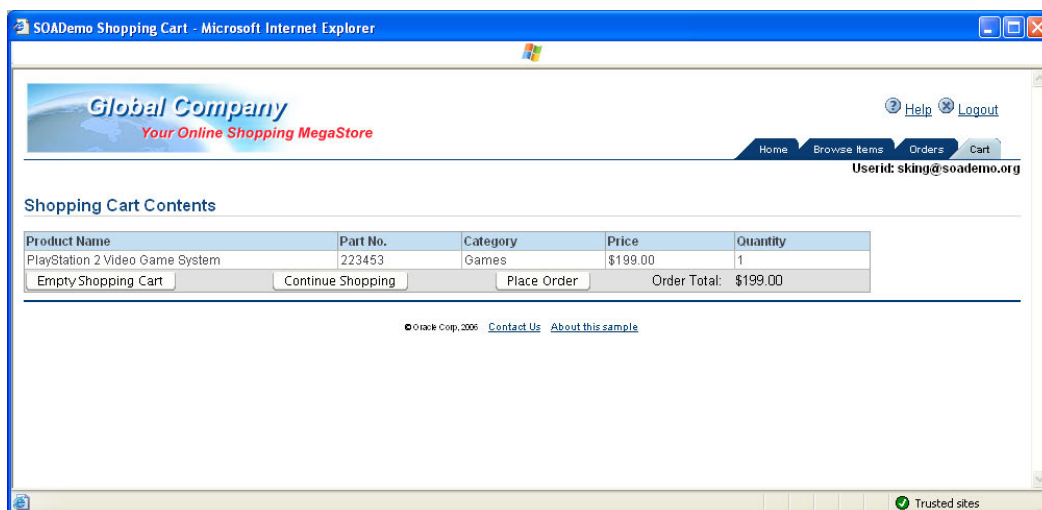
6. Click on **Browse products and create a new order** and then click the radio button for **Playstation2**. Click on **View Details**.



7. Select **Quantity** as **1** and click on the **Add to Cart**, as shown in the following screenshot:

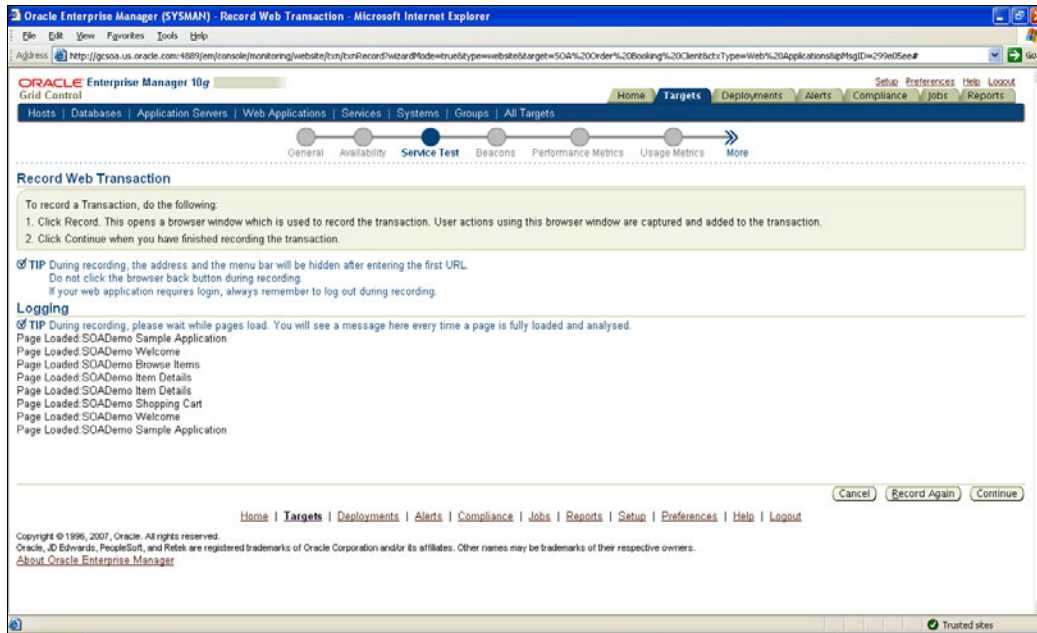


8. Click on **Go To Shopping Cart**.

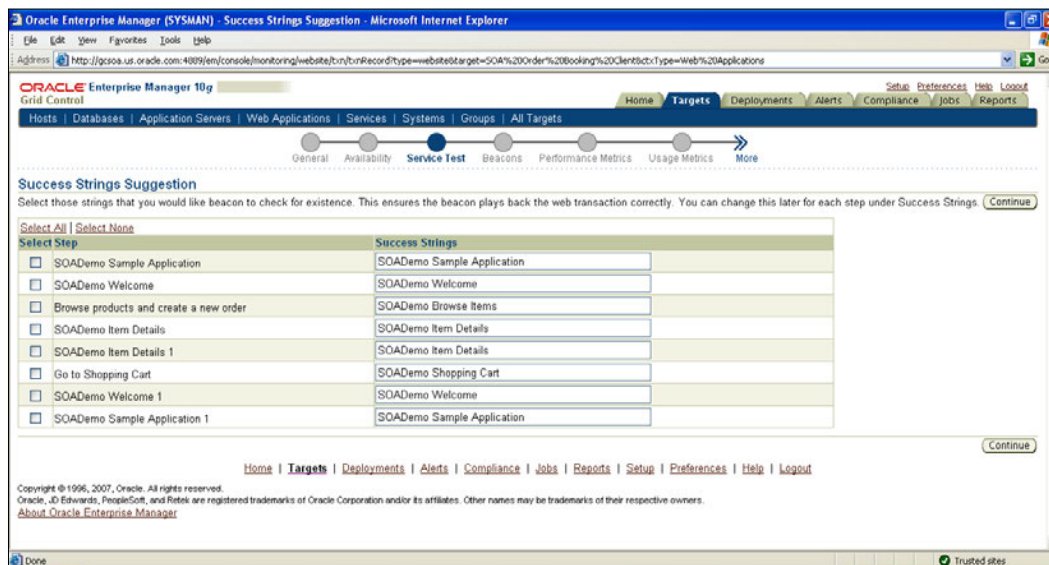


9. Click on the **Place Order** button. Click on the **Orders** tab to view orders submitted. Click on the **logout** link and after going back to the login page, close the browser window.

10. On the **Record Web Transaction** page, click on **Continue**, as you have completed the recording of the transaction, as seen in the following screenshot:



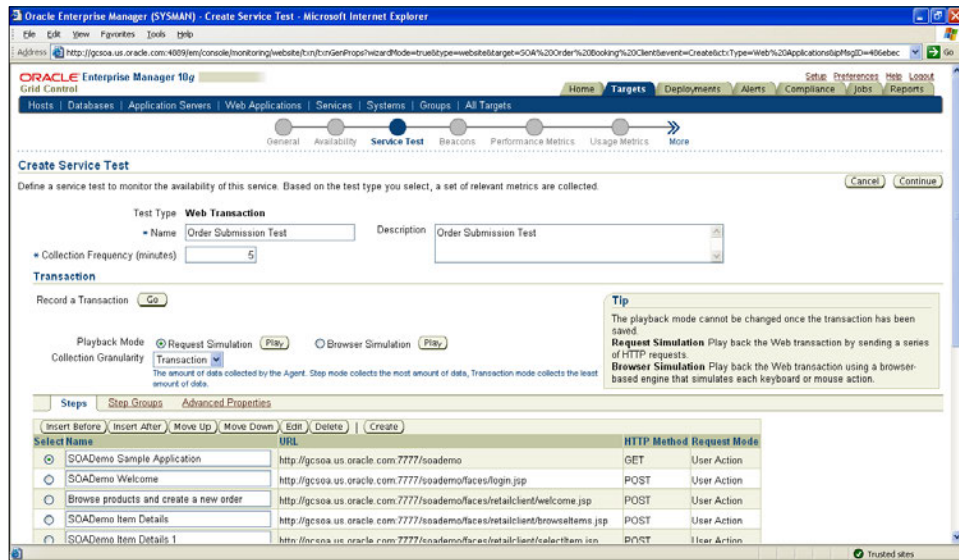
11. You will be taken to the **Success Strings Suggestion** page.



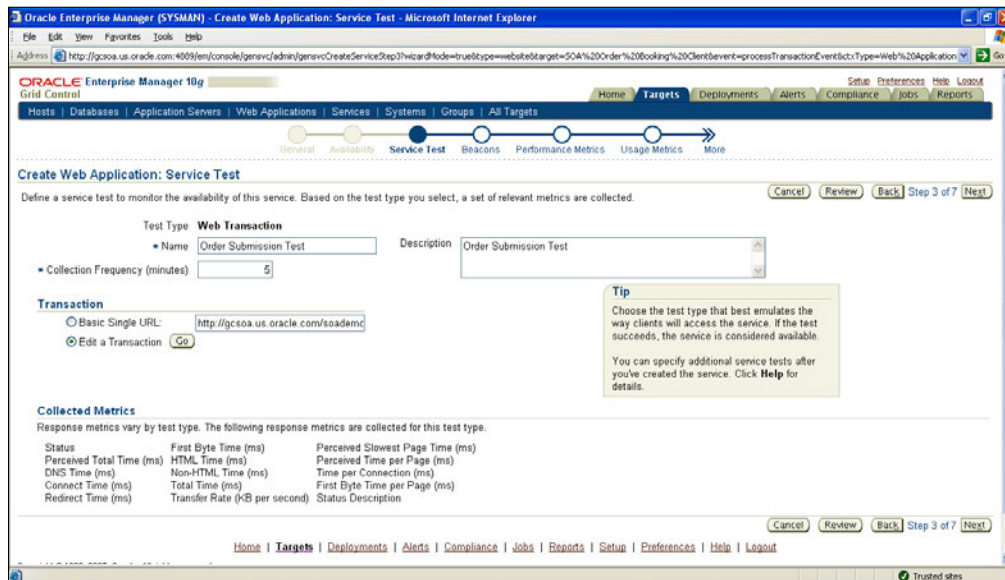
Adding Beacons to run the Service Test

Once the web transactions have been created, we need to set up the agents or Beacons to fire these transactions so that Grid Control can record and report on the transaction metrics:

1. Click on **Continue** to review the Service Test.



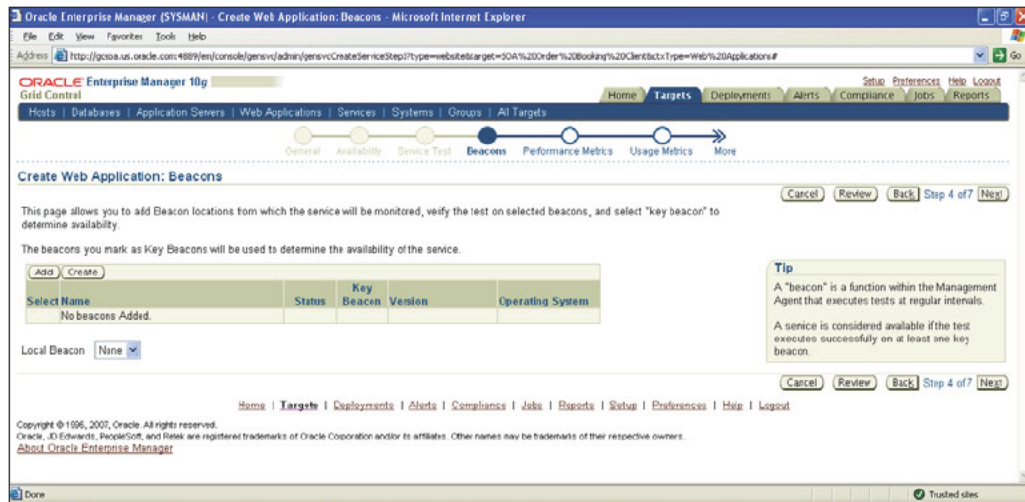
2. Click on **Continue** once again.



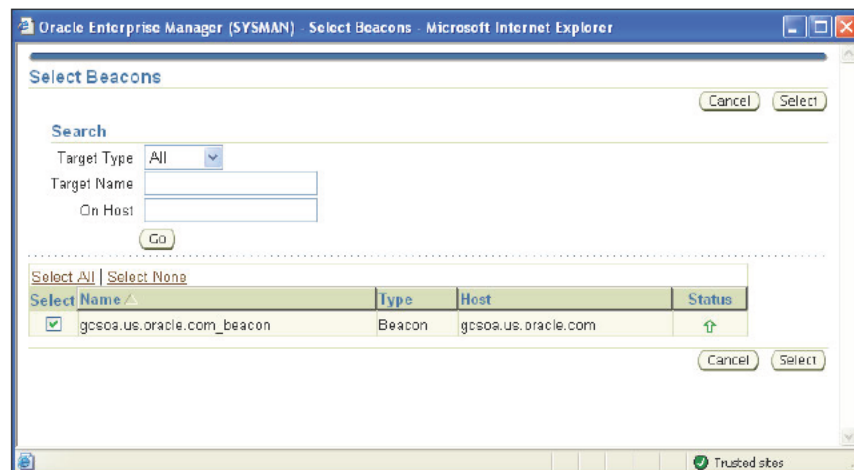
- Click on **Next** to now select the Beacon.



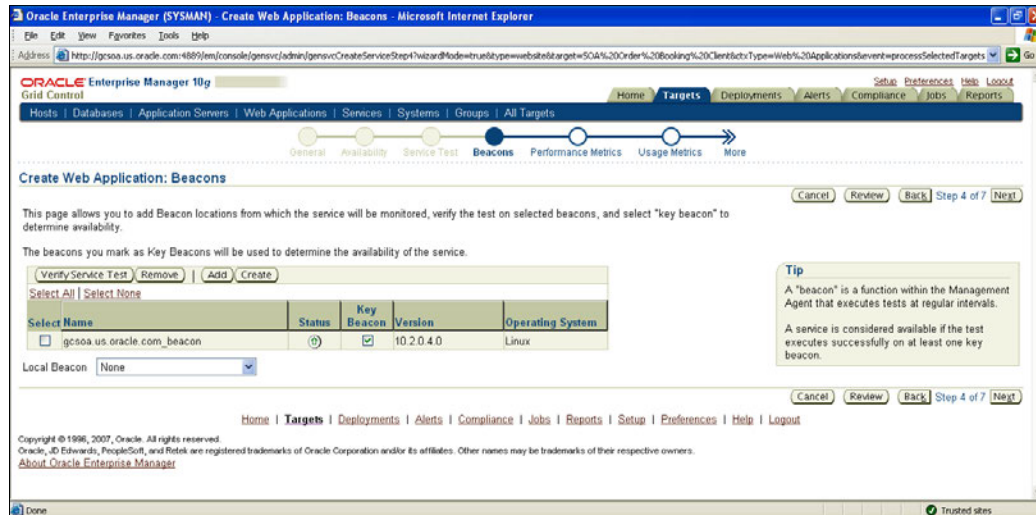
Beacons are Grid Control agents configured to emulate end-user behavior by running recorded Service Tests. Frequently, these are deployed outside the firewall to test applications from an end-user perspective. Beacons are deployed where users are located, typically one per geographical segment. Beacons help to break down the end-user time into network time and server time, which helps to isolate user-related problems.



- Click on **Add** and then select the Beacon, as shown in the following screenshot:



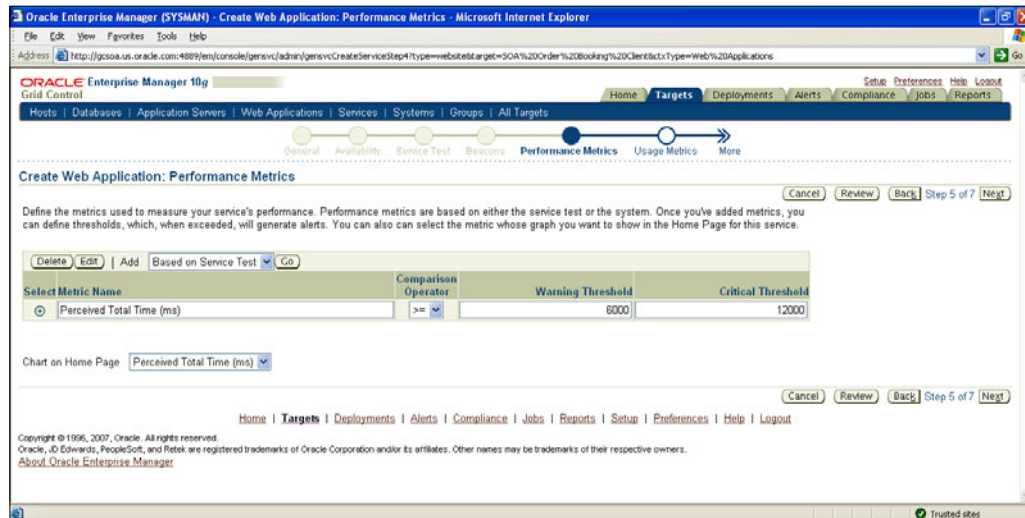
5. Click on **Select**.



