Oracle® Fusion Applications

Financials Enterprise Deployment Guide

11*g* Release 5 (11.1.5)

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Documentation for system administrators who are installing and configuring Oracle Fusion Applications components in an enterprise deployment for Oracle Fusion Financials.

Oracle Fusion Applications Financials Enterprise Deployment Guide, 11*g* Release 5 (11.1.5)

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Preface

This preface describes the audience, contents and conventions used in the *Oracle Fusion Applications Financials Enterprise Deployment Guide*.

Audience

This guide is intended for system administrators who are responsible for installing and configuring Oracle Fusion Applications enterprise deployments for Oracle Fusion Financials.

Documentation Accessibility

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Related Documents

For more information, see the following documents in the Oracle Fusion Applications documentation set or in the Oracle Fusion Middleware documentation set:

- *Oracle Fusion Middleware Enterprise Deployment Guide for Oracle Business Intelligence*
- *Oracle Fusion Middleware Installation and Configuration Guide for Oracle Business Intelligence Applications*
- *Oracle Fusion Applications Administrator's Guide*
- *Oracle Database Administrator's Guide*
- *Oracle Fusion Applications Installation Guide*
- *Oracle Fusion Middleware Repository Creation Utility User's Guide*
- *Oracle Real Application Clusters Administration and Deployment Guide*
- *Oracle Fusion Middleware Enterprise Deployment Guide for Oracle Identity Management (Oracle Fusion Applications Edition)*

- *Oracle Fusion Applications Concepts Guide*

Conventions

The following text conventions are used in this document:

Convention	Meaning
boldface	Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.
italic	Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.
`monospace`	Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter.

What's New in This Guide

The preface describes the significant changes made to the *Oracle Fusion Applications Financials Enterprise Deployment Guide* 11*g* Release 5 (11.1.5), and provides pointers to additional information.

Significant Changes in this Document for 11*g* Release 11.1.5

For 11*g* Release 5 (11.1.5), this guide has been updated in several ways. Following are the sections that have been added or changed.

- Screen shots updated to reflect changes made in this release. See Section 5.3.2, "Creating a New Provisioning Response File."
- New section added. See Section 5.6, "Starting and Stopping the Provisioned Environment."
- New section added. See Section 15.6.1, "Redefining the Essbase Cluster Name After Essbase Scale Out."
- Chapter rewritten and restructured for clarity. See Chapter 19, "Configuring Oracle Business Intelligence Applications."

1 Enterprise Deployment Overview

This chapter provides an overview of the enterprise topology for Oracle Fusion Financials.

This chapter includes the following topics:

- Section 1.1, "What is an Enterprise Deployment?"
- Section 1.2, "About Oracle Fusion Applications"
- Section 1.3, "Benefits of Oracle Recommendations"
- Section 1.4, "Terminology"

1.1 What is an Enterprise Deployment?

An enterprise deployment is an Oracle guidelines blueprint based on proven Oracle high-availability and security technologies and recommendations for Oracle Fusion Applications. The guidelines described in these blueprints span all Oracle products across the entire technology stack: Oracle Database, Oracle Fusion Middleware, Oracle Fusion Applications, and Fusion Middleware Control.

An Oracle Fusion Applications enterprise deployment:

- considers various business Service Level Agreements (SLA) to make high-availability guidelines as widely applicable as possible
- leverages database grid servers and storage grid with low-cost storage to provide highly resilient, lower cost infrastructure
- uses results from extensive performance impact studies for different configurations to ensure that the high-availability architecture is optimally configured to perform and scale to business needs
- enables control over the length of time to recover from an outage and the amount of acceptable data loss from a natural disaster
- uses Oracle guidelines and recommended architecture, which are independent of hardware and operating systems.

Note: This document focuses on enterprise deployments in Linux environments. Enterprise deployments can also be implemented in UNIX and Windows environments.

1.2 About Oracle Fusion Applications

Oracle Fusion Applications are a unified suite of business applications designed to unify personal and enterprise processes. It unifies transactional Oracle SOA Suite and business processes, business intelligence, and collaborative technologies in a seamless user experience. Oracle Fusion Applications can be easily integrated into a service-oriented architecture and made available as software as a service.

Oracle Fusion Applications offer a strong functional value by providing:

- Installed based demand (for example, unified global payroll module)
- Competitive differentiation (for example, Distributed Order Orchestration)
- Revenue generation (for example, sales territory management)

Oracle Fusion Applications incorporate best practice business processes, including those from Oracle E-Business Suite, PeopleSoft, Oracle On Demand, JD Edwards, and Siebel.

Oracle Fusion Applications are standards-based, making them highly adaptable. This standards-based technology allows you to respond effectively to change with flexible, modular, user-driven business software that is powered by best-in-class business capabilities built on open standards. Its technology framework includes the following products:

- Oracle WebCenter Portal provides design time and runtime tools for building enterprise portals, transactional websites, and social networking sites.
- Oracle Business Intelligence 11*g* provides a full range of business intelligence capabilities that allow you to collect, present, and deliver organizational data.
- Hyperion extends Oracle's business intelligence capabilities to offer the most comprehensive system for enterprise performance management.
- Oracle WebCenter Content enables you to leverage document management, Web content management, digital asset management, and records retention functionality to build and complement your business applications.
- Oracle SOA Suite provides an enterprise architecture that supports building connected enterprise applications to provide solutions to business problems.
- Oracle WebLogic Server is a scalable, enterprise-ready Java Platform, Enterprise Edition (Java EE) application server.
- Oracle JDeveloper is an integrated development environment with end-to-end support for modeling, developing, debugging, optimizing, and deploying Java applications and Web services.
- Oracle Enterprise Manager Fusion Middleware Control offers business-driven applications management, integrated application to disk management, and integrated systems management and support experience.
- Oracle Identity Management enables organizations to manage the end-to-end life cycle of user identities and to secure access to enterprise resources and assets.

For more information, see the *Oracle Fusion Applications Concepts Guide*.

1.3 Benefits of Oracle Recommendations

The Oracle Fusion Applications configurations discussed in this guide are designed to ensure security of all invocations, maximize hardware resources, and provide a reliable, standards-compliant system for enterprise computing with a variety of applications.

- Built-in Security
- High Availability

The security and high-availability benefits of the Oracle Fusion Applications configurations are realized through isolation in firewall zones and replication of software components.

1.3.1 Built-in Security

The enterprise deployment architectures are secure because every functional group of software components is isolated in its own demilitarized zone (DMZ), and all traffic is restricted by protocol and port. The following characteristics ensure security at all needed levels, as well as a high level of standards compliance:

- Configure external load balancers to redirect all external communication received on port 80 to port 443.

> **Note:** The Oracle Technology Network (`http://www.oracle.com/technetwork/index.html`) provides a list of validated load balancers.

- Communication from external clients does not go beyond the Load Balancing Router (LBR) level.
- Components are separated in different protection zones: the Oracle Web Tier, application tier, and the data tier. Moreover, Oracle Identity Management (IDM) has its own protection zones like Oracle Web Tier, Applications tier and Data tier
- No direct communication from the Load Balancing Router to the data tier is allowed.
- Direct communication between two firewalls at any one time is prohibited.
- If a communication begins in one firewall zone, it must end in the next firewall zone.
- Oracle Internet Directory (OID) is isolated in the data tier.
- All communication between components across protection zones is restricted by port and protocol, according to firewall rules.

1.3.2 High Availability

The enterprise deployment architectures are highly available, because each component or functional group of software components is replicated on a different computer, and configured for component-level high availability.

1.4 Terminology

The following terminology is used in this enterprise deployment guide:

- **Oracle home**: An Oracle home contains installed files necessary to host a specific product. For example, the SOA Oracle home contains a directory that contains binary and library files for Oracle SOA Suite. An Oracle home resides within the directory structure of the Middleware home. Each Oracle home can be associated with multiple Oracle instances or Oracle WebLogic Server domains.

- ***ORACLE_BASE***: An alternate way of specifying the path `/u01/oracle`. Stores binaries, configuration, and Oracle Inventory.
- **WebLogic Server home**: A WebLogic Server home contains installed files necessary to host a WebLogic Server. The WebLogic Server home directory is a peer of Oracle home directories and resides within the directory structure of the Middleware home.
- **Middleware home:** A Middleware home consists of the Oracle WebLogic Server home, and, optionally, one or more Oracle homes. A Middleware home can reside on a local file system or on a remote shared disk that is accessible through NFS.
- **Oracle instance**: An Oracle instance contains one or more active middleware system components, for example Oracle Web Cache, Oracle HTTP Server or Oracle Internet Directory. You determine which components are part of an instance, either at install time or by creating and configuring an instance at a later time. An Oracle instance contains files that can be updated, such as configuration files, log files, temporary files.
- **Domain**: The basic administrative unit of Oracle WebLogic Server.
- **Managed Server**: Hosts business applications, application components, Web services, and their associated resources. To optimize performance, Managed Servers maintain a read-only copy of the domain's configuration document. When a Managed Server starts, it connects to the domain's Administration Server to synchronize its configuration document with the document that the Administration Server maintains.
- **failover**: When a member of a high availability system fails unexpectedly (unplanned downtime), in order to continue offering services to its consumers, the system undergoes a failover operation. If the system is an active-passive system, the passive member is activated during the failover operation and consumers are directed to it instead of the failed member. The failover process can be performed manually, or it can be automated by setting up hardware cluster services to detect failures and move cluster resources from the failed node to the standby node. If the system is an active-active system, the failover is performed by the load balancer entity serving requests to the active members. If an active member fails, the load balancer detects the failure and automatically redirects requests for the failed member to the surviving active members. See *Oracle Fusion Middleware High Availability Guide* for information on active-active and active-passive systems.
- **failback**: After a system undergoes a successful failover operation, the original failed member can be repaired over time and be re-introduced into the system as a standby member. If desired, a failback process can be initiated to activate this member and deactivate the other. This process reverts the system back to its pre-failure configuration.
- **hardware cluster**: A hardware cluster is a collection of computers that provides a single view of network services (for example: an IP address) or application services (for example: databases, Web servers) to clients of these services. Each node in a hardware cluster is a standalone server that runs its own processes. These processes can communicate with one another to form what looks like a single system that cooperatively provides applications, system resources, and data to users.