Adding performance and usage metrics

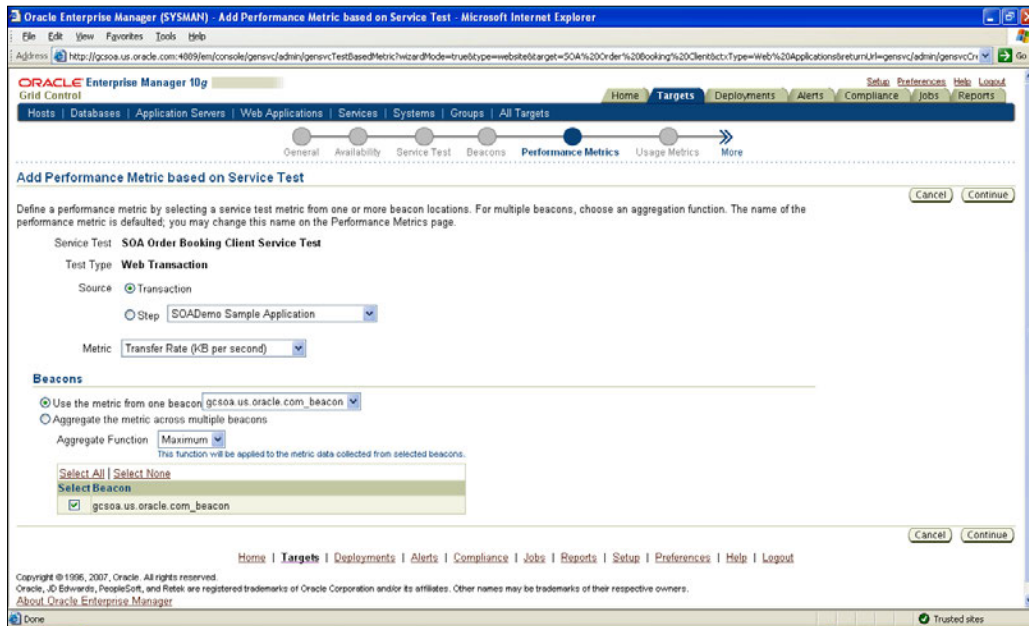
As Grid Control collects several metrics for a web transaction, you can specify specific metrics to be included in the performance and usage buckets:

1. Continuing from the previous step, click on **Next** to now define **Performance Metrics**.

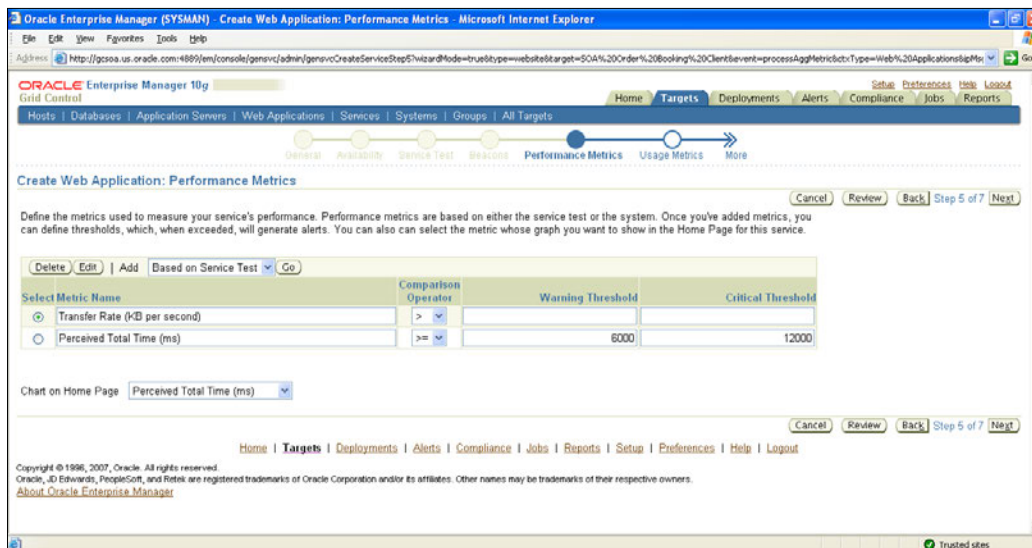


2. Select **Add as Based on Service Test** and click on **Go**.

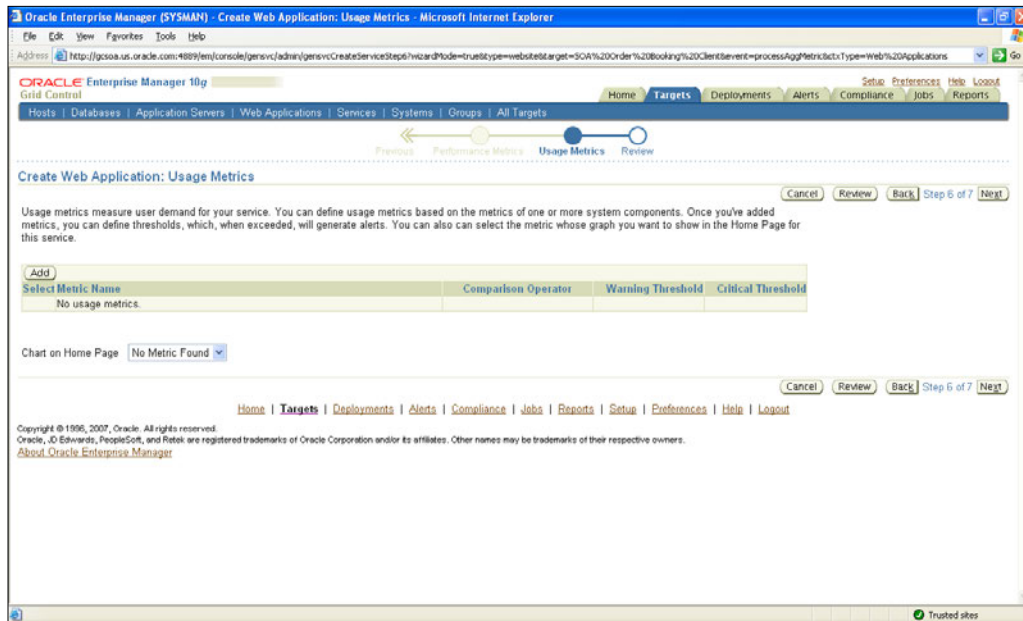
3. Select **Metric as Transfer Rate (KB per second)** and click on **Continue**, as shown in the following screenshot:



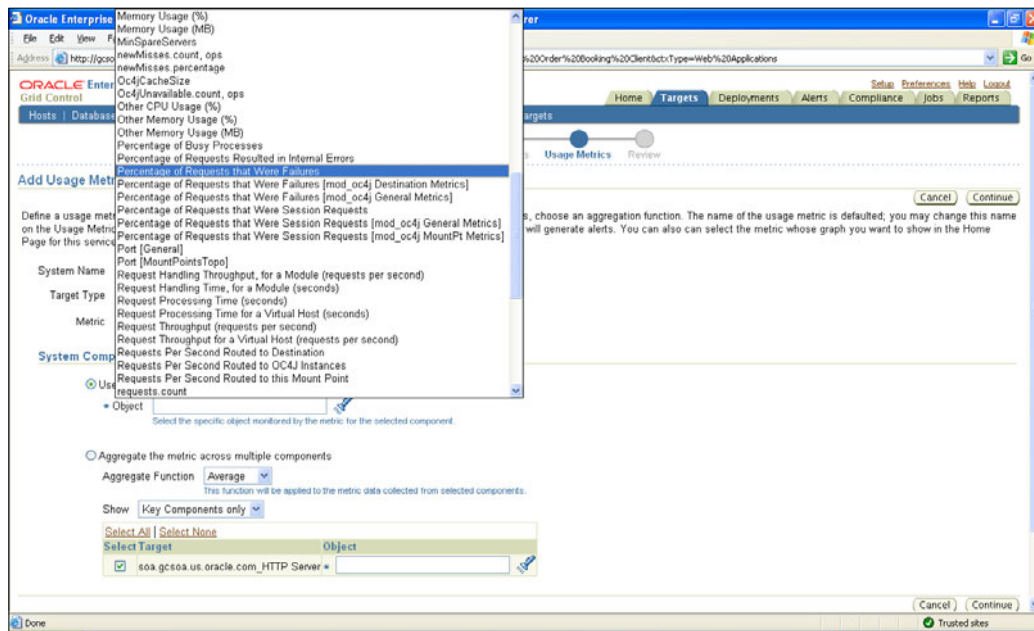
4. Enter a **Warning Threshold** of 6000 and a **Critical Threshold** of 12000. You can add additional metrics similarly. Then click on **Next**, as shown in the following screenshot:



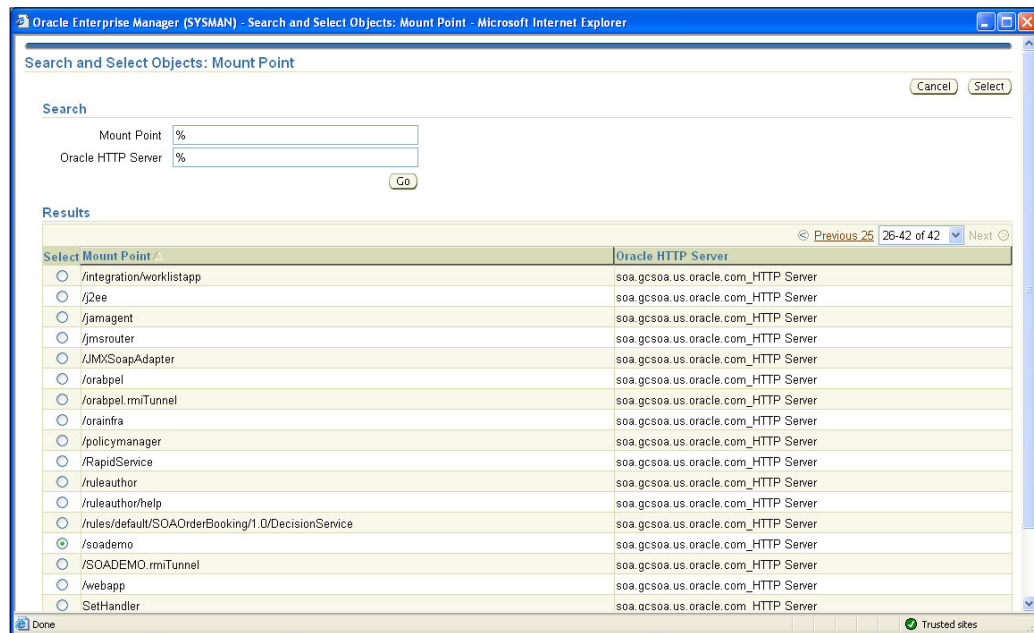
5. You will now be taken to the **Usage Metrics** screen, as seen in the next screenshot. Usage metrics measure user demand for your service. You can define usage metrics based on the metrics of one or more system components. Once you've added metrics, you can define thresholds, which, when exceeded, will generate alerts. You can also select the metric whose graph you want to show in the home page for this service.



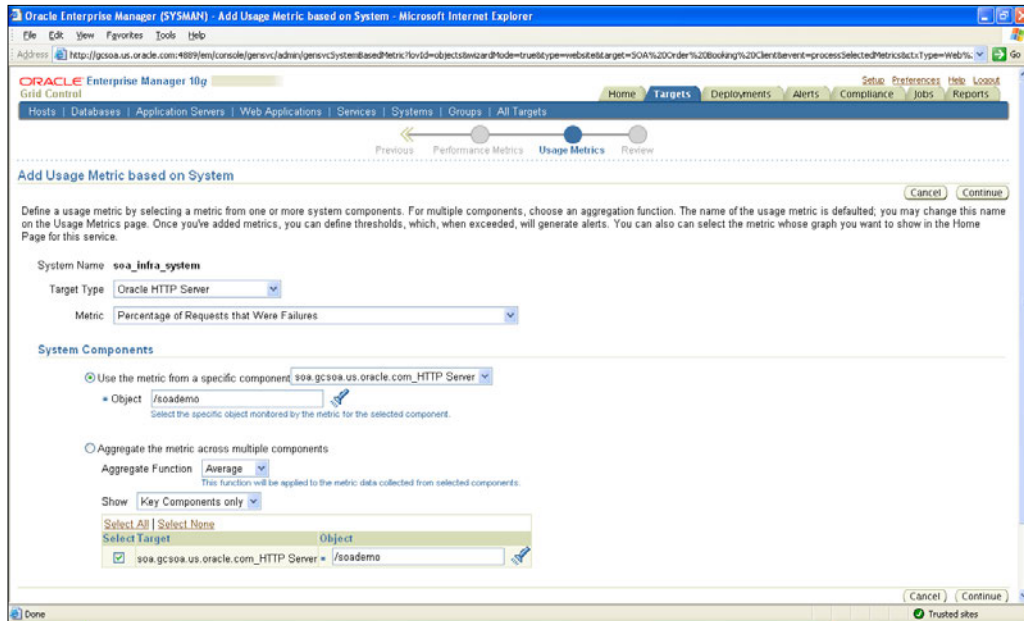
6. You can select from a number of target types. For each target type, you can select from a large number of available metrics.
7. For example let's select **Target Type** as **Oracle HTTP Server** and select the metric **Percentage of Requests that Were Failures**



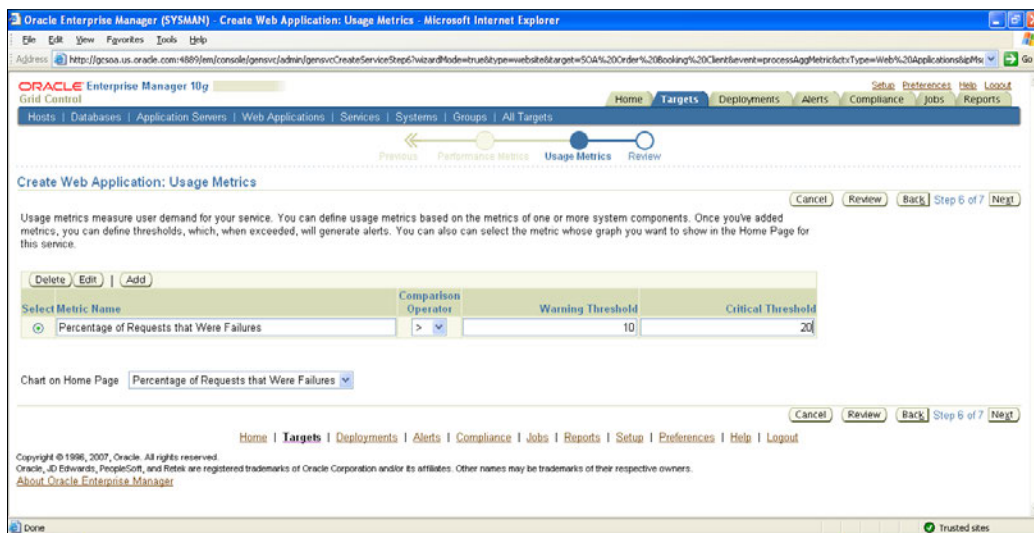
8. Click on the *flashlight* for the object and then select **Mount Point** as **/soademo**.



9. On clicking **Select**, you will see the page shown in the following screenshot:



10. Click on **Continue** and then provide a **Warning Threshold** of 10 and a **Critical Threshold** of 20.



11. Click on **Next** to review all the selections made so far and then click on **Finish**.

Oracle Enterprise Manager (SYSMAN) - Create Web Application: Review - Microsoft Internet Explorer

Address: http://gcsoa.us.oracle.com:4889/em/console/genovc/admin/genovcCreateServiceStep6?type=web&target=SOA%20Order%20Booking%20Client&type=Web%20Applications

soa.gcsoa.us.oracle.com_oc4j_soa	OC4J	☒
soa.gcsoa.us.oracle.com_oc4j_soa JVM_1	OC4J JVM	☒

Availability: Based on Service Test

Service Test

Test Type: Web Transaction

Name: Order Submission Test

Collection Frequency (minutes): 5

Description: Order Submission Test

Transaction

Transaction

Beacons

Name	Status	Key Beacon	Version	Operating System
gcsoa.us.oracle.com_beacon	↑	☒	10.2.0.4.0	Linux

Local Beacon

Performance

Metric Name	Comparison Operator	Warning Threshold	Critical Threshold
Transfer Rate (KB per second)	>	6000	12000
Perceived Total Time (ms)	>=	6000	12000

Chart on Home Page: Perceived Total Time (ms)

Usage

Metric Name	Comparison Operator	Warning Threshold	Critical Threshold
Percentage of Requests that Were Failures	>	10	20

Chart on Home Page: Percentage of Requests that Were Failures

Cancel Back Step 7 of 7 Finish

Home | Targets | Deployments | Alerts | Compliance | Jobs | Reports | Setup | Preferences | Help | Logout

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Trusted sites

12. You have now successfully added the web application with the appropriate recorded service tests, as well as performance and usage metrics.

Oracle Enterprise Manager (SYSMAN) - Web Applications - Microsoft Internet Explorer

Address: http://gcsoa.us.oracle.com:4889/em/console/targets&type=Web_20Applications&event=refresh

ORACLE Enterprise Manager 10g

Grid Control

Home | Targets | Deployments | Alerts | Setup | Preferences | Help | Logout

Hosts | Databases | Application Servers | Web Applications | Services | Systems | Groups | All Targets

Confirmation

Web Application SOA Order Booking Client has been added.

Web Applications

Page Refreshed Jun 20, 2008 2:34:53 PM EDT

Search: Go Advanced Search

Remove Configure Add

Select	Name	Status	Performance Alerts	Usage Alerts	Name	System	Key Components Status	Alerts	Key Tests Status	Alerts	Monitoring Beacons
☒	FM Website	Ⓢ	0 0	0 0	FM Website System	FM Website System	↑ 3	0 6	↑ 1	0 0	1
☐	SOA Order Booking Client	Ⓢ	0 0	0 0	soa_infra_system	soa_infra_system	↑ 2	2 12	Ⓢ 1	0 0	1

TIP For an explanation of the icons and symbols used in this page, see the [Icon Key](#).

Related Links

[Customize Table Columns](#)

Home | Targets | Deployments | Alerts | Compliance | Jobs | Reports | Setup | Preferences | Help | Logout

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About Oracle Enterprise Manager

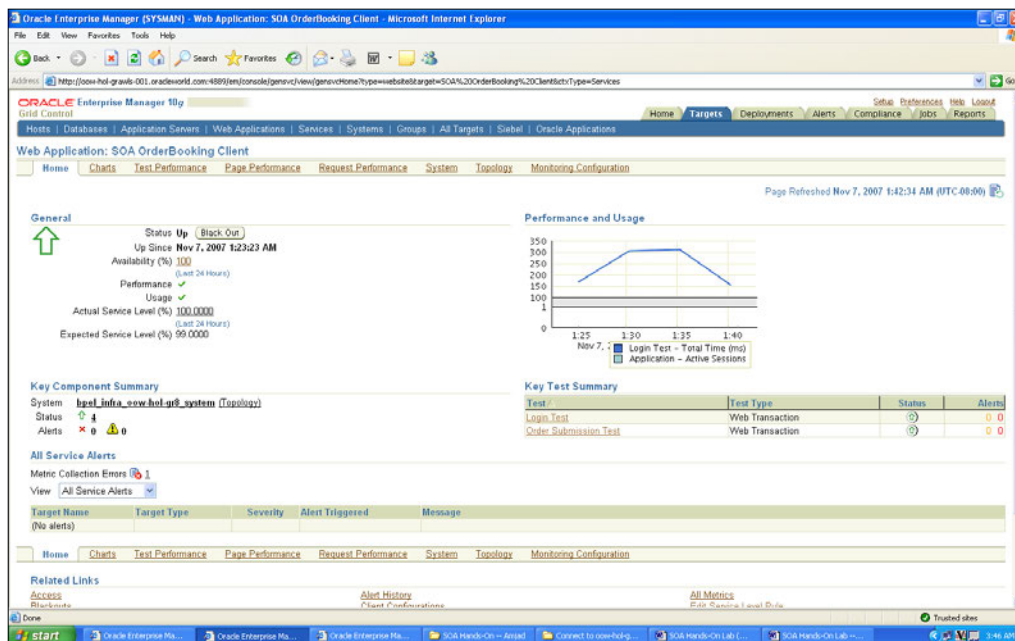
Done

Trusted sites

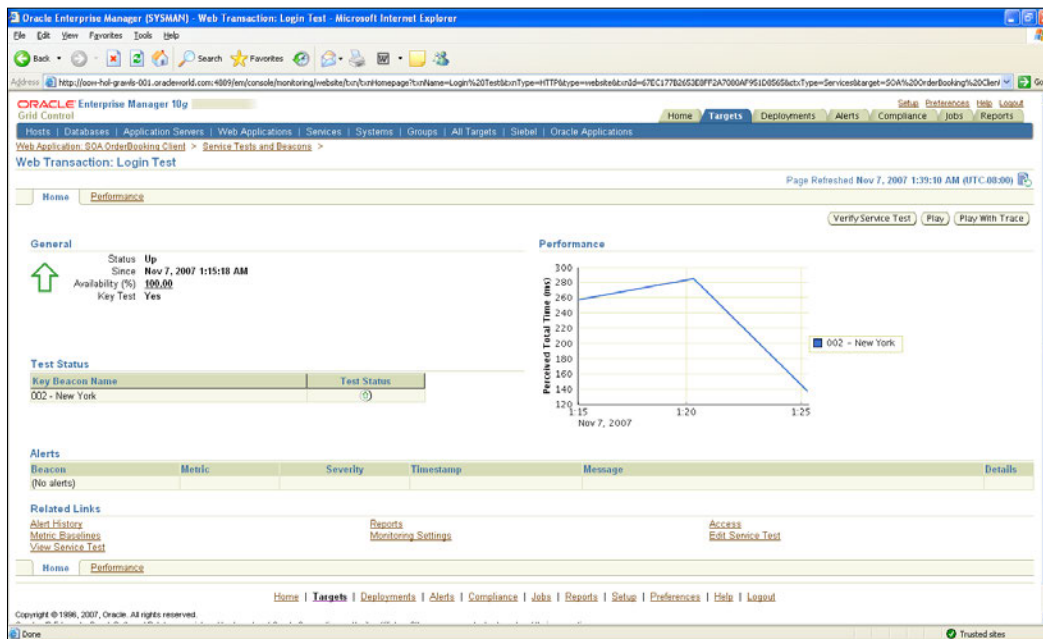
Viewing web transaction playback

After recording the transaction, it is useful to view what has been recorded for verification.

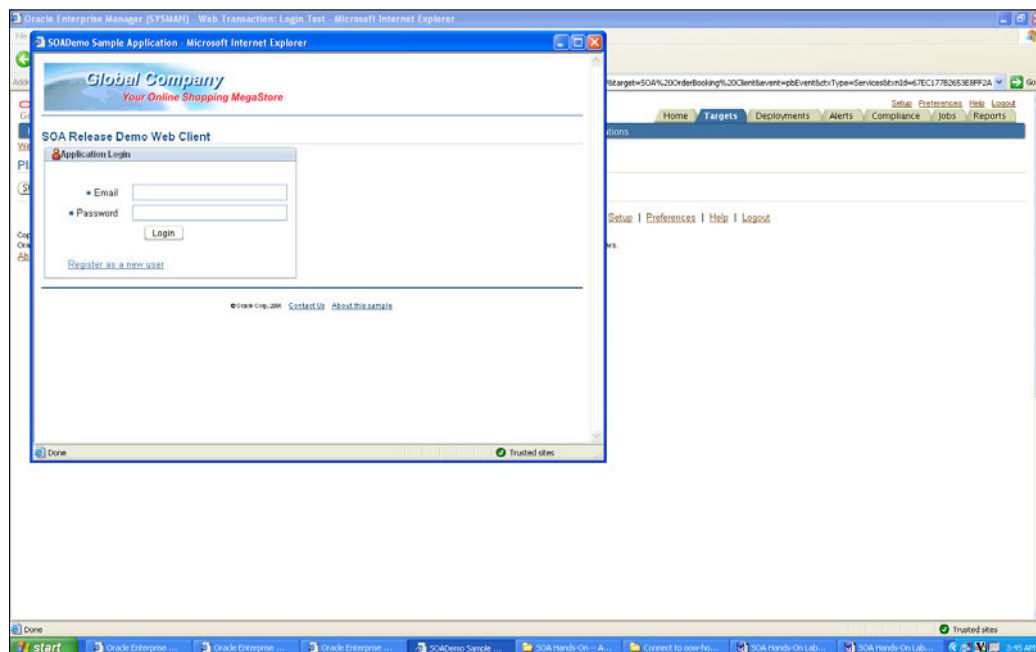
1. To view the recorded Service Test transaction, click on **Targets**, then on the **Web Applications** tab.
2. Click on the **SOA OrderBooking Client** application.



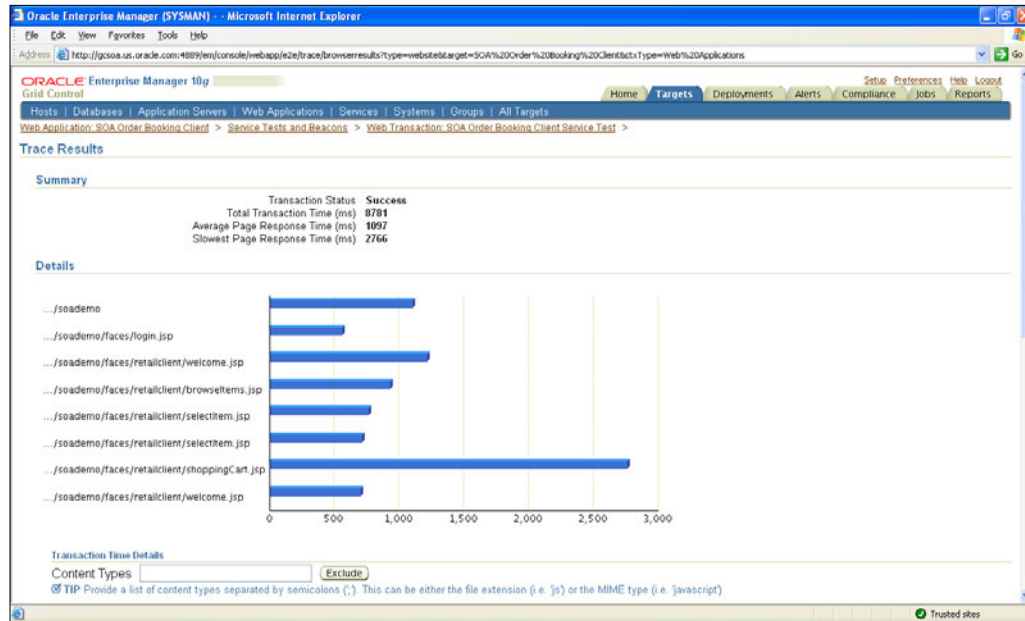
3. In the **Key Test Summary** section, click on **Order Submission Test**. Observe the historic performance of submitting orders on the **SOA OrderBooking** web application as experienced by end users. Now click on **Play** to run the recorded transaction.



4. Observe the recorded transaction in the pop-up window.



- Observe the results of the test and the time breakdown for each component.



Transaction Time Details

Content Types: TIP: Provide a list of content types separated by semicolons (;). This can be either the file extension (i.e. .js) or the MIME type (i.e. javascript)

Response Times

Step Name	Request Number	Response Time (ms)	Status	Request Mode	Request	Content Type	Content Length (bytes)
SOADemo Sample Application	1110	Success			http://gcsoa.us.oracle.com:7777/soademo		
SOADemo Welcome	562	Success			http://gcsoa.us.oracle.com:7777/soademo/faces/login.jsp		
Browse products and create a new order	1219	Success			http://gcsoa.us.oracle.com:7777/soademo/faces/retailclient/welcome.jsp		
SOADemo Item Details	937	Success			http://gcsoa.us.oracle.com:7777/soademo/faces/retailclient/browseItems.jsp		
SOADemo Item Details 1	766	Success			http://gcsoa.us.oracle.com:7777/soademo/faces/retailclient/selectItem.jsp		
Go to Shopping Cart	718	Success			http://gcsoa.us.oracle.com:7777/soademo/faces/retailclient/selectItem.jsp		
SOADemo Welcome 1	2766	Success			http://gcsoa.us.oracle.com:7777/soademo/faces/retailclient/shoppingCart.jsp		
SOADemo Sample Application 1	703	Success			http://gcsoa.us.oracle.com:7777/soademo/faces/retailclient/welcome.jsp		

Summary

Recording and monitoring critical end-user paths is a proactive approach to increasing end-user satisfaction. In a global economy, enterprises need to ensure users can get the information they want, when they want it, from anywhere in the world. A management solution is incomplete without a synthetic monitoring strategy.

In this chapter, we discussed how to create web applications, record web transactions, and use specific metrics for performance and usage purposes. Further, we also discussed how to configure running these synthetic transactions from various agents or Beacons. Finally, we discussed how to view a web transaction to review and verify all the steps.

Synthetic service-test monitoring within Grid Control is complemented by passive real-user monitoring. Enterprise Manager's Real User Experience Insight (from the Moniforce acquisition) is a great tool in this area. More information on Real User Experience Insight can be found on the Oracle Technology Network.

11

Discovery of WebLogic and OSB targets

With the 10.2.0.5 (or 10gR5) release, Grid Control introduced new functionality for managing the **Oracle Service Bus (OSB)**, formerly known as the **AquaLogic Service Bus (ALSB)**. Grid Control had heterogeneous application server support even prior to 10.2.0.5. Specifically, Grid Control had monitoring functionality for the **WebLogic Server (WLS)**, going back to version 7.x. The introduction of OSB management complemented the WLS management functionality and helped strengthen Grid Control's middleware management offering to a considerable extent.

In the 10.2.0.5 release, Grid Control provided several features for OSB management such as discovering the OSB components, monitoring the OSB proxy and business services, monitoring the extended WebLogic and underlying infrastructure, deployment automation, configuration management, and service-level management.

This chapter talks about the discovery of the WebLogic Server and the OSB instance. Discovery of WebLogic and OSB is the first step before performing other management tasks. The following areas are covered in this chapter:

- Challenges
- Solution
- Step-by-step exercises:
 - Adding a WebLogic domain target
 - Navigating to the OSB target home page

Challenges

For any small, medium, or large enterprise, the challenge is to manage several disparate application, middleware, and database targets from a single console. The traditional hardware and software components such as servers, storage devices, operating systems, databases, middleware, and applications have been managed by system management solutions. With the rise of integration software such as BPEL and OSB, applications and infrastructure pose new problems. First, they need to be managed along with existing hardware and software. Second, as the WebLogic domains and OSB projects proliferate across the enterprise, the infrastructure team is faced with increasing problems to manage these projects. Thirdly, for the administrators who are new to OSB, supporting these environments in production poses unknown challenges. Finally, the IT managers want to avoid hiring new administrators with increasing OSB projects.

Solution

Grid Control provides a way to discover WebLogic and OSB components whether it is in development, test, stage, or production. For the infrastructure team, this is a convenient way to manage several installations from one console. The prerequisite is to have the Grid Control agent installed on the server hosting WebLogic admin server. Once the Grid Control agent is installed, the discovery process can be initiated from the console.

Step-by-step exercises

This set of step-by-step exercises will walkthrough discovering a WebLogic and OSB target.

Adding a WebLogic domain target

The first step in managing a WebLogic and OSB environment is to discover the WebLogic target – admin, clusters, and managed servers:

1. From the Grid Control home page, click on **Targets | Middleware**.
2. Click on the **Provisioning** sub-tab.



This is a view showing all of the monitored Middleware components in the enterprise. Grid Control can discover and manage several types of Application Servers such as Oracle Application Server, WebLogic, WebSphere, and JBoss. There are one or more target types and one or more targets for each piece of middleware that is discovered and managed. For each target, a summary of status with details, alerts, policy violations, CPU usage, and memory usage on the host are tabulated.

- From the dropdown on the right, add an **Oracle WebLogic Server Domain** target. Click on **Go**, as shown in the following screenshot:

The screenshot shows the Oracle Enterprise Manager 10g Grid Control interface. The top navigation bar includes links for Home, Targets, Deployments, Alerts, Compliance, Jobs, Reports, Setup, Preferences, Help, and Logout. The main content area is titled 'Middleware' and shows a search bar, a 'Page Refreshed' timestamp, and a 'Go' button. Below the search bar, there are buttons for 'Remove', 'Configure', 'Expand All', and 'Collapse All'. A table of targets is displayed with columns for Select Name, Type, Status, Status Details, Alerts, Policy Violations, CPU Usage (%), and Memory Usage (MB). The table shows one target: 'EnterpriseManaged01.qcsea.us.oracle.com' of type 'Oracle Application Server'. Below the table, there is a 'Related Links' section with a link to 'Customize Table Columns'. At the bottom, there is a footer with copyright information and a link to 'About Oracle Enterprise Manager'.