  A hardware cluster achieves high availability and scalability through the use of specialized hardware (cluster interconnect, shared storage) and software (health monitors, resource monitors). The cluster interconnect is a private link used by the hardware cluster for heartbeat information to detect node death. Due to the need for specialized hardware and software, hardware clusters are commonly provided by hardware vendors such as HP, IBM, and Dell. While the number of nodes that can be configured in a hardware cluster is vendor dependent, for the purpose of Oracle Fusion Applications high availability, only two nodes are required. Hence, this document assumes a two-node hardware cluster for high availability solutions employing a hardware cluster.

- **cluster agent**: The software that runs on a node member of a hardware cluster that coordinates availability and performance operations with other nodes. Clusterware provides resource grouping, monitoring, and the ability to move services. A cluster agent can automate the service failover.
- **clusterware**: Software that manages the operations of the members of a cluster as a system. It allows one to define a set of resources and services to monitor via a heartbeat mechanism between cluster members and to move these resources and services to a different member in the cluster as efficiently and transparently as possible.
- **shared storage**: Shared storage is the storage subsystem that is accessible by all the computers in the enterprise deployment domain. Among other things, the following is located on the shared disk:
  - Middleware Home software
  - AdminServer Domain Home
  - Java Message Service (JMS)
  - Tlogs (where applicable)

  Managed server homes can also be optionally located in the shared disk. The shared storage can be a Network Attached Storage (NAS), a Storage Area Network (SAN) or any other storage system that multiple nodes can access simultaneously and can read/write.
- **primary node**: The node that is actively running an Oracle Fusion Applications instance at any given time and has been configured to have a backup/secondary node. If the primary node fails, Oracle Fusion Applications instance is failed over to the secondary node. This failover can be manual or automated using the Clusterware for Administration Server. For a server migration based scenario, WebLogic Whole Server Migration is used for automated failover.
- **secondary node**: The node that is the backup node for an Oracle Fusion Applications instance. This is where the active instance fails over when the primary node is no longer available. See the definition for primary node in this section.
- **network host name**: Network host name is a name assigned to an IP address either through the `/etc/hosts` file or through DNS resolution. This name is visible in the network that the computer to which it refers to is connected. Often, the network host name and physical host name are identical. However, each computer has only one physical host name but may have multiple network host names. Thus, a computer's network host name may not always be its physical host name.
- **physical host name**: This guide differentiates between the terms physical host name and network host name. This guide uses physical host name to refer to the "internal name" of the current computer. On UNIX, this is the name returned by the `hostname` command.

Physical host name is used by Oracle Fusion Middleware to reference the local host. During installation, the installer automatically retrieves the physical host name from the current computer and stores it in the Oracle Fusion Middleware configuration metadata on disk.

- **physical IP**: Physical IP refers to the IP address of a computer on the network. In most cases, it is normally associated with the physical host name of the computer (see the definition of the physical host name). In contrast to a virtual IP, it is always associated with the same computer when on a network.
- **switchover**: During normal operation, active members of a system may require maintenance or upgrading. A switchover process can be initiated to allow a substitute member to take over the workload performed by the member that requires maintenance or upgrading, which undergoes planned downtime. The switchover operation ensures continued service to consumers of the system.
- **switchback**: When a switchover operation is performed, a member of the system is deactivated for maintenance or upgrading. When the maintenance or upgrading is completed, the system can undergo a switchback operation to activate the upgraded member and bring the system back to the pre-switchover configuration.
- **virtual host name**: Virtual host name is a network addressable host name that maps to one or more physical computers via a load balancer or a hardware cluster. For load balancers, the name "virtual server name" is used interchangeably with virtual host name in this book. A load balancer can hold a virtual host name on behalf of a set of servers, and clients communicate indirectly with the computers using the virtual host name. A virtual host name in a hardware cluster is a network host name assigned to a cluster virtual IP. Because the cluster virtual IP is not permanently attached to any particular node of a cluster, the virtual host name is not permanently attached to any particular node either.

  > **Note:** Whenever the term "virtual host name" is used in this document, it is assumed to be associated with a virtual IP address. In cases where just the IP address is needed or used, it will be explicitly stated.

- **virtual IP**: (Cluster virtual IP, load balancer virtual IP.) Generally, a virtual IP can be assigned to a hardware cluster or load balancer. To present a single system view of a cluster to network clients, a virtual IP serves as an entry point IP address to the group of servers which are members of the cluster. A virtual IP can be assigned to a server load balancer or a hardware cluster.

  A hardware cluster uses a cluster virtual IP to present to the outside world the entry point into the cluster (it can also be set up on a standalone computer). The hardware cluster's software manages the movement of this IP address between the two physical nodes of the cluster while clients connect to this IP address without the need to know which physical node this IP address is currently active on. In a typical two-node hardware cluster configuration, each computer has its own physical IP address and physical host name, while there could be several cluster IP addresses. These cluster IP addresses float or migrate between the two nodes. The node with current ownership of a cluster IP address is active for that address.

  A load balancer also uses a virtual IP as the entry point to a set of servers. These servers tend to be active at the same time. This virtual IP address is not assigned to any individual server but to the load balancer which acts as a proxy between servers and their clients.

2 Introduction to the Enterprise Deployment Reference Topologies

This chapter describes and illustrates the Oracle Fusion Financials enterprise deployment reference topologies described in this guide. The road map for installation and configuration directs you to the appropriate chapters for the tasks you need to perform. Use this chapter to help you plan your Oracle Fusion Financials enterprise deployment.

This chapter includes the following topics:

- Section 2.1, "Overview of Reference Enterprise Deployment Topologies"
- Section 2.2, "Hardware Requirements"
- Section 2.3, "Installation Prerequisite"
- Section 2.4, "Implementing the Topology"

2.1 Overview of Reference Enterprise Deployment Topologies

This section describes diagrams used in an Oracle Fusion Financials enterprise deployment. Use this section to plan your enterprise deployment topology.

This section includes the following topics:

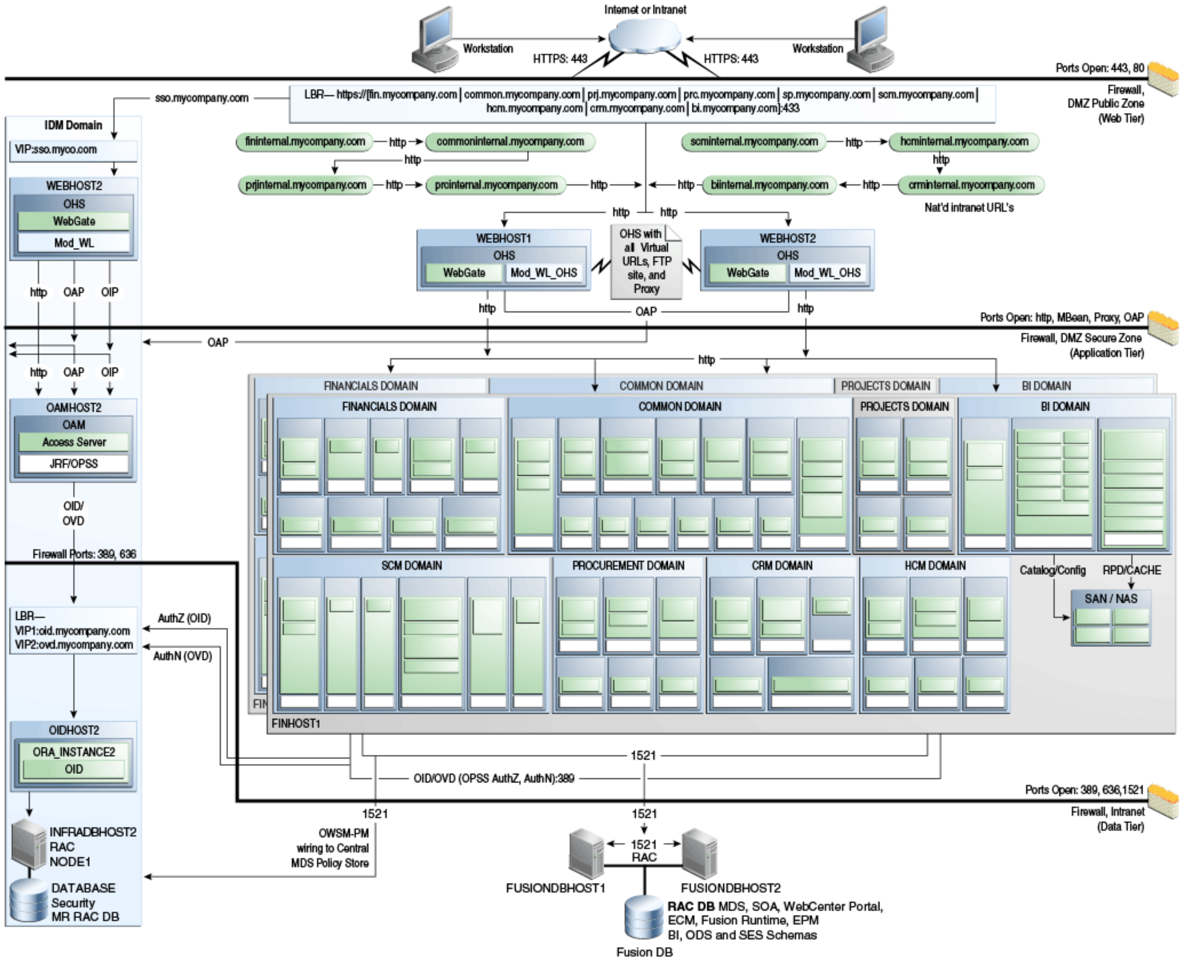
- Section 2.1.1, "Overall Reference Enterprise Deployment Topology"
- Section 2.1.2, "Reference Topologies Documented in the Guide"
- Section 2.1.3, "About the Web Tier Nodes"
- Section 2.1.4, "About the Application Tier"
- Section 2.1.5, "About the Data Tier"

2.1.1 Overall Reference Enterprise Deployment Topology

Figure 2–1 shows the overall Oracle Fusion Financials reference enterprise deployment topology, to which variations may be applied. The graphic illustrates how all components are deployed together.

In the topology, the primary node (also known as a host, and is *FINHOST* in the diagram) is actively running the Oracle Fusion Applications instance. The secondary node (*FINHOST2*) is the redundant (HA) node for the Oracle Fusion Applications instance. The primary node consists of an Administration Server and applications that have been deployed to Managed Servers. Managed Servers can be grouped together in clusters to provide scalability and high availability for applications. Together, the primary and secondary nodes form a domain.

Figure 2–1 Oracle Fusion Financials Reference Enterprise Deployment Topology

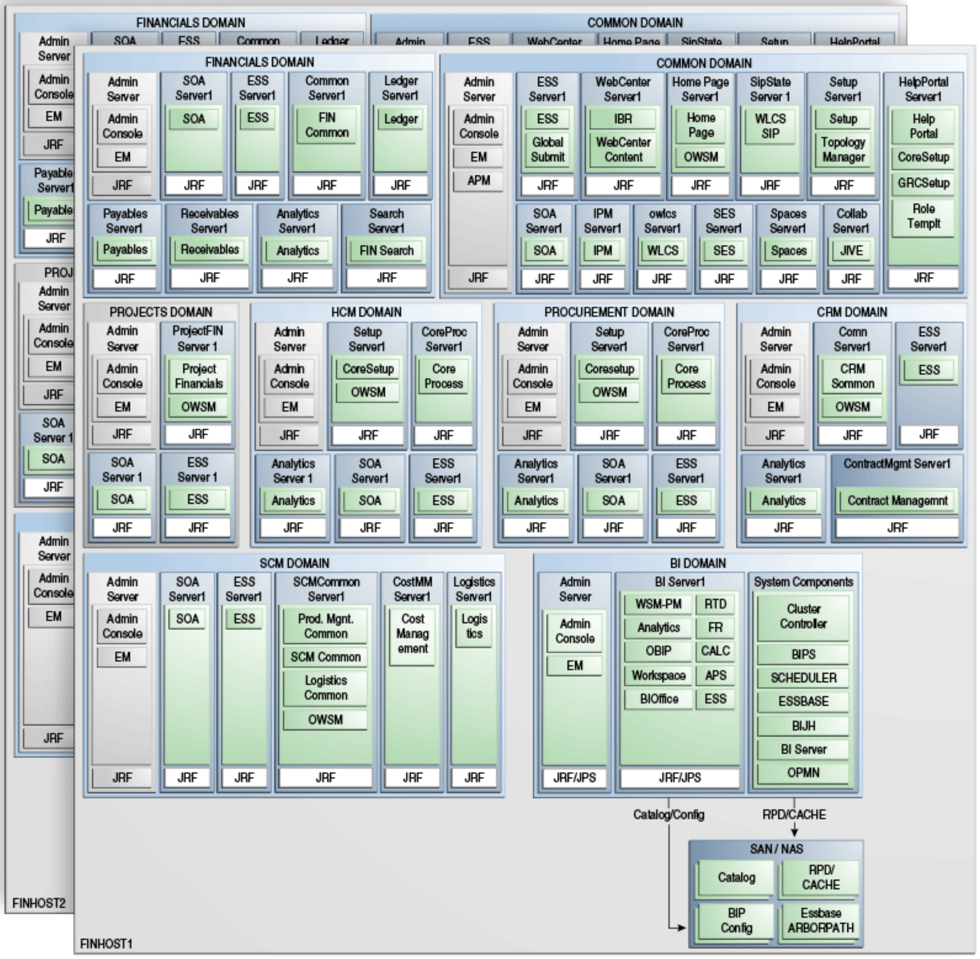


As shown in Figure 2–2, the overall Oracle Fusion Applications reference enterprise deployment topology comprises several domains:

- Oracle Fusion Financials Domain
- Oracle Fusion Customer Relationship Management Domain
- Oracle Fusion Common Domain
- Oracle Fusion Human Capital Management Domain
- Oracle Fusion Supply Chain Management Domain
- Oracle Fusion Projects Domain
- Oracle Fusion Procurement Domain
- Oracle Business Intelligence Domain

Figure 2–2 shows each of the domains in detail.

Figure 2–2 Domain Details



The scale out of these domains is described in the chapters that follow.

For information about installing the Oracle Identity Management stack for Oracle Fusion Applications, see Section 5.2, "Prerequisites for Using the Provisioning Process."

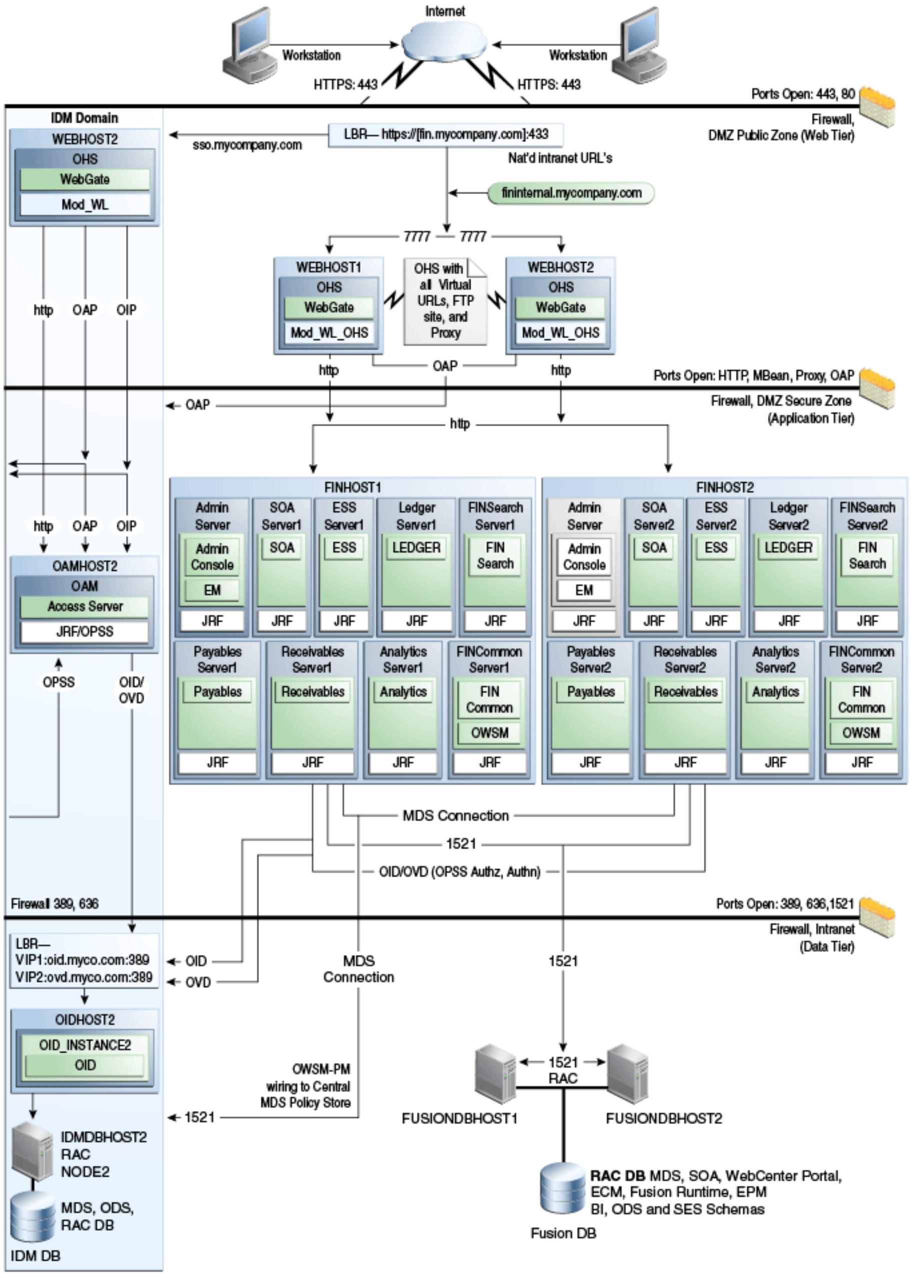
2.1.2 Reference Topologies Documented in the Guide

This section describes the references topologies used in an Oracle Fusion Financials enterprise deployment.

2.1.2.1 Oracle Fusion Financials Domain

Figure 2–3 shows the Oracle Fusion Financials domain within the overall reference enterprise deployment topology for Oracle Fusion Applications.

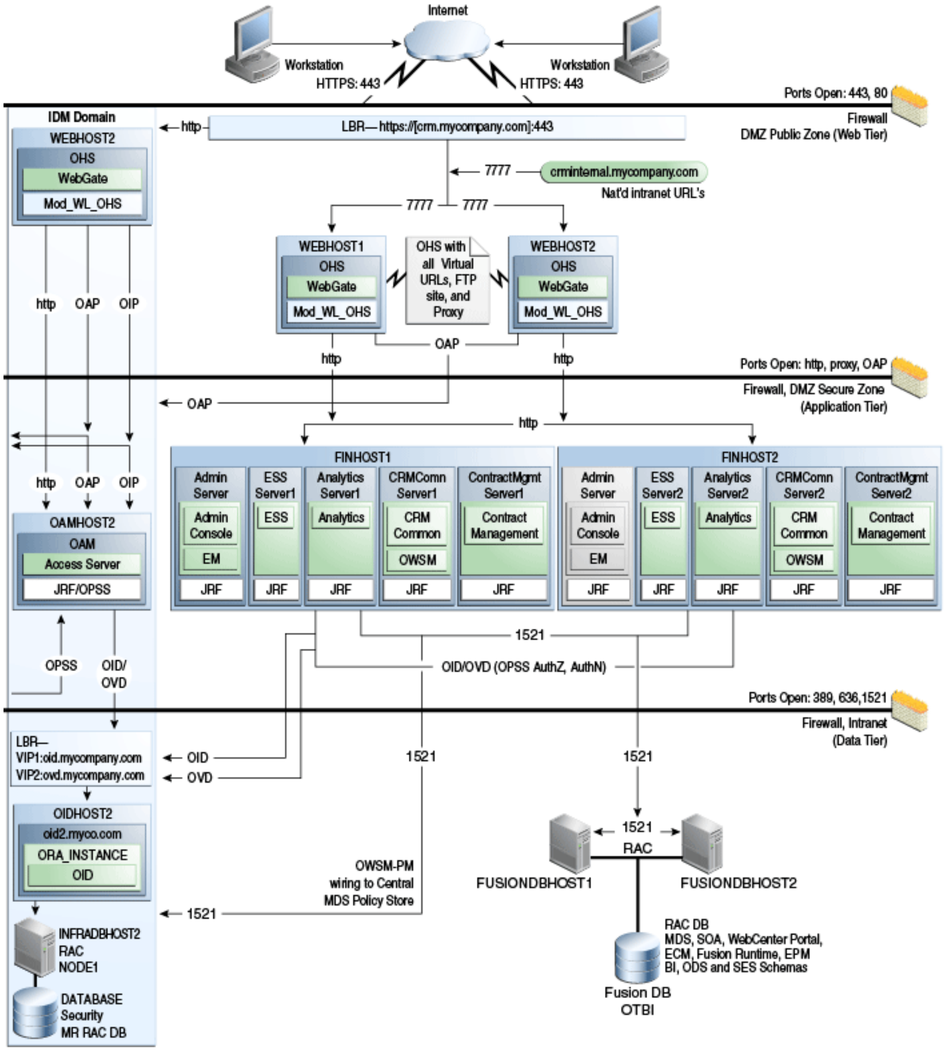
Figure 2–3 Reference Topology for Oracle Fusion Financials Domain



2.1.2.2 Oracle Fusion Customer Relationship Management Domain

Figure 2–4 shows the Oracle Fusion Customer Relationship Management domain within the overall reference enterprise deployment topology for Oracle Fusion Applications.