- On the **Host** step, fill in the fields as shown in the next screenshot:
 - Pick the **Administration Server Host** from the *flashlight*.
 - Version** as **10.x** (WebLogic Server version 7.x and above are supported).
 - Port** as **7021** (this is the default admin port).
 - Administration Server Username** as **weblogic**.
 - Password** as **<Your WebLogic admin password>**
 - Check the **Save as Preferred Credentials** box.
 - Administration Server Home Directory** as **/u01/homes/osb_wls/wlserver_10.3/server/lib**.
 - Leave the other fields blank.
 - Click on **Next**.

Discovery of WebLogic and OSB targets

5. On the **Host Credentials** step:
 - **Host Username** as **oracle**.
 - **Password** as *<Your WebLogic admin password>*.
 - Check the **Save as Preferred Credentials** box.
 - Click on **Next**.
6. On the **Select Managed Servers** step:
 - Check the domain that has been discovered with the Admin/Managed Server and Oracle Service bus target.
 - Click on **Next**, as shown in the next screenshot:

Select Name	Type	Host Name	Port
servicebus_7021	Domain	n/a	n/a
xbusServer	Administration Server	gcsa.us.oracle.com	7021
xbusServer_osb	Oracle Service Bus		

- On the **Review** step, click on **Finish**.
- On the **Middleware** page, observe the confirmation message. Look at the newly discovered WebLogic domain, Managed Server, and OSB target.

Confirmation
Oracle WebLogic Server Domain servicebus_7021 on host gcsoa.us.oracle.com has been successfully added, and is now being monitored by Enterprise Manager.

Middleware
Page Refreshed Feb 17, 2009 9:56:32 PM EST (Refresh)

Search: All Go

Remove Configure View Flat List Add Oracle Application Server Go

Expand All Collapse All

Select	Name	Type	Status	Status Details	Alerts	Policy Violations	CPU Usage (%)	Memory Usage (MB)
☐	All Middleware							
☐	EnterpriseManaged1.gcsoa.us.oracle.com	Oracle Application Server		5 (4.5)	0 0	0 0 0	3.71	809.81
☐	gcsoa.us.oracle.com.servicebus_7021	Oracle WebLogic Server Domain	n/a	1 (5.1)	0 0	0 0 0		
☐	gcsoa.us.oracle.com.servicebus_7021.xbusServer	Oracle WebLogic Managed Server			0 0	0 0 0		
☐	gcsoa.us.oracle.com.servicebus_7021.xbusServer.osb	Oracle Service Bus			0 0	0 0 0		

TIP For an explanation of the icons and symbols used in this page, see the [Icon Key](#).

Related Links
[Customize Table Columns](#)

Navigating to the OSB target home page

Once the WebLogic and OSB components are discovered, it is useful to visit the OSB target home page and observe useful monitoring-related information.

- Click on the **Oracle Service Bus target name** hyperlink.



On the Oracle Service Bus target home page you will see the availability status of the OSB server, **Availability % (last 24 hours)**, **Oracle WebLogic Server Domain, Version, and Host**.

Oracle Enterprise Manager 10g
Grid Control

Home Targets Deployments Alerts Compliance Jobs Reports

Hosts | Databases | Middleware | Web Applications | Services | Systems | Groups | Virtual Servers | All Targets

Oracle WebLogic Managed Server: gcsoa.us.oracle.com.servicebus_7021.xbusServer >

Oracle Service Bus: gcsoa.us.oracle.com.servicebus_7021.xbusServer_osb
Page Refreshed

Home OSB Services OSB Performance JMS Performance Web Service Security Violation

General

Status: Up (Black Out)
Up Since: Feb 21, 2009 1:04:45 AM
Availability (%): 100 (Last 24 Hours)
Last Collection Time: Feb 21, 2009 1:09:47 AM EST
Collection Interval: Every 75 Minutes
Version: 10.3.0.0
Oracle WebLogic Server Domain: gcsoa.us.oracle.com.servicebus_7021
Host: gcsoa.us.oracle.com

Throughput (24 Hours)

1.0
0.8
0.6
0.4
0.2
0.0

No data is currently available.

EM System and Service

Create Infrastructure Service

System	Status	Alerts	Policy Violations Service
No items found			

Summary

Discovery is the first step to managing a target in the enterprise. Discovering and managing multiple targets from a single console is a powerful way to ramp up on new projects, while maintaining a standardized management platform. This avoids hiring new administrators for new projects that increase the number of managed targets.

In this chapter, we looked at how to discover WebLogic Server and OSB targets. In particular, we discussed the mandatory discovery process to locate and identify the WebLogic and OSB components. There are several challenges associated with managing multiple components in the data center. Grid Control provides a single interface to discover and manage these disparate components. In the exercises, we walked through simple steps to discover WebLogic and OSB components. Finally, we viewed the key monitoring areas on the OSB target home page.

The WebLogic server discovery is mandatory, and OSB is discovered automatically as a result. These are mandatory steps to enable subsequent management tasks on WebLogic or OSB. The next few chapters will walkthrough hands-on exercises to set up and perform additional management tasks for the discovered targets.

12

OSB Deployment Automation

In most medium to large enterprises, integration developers have to deal with managing multiple initiatives spread over multiple departments. In the WebLogic and **Oracle Service Bus (OSB)** world, this translates to multiple WebLogic/OSB projects in multiple WebLogic domains. Typically, the integration developers are tasked with project development and testing while the WebLogic administrators are responsible for the deployment and operational support. This handoff is not entirely smooth due to different tools and processes in the development and operational organizations.

WebLogic administrators have to deal with multiple OSB projects. Typically, the OSB project deployment should follow the existing methodology in the enterprise. The operational team should centrally maintain the deployment artifacts, and this should be a different location than the one used by the development team. The deployment itself should be a well-defined procedure with a series of repeatable steps. Further, the set of best practices for the enterprise should be invoked at deployment time. This chapter talks about deploying multiple OSB projects to an OSB environment in a standardized manner. Specifically, this chapter talks about:

- Challenges
- Solution
- Step-by-step exercises:
 - Viewing the Software Library
 - Uploading projects to the Software Library
 - Viewing the project deployment procedure
 - Scheduling project deployment

Challenges

Deploying applications in production environments is a challenge. The SOA application developers build new projects, or new versions of existing projects, and throw them "over the wall" to the operations team. Administrators have to deploy multiple application files to multiple targets, in a fixed time window. This process is repeated when moving from test to stage to production. This consumes time and requires expertise on these applications. Controlling the WebLogic projects centrally is the first challenge, where administrators have to track the project versions to comply with change and release management guidelines. Next the deployment itself is a challenge, considering the administrator needs to deploy the projects with specific customizations and honor the scheduled maintenance window. All in all, the administrator has too many manual tasks to deal with, given the constraints of the operational environment.

Solution

With Grid Control, administrators can deploy multiple OSB projects to a domain deployment procedure framework. A five-step interview process lets the user pick the source projects, pick the target OSB server and domain, set the credentials, specify configurations and the customization file, and schedule a future deployment using the job system.

- Store OSB deployment artifacts in an enterprise Software Library
- Export OSB deployment artifacts from a live OSB server
- Track maturity of OSB deployment artifacts and usage
- Deploy OSB projects from test to stage to production
- Deploy in a future maintenance window

Step-by-step exercise

This set of step-by-step exercises will walkthrough managing the deployment of OSB projects.

Viewing the Software Library

The first step is to view the operational store or the Software Library in Grid Control. This is the starting point for administrators to look at the inventory, add items, or change existing items.

1. From the Grid Control home page, click on the **Deployments** tab.
2. Click the **Provisioning** sub-tab.



The Software Library contains several objects such as operating system images, Oracle homes for database and application server, and deployment artifacts for BPEL, OSB, and so on. The Library is used to track the maturity of these components as they are used on various monitored targets.

3. Expand **Components** to reveal the component types.

Select Name	Type	Revision	Status	Maturity	Product name/Patch number	Product version	Description
Components							
Oracle Components							Oracle Components
BPEL Deployer Component							BPEL Deployer Component
BPEL Process Suitcase							BPEL Process Suitcase
Sample BPEL Suitcase	Generic Component	0.2	Ready	Production	Oracle BPEL Process Manager	10.1.3	Sample BPEL Suitcase used for Deployment Procedure
Common Provisioning Utilities							Common Provisioning Utilities
LDR Configuration							LDR Configuration
myJEECompany Provisioning							myJEECompany Provisioning
Oracle Patch Prerequisite Checker							Oracle Patch Prerequisite Checker
Prerequisite-fixup components							Prerequisite-fixup components
RAC Provisioning							RAC Provisioning
Stage Server Up2date Component							Stage Server Up2date Component
Windows host Patching Repository Component							Windows host Patching Repository Component
SOA 10.1.3.1 Gold Image	Oracle IAS Clone	0.1	Active	Untested	SOA Suite	10.1.3.1	Company's gold image of SOA Suite 10.1.3.1

Uploading projects to the Software Library

In this particular scenario, the administrator has been handed a copy of the OSB project, and needs to deploy it. Before deployment, the administrator needs to upload the projects to the Grid Control Software Library for tracking, operational version control, and to enable deployment:

1. Upload OSB Projects to Software Library
2. Select the radio button for **Oracle Components**.

3. Click on the **Create Component** button.

View Edit Activate Deactivate Delete Promote Demote Create Folder Create Component							
Select Name	Type	Revision	Status	Maturity	Product name/Patch number	Product version	Description
☐ Components							
☒ Oracle Components							Oracle Components
☐ BPEL Deployer Component							BPEL Deployer Component
☐ BPEL Process Deployment Plan							BPEL Process Deployment Plan
☐ BPEL Process Suitcase							BPEL Process Suitcase
☐ Sample BPEL Suitcase	Generic Component	0.1	Ready	Production	Oracle BPEL Process Manager	10.1.3	Sample BPEL Suitcase used for Deployment Procedure
☐ Common Provisioning Utilities							Common Provisioning Utilities
☐ Host Patch							Host Patch
☐ IAS Provisioning							IAS Provisioning
☐ LBR Configuration							LBR Configuration
☐ myJ2EECompany Provisioning							myJ2EECompany Provisioning
☐ Oracle Application Server Provisioning							Oracle Application Server Provisioning
☐ Oracle Patch Prerequisite Checker							Oracle Patch Prerequisite Checker
☐ Prerequisite-fixup components							Prerequisite-fixup components
☐ RAC Provisioning							RAC Provisioning
☐ Stage Server Up2date Component							Stage Server Up2date Component
☐ Virtualization Provisioning							Virtualization Provisioning
☐ Windows host Patching Repository Component							Windows host Patching Repository Component
View Edit Activate Deactivate Delete Promote Demote Create Folder Create Component							

4. Enter the following values in the **Describe** step, as shown in the next screenshot:

- Select **Type** as **Generic Component**.
- Name as **OSB projects**.
- Leave the other fields blank.
- Click on **Next**.

Describe

Customize

Upload File

Set Directives

Review

Create Component: Describe

[Cancel](#)
[Save](#)
Step 1 of 5
[Next](#)

Parent Components

Provide a name and other details for the Component.

Type

Generic Component

* Name

OSB projects

The name must be unique within the parent folder

Description

Product name/Patch number

Product version

Vendor

[Cancel](#)
[Save](#)
Step 1 of 5
[Next](#)

[Home](#)
[Targets](#)
[Deployments](#)
[Alerts](#)
[Compliance](#)
[Jobs](#)
[Reports](#)
[Setup](#)
[Preferences](#)
[Help](#)
[Logout](#)

5. In the **Customize** step, leave the defaults and click on **Next**.

6. In the **Upload File** step:

- Select **Upload from Agent Machine**.
- Click on the **Select Target** button.
- Select the **Host Name** as **gcsoa.us.oracle.com**.
- Click on the **Select File** button.
- Select the location of the `sbconfig.jar` from a pre-existing project from an OSB server, which was zipped up and stored on the local machine; for instance: `/u01/homes/osb_wls/projects/sbconfig.jar`.



Note that you can directly export projects from a live OSB server during the deployment process. This will be the most common usage of the deployment procedure. Here, for this workshop though, the export jar has already been created in advance. This export jar contains several projects extracted from another OSB server.

- Click on **Next**.

7. On the **Set Directives** step, click on **Next**.8. On the **Review** step, note the details, and click on **Finish**.9. Note the confirmation message, and the new **OSB Project** generic component that has been added.

Confirmation

The Component, OSB projects, is being created beneath folder, Components. A Job has been triggered to create the component. It will be ready to use after successful completion of the Job.

The Job execution ID is 6346F3DF6A233F77E04010AC02642207.

Provisioning

Provision a full stack of software ranging from Operating System to applications onto a Hardware Server. Page Refreshed February 19, 2009 5:59:55 PM EST [Refresh](#)

[Components](#) [Directives](#) [Networks](#) [Images](#) [Suites](#) [Assignments](#) [Hardware](#) [Cluster](#) [Suite Instance](#) [Administration](#) [Refresh](#)

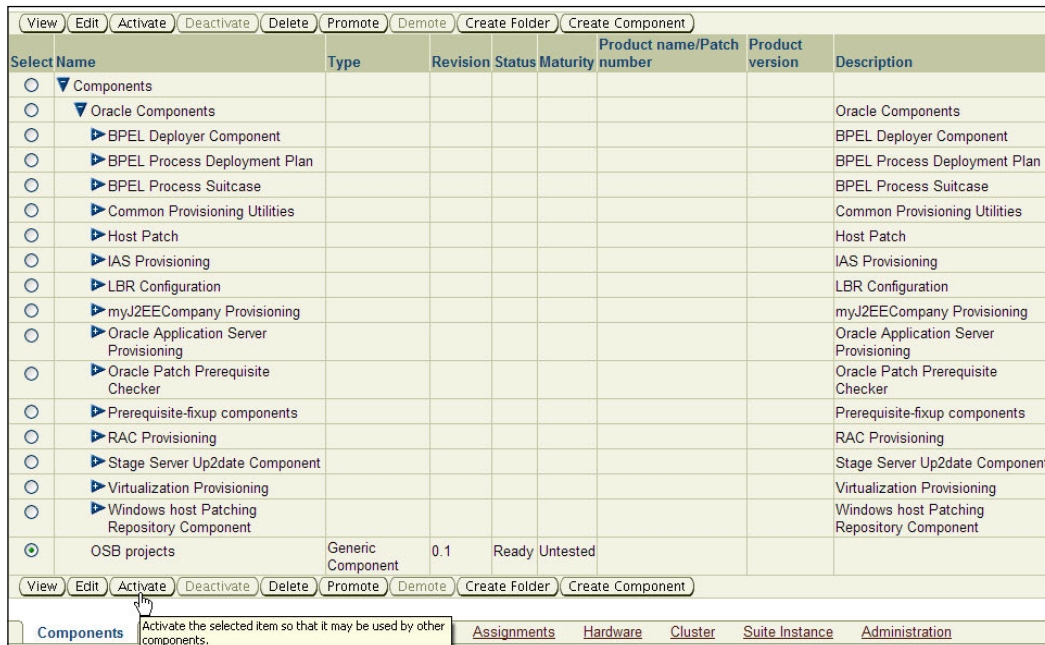
Define and configure the set of Software Components that may be included in an Image.

View: [Latest Version](#) [Go](#) [Advanced Search](#)

Select	Name	Type	Revision	Status	Maturity	Product name/Patch number	Product version	Description
☐	Components							
☐	Oracle Components							Oracle Components
☒	OSB projects	Generic Component	0.1	Ready	Untested			

10. Activate the **OSB projects** for use:

- Select the radio button for **OSB Projects**.
- Click on **Activate**, as shown in the following screenshot:



Viewing the project deployment procedure

Grid Control comes with out-of-the-box procedures to deploy Oracle components including OSB projects. These procedures simplify the administrator's life by automating manual steps, thereby saving time, and reducing human error.

1. View the **Oracle Service Bus Resource Provisioning** deployment procedure:

- From the Grid Control home page, click on the **Deployments** tab.
- Scroll down to locate the **Deployment Procedure Manager** section and click on the **Deployment Procedures** link.