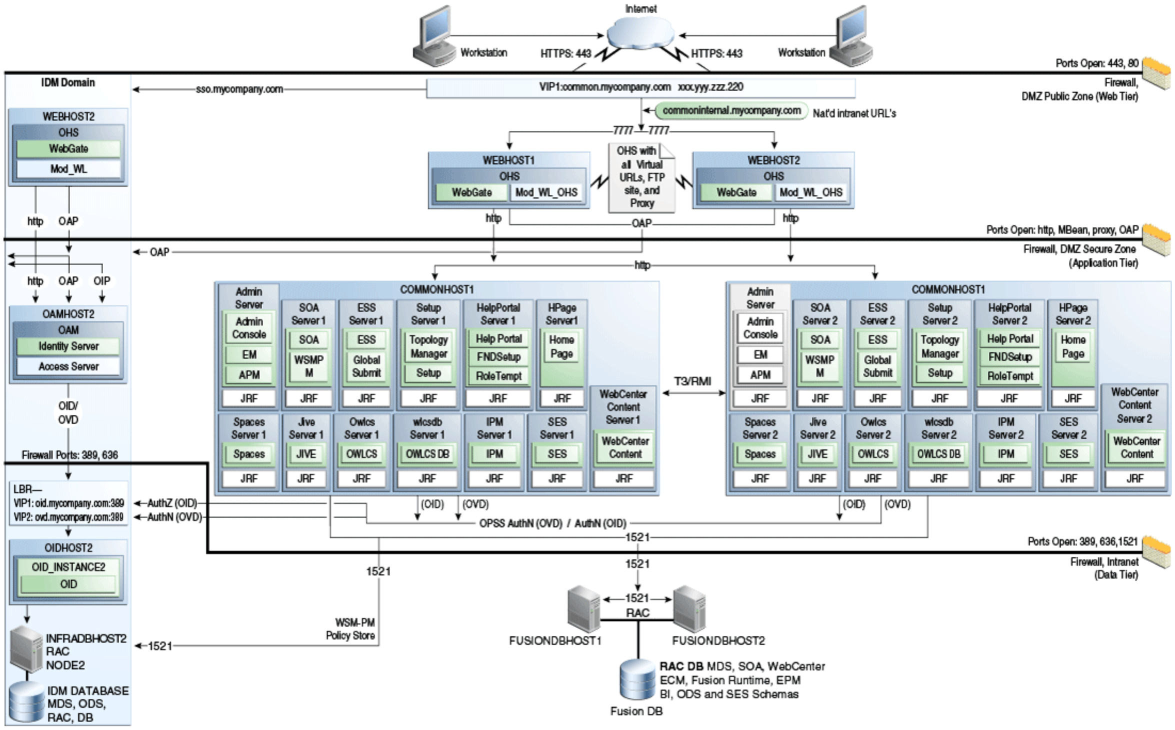
Figure 2–4 Reference Topology for Oracle Fusion Customer Relationship Management Domain



2.1.2.3 Oracle Fusion Common Domain

Figure 2–5 shows the Oracle Fusion Common domain within the overall reference enterprise deployment topology for Oracle Fusion Applications.

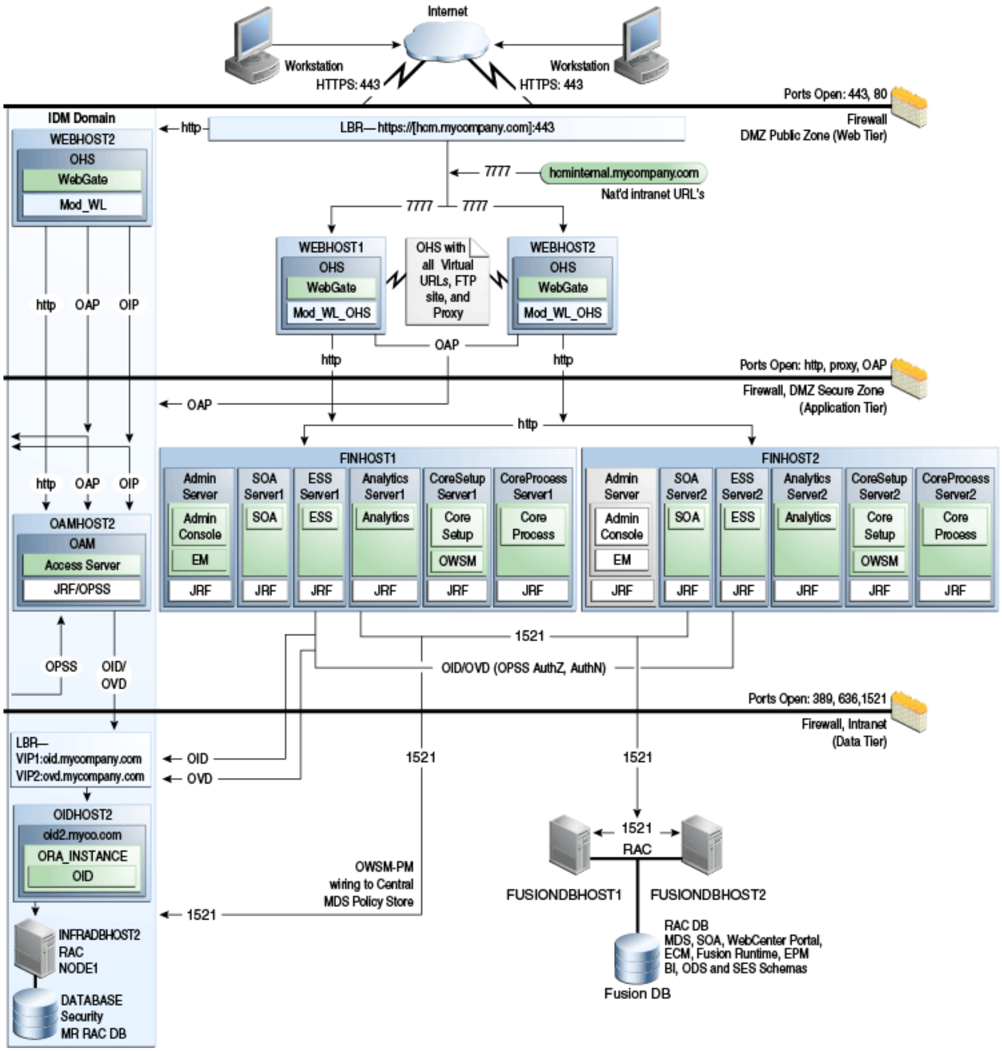
Figure 2–5 Reference Topology for Oracle Fusion Common Domain



2.1.2.4 Oracle Fusion Human Capital Management Domain

Figure 2–6 shows the Oracle Fusion Human Capital Management domain within the overall reference enterprise deployment topology for Oracle Fusion Applications.

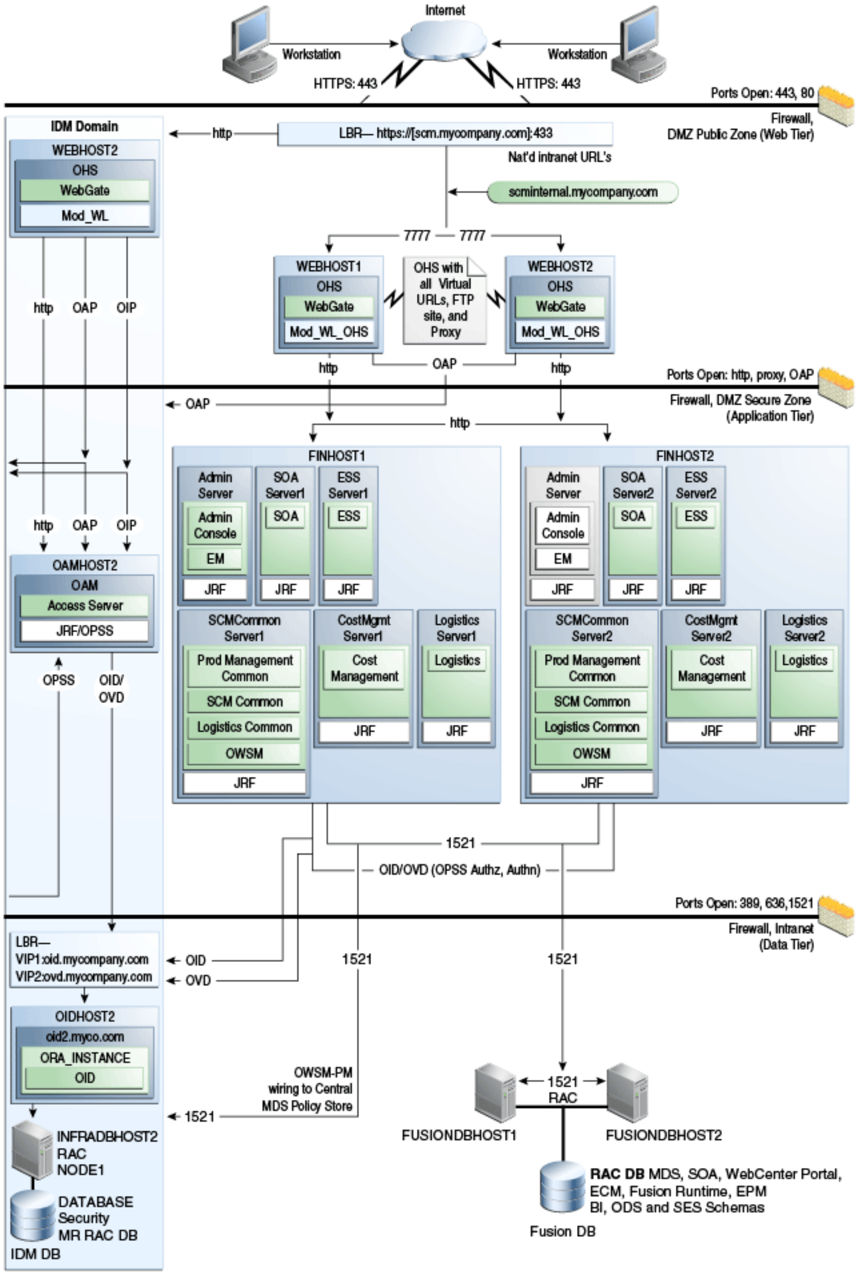
Figure 2–6 Reference Topology for the Oracle Fusion Human Capital Management Domain



2.1.2.5 Oracle Fusion Supply Chain Management Domain

Figure 2–7 shows the Oracle Fusion Supply Chain Management domain within the overall reference enterprise deployment topology for Oracle Fusion Applications.

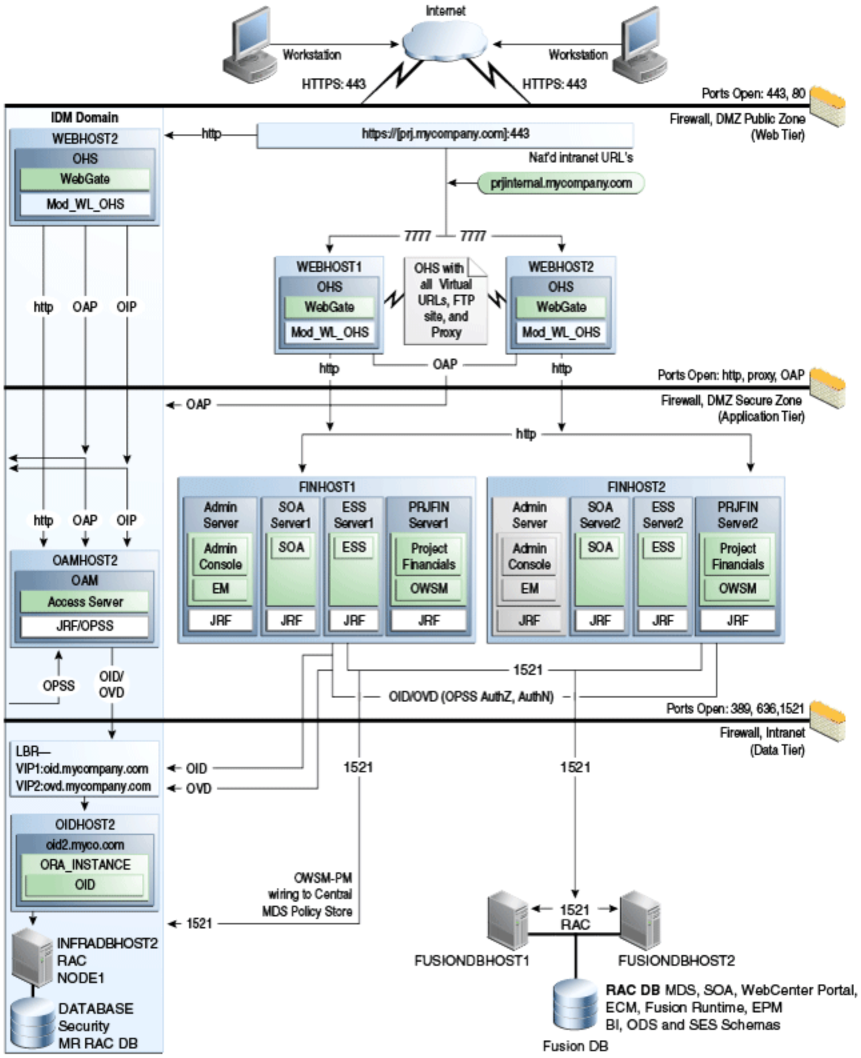
Figure 2–7 Reference Topology for Oracle Fusion Supply Chain Management Domain



2.1.2.6 Oracle Fusion Projects Domain

Figure 2–8 shows the Oracle Fusion Projects domain within the overall reference enterprise deployment topology for Oracle Fusion Applications.

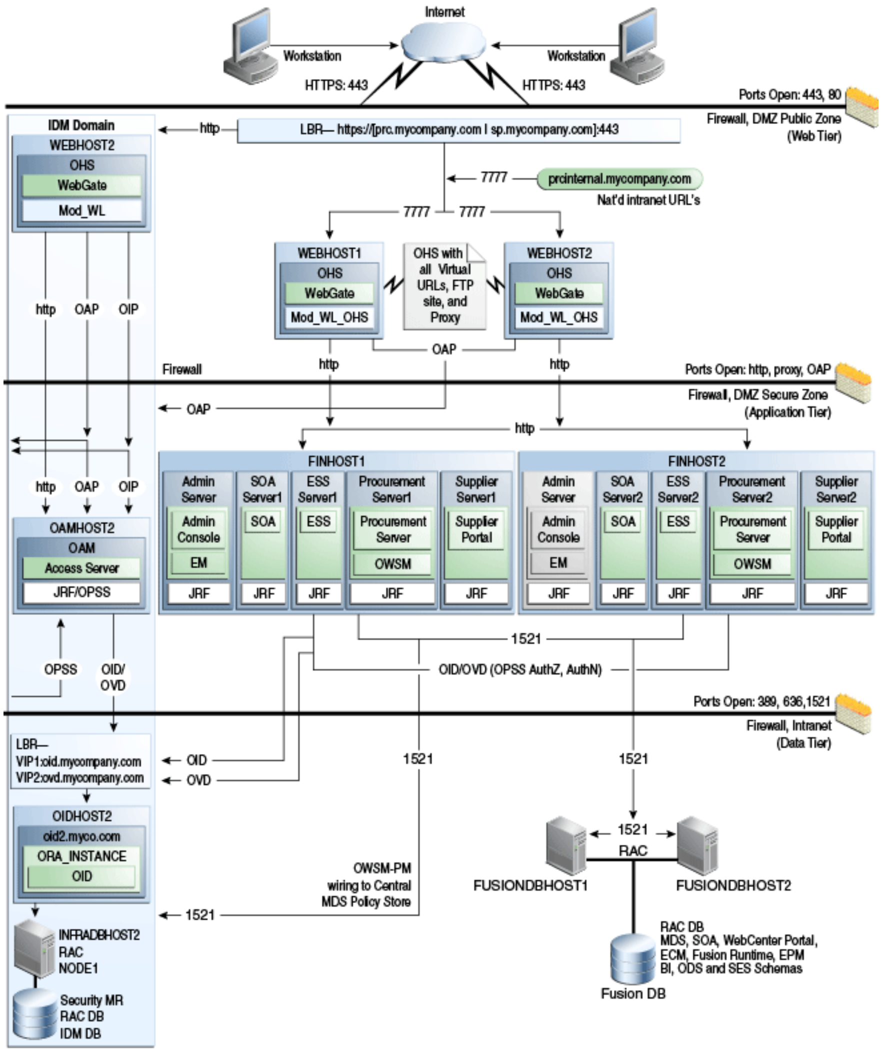
Figure 2–8 Reference Topology for Oracle Fusion Projects Domain



2.1.2.7 Oracle Fusion Procurement Domain

Figure 2–9 shows the Oracle Fusion Procurement domain within the overall reference enterprise deployment topology for Oracle Fusion Applications.

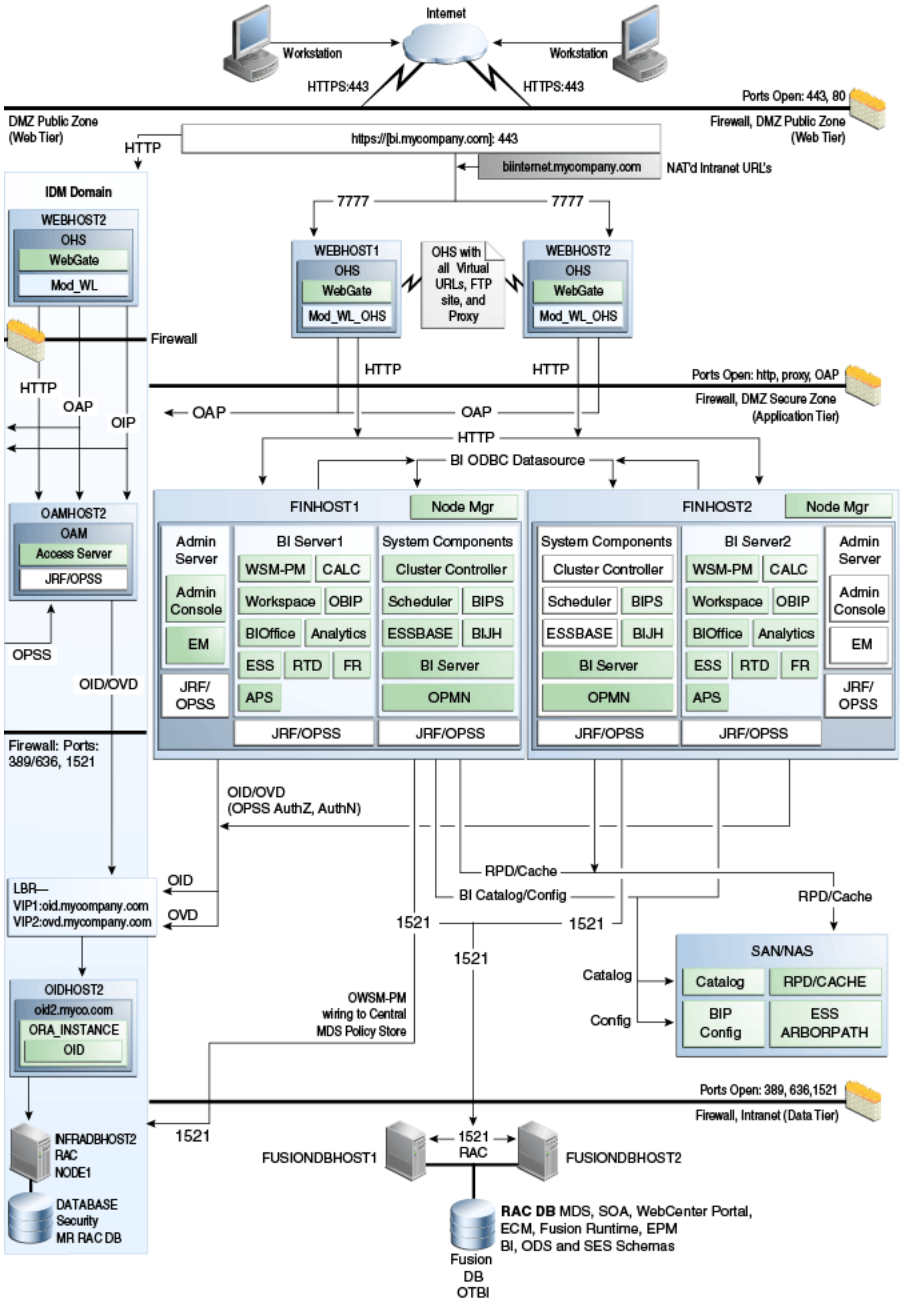
Figure 2–9 Reference Topology for Oracle Fusion Procurement Domain