A deployment procedure is a series of logical steps that automate key administrative tasks related to Oracle products. Most of these complex administrative tasks are listed in the "Enterprise Deployment Guide". Note the various deployment procedures available out of the box – database provisioning, RAC extend, application server provisioning, and many more. These deployment procedures can be customized as well.

- Search for "service" to locate the OSB deployment procedure.
- Click on the **Oracle Service Bus Resource Provisioning** link.

Deployment Procedure Manager

Procedures Procedure Completion Status Recycle Bin

Deployment procedures are best practices provided by Oracle for various Provisioning and Patching tasks. Procedures created by Oracle cannot be edited, but can be extended using 'Create Like', so that you can customize the procedure to fit your environment. For more details click Help.

Search Text Fields: [Advanced Search](#)

Select Procedure	Type	Description	Last Modified By	Version	Last Updated
☒ Oracle Service Bus Resource Provisioning	Oracle Service Bus Resource Provisioning	Procedure for deploying Oracle Service Bus resources to an Oracle Service Bus Domain ?	Oracle	1.0	Feb 10, 2009 10:43:05 PM EST

- Note the steps underlying the procedure and the orchestration of the steps.



Note that you can customize this procedure by adding steps at any point. You can do this by using the **Create Like** button.

[Expand All](#) | [Collapse All](#)

Name	Type	Description
▼ Oracle Service Bus Resource Provisioning		Procedure for deploying Oracle Service Bus resources to an Oracle Service Bus Domain
▼ Export Resources	Rolling	Export the resources from the source Oracle Service Bus domain.
Export Resources from Selected Source	Directive	Export all resources of the selected projects from the selected Oracle Service Bus domain.
▼ Save Exported Resources	Rolling	Save the exported resources to the Software Library
Upload JAR file to Software Library	Computational	Upload the JAR file containing the exported resources to the Software Library as a Generic Component.
▼ Transfer JAR File	Rolling	Transfer the exported JAR file from the source host to the target host for deployment
Transfer JAR File to Target Host	Job	Transfer the exported JAR file from the source host to the target host
Remove Temporary Files	Directive	Remove all temporary directories and files created during export
▼ Stage Software Library Components	Rolling	Copy the selected Software Library components to the host of the Oracle Service Bus domain where they have to be deployed.
Stage JAR File	Component	Copy the projects/resource JAR file to the target host
Stage Customization File	Component	Copy the customization file to the target host
▼ Deploy Resources and Customize	Rolling	Deploy resources and apply customization on the selected target
Deploy Resources and Execute Customization	Directive	Deploy the resources and execute the customization file on the target Oracle Service Bus domain.
Remove Temporary Files	Directive	Remove all temporary directories and files used during deployment

Scheduling project deployment

Now that we are familiar with the OSB project deployment procedure, the next step is to kick off the deployment. This can be done through a simple interview process:

1. Schedule the OSB project deployment.
2. Continuing from the previous step, click the **Schedule Deployment** button.
3. On the **Select Source** step, follow these steps:
 - Select the **Oracle Software Library** radio button.
 - Click the *Component* flashlight to locate the jar file from library.
 - Locate the OSB projects that were uploaded previously.
 - Click on **Select** to select source suitcase bundles.



These bundles are stored in the Grid Control Software Library before actual deployment.

Search and Select : Source

Select an Oracle Service Bus Project or Resource jar file that you want to deploy to the domain

Component Name: Revision: Latest Version
 File name: Author:
 Component Location: Go

Select	Component Name	Location	File Name	Last Modified By
☒	OSB projects	Components/OSB projects	sbconfig.jar	SYSMAN

TIP By default, the components listed here are from the default components location in the Software Library.

Oracle Software Library
 Select an OSB Project JAR or Resource JAR file stored as a generic component in the Software Library

* Component:

Pass Phrase:
 Provide the pass-phrase if the JAR file contains any protected resources.

Buttons: Cancel, Select, Next

- Leave the pass phrase field blank.
 - Click on **Next** to continue.
4. On the **Select Target** step:
 - Select the relevant WebLogic domain from the flashlight.
 - Specify the BEA home directory, for example: `/u01/homes/osb_wls`.

- Leave the **Advanced Options** section as it is.
- Leave the **Customization File** option as it is.



You can specify advanced options, as well as upload customization files, during deployment. The customization files could be uploaded to the Software Library and reused for deployments to development, stage, test, and production.

- Click on **Next** to proceed, as shown in the following screenshot:

Oracle Service Bus Resource Provisioning: Select Target

Cancel Back Step 3 of 6 Next

Target
Select the Oracle Service Bus domain where you want to deploy the resources.

* Domain

* BEA Home Directory

Advanced Options

☒ Preserve Environment Variables
☒ Preserve Operational Values
☒ Preserve Security and Policy Configuration
☒ Preserve Credentials
☒ Preserve Access Control Policies
☒ TIP For OSB 2.6.x targets, Security and Policy Configuration, Credentials and Access Control Policies cannot be preserved.

Customization
Specify the location of a customization file available on the target host or Select a customization file from the Software Library. You can use customization files to make changes to environment values as well as to change references within resources. Note that using customization file is optional.

Customization File ☒ None
☐ Use the customization file on the target host
 Location
 Specify the absolute path of the customization file on the target host.

5. In the **Set Credentials** step:

- Provide the credentials for OSB Domain. If you checked the **Store Preferred Credentials** box during target discovery, then the **Username** and **Password** fields are auto-populated for you.
- Provide the credentials for the host. If you checked the **Store Preferred Credentials** box during target discovery, then the **Username** and **Password** fields are again auto-populated for you.

- Click on Next to proceed, as shown in the following screenshot:

Oracle Service Bus Resource Provisioning: Set Credentials

Cancel Back Step 4 of 6 Next

Oracle Service Bus Domain Credentials: gsoa.us.oracle.com.servicebus_7021
Specify the login credentials for the target Oracle Service Bus Domain.

* Username
* Password

Host Credentials: gsoa.us.oracle.com.servicebus_7021
Specify the host credentials for the agent monitoring the Administration server of the target Oracle Service Bus domain.

* Username
* Password

TIP By default, the fields are pre-filled with the preferred credentials that are stored in the Management Repository. You can either use these credentials or edit them to override the preferred credentials with your new credentials.

Cancel Back Step 4 of 6 Next

6. In the **Schedule** step, follow these steps:

- Select **One Time (Immediately)**.
- Leave **Grace Period** as **Indefinite**.
- Leave the default name **OSB Resource Provisioning_1235085922548** for the **Instance Name** field, or specify a new name
- Click on **Next** to proceed, as shown in the following screenshot:

 Deployment can be scheduled immediately or for a future time, typically during a customer maintenance window. The Grid Control job system takes care of the job scheduling and management.

Oracle Service Bus Resource Provisioning: Schedule

Cancel Back Step 5 of 6 Next

Schedule

Type ☒ One Time (Immediately) ☐ One Time (Later)
Grace Period ☒ Indefinite ☐ End After Hours Minutes

Deployment Procedure Instance Name
Review the name provided for the Oracle Service Bus Provisioning deployment procedure instance

* Instance Name

Cancel Back Step 5 of 6 Next

7. In the **Review** step:
 - Review all the information before submitting a deployment job.
 - Click on **Finish** when you're ready.

Oracle Service Bus Resource Provisioning: Review

Cancel Back Step 6 of 6 Finish

Deployment Procedure Instance Name
Instance Name OSB Resource Provisioning_1235085922548

Source
Component Components/OSB projects

Target
Oracle Service Bus Domain gcsoa.us.oracle.com.servicebus_7021

Advanced Options
☒ Preserve Environment Variables
☒ Preserve Operational Values
☒ Preserve Security and Policy Configuration
☒ Preserve Credentials
☒ Preserve Access Control Policies

Customization
Customization File None

Schedule
Type One Time (Immediately)
Grace Period Indefinite

Cancel Back Step 6 of 6 Finish

8. View the status of the scheduled deployment:
 - Continuing from the previous step, click on the deployment job from the confirmation screen.

Page Refreshed Feb 19, 2009 6:26:27 PM EST Refresh

View Data Real Time: Manual Refresh

Deployment Procedure Manager

Procedures Procedure Completion Status Recycle Bin

All deployment procedures in various stages of their lifecycle are shown below. Set the refresh settings to update the page automatically. Click on the link in the Run column to get more details on that run.

Search Text Fields Go Advanced Search

Stop Suspend Resume Retry Delete Schedule Deployment...

Select Run	Status	Procedure	Type	Owner	Last Updated
☒ OSB Resource Provisioning_1235085922548	Scheduled	Oracle Service Bus Resource Provisioning	Oracle Service Bus Resource Provisioning	SYSMAN	Feb 19, 2009 6:26:26 PM EST

- The job status page shows the details of the scheduled job, including elapsed time and error messages if any.
- Use the **Refresh** button on the top right to see the progress.

- Wait for the job to finish successfully.
- Note the **Status** and **Completed Date** values.

Procedure Completion Status >

Page Refreshed Feb 19, 2009 6:28:44 PM EST [Refresh](#)

View Data [Real Time: Manual Refresh](#) ▼

Status

[Delete](#) [Schedule Deployment...](#) [Stop](#) [Suspend](#) [Resume](#) [Retry](#) [Done](#)

General Information

Run	OSB Resource Provisioning_1235085922548	Created On	Feb 19, 2009 6:26:26 PM EST
Procedure	Oracle Service Bus Resource Provisioning	Scheduled	Feb 19, 2009 6:26:27 PM EST
Procedure Version	1.0	Start Date	Feb 19, 2009 6:26:27 PM EST
Error Handling Mode	Stop On Error	Last Updated	Feb 19, 2009 6:27:33 PM EST
Status	Succeeded	Completed Date	Feb 19, 2009 6:27:33 PM EST
Owner	SYSMAN	Elapsed Time	66 Seconds

Status Detail

[Steps](#) [Job Details](#) [OMS Log](#)

[Expand All](#) | [Collapse All](#)

Name	Status	Type	Description	Run Privilege	Run Privilege Command/Privilege Delegation	Error Handling Mode
▼ Oracle Service Bus Resource Provisioning	Succeeded		Procedure for deploying Oracle Service Bus resources to an Oracle Service Bus Domain			Stop On Error
▼ Export Resources	Skipped	Rolling	Export the resources from the source Oracle Service Bus domain.			Stop On Error
Export Resources from Selected Source		Directive	Export all resources of the selected projects from the selected Oracle Service Bus domain.	Normal		Stop On Error

- View the deployed projects in Grid Control:
 - Navigate to the OSB target home page.
 - Click on the **OSB Services** tab.
 - Click the **Refresh** button on the top right.
 - Note the newly deployed projects in the list.

Oracle WebLogic Managed Server: gcsoa.us.oracle.com.servicebus_7021.xbusServer >

Oracle Service Bus: gcsoa.us.oracle.com.servicebus_7021.xbusServer_osb

Collected From Feb 19, 2009 5:14:59 PM EST To Feb 19, 2009 6:29:59 PM EST [Refresh](#)

[Home](#) [OSB Services](#) [OSB Performance](#) [JMS Performance](#) [Web Service Security Violation](#)

Services List

Provides a list of Oracle Service Bus (OSB) services currently being monitored. To view the references associated with a service, select a business service or proxy service from the list. To manage a service or project through the OSB console, select the service and click 'Launch Console'.

[Launch Console](#)

Select	Name	Path	Webservice Security Violation Count Since Last Collection	Error Count Since Last Collection	Message Count Since Last Collection	Average Execution Time (ms)
☐	▼ Services List					
☐	▼ TelecomProviderProcessing					
☐	▼ ProxyService					
☐	TVTestService	TelecomProviderProcessing/services/TVTestService	0	0	0	0.00
☐	DSLTestService	TelecomProviderProcessing/services/DSLTestService	0	0	0	0.00
☐	PhoneTestService	TelecomProviderProcessing/services/PhoneTestService	0	0	0	0.00
☐	TelecomProvider	TelecomProviderProcessing/sample/TelecomProvider	0	0	0	0.00
☐	▼ BusinessService					
☐	TelecomProvider	TelecomProviderProcessing/sample/TelecomProvider	0	0	0	0.00
☐	▼ TestProject					
☐	▼ ProxyService					
☐	test-proxy-PS	TestProject/test_project1/test-proxy-PS	0	0	0	0.00

Summary

Deployment is a critical task for WebLogic administrators. With Grid Control Software Library and deployment procedure capabilities, administrators can manage WebLogic and OSB projects, and schedule and automate deployment.

In this chapter, we covered the various administrative challenges dealing with application code deployments such as OSB project deployments. Grid Control automates the deployment process for the administrator, thereby saving time and reducing human errors. First we took a look at the Grid Control Software Library, then we uploaded the new OSB projects to this library, and then we kicked off the actual deployment procedure. Finally, we looked at the execution of the deployment procedure job, and validated the completion and successful deployment via the OSB console.

The next few chapters will walkthrough managing other areas in OSB such as monitoring services, managing configurations, and service levels.

13

OSB Proxy and Business Service Monitoring

Oracle Service Bus is one of the premier **Enterprise Service Bus (ESB)** systems available in the marketplace. It follows the typical ESB paradigm of validate, enrich, and transform (VET). Often, OSB acts as the provider to one or more consumers for business critical services.

Monitoring provides visibility and the means to measure availability and performance, and hence evaluate service-level agreements between providers and consumers. This chapter talks about monitoring OSB proxy and business services. Specifically, this chapter talks about:

- Challenges
- Solution
- Step-by-step exercises:
 - Creating an OSB infrastructure service
 - Navigating to the OSB proxy service home page
 - Creating the OSB proxy aggregate service
 - Creating a SOAP test to monitor a OSB proxy service endpoint
 - Creating a SOAP test to monitor a OSB business service endpoint
 - Testing the SOAP tests

Challenges

For any small, medium, or large enterprise, it's a challenge to monitor several disparate application, middleware, and database targets from a single console. The traditional hardware and software components such as servers, storage devices, operating systems, databases, middleware, and applications have been monitored by system management solutions. With the rise of integration software such as BPEL and OSB, applications and infrastructure pose new problems. First, they need to be monitored along with existing hardware and software. Second, as the WebLogic domains and OSB projects proliferate across the enterprise, the infrastructure team is faced with increasing problems to manage these projects. Thirdly, for the administrators who are new to OSB, supporting these environments in production poses unknown challenges. Finally, the IT managers want to avoid hiring new administrators with increasing OSB projects.

Solution

Grid Control provides monitoring capabilities for WebLogic and OSB components whether it is in development, test, stage, or production. For the infrastructure team, this is a convenient way to monitor several installations from one console. Once the Grid Control agent is installed on the server hosting WebLogic Admin Server, the discovery process can be initiated from the console. Post discovery, the infrastructure components and OSB services can be monitored from Grid Control.

Step-by-step exercises

This set of step-by-step exercises will walkthrough monitoring proxy and business services.

Creating an OSB Infrastructure Service

The OSB infrastructure service provides a useful grouping to monitor relevant OSB and WebLogic components as a whole. Grid Control takes care of identifying the relationships among the infrastructure components and putting them in one bucket.

1. From the Grid Control home page, click on **Targets | Middleware**.
2. Expand the WebLogic Server Domain target of your choice and click on the OSB target.
3. From the OSB target home page, click on the **Create Infrastructure Service** button.

4. On the **Create Service** page, enter a **Service Name** such as `osb_infra` and click on **OK**, as shown in the following screenshot:

ORACLE Enterprise Manager 10g

Grid Control

Home Targets Deployments Alerts Compliance Jobs Reports

Hosts | Databases | Middleware | Web Applications | Services | Systems | Groups | Virtual Servers | All Targets

Create Service

Please provide a name for the System and Service.

* Service Name

Specify a unique Name for the System and Service.

Application Name

Application Server Name

☒ **TIP** By creating a service, you are checking for a service dependency to identify the infrastructure components on which the selected target depends. Once this is done, a system is automatically created with those components, and then a service is created and associated with the selected target.

Cancel OK

5. You should get a **confirmation** message. Click on **OK**.



The infrastructure service encapsulates the key underlying logical components of the OSB instance. For the OSB instance and services to work smoothly, the underlying infrastructure must work smoothly as well. Observe the newly created system and service, status of system and service, alerts, and policy violations.

Navigating to the OSB proxy service home page

Proxy services perform the heavy lifting for the OSB. They are created to validate, enrich, and transform messages coming into the service bus. It is extremely important for the administrator to have visibility and understanding of the OSB proxy services.

1. From the OSB target home page, click on the **OSB Services** tab.



All the OSB services deployed on the server are automatically discovered and displayed here. Summary throughput process instance information is also displayed in the table. These metric values are collected at a frequency controlled by the "Collection Interval" directly from the OSB server and stored in the Grid Control metric repository. It is possible to drill down on any metric to view trends for different functions such as minimum, maximum, or average values over a specific time range.