2.1.2.8 Oracle Business Intelligence Domain

Figure 2–10 shows the Oracle Business Intelligence domain within the overall reference enterprise deployment topology for Oracle Fusion Applications.

Figure 2–10 Reference Topology for Oracle Business Intelligence Domain Domain



2.1.3 About the Web Tier Nodes

Nodes in the Oracle Web Tier are located in the demilitarized zone (DMZ) public zone. In this tier, two nodes *WEBHOST1* and *WEBHOST2* run Oracle HTTP Server configured with WebGate and FusionVirtualHost_*domain*.conf.

Through FusionVirtualHost_*domain*.conf, which allows requests to be proxied from Oracle HTTP Server to WebLogic Server, Oracle HTTP Server forwards the requests to WebLogic Server running in the application tier.

WebGate (which is an Oracle Access Manager component) in Oracle HTTP Server uses Oracle Access Protocol (OAP) to communicate with Oracle Access Manager running on *OAMHOST1* and *OAMHOST2*, in the Identity Management DMZ. WebGate and Oracle Access Manager are used to perform operations such as user authentication.

The Oracle Web Tier also includes a load balancer router to handle external requests. External requests are sent to the virtual host names configured on the load balancer. The load balancer then forwards the requests to Oracle HTTP Server.

The WebGate module in Oracle HTTP Server uses Oracle Access Protocol (OAP) to communicate with Oracle Access Manager to perform operations such as querying user groups.

On the firewall protecting the Oracle Web Tier, only the HTTP ports are open: 443 for HTTPS and 80 for HTTP.

2.1.3.1 Load Balancer Requirements

This enterprise topology uses an external load balancer. This external load balancer should have the following features:

- Ability to load-balance traffic to a pool of real servers through a virtual host name: Clients access services using the virtual host name (instead of using actual host names). The load balancer can then load-balance requests to the servers in the pool.
- Port translation configuration should be possible so that incoming requests on the virtual host name and port are directed to a different port on the back-end servers.
- Monitoring of ports on the servers in the pool to determine availability of a service.
- Virtual servers and port configuration: Ability to configure virtual server names and ports on your external load balancer, and the virtual server names and ports must meet the following requirements:
  - The load balancer should allow configuration of multiple virtual servers. For each virtual server, the load balancer should allow configuration of traffic management on more than one port. For example, for Oracle HTTP Server in the Oracle Web Tier, the load balancer needs to be configured with a virtual server and ports for HTTP and HTTPS traffic.
  - The virtual server names must be associated with IP addresses and be part of your DNS. Clients must be able to access the external load balancer through the virtual server names.
- Ability to detect node failures and immediately stop routing traffic to the failed node.
- Fault-tolerant mode: It is highly recommended that you configure the load balancer to be in fault-tolerant mode.
- It is highly recommended that you configure the load balancer virtual server to return immediately to the calling client when the back-end services to which it forwards traffic are unavailable. This is preferred over the client disconnecting on its own after a timeout based on the TCP/IP settings on the client computer.
- Sticky routing capability: Ability to maintain sticky connections to components. Examples of this include cookie-based persistence, IP-based persistence, and so on.
- The load balancer should be able to terminate SSL requests at the load balancer and forward traffic to the back-end real servers using the equivalent non-SSL protocol (for example, HTTPS to HTTP). Typically, this feature is called SSL acceleration and it is required for this enterprise deployment.

2.1.4 About the Application Tier

Nodes in the application tier are located in the DMZ secure zone.

FINHOST1 and *FINHOST2* run all the Managed Servers in the Oracle Fusion Financials, Oracle Fusion Customer Relationship Management, Oracle Business Intelligence, Oracle Fusion Projects, Oracle Fusion Procurement, Oracle Fusion Supply Chain Management, and Oracle Fusion Human Capital Management domains.

FINHOST1 and *FINHOST2* run the managed and C/C++ servers from different domains in an active-active or active-passive implementation. C/C++ components are managed by Oracle Process Manager and Notification Server (OPMN), and all the Managed Servers are managed by Administration Server within the domain.

FINHOST1 and *FINHOST2* also run the Oracle WebLogic Server Administration Console and Oracle Enterprise Manager Fusion Middleware Control, but in an active-passive configuration. You also can fail over the Administration Server manually. Alternatively, you can configure the Oracle WebLogic Server Administration Console with CFC/CRS to fail over automatically on a separate hardware cluster.

Oracle Web Services Manager (Oracle WSM) provides a policy framework to manage and secure Web services in the enterprise deployment topology. WSM Policy Manager also runs in active-active configuration in every Fusion domain where Web Services are hosted.

On the firewall protecting the application tier, the HTTP ports, OAP port, and proxy port are open. The OAP port is for the WebGate module running in Oracle HTTP Server in the Oracle Web Tier to communicate with Oracle Access Manager. Applications requiring external HTTP access use Oracle HTTP Server as the proxy. (The proxy on the Oracle HTTP Server must be enabled to allow this access.)

2.1.5 About the Data Tier

Nodes in the data tier are located in the most secured network zone (the intranet).

In this tier, an Oracle RAC database runs on the nodes *FUSIONDBHOST1* and *FUSIONDBHOST2*. The database contains the schemas needed by the Oracle Fusion Applications components. The components running in the application tier access this database.

On the firewall protecting the data tier, the database listener port (typically, 1521) is required to be open. The LDAP ports (typically, 389 and 636) are also required to be open for the traffic accessing the LDAP storage in the IDM enterprise deployment.

2.2 Hardware Requirements

This section provides recommended hardware for the Oracle Fusion Applications reference enterprise deployment topology on Linux operating systems.

The recommended hardware for the Oracle Fusion Applications reference enterprise deployment topology consists of six 96 GB Intel Westmere, six dual-core CPU servers (excluding Oracle HTTP Server and Oracle Database servers). Table 2–1 describes the typical hardware requirements.

Table 2–1 Example Hardware Requirements - 200 Concurrent Users

Server	Processor	Memory	TMP	SWAP
FINHOST1	6 core 2 CPU Westmere	96 GB	default	default
FINHOST2	6 core 2 CPU Westmere	96 GB	default	default
FINHOST3	6 core 2 CPU Westmere	96 GB	default	default
WEBHOST1	2 core 2 CPU	4 GB	default	default
WEBHOST2	2 core 2 CPU	4 GB	default	default
FUSIONDBHOST1	4 core 4 CPU	48 GB	default	default
FUSIONDBHOST2	4 core 4 CPU	48 GB	default	default

2.3 Installation Prerequisite

The Oracle Identity Management stack for Oracle Fusion Applications should already be installed prior to starting a deployment. Note, however, that the provisioning process described in Chapter 5, "Using the Provisioning Process to Install Components for an Enterprise Deployment," cannot proceed without it. Follow the instructions in *Oracle Fusion Middleware Enterprise Deployment Guide for Oracle Identity Management (Oracle Fusion Applications Edition)* to install and configure these components.

2.4 Implementing the Topology

Oracle recommends the following approach when implementing the Oracle Fusion Applications topology outlined in Section 2.1, "Overview of Reference Enterprise Deployment Topologies":

1. Preparing the Network for an Enterprise Deployment
2. Preparing the Database for an Enterprise Deployment
3. Using the Provisioning Process to Install Components for an Enterprise Deployment
4. Scaling Out Oracle HTTP Server
5. Setting Up Node Manager for an Enterprise Deployment
6. Scaling Out the Oracle Fusion Financials Domain
7. Scaling Out the Oracle Fusion Customer Relationship Management Domain
8. Scaling Out the Oracle Fusion Common Domain
9. Scaling Out the Oracle Fusion Human Capital Management Domain
10. Scaling Out the Oracle Fusion Supply Chain Management Domain
11. Scaling Out the Oracle Fusion Projects Domain
12. Scaling Out the Oracle Fusion Procurement Domain
13. Scaling Out the Oracle Business Intelligence Domain
14. Additional Configuration Procedures for Scaling Out Oracle SOA Suite Server
15. Configuring Administration Server High Availability
16. Setting Up Server Migration for an Enterprise Deployment
17. Configuring Oracle Business Intelligence Applications

18. Managing the Topology
19. Deploying Administrative Clients for Oracle Fusion Applications

Oracle recommends this modular approach in order to facilitate the verification of individual components one by one. This building block approach simplifies the troubleshooting during the setup process and facilitates the configuration in smaller steps.

3 Preparing the Network for an Enterprise Deployment

This chapter describes the network environment configuration required by the Oracle Fusion Applications reference enterprise deployment topology, as well as recommendations for shared storage and directory structure.

This chapter includes the following topics:

3.1 External Virtual Server Names

The Oracle Fusion Applications enterprise deployment topology uses the following externally accessible load balancer virtual IPs that are created on the Load Balancer:

- *finexternal*.mycompany.com
- *prjexternal*.mycompany.com
- *prcexternal*.mycompany.com
- *prcsupplierportal-external*.mycompany.com
- *crmexternal*.mycompany.com
- *hcmexternal*.mycompany.com
- *scmexternal*.mycompany.com
- *biexternal*.mycompany.com
- *commonexternal*.mycompany.com

These virtual server names act as the access point for all HTTP traffic to the runtime components for Oracle Fusion Financials. The HTTP traffic from client browser to LBR is always in SSL.

These VIPs receive all the requests externally (from the intranet or internet) on port 443 in SSL mode. These requests are forwarded to one of Oracle HTTP Server's "external virtual hosts specific to each domain" on *`WEBHOST1`* or *`WEBHOST2`*.

> **Note:** All external VIPs listed above are also configured on port 80, and any request that is received on port 80 will be forwarded back to port 443. This is to prevent a browser error when the user types the URL without the `http://` and the browser uses the default 80 port. If the user types `https://`, the browser uses the default 443 port.

3.2 Internal Virtual IPs

The following Oracle Fusion Financials deployment topology also requires separate secure network address translations (NATs) internal VIPS for each domain. These VIPs are used for transactional and administrative access.

- *fininternal*.mycompany.com
- *prjinternal*.mycompany.com
- *prcinternal*.mycompany.com
- *prcsupplierportal-internal*.mycompany.com
- *crminternal*.mycompany.com
- *hcminternal*.mycompany.com
- *scminternal*.mycompany.com
- *biinternal*.mycompany.com
- *commoninternal*.mycompany.com

The above virtual URLs (VIPs) are defined on the load balancer and are used for internal invocations of services within the data center. The URLs are not exposed to the internet or intranet, and are only accessible within the data center.

The VIPs receive all the requests internally on port 7777 in non-SSL mode. All the internal services/clients access these VIPs using the above virtual addresses, and the requests are then forwarded to one of Oracle HTTP Server's "internal virtual hosts specific to each domain" on *`WEBHOST1`* or *`WEBHOST2`*.

For additional Oracle WebLogic Server security, you can configure the internal VIPs listed above with a load-balancing router rule that accepts requests only from well-known hosts like *`FINHOST1`*, *`FINHOST2`*, or from the system administrator host, and rejects all other requests.

Note that an additional VIP, *COMMONUCMVH1*.mycompany.com, is used to load balance the traffic to the `UCM_server` instances.

3.3 Load Balancer Configuration

The Oracle Fusion Applications enterprise topology requires an external load balancer with SSL acceleration. To configure the load balancer with above VIPs listed above, refer to vendor-specific load balancer configuration instructions.

Note: The Oracle Technology Network (`http://otn.oracle.com`) provides a list of validated load balancers and their configurations.

3.4 Reference Enterprise Deployment Directory Structure

This section describes the directory structure specifically used by the Oracle Fusion Applications reference enterprise deployment topology. It includes the following topics:

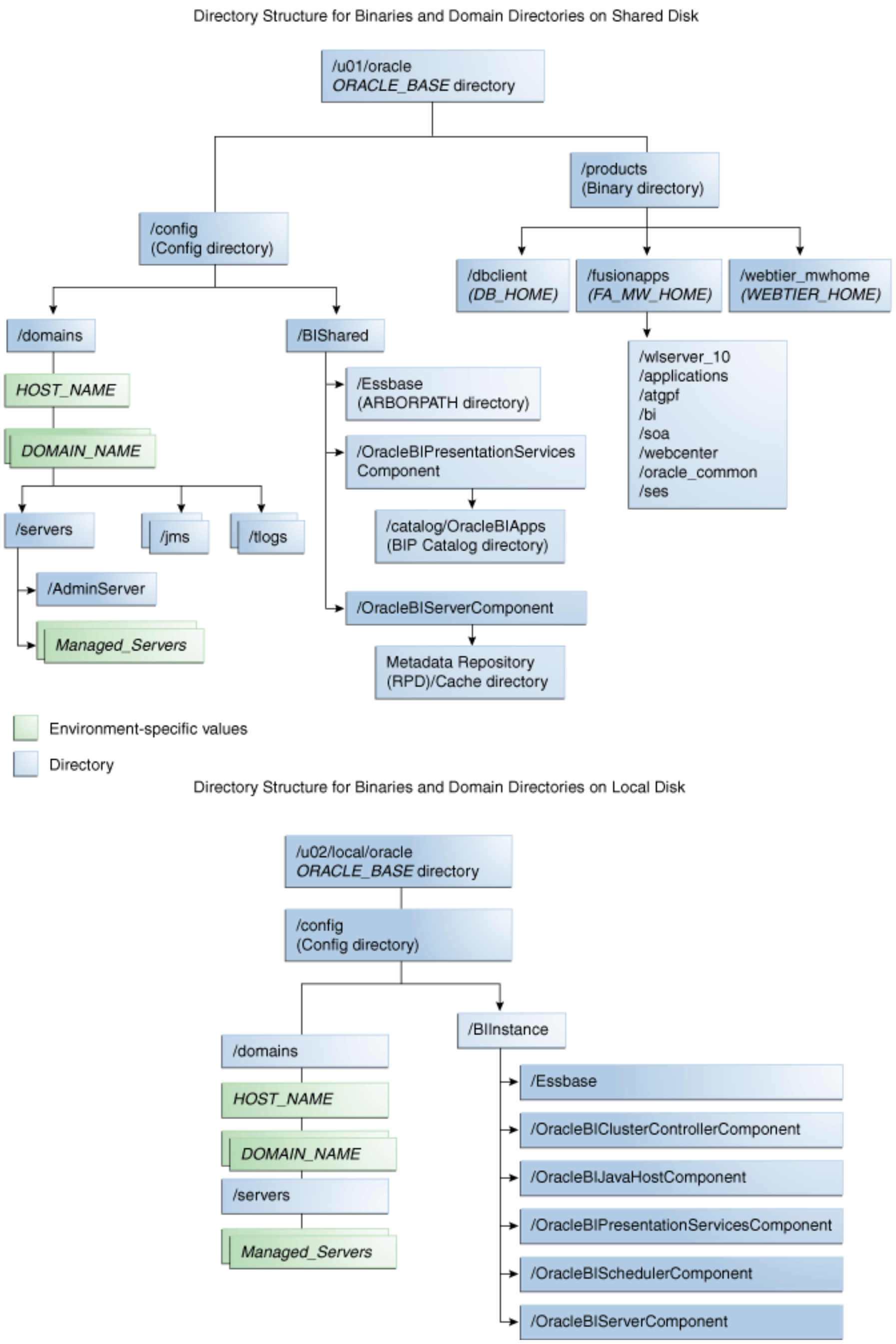
- Section 3.4.1, "Directory Structure"
- Section 3.4.2, "Binary Directory Structure"
- Section 3.4.3, "Domain Configuration Directory Structure"

For general information about Oracle Fusion Applications architecture and concepts, see "Introduction to Oracle Fusion Applications for System Administrators" in *Oracle Fusion Applications Administrator's Guide*.

3.4.1 Directory Structure

Figure 3–1 shows the enterprise deployment directory structure and its dependencies.

Figure 3–1 Enterprise Deployment Directory Structure for Oracle Fusion Applications



3.4.2 Binary Directory Structure

The binaries in the Oracle Fusion Applications reference enterprise deployment topology (the Oracle Fusion Middleware home and Oracle home) are on a shared disk. In order to avoid disk corruption, you may choose to maintain snapshots.

The file system for the binaries should be mounted on all the nodes with the exact mount point and path. For example, `/u01/oracle`.

3.4.3 Domain Configuration Directory Structure

The domain configuration directory structure is created on a shared disk, and its mount point should be visible from all nodes This path will be used by the components that require shared resources and also administration servers to start active-passive processes. For example, `/u01/oracle`.

3.5 Shared Storage

For binaries: the file system is optimized for read operations.

For config: the file system should be optimized for read/write operations. For example, AdminServer Domain directory and Oracle Business Intelligence shared folders like Oracle Business Intelligence WebCat, RPD cache, Essbase ARBORPATH, and Oracle Business Intelligence config.

> **Note:** The minimum amount of shared storage is 500 GB.

The following steps show how to create and mount shared storage locations for binaries and config so that *FINHOST1* and *FINHOST2* can see the same location.

"nasfiler" is the shared storage filer.

From *FINHOST1*:

```
FINHOST1> mount nasfiler:/vol/vol1/u01/oracle /u01/oracle -t nfs
```

From *FINHOST2*:

```
FINHOST2> mount nasfiler:/vol/vol1/u01/oracle /u01/oracle -t nfs
```

> **Note:** The shared storage can be a NAS or SAN device. The following illustrates an example of creating storage for a NAS device from *FINHOST1*. The options may differ.
>
> ```
> mount nasfiler:/vol/vol1/u01/oracle
> /u01/oracle -t nfs -o
> rw,bg,hard,nointr,tcp,vers=3,timeo=300,rsize=32768,
> wsize=32768
> ```
>
> Contact your storage vendor and computer administrator for the correct options for your environment.

3.5.1 Shared Storage for Oracle Business Intelligence

For general information, see "Shared Storage and Recommended Directory Structure" in *Oracle Fusion Middleware Enterprise Deployment Guide for Oracle Business Intelligence*.

Shared Storage Locations

In addition, Oracle Business Intelligence has two specific shared-storage locations.

- Location for Data Warehouse Console Configuration folder:

  ```
  ORACLE_BASE/config/BIShared/dac
  ```

  - Mounted from: All nodes containing the instance of DAC in the cluster or where DAC can be migrated to must mount this location (all nodes must have read/write access)

- Location for shared Essbase ARBORPATH:

  ORACLE_BASE/config/BIShared/Essbase

  - Mounted from: All nodes containing the instance of Essbase in the cluster must mount this location (all nodes must have read/write access)

Note: *ORACLE_BASE* is /u01/oracle.

3.6 IPs and Virtual IPs

Configure the Administration Server and the Managed Servers to listen on different virtual IPs and physical IPs.

The following VIPs are required to configure specific components:

- Virtual IPs for AdminServer are needed for every domain to configure AdminServer in active-passive mode. These VIPs are shared across *FINHOST1* and *FINHOST2*, depending on where the Administration Server is running.
- Virtual IPs for all Oracle SOA Suite servers in every domain, and Oracle Business Intelligence servers in the Oracle Business Intelligence domain are needed to support server migration. These components are implemented in active-active mode, so these VIPs are needed for *FINHOST1* and *FINHOST2*.
- When requesting VIPs, ensure that they are in the same subnet as *FINHOST1* and *FINHOST2* with netmask.