ORACLE Enterprise Manager 10g
Grid Control
Home Targets Deployments Alerts Compliance

Hosts | Databases | Middleware | Web Applications | Services | Systems | Groups | Virtual Servers | All Targets

Oracle WebLogic Managed Server: gcsoa.us.oracle.com.servicebus_7021.xbusServer_>

Oracle Service Bus: gcsoa.us.oracle.com.servicebus_7021.xbusServer_osb

Collected From Feb 22, 2009 10:26:18 AM EST To Feb 22, 2009 10:36:18

Home OSB Services OSB Performance JMS Performance Web Service Security Violation

Services List

Provides a list of Oracle Service Bus (OSB) services currently being monitored. To view the references associated with a service, select a business service or proxy service from the list. To manage a service or project through the OSB console, select the service and click 'Launch Console'.

Launch Console

Select Name	Path	WebService Security Violation Count Since Last Collection	Error Count Since Last Collection	Message Count Since Last Collection	Average Execution Time (ms)
Services List					
TestProject					
ProxyService					
test-proxy-PS	TestProject/test_project1/test-proxy-PS	0	0	0	0.00
HelloWorld					
ProxyService					
HelloWorldProxy	HelloWorld/ProxyServices/HelloWorldProxy	0	0	0	0.00
test-proxy	HelloWorld/test-proxy/test-proxy	0	0	0	0.00
BusinessService					
HelloWorldBusinessService	HelloWorld/BusinessServices/HelloWorldBusinessService	0	0	0	0.00
MortgageBroker					
ProxyService					
loanGateway3	MortgageBroker/ProxyServices/loanGateway3	0	0	0	0.00

- Click on any of the deployed proxy services within a project, for example, **loanGateway3** proxy service under the **MortgageBroker** project.

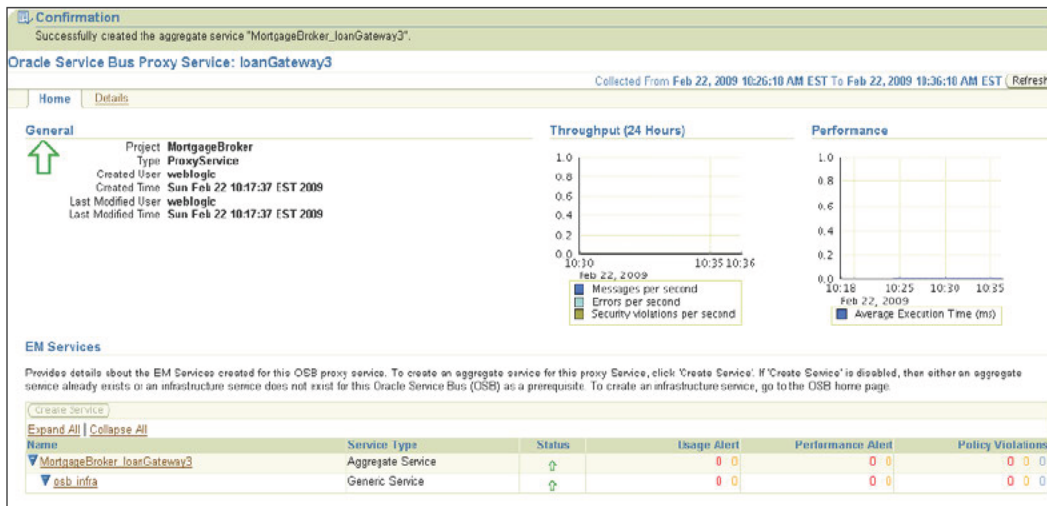


This is the individual OSB proxy service page. Note the proxy specific instance throughput graph. At the bottom, note that all the references for the proxy are discovered along with the business services, endpoints, protocols, load-balancing algorithms, and so on.

Creating the OSB proxy aggregate service

An aggregate service is a useful structural entity in Grid Control to provide a relationship and hierarchy among OSB proxy, business, and infrastructure services. When troubleshooting a problem, it is useful not only to know the state of a proxy service, but also the state of the supporting infrastructure.

- From the OSB proxy page, under EM Services click on the **Create Service** button.
- Notice the confirmation message, and the aggregate service that has been added.



Note that the aggregate service that was created is listed under the **Services** section. The previously created infrastructure service has automatically been associated with the aggregate service. In the **Services** section, starting from the left, you see the service name, type of service, status, and other alerts. The top-level service is the aggregate service. The next service is the infrastructure service—a subservice of the aggregate.

Creating a SOAP test to monitor an OSB proxy service endpoint

Monitoring proxy services from a client or an end-user perspective is important for the operations team. This helps the team to get alerted potentially before clients or end users report the error.



A **SOAP (Simple Object Access Protocol)** test is a way to check the availability and performance of a Web service with a SOAP interface. This remote synthetic check invokes an operation within the Web service as defined in the **WSDL (Web Service Description Language)** and measure the HTTP response code and latency.

1. Scroll down to the **References** section, and select **loanGateway3** from the radio button list.

- Click on the **Add SOAP Test** button to create a SOAP test for that service.

EM Services

Provides details about the EM Services created for this OSB proxy service. To create an aggregate service for this proxy Service, click 'Create Service'. If 'Create Service' is disabled, then either an aggregate service already exists or an infrastructure service does not exist for this Oracle Service Bus (OSB) as a prerequisite. To create an infrastructure service, go to the OSB home page.

[Create Service](#)

[Expand All](#) | [Collapse All](#)

Name	Service Type	Status	Usage Alert	Performance Alert	Policy Violation
▼ MortgageBroker_loanGateway3	Aggregate Service	↑	0 0	0 0	0 0
▼ osb_infra	Generic Service	↑	0 0	0 0	0 0

References

Provide details about the routing flow to business services for this service. Additional information such as the load balancing algorithm used, the protocol used, the end point URI exposed, and so on are also shown.

[Add SOAP Test](#)

Select Name	Resource Type	Status	Protocol	Load Balancing Algorithm	Weight	End Point URI	Path
☒ ▼ loanGateway3	ProxyService	↑	SOAP	round-robin		http://gcsea.us.oracle.com:7021/loan/gateway3	MortgageBroker/ProxyServices/loanGateway3
☐ ▼ normalLoanProcessorBusinessService	BusinessService	↑	SOAP	round-robin			MortgageBroker/BusinessServices/normalLoanProcessor
☐ localhost:7021					10	http://localhost:7021/njws_basic_ejb/NormalSimpleBean	
☐ stapp04.7021					1	http://stapp04.7021/njws_basic_ejb/NormalSimpleBean	

Related Links

Access	Administer (OSB Console)	Alert History
All Metrics	Blackouts	Metric and Policy Settings
Monitoring Configuration	Reports	Target Properties

[Home](#) | [Details](#)

- For the **Collection Frequency** field, enter **3 minutes**.
- Under **Input Parameters**, click on **XML Source**.
- Enter a proxy service payload. This is the XML input that is needed for the proxy service to perform its business.

 A proxy service payload can be generated through a simple test of the proxy through the OSB console. Once the inputs are entered into the test page, the console generates an XML payload that can be used as input for the SOAP test.

- Leave the **Basic Authentication Credentials** section empty.
- Click on **Continue**, as shown in the following screenshot:

Oracle WebLogic Managed Server: gcsoa.us.oracle.com:servicebus_7021.xbusServer > OSB-gcsoa.us.oracle.com:servicebus_7021.xbusServer_osb > OSB-loanGateway3 >

Create SOAP Test

Enterprise Manager Grid Control automatically creates a service for the SOAP test that is being added to the selected partner link. The name provided for this service is auto-generated and non-editable. The name provided for the SOAP Test is also auto-generated, but it is editable. If you want to change the name of the SOAP Test, then modify the default name.

Service Name: **loanGateway3_availability**

SOAP Test Name: **loanGateway3_test**

Collection Frequency (minutes): **3**

Port Types: **helloPort**

Operations

Select one operation from the following list. These operations are supported and are exposed by the web service.

☒ processLoanApp [LoanStruct processLoanApp(LoanStruct)]

Input Parameters

Enter values for input parameters for the selected operation. You can also enter the pregenerated SOAP Envelope by selecting XML Source option.

☐ HTML Form ☒ XML Source

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Header xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
  </soap:Header>
  <soapenv:Body>
    <osam:processLoanApp xmlns:osam="http://example.org">
      <loanRequest xsi:type="java:LoanStruct" xmlns:java="java:normal.client"
        xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
        <!-- Optional -->
        <java:Name>string</java:Name>
      </loanRequest>
    </osam:processLoanApp>
  </soapenv:Body>
</soapenv:Envelope>
```

8. To add a Beacon, click on the **Add** button.
9. From the pop-up window, check one or more Beacons from the available Beacons and click on **Select**, as shown in the following screenshot:

Oracle WebLogic Managed Server: gcsoa.us.oracle.com:servicebus_7021.xbusServer > OSB-gcsoa.us.oracle.com:servicebus_7021.xbusServer_osb > OSB-loanGateway3 >

Create SOAP Test

Beacons

Click Add to search and select a beacon. The selected beacons get associated with the service as key beacons.

Add

Select Name: **No beacons Added**

Search and Select: Targets

Search: **Target Type: Beacon**

Target Name: **gcsoa.us.oracle.com:4080/event-search&ipMspID=716f411...**

Select All | Select None

Select	Name	Type	Host	Status
☒	gcsoa.us.oracle.com_beacon	Beacon	gcsoa.us.oracle.com	Up

Cancel | Select

10. Click on **OK** to save the SOAP test and Beacon settings.
11. On the OSB proxy home page, note the availability generic service that was automatically created.

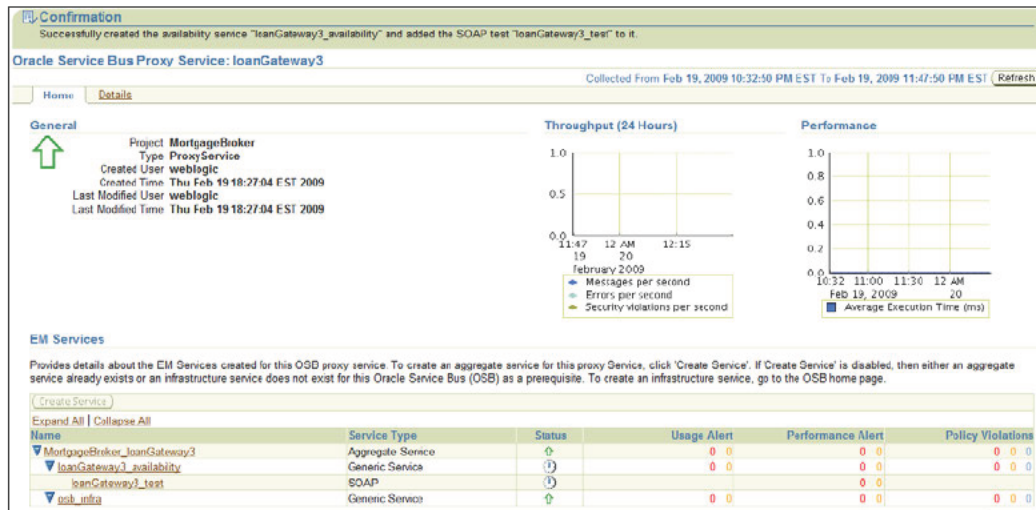


The availability service for the OSB proxy is formed when the first SOAP test is created. Note the status of each test, and how it is rolled up (configurable) to determine process availability.

12. Expand the **loanGateway3_availability** and verify whether the SOAP test that was just created in the prior steps has been added.



Note that the status of the SOAP test will take some time to show up, based on the frequency set for the test.



Creating a SOAP test to monitor an OSB business service endpoint

Business services provide the endpoint facade to the proxy services. It is important to monitor them with SOAP tests similar to the proxy service monitoring.

1. Create a business service SOAP test to monitor business service endpoint.
2. Go to the **loanGateway3** proxy page.
3. Scroll down and select one of the business service endpoints, for example the **localhost:7021** radio button under the **normalLoanProcessor** business service.
4. Click on **Add SOAP Test** to create a SOAP test for the business service.

Expand All | Collapse All

Name	Service Type	Status	Usage Alert	Performance Alert
▼ MortgageBroker_loanGateway3	Aggregate Service	↑	0 0	0 0
▼ loanGateway3_availability	Generic Service	⌚	0 0	0 0
loanGateway3_test	SOAP	⌚		0 0
▼ osb_infra	Generic Service	↑	0 0	0 0

References

Provide details about the routing flow to business services for this service. Additional information such as the load balancing algorithm used, the protocol used, the end point URI is shown.

Add SOAP Test

Select Name	Resource Type	Status	Protocol	Load Balancing Algorithm	Weight	End Point URI	Path
☐ ▼ loanGateway3	ProxyService	↑	SOAP			http://gcsoa.us.oracle.com:7021/loan/gateway3	MortgageBroker/ProxyServ
☐ ▼ normalLoanProcessorBusinessService	BusinessService	↑	SOAP	round-robin			MortgageBroker/BusinessS
☒ localhost:7021					10	http://localhost:7021/njws_basic_ejb/NormalSimpleBean	
☐ stapp04:7021					1	http://stapp04:7021/njws_basic_ejb/NormalSimpleBean	

Related Links

Access	Administer (OSB Console)	Alert History
All Metrics	Blackouts	Metric and Policy Settings
Monitoring Configuration	Reports	Target Properties

- Change the collection frequency to a desired number in minutes, for instance, **3**.
- Leave the default port that has been selected.
- Under **Input Parameters**, click on **XML Source**.
- Enter the business service payload saved earlier.
- Leave the **Basic Authentication Credentials** section empty.

Oracle WebLogic Managed Server: gcsoa.us.oracle.com:servicebus_7021.xbusServer > OSB-gcsoa.us.oracle.com:servicebus_7021.xbusServer_osb > OSB-loanGateway3 > **Create SOAP Test**

By default, Enterprise Manager Grid Control provides an auto-generated name for the SOAP Test that is being created. If you want to change its name, then modify the default name. The SOAP Test that is being created gets added to the same service that was created earlier for the first SOAP Test.

Service Name: **loanGateway3_availability**

SOAP Test Name: **normalLoanProcessor_localhost_test**

Collection Frequency (minutes): **3**

Port Types: **NormalLoanApprovalServiceSoapBindingQSPort**

Operations

Select one operation from the following list. These operations are supported and are exposed by the web service.

☒ processLoanApp [LoanStruct processLoanApp(LoanStruct)]

Input Parameters

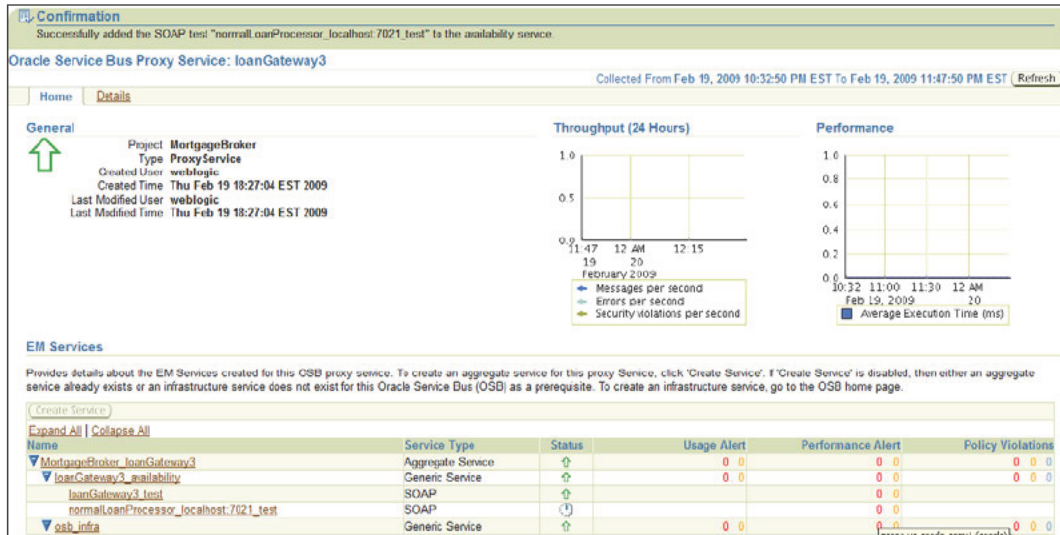
Enter values for input parameters for the selected operation. You can also enter the pregenerated SOAP Envelope by selecting XML Source option.

☐ HTML Form ☒ XML Source

```
<?xml version='1.0' encoding='UTF-8'>
<loanRequest xmlns:example="http://example.org" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <!--Optional-->
  <java:Name>string</java:Name>
  <!--Optional-->
  <java:SSN>string</java:SSN>
  <!--Optional-->
  <java:Rate>1.051732E7</java:Rate>
</loanRequest>
```

- Click on **OK** to complete the creation of the service test.
- Observe the confirmation message.

12. Expand the availability service to view the SOAP test for the business service endpoint.



Testing the SOAP tests

Once the SOAP tests have been created, Grid Control provides the capability to run any of the SOAP tests on demand to test the availability and performance of the underlying service.

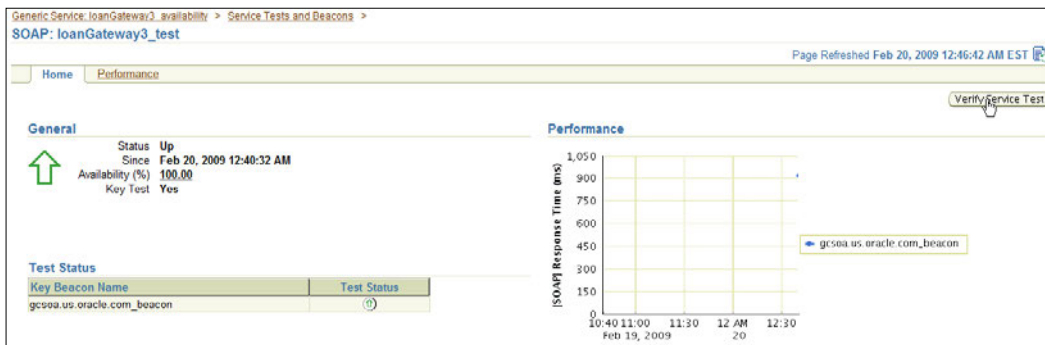
1. Click on one of the SOAP tests that you've created.

[



The test page shows the test availability, Beacons that run this test, and alerts associated with this test. The graph shows the test response times from the beacon. Note that the test metrics will take some time to show up on the test home page. One or more Beacons could be used to test the service, potentially from multiple geographic locations that emulate the user base.

]



2. Click on the **Verify Service Test** button.
3. Click on the **Perform Test** to run the test instantaneously and view the results, as shown in the following screenshot:

Oracle Enterprise Manager (SYSMAN) - Verify Service Test - Mozilla Firefox

File Edit View History Delicious Bookmarks Tools Help

ORACLE Enterprise Manager 10g

Grid Control

Home **Targets** Deployments Alerts Compliance Jobs Reports

Hosts | Databases | Application Servers | Web Applications | Services | Systems | Groups | All Targets

Generic Service: SOAOrderBooking(v.1.0)_availability > Service Tests and Beacons >

Verify Service Test

Select the beacons to verify the service test. Execution results for selected beacons are displayed in the results table. Hold down CTRL or SHIFT buttons to select multiple beacons. [Continue](#)

Service Test: Beacons: [Perform Test](#)

Results

Beacon	Status	Response Time (ms)
No Test Performed		

[Continue](#)

[Home](#) | [Targets](#) | [Deployments](#) | [Alerts](#) | [Compliance](#) | [Jobs](#) | [Reports](#) | [Setup](#) | [Preferences](#) | [Help](#) | [Logout](#)

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[About Oracle Enterprise Manager](#)

Done

Now: Mostly Sunny, 72° F Tue: 72° F Wed: 72° F

Summary

Monitoring OSB proxy and business services is key to guaranteeing healthy key business processes in the enterprise, and preserving the provider-to-consumer relationship. In this chapter, we looked at how to monitor OSB proxy and business services using agent-based monitoring and synthetic tests. In order to monitor the OSB services, the appropriate Grid Control service mappings had to be created. We created the OSB infrastructure service, visited the proxy service home page to view the discovered services, and created the OSB proxy aggregate service. Once the Grid Control services had been set up, we created SOAP tests to monitor the proxy and business service endpoints. Finally, we tested the SOAP tests that we created.

The next few chapters will walkthrough hands-on exercises to perform additional management tasks on the Oracle Service Bus.

14

WebLogic and OSB Configuration Management

Managing the configurations of middleware environments is a difficult proposition for medium and large enterprises. "Knowing what you have" enables IT managers to make decisions about future investments and retiring old assets, standardize existing assets, manage change across the enterprise, and troubleshoot performance problems related to configurations.

Most configuration management solutions today are compliant with the best practices laid out by the **IT Information Library (ITIL)** framework. All the assets are stored in a central repository called the **Configuration Management Database (CMDB)**. Configuration parameters such as instance parameters for a database, or start up parameters for a WebLogic application server, or port numbers for an HTTP server are stored in the CMDB. Any changes to these parameters are also tracked. It then becomes easy to audit the changes for a specific asset, compare assets to each other (for example, Managed Server 1 and Managed Server 2), compare different versions of the same asset, save a reference configuration to the CMDB, and use that to standardize across the enterprise. This chapter talks about managing configurations for a WebLogic and OSB environment. Specifically, this chapter talks about:

- Challenges
- Solution
- Step-by-step exercises:
 - Viewing a WebLogic managed server configuration
 - Saving a managed server configuration snapshot
 - Viewing and saving an OSB configuration
 - Comparing the current OSB configuration with a saved baseline
 - Comparing the current managed server configuration with a saved baseline

Challenges

It is difficult to track the configurations of all IT systems. Often, IT departments resort to Excel spreadsheets to store critical middleware configuration information. This makes an IT department slow in making changes, measuring impact, identifying performance problems due to incorrect configuration, and increases costs of managing a data center. With a WebLogic and OSB environment, it is difficult to maintain configurations for multiple domains, and underlying configurations. For a medium-to-large WebLogic installation, it is important to baseline a working configuration and compare it with non-working ones for department or enterprise-wide customization. For OSB, there is the additional challenge of maintaining the proxy and business service configurations over different project versions. In the absence of control over configurations, it is difficult to assess the production impact for new project versions, as well as troubleshoot production problems that might be associated with configuration changes.

Solution

With Grid Control, key configuration metrics for WebLogic and OSB server processes are collected and stored in the Enterprise Manager repository. Administrators can view the historic configuration changes across the WebLogic and OSB environment. They can also baseline a working configuration by saving it in the repository. A WebLogic Admin, Managed Server, and OSB server configuration parameters can be compared with other servers. Finally, OSB project versions can also be compared to observe the changes and assess impact across successive deployments.

Step-by-step exercises

This set of step-by-step exercises will walkthrough managing configurations for the WebLogic and OSB server targets.

Viewing a WebLogic managed server configuration

During a reactive troubleshooting exercise (typically associated with a monitoring alert), one of the first questions that an administrator asks is "what changed?" Before even viewing the changes, it is useful to look at the current configuration of the system to determine if there are any obvious wrong settings:

1. Navigate to the **Targets | Middleware** tab.
2. Click on the **Oracle WebLogic Managed Server** link.

3. This takes you to the Managed Server home page.
4. Click on the **Administration** tab.
5. Note the links related to Configuration Management for the target.



The Grid Control Configuration Management framework picks up key configuration parameters for WebLogic components including the Managed Server and Admin Server on a daily basis. These parameters are stored in the Grid Control repository. Key configuration tasks can be accessed from here.

Oracle WebLogic Server Domain: servicebus_7021 >

Oracle WebLogic Managed Server: xbusServer

Home Applications Web Services Resources Performance **Administration**

Configuration

[Compare Configuration](#)
[Compare to Multiple Configurations \(Job\)](#)
[Last Collected Configuration](#)
[Saved Configurations](#)
[History](#)

Configuration Searches

Oracle WebLogic Managed Server Ports

Home Applications Web Services Resources Performance **Administration**

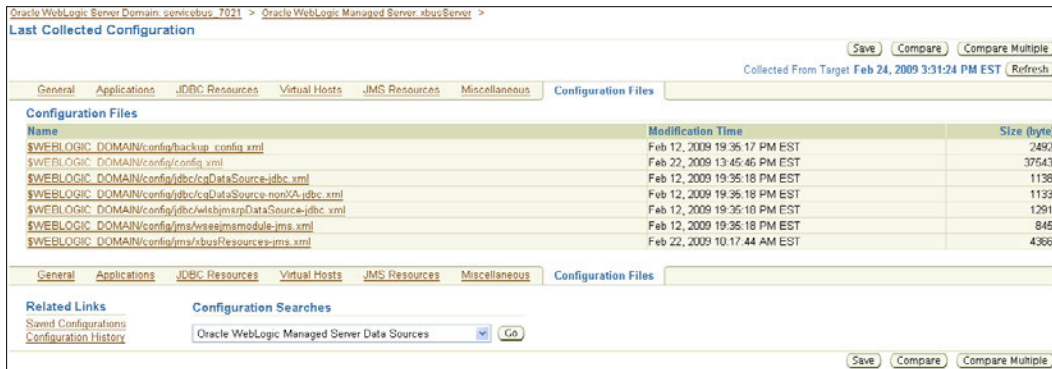
Related Links

[Access](#)
[All Metrics](#)
[Monitoring Configuration](#)

[Administer WebLogic Server Domain](#)
[Blackouts](#)
[Reports](#)

6. Notice that you can launch **Configuration Searches** from here for data sources, applications, J2EE modules, ports, and so on.
7. View the last collected configuration for the managed server:
 - Click on **Last Collected Configuration** to view configuration parameters.
 - View the configuration settings on the **Last Collected Configuration** page.
 - The **General** tab shows generic information about the server including ports, resource usage, tuning parameters, JVM info, and cluster parameters.
 - The **Applications** tab lists the deployed applications, along with the path. It also shows modules, type, URL mapping, and session timeout information.
 - **JDBC Resources** shows a list of connection pools and data sources.

- **JMS Resources** specifies queues, max/min byte size if configured, JNDI name, and so on.
- **Virtual Hosts** shows the list of hosts if configured.
- **Miscellaneous** shows startup/shutdown classes, Jolt connection pools, and work manager information.
- **Configuration Files** shows the list of key configuration files for the managed server.
- Drill down into a configuration file to view the contents.



Saving a managed server configuration snapshot

Standardizing a managed server configuration is important to ensure predictable behavior across multiple installations. The first step toward standardization is saving an existing, trustworthy configuration in the Grid Control repository, so that it can be used as a standard for comparing with other configurations:

1. Drill down into a configuration file to view the contents
2. Click on the **Save** button on the top right.
3. Select the option to **Save to Enterprise Manager Repository**.
4. Enter a description such as **ManagedServerGoldConfig**, as shown in the following screenshot:

5. Click on **OK** to save the current configuration to the EM repository.
6. Note the confirmation message and the saved configuration with timestamp, name, description, saved date, and owner.

Viewing and saving an OSB configuration

Similar to the WebLogic Managed Server target, we can also view the latest configuration for the OSB target, and save a known, trustworthy configuration to the Grid Control repository:

1. Navigate to the **Configuration Management** section for an OSB target:
 - Navigate to the OSB target home page.
 - At the bottom, under **Configuration**, click on the **View Configuration** tab.
2. View the last collected configuration for the OSB target:
 - The current configuration of the OSB server is displayed.
 - Notice the JMS queue information (specific queues to the OSB).
 - OSB frontend configuration and global operation settings capture key parameters that are set on the OSB console.

- Proxy and Business service configurations are displayed for each deployed service.

Oracle Service Bus: albusServer_002

View Configuration: Oracle Service Bus Configuration

Collected From Target: Feb 24, 2009 3:06:14 PM
Description: Latest Configuration

Save Compare Compare to Multiple History Refresh

OSB Reporting Database Details

JNDI Name: wlsbjmsrpDataSource
URL: jdbc:pointbase:server://localhost:9073/weblogic_0vat:new
Driver Class Name: com.pointbase.jdbc.jdbcUniversalDriver

JMS Queue Configuration

JMS Queue Names

QueueIn
test-proxy-PSRequest
wls.reporting.jmsprovider.queue
wls.reporting.jmsprovider_error.queue
wls.reporting.purge.queue
wlsb.internal.transport.task.queue.email
wlsb.internal.transport.task.queue.file
wlsb.internal.transport.task.queue.flp
wlsb.internal.transport.task.queue.sfp

OSB Front End Configuration Details

Return to Top History

3. Save a configuration snapshot to the repository:
 - Click on the **Save** button to save the current configuration.
 - Select the option to **Save to EM Repository**.
 - Provide a description such as **OSBGoldConfig**.
 - Click on **OK** to save the current configuration to the EM repository.
 - Note the confirmation message and the saved configuration with target name, target type, and timestamp.

Comparing the current OSB configuration with a saved baseline

Once the OSB configuration snapshot has been saved in Grid Control, this can be used as a standard for comparing with other OSB targets. Often, it is useful to compare the static trustworthy snapshot with the latest configuration, in order to see the drift from the known, trustworthy state.



To view configuration changes, you must make some changes on the OSB console before attempting this section. For example, log in to the OSB console, and change "Global Settings" and some business and proxy service configuration. Then you can attempt this section to view the changes picked up in Grid Control.

1. Update the latest configuration:
 - Navigate to the OSB target home page.
 - Click on the **View Configuration** link at the bottom.
 - Click on the **Refresh** button to get the latest configurations updated.
 - Wait for a minute. Grid Control agents interact with the OSB server to get the latest information and display it on the page.
2. Initiate configuration comparison:
 - Click on the **Compare** button to start a comparison between the current configuration of the OSB target and a saved ("OSBGold Config") configuration.
 - Click on the **Saved Configuration** link.
 - Select the **OSBGoldConfig** for comparison.

Compare Configurations: Second Configuration

First Configuration Target **gcsoa.us.oracle.com.servicebus_7021.xbusServer_osb (Oracle Service Bus)**
Collected **Latest Configuration**

Select the Second Configuration to compare with First Configuration.

Saved Configurations

Target Name Collected Before
Description Collected After
Owner

[Go Latest Configurations](#)

Select Collected	Target Name	Target Type	Saved to Repository	Description	Owner
☒ Feb 24, 2009 3:06:14 PM EST	gcsoa.us.oracle.com.servicebus_7021.xbusServer_osb	Oracle Service Bus	Feb 24, 2009 6:26:03 PM EST	OSBGoldConfig	SYSMAN

[Home](#) | [Targets](#) | [Deployments](#) | [Alerts](#) | [Compliance](#) | [Jobs](#) | [Reports](#) | [Setup](#) | [Preferences](#) | [Help](#) | [Logout](#)

[Cancel](#) [Back](#) [Compare](#)

3. Click on **Compare** to generate the comparison results.

Oracle Service Bus: xbusServer_osb

Compare: Oracle Service Bus Configuration

First **xbusServer_osb** Host **gcsoa.us.oracle.com** Collected **Feb 24, 2009 7:01:30 PM**

Second **xbusServer_osb** Host **gcsoa.us.oracle.com** Collected **Feb 24, 2009 3:06:14 PM** Description **OSBGoldConfig**

Summary

- OSB Reporting Database Details
- OSB Global Operation Settings
- OSB Business Service Transport Configuration
- JMS Queue Configuration
- OSB Proxy Service Configurations
- OSB Front End Configuration Details
- OSB Business Service Configurations

OSB Reporting Database Details

Result	Attribute	Feb 24, 2009 7:01:30 PM	Feb 24, 2009 3:06:14 PM
No differences found			

JMS Queue Configuration

Result	JMS Queue Names	Feb 24, 2009 7:01:30 PM	Feb 24, 2009 3:06:14 PM
No differences found			

OSB Front End Configuration Details

Result	Attribute	Feb 24, 2009 7:01:30 PM	Feb 24, 2009 3:06:14 PM
No differences found			

OSB Global Operation Settings

4. View the OSB target comparison results with a saved baseline:
 - The comparison results between the OSB targets are presented in all the categories. The **Summary** tab lists the status of the categories.
 - Notice the differences marked with a red *inequality* sign for the various parameters.

Comparing the current managed server configuration with a saved baseline

Just as we compared an OSB server configuration with a saved snapshot, we can also compare the WebLogic managed server target with the saved snapshot. This will enable us to identify the configuration differences at the WebLogic level.



To view configuration changes, you must make some changes on the WebLogic admin console before attempting this section. For example, login to the Admin console, and change some settings for the Managed Server in question. Then you can attempt this section to view the changes picked up in Grid Control.

1. Update the latest configuration:
 - Navigate to the Managed Server target home page.
 - Click on the **Administration** tab.
 - Click on the **Last Collected Configuration** button to get the latest configurations updated.
 - Click on **Refresh** to update the latest configuration.
 - Wait for a minute.
2. Initiate configuration comparison:
 - Click on the **Compare** button to start a comparison between the current configuration of the Managed Server target and a saved (**ManagedServerGoldConfig**) configuration.
 - Click on the **Saved Configuration** link.
 - Select **ManagedServerGoldConfig** for comparison.

Compare Configurations: Second Configuration Cancel Back Compare

First Configuration Target: **gcsoa.us.oracle.com.servicebus_7021.xbusServer (Oracle WebLogic Managed Server)**
 Collected: **Latest Configuration**

Select the Second Configuration to compare with First Configuration.

Saved Configurations

Target Name: Collected Before:
 Description: Collected After:
 Owner: Go Latest Configurations

Select	Collected	Target Name	Target Type	Saved to Repository	Description	Owner
☒	Feb 24, 2009 3:31:24 PM EST	gcsoa.us.oracle.com.servicebus_7021.xbusServer	Oracle WebLogic Managed Server	Feb 24, 2009 6:18:15 PM EST	ManagedServerGoldConfig	SYSMAN

Cancel Back Compare

3. View the differences between the current and the saved configurations:

- Click on **Configuration Files**.
- Select **config.xml**.
- Click on **Compare File Contents**.
- Observe the differences marked in red.

Compare WebLogic Managed Servers

First Collected	Second Collected
gcsoa.us.oracle.com.servicebus_7021.xbusServer Feb 24, 2009 7:21:50 PM EST	gcsoa.us.oracle.com.servicebus_7021.xbusServer Feb 24, 2009 3:31:24 PM EST

Summary General Applications JDBC Resources Virtual Hosts JMS Resources Miscellaneous Configuration Files

TIP The comparison results below are based only on file size and modification time. To compare file contents, select a file and click Compare File Contents.

Compare File Contents

Select	Result	gcsoa.us.oracle.com.servicebus_7021.xbusServer
☒	\$WEBLOGIC_DOMAIN/config/config.xml	\$WEBLOGIC_DOMAIN/config/config.xml
☐	\$WEBLOGIC_DOMAIN/config/backup_config.xml	\$WEBLOGIC_DOMAIN/config/backup_config.xml
☐	\$WEBLOGIC_DOMAIN/config/jdbc/cgDataSource-jdbc.xml	\$WEBLOGIC_DOMAIN/config/jdbc/cgDataSource-jdbc.xml
☐	\$WEBLOGIC_DOMAIN/config/jdbc/cgDataSource-nonXA-jdbc.xml	\$WEBLOGIC_DOMAIN/config/jdbc/cgDataSource-nonXA-jdbc.xml
☐	\$WEBLOGIC_DOMAIN/config/jdbc/wsbjmsrpDataSource-jdbc.xml	\$WEBLOGIC_DOMAIN/config/jdbc/wsbjmsrpDataSource-jdbc.xml
☐	\$WEBLOGIC_DOMAIN/config/jms/wseejmsmodule-jms.xml	\$WEBLOGIC_DOMAIN/config/jms/wseejmsmodule-jms.xml
☐	\$WEBLOGIC_DOMAIN/config/jms/xbusResources-jms.xml	\$WEBLOGIC_DOMAIN/config/jms/xbusResources-jms.xml

Summary General Applications JDBC Resources Virtual Hosts JMS Resources Miscellaneous Configuration Files

12	<sec:role-mapper xmlns:xac="http://www.bea.com/ns/weblogic/90/security/xacml" xsi:type="xac:xacml-role-mapperType"></sec:role-mapper>	<sec:role-mapper xmlns:xac="http://www.bea.com/ns/weblogic/90/security/xacml" xsi:type="xac:xacml-role-mapperType"></sec:role-mapper>
13	<sec:authorizer xmlns:xac="http://www.bea.com/ns/weblogic/90/security/xacml" xsi:type="xac:xacml-authorizerType"></sec:authorizer>	<sec:authorizer xmlns:xac="http://www.bea.com/ns/weblogic/90/security/xacml" xsi:type="xac:xacml-authorizerType"></sec:authorizer>
14	<sec:adjudicator xsi:type="wls:default-adjudicatorType"></sec:adjudicator>	<sec:adjudicator xsi:type="wls:default-adjudicatorType"></sec:adjudicator>
15	<sec:credential-mapper xsi:type="wls:default-credential-mapperType"></sec:credential-mapper>	<sec:credential-mapper xsi:type="wls:default-credential-mapperType"></sec:credential-mapper>
16	<sec:cert-path-provider xsi:type="wls:web-logic-cert-path-providerType"></sec:cert-path-provider>	<sec:cert-path-provider xsi:type="wls:web-logic-cert-path-providerType"></sec:cert-path-provider>
17	<sec:cert-path-builder>WebLogicCertPathProvider</sec:cert-path-builder>	<sec:cert-path-builder>WebLogicCertPathProvider</sec:cert-path-builder>
18	<sec:name>myrealm</sec:name>	<sec:name>myrealm</sec:name>
19	</realm>	</realm>
20	<default-realm>myrealm</default-realm>	<default-realm>myrealm</default-realm>
21	<credential-encrypted>(3DES)+TrUY5XilkebfLzZUjwOzZqulDWiUFAHwezQOFPcQX8LPHv+QRw8nwQQDeGQH1KuRH9zwow9igBHAnbKFxty3MP/wJn6J</credential-encrypted>	<credential-encrypted>(3DES)+TrUY5XilkebfLzZUjwOzZqulDWiUFAHwezQOFPcQX8LPHv+QRw8nwQQDeGQH1KuRH9zwow9igBHAnbKFxty3MP/wJn6J</credential-encrypted>
22	<node-manager-username>weblogic</node-manager-username>	<node-manager-username>weblogic</node-manager-username>
23	<node-manager-password-encrypted>(3DES)rqSynU7Zb4lybn3DzN4BTg==</node-manager-password-encrypted>	<node-manager-password-encrypted>(3DES)rqSynU7Zb4lybn3DzN4BTg==</node-manager-password-encrypted>
24	</security-configuration>	</security-configuration>
25	<server>	<server>
26	<name>xbusServer</name>	<name>xbusServer</name>
		<reverse-dns-allowed>false</reverse-dns-allowed>
		<native-io-enabled>true</native-io-enabled>
		<thread-pool-percent-socket-readers>33</thread-pool-percent-socket-readers>

Summary

Configuration management is critical for administrators to control change within the environment and troubleshoot problems associated with changing configurations. With Grid Control's configuration management capabilities, administrators can manage change and reduce time to troubleshoot problems.

In this chapter, we discussed the challenges related to configurations in the enterprise. We discussed how to view the latest configuration for WebLogic managed server and OSB targets. Then we saved a snapshot of a known, trustworthy configuration in the Grid Control repository, so we could use that as a baseline for comparison. Then we compared the saved baseline with the latest configuration and viewed the drift. We discussed how the Grid Control configuration features could be leveraged for the WebLogic managed server and the OSB target.

Configuration management has been extended with Enterprise Manager's acquisition of two new products, namely **Configuration Change Console (CCC)** and **Application Change Console (ACC)**. With these two products, administrators can view changes actively as they happen, as well as roll back and roll forward to a desired configuration.

Index

Symbols

.bpel file 83
.wsdl file 83
.xsd file 83

A

ACC 124
Activate button 140
Add SOAP Test button 32
administration tasks
 viewing 49
aggregate service, BPEL process
 availability definition, viewing 68
 performance, adding 69, 70
 service level expectation, setting 70
 usage metrics, adding 69, 70
 viewing 68
Alert History button 45
ALSB 16, 183
Application Change Console. *See* **ACC**
Application Server
 homepage, URL 19
AquaLogic Service Bus. *See* **ALSB**
availability definition
 about 163
 viewing 62
availability level expectation
 setting, steps 61, 62

B

BAM 15
Beacons
 adding, to run Service Test 170-172
BPEL 14

BPEL Configuration Management

 application server target comparison
 results, viewing 120-123
 BPEL environment, modifying 106-108
 BPEL target configuration management,
 navigating to 97
 challenges 96
 current BPEL configuration, comparing
 112-116
 current Oracle Application Server configuration,
 comparing 119
 Oracle Application Server configuration
 management, navigating to 101, 102
 Oracle Application Server environment,
 modifying 108-112
 solution 96
 steps 97-120
 versions, comparing 117-119

BPEL deployment

 BPEL suitcase deployment, scheduling
 87-92
 BPEL suitcases, uploading to software
 library 84, 85, 86
 challenges 82
 procedures, viewing 86, 87
 processes, viewing 93
 scheduled deployment status, viewing
 92, 93
 software library, viewing 83
 solutions 82
 steps 82-93

BPEL infrastructure

 challenges 42
 service, creating 43
 solution 43

BPEL infrastructure service

- administration tasks, viewing 49
- configuration changes, viewing 48
- creating 43, 45
- key system metrics, viewing 49
- policies, viewing 45, 46
- system alerts, viewing 45, 46
- system components, viewing 50
- system dashboard, viewing 51
- viewing 45, 63

BPEL PM

- about 18
- challenges 28
- process home page, navigating to 29, 30
- service dashboard, creating 74
- SOAP test, creating to monitor BPEL process 35-37
- SOAP test, creating to monitor partner link 31-34
- SOAP tests, testing 38
- solution 28
- steps 28-39
- target, discovering 18
- target home page, navigating to 28, 29

BPEL PM target

- application servers, navigating to 19
- configuring 23, 24
- discovering 19, 20
- homepage, navigating to 22, 23

BPEL process aggregate service

- viewing 68

BPEL process availability service

- viewing 58, 59

BPEL Process Manager

- overview 15

BPEL service dashboard

- challenges 74
- solution 74

BPEL Service Level Management

- challenges 56
- solution 57

BPEL target configuration management, navigating to

- configuration snapshot, saving to repository 100, 101
- last collected configuration, viewing 98-100
- steps 97

Business Process Execution Language. *See* BPEL

business service, monitoring. *See* proxy, monitoring

C

CCC 124

CMDB 95, 215

COBIT 55

Configuration Change Console. *See* CCC

configuration changes

- viewing 48

configuration management

- challenges 216

- for OSB 215

- for WebLogic 215

- solution 216

Configuration Management Database. *See* CMDB

Control Objectives for Information and Related Technology. *See* COBIT

Create Like button 195

D

discovery 17

downloading

- Grid Control 13

E

EAI 15

Enterprise Application Integration. *See* EAI

Enterprise Service Bus. *See* ESB

ESB 203

G

Grid Control

- about 27

- BPEL management functionality 18

- components 11

- downloading 13

- installing 13

- overview 10

Grid Control, components

- architecture diagram 12

- central web console 12
- management agent 11
- OMR 11
- OMS 11

Grid Control Software Library

- component, creating 131-134
- Configure page 134, 135
- Create Component wizard 133
- creating 131
- Refresh button 139
- Review page 136
- Set Directives page 136
- Summary wizard 138

H

home page, Grid Control

- about 14
- All Target Alerts 14
- All Targets Policy Violations 14
- All Targets Status 14
- Deployments Summary 14
- Target Search 14

I

Information Technology Infrastructure Library. *See* ITIL

infrastructure availability definition

- viewing 67

infrastructure performance metrics

- adding 63

infrastructure usage metrics

- adding 65
- setting 66

installing

- Grid Control 13

ITIL 55, 95

IT Information Library. *See* ITIL

J

jar file 83

Java Virtual Machine. *See* JVM

JVM 41

K

key system metrics, BPEL infrastructure service
viewing 49

M

Management Agent 11

Managed Server home page 217

Metric 173

Mount Point 175

N

newly created cluster

- validating 153

newly created cluster, validating

- BPEL Control console 156
- Oracle Application Server home page 154
- steps 153-156

O

OESB 15

OMS 11

Oracle Application Server cloning, SOA applications used

- Application and Web Tier page 146

- Credentials/Schedule page 145

- Library Step Properties page 147

- Procedure Completion Status property page 150

- Review page 148

- Select Component for Application Tier page 142

- Select Target(s) for Application Tier page 144

- Source Selection page 143

- Status page, Job run 150, 152

- steps 141

- Target List page 144

Oracle Application Server configuration management, navigating to

- configuration snapshot, saving to repository 105

- last collected configuration, viewing 102-104

- Oracle BAM** 10
- Oracle BPEL Process Manager home page** 155
- Oracle Business Activity Monitoring.** *See* **BAM**
- Oracle Enterprise Service Bus.** *See* **OESB**
- Oracle Service Bus.** *See* **OSB**
- OSB**
 - overview 16
- Oracle SOA Suite**
 - overview 15
- Oracle Technology Network.** *See* **OTN**
- Oracle Web Services Manager.** *See* **OWSM**
- OSB**
 - about 15, 189
 - challenges 184
 - solutions 184
 - target home page, navigating to 187
- OSB configuration**
 - comparing, with saved baseline 220-222
 - managed server configuration, comparing with saved baseline 222, 223
 - saving 219, 220
 - viewing 219, 220
- OSB deployment automation**
 - challenges 190
 - solution 190
- OSB infrastructure service, creating**
 - steps 204, 205
- OSB project deployment**
 - managing, steps 190-196
 - procedure, viewing 194, 195
 - projects, uploading to Software Library 191-194
 - scheduling 196-201
 - Software Library, viewing 190, 191
- OSB proxy**
 - aggregate service, creating 206, 207
 - service endpoint, monitoring 207-209
 - service homepage, navigating to 205
- OTN**
 - URL 12
- OWSM** 15

P

- proxy, monitoring**
 - challenges 204
 - OSB infrastructure service, creating 204, 205
 - OSB proxy aggregate service, creating 206, 207
 - OSB proxy service home page, navigating to 205, 206
 - SOAP test, creating 207
 - SOAP test creating, for business service endpoint testing 210-212
 - SOAP test creating, for proxy service endpoint monitoring 207-210
 - SOAP tests, testing 212
 - solution 204

R

- Refresh button** 93
- response time test** 62
- Request Processing Time** 64
- Review step** 91

S

- SAS 70** 55
- service, BPEL**
 - aggregate service 57
 - aggregate service availability definition, viewing 68
 - aggregate service level expectation, setting 70, 71
 - aggregate service performance, adding 69, 70
 - availability definition, viewing 62
 - availability level expectations, setting 61, 62
 - availability service 57
 - BPEL infrastructure service, viewing 63
 - BPEL process aggregate service, viewing 68
 - BPEL process availability service, viewing 58, 59
 - generic service 57

- infrastructure availability definition, viewing 67
- infrastructure performance metrics, adding 63, 64
- infrastructure service 57
- infrastructure service level expectation, setting 66
- infrastructure usage metrics, adding 65
- performance metrics, adding 59-61
- service test 58
- SLA 57
- system 57
- usage metrics, adding 69, 70
- service dashboard, creating**
 - SOA service dashboard 75-77
 - SOA service dashboard, creating 75
 - SOA service dashboard, viewing 77-79
 - steps 74-79
- Service Level Agreements.** *See* **SLAs**
- service performance metrics**
 - adding, steps 59-61
- Simple Object Access Protocol.** *See* **SOAP**
- SLAs 73**
- SOAP 207**
- SOA Suite Cloning**
 - application server processes, stopping 130
 - challenges 126
 - components, creating in Grid Control
 - Software Library 131-140
 - newly created cluster, validating 153
 - Oracle Application Server, adding to Grid Control 126-130
 - Oracle Application Server cloning, SOA applications used 141
 - solution 126
- Software Library**
 - projects, uploading 191-194
 - viewing 190, 191
- Statement on Auditing Standards 70.** *See* **SAS 70**
- system components**
 - viewing 50
- system dashboard**
 - viewing 51

T

three-tier architecture, Grid Control

- Central web console 12
- Management Agent 11
- OMR 11
- OMS 11

U

Usage Metrics Screen 65, 174

V

Verify Service Test button 38

W

web application

- challenges 160
- solutions 160

web application management

- Beacons, adding 170-172
- creating 161-163
- performance metrics, adding 172, 173
- recorded web transaction playback, viewing 178-180
- steps 161, 164, 170, 172, 178
- usage metrics, adding 174-177
- web transaction, recording as Service Test 164-171

WebLogic

- challenges 184
- domain target, adding 184-186
- solutions 184

WebLogic configuration management

- managed server configuration snapshot, saving 218, 219
- managed server configuration, viewing 216-218

WebLogic Server. *See* **WLS**

Web Service Description Language. *See* **WSDL**

Web Service Invocation Framework. *See*
WSIF
Web Services Business Process Execution
Language. *See* WS-BPEL
WLS 183
WS-BPEL 14
WSDL 207
WSIF 27

Z

zone, website creation
Use System Time Zone 161



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