Table 3–1 provides descriptions of the various virtual hosts.

Table 3–1 Virtual Hosts

Virtual IP	VIP Maps to...	Description
VIP1	*FINADMINVH*	The virtual host name that is the listen address for the FinancialDomain Administration Server and fails over with manual failover of the Administration Server. It is enabled on the node where the FinancialDomain Administration Server process is running (*FINHOST1* by default).
VIP2	*FINSOAVH1*	The virtual host name that maps to the listen address for soa_server1 and fails over with server migration of this Managed Server. It is enabled on the node where soa_server1 process is running (*FINHOST1* by default).
VIP3	*FINSOAVH2*	The virtual host name that maps to the listen address for soa_server2 and fails over with server migration of this Managed Server. It is enabled on the node where soa_server2 process is running (*FINHOST2* by default).
VIP4	*COMMONADMINVH*	The virtual host name that is the listen address for the CommonDomain Administration Server and fails over with manual failover of the Administration Server. It is enabled on the node where the CommonDomain Administration Server process is running (*FINHOST1* by default).

Table 3–1 (Cont.) Virtual Hosts

Virtual IP	VIP Maps to...	Description
VIP5	*COMMONSOAVH1*	The virtual host name that maps to the listen address for soa_server1 and fails over with server migration of this Managed Server. It is enabled on the node where soa_server1 process is running (*FINHOST1* by default).
VIP6	*COMMONSOAVH2*	The virtual host name that maps to the listen address for soa_server2 and fails over with server migration of this Managed Server. It is enabled on the node where soa_server2 process is running (*FINHOST2* by default).
VIP7	*COMMONIPMVH1*	The virtual host name that maps to the listen address for IPM_server1 and fails over with server migration of this Managed Server. It is enabled on the node where IPM_server1 process is running (*FINHOST1* by default).
VIP8	*COMMONIPMVH2*	The virtual host name that maps to the listen address for IPM_server2 and fails over with server migration of this Managed Server. It is enabled on the node where IPM_server2 process is running (*FINHOST2* by default).
VIP9	*CRMADMINVH*	The virtual host name that is the listen address for the CRMDomain Administration Server and fails over with manual failover of the Administration Server. It is enabled on the node where the CRMDomain Administration Server process is running (*FINHOST1* by default).
VIP10	*CRMSOAVH1*	The virtual host name that maps to the listen address for soa_server1 and fails over with server migration of this Managed Server. It is enabled on the node where soa_server1 process is running (*FINHOST1* by default).
VIP11	*CRMSOAVH2*	The virtual host name that maps to the listen address for soa_server2 and fails over with server migration of this Managed Server. It is enabled on the node where soa_server2 process is running (*FINHOST2* by default).
VIP12	*HCMADMINVH*	The virtual host name that is the listen address for the HCMDomain Administration Server and fails over with manual failover of the Administration Server. It is enabled on the node where the HCMDomain Administration Server process is running (*FINHOST1* by default).
VIP13	*HCMSOAVH1*	The virtual host name that maps to the listen address for soa_server1 and fails over with server migration of this Managed Server. It is enabled on the node where soa_server1 process is running (*FINHOST1* by default).
VIP14	*HCMSOAVH2*	The virtual host name that maps to the listen address for soa_server2 and fails over with server migration of this Managed Server. It is enabled on the node where soa_server2 process is running (*FINHOST2* by default).
VIP15	*SCMADMINVH*	The virtual host name that is the listen address for the SCMDomain Administration Server and fails over with manual failover of the Administration Server. It is enabled on the node where the SCMDomain Administration Server process is running (*FINHOST1* by default).
VIP16	*SCMSOAVH1*	The virtual host name that maps to the listen address for soa_server1 and fails over with server migration of this Managed Server. It is enabled on the node where soa_server1 process is running (*FINHOST1* by default).

Table 3–1 (Cont.) Virtual Hosts

Virtual IP	VIP Maps to...	Description
VIP17	*SCMSOAVH2*	The virtual host name that maps to the listen address for soa_server2 and fails over with server migration of this Managed Server. It is enabled on the node where soa_server2 process is running (*FINHOST2* by default).
VIP18	*BIADMINVH*	The virtual host name that is the listen address for the BIDomain Administration Server. It is enabled on the node where the BIDomain Administration Server process is running (*FINHOST1* by default).
VIP19	*BIVH1*	The virtual host name that maps to the listen address for bi_server1 and fails over with server migration of this Managed Server. It is enabled on the node where bi_server1 process is running (*FINHOST1* by default).
VIP20	*BIVH2*	The virtual host name that maps to the listen address for bi_server2 and fails over with server migration of this Managed Server. It is enabled on the node where bi_server2 process is running (*FINHOST2* by default).
VIP21	*PRJSOAVH1*	The virtual host name that maps to the listen address for soa_server1 and fails over with server migration of this Managed Server. It is enabled on the node where soa_server1 process is running (*FINHOST1* by default).
VIP22	*PRJADMINVH*	The virtual host name that is the listen address for the ProjectsDomain Administration Server. It is enabled on the node where the ProjectsDomain Administration Server process is running (*FINHOST1* by default).
VIP23	*PRJSOAVH2*	The virtual host name that maps to the listen address for soa_server2 and fails over with server migration of this Managed Server. It is enabled on the node where soa_server2 process is running (*FINHOST2* by default).
VIP24	*PRCSOAVH1*	The virtual host name that maps to the listen address for soa_server1 and fails over with server migration of this Managed Server. It is enabled on the node where soa_server1 process is running (*FINHOST1* by default).
VIP 25	*PRCADMINVH*	The virtual host name that is the listen address for the ProcurementDomain Administration Server and fails over with manual failover of the Administration Server. It is enabled on the node where the ProcurementDomain Administration Server process is running (*FINHOST1* by default).
VIP 26	*PRCSOAVH2*	The virtual host name that maps to the listen address for soa_server2 and fails over with server migration of this Managed Server. It is enabled on the node where soa_server2 process is running (*FINHOST2* by default).
VIP27	*FINSOAVH3*	The virtual host name that maps to the listen address for soa_server3 and fails over with server migration of this Managed Server. It is enabled on the node where soa_server3 process is running (*FINHOST3* by default).
VIP28	*FUSIONDBHOST1*	The virtual host name that is the listen address for the database Oracle RAC database server. It is enabled on the node where the database is running.

3.7 Firewalls and Ports

Many Oracle Fusion Middleware components and services use ports. As an administrator, you must know the port numbers used by these services, and to ensure that the same port number is not used by two services on a host.

Most port numbers are assigned during installation.

Table 3–2 lists the ports used in the Oracle Fusion Financials topology, including the ports that you must open on the firewalls in the topology.

Firewall notation:

- FW1 refers to the outermost firewall
- FW2 refers to the firewall between the Oracle Web Tier and the application tier
- FW3 refers to the firewall between the application tier and the data tier
- dst refers to destination

Table 3–2 Ports Used

Type	Firewall	Port and Port Range	Protocol / Application	Inbound / Outbound	Other Considerations and Timeout Guidelines
Browser request	FW1	80 (dst)	HTTP	Inbound	Timeout depends on all HTML content and the type of process model used for Oracle Fusion Applications.
Browser request	FW1	443	HTTPS / Load Balancer	Inbound	Timeout depends on all HTML content and the type of process model used for Oracle Fusion Applications.
Browser request	FW1	443 (dst)	HTTPS	Outbound	Open connection to `http://xmlns.oracle.com/adf/config` only
OAP	N/A	8181	HTTP	N/A	
Oracle HTTP Server registration with Administration Server	FW2	7001 (both)	HTTP/t3	Inbound	Set the timeout to a short period (5-10 seconds).
Oracle HTTP Server registration with Administration Server	FW2	OPMN port 7043 (dst) and Oracle HTTP Server Admin Port 7044 (dst)	TCP and HTTP, respectively	Outbound	Set the timeout to a short period (5-10 seconds).
All Domain Servers	FW2	7777 (dst)	HTTP	Outbound	Managed Servers are sending packets to LBR internal VIPS with port 7777
All Domains: Server Migration and Multicast VIPs	FW2		Multicast	Outbound	
Common Domain	FW2	7001-7035 (dst)	HTTP	Inbound	
Financial Domain	FW2	7401-7430 (dst)	HTTP	Inbound	

Table 3–2 (Cont.) Ports Used

Type	Firewall	Port and Port Range	Protocol / Application	Inbound / Outbound	Other Considerations and Timeout Guidelines
Supply Chain Domain	FW2	7801-7830 (dst)	HTTP	Inbound	
Customer Relationship Management Domain	FW2	9001-9040 (dst)	HTTP	Inbound	
Human Capital Management Domain	FW2	9401-9430 (dst)	HTTP	Inbound	
Business Intelligence Domain	FW2	10201-10230 (dst)	HTTP	Inbound	
Common Administration Console access	FW2	7001 (both)	HTTP / Administration Server and Enterprise Manager t3	Both	You should tune this timeout based on the type of access to the administration console (whether it is planned to use the Oracle WebLogic Server Administration Console from application tier clients or clients external to the application tier).
Financial Administration Console access	FW2	7401 (both)	HTTP / Administration Server and Enterprise Manager t3	Both	You should tune this timeout based on the type of access to the administration console (whether it is planned to use the Oracle WebLogic Server Administration Console from application tier clients or clients external to the application tier).
Projects Domain	FW2	8601-9000 (dst)	HTTP	Inbound	
Procurement Domain	FW2	8201-8600 (dst)	HTTP	Inbound	
SCM Administration Console access	FW2	7801 (both)	HTTP / Administration Server and Enterprise Manager t3	Both	You should tune this timeout based on the type of access to the administration console (whether it is planned to use the Oracle WebLogic Server Administration Console from application tier clients or clients external to the application tier).

Table 3–2 (Cont.) Ports Used

Type	Firewall	Port and Port Range	Protocol / Application	Inbound / Outbound	Other Considerations and Timeout Guidelines
FIN Administration Console access	FW2	9001 (both)	HTTP / Administration Server and Enterprise Manager t3	Both	You should tune this timeout based on the type of access to the administration console (whether it is planned to use the Oracle WebLogic Server Administration Console from application tier clients or clients external to the application tier).
HCM Administration Console access	FW2	9401 (both)	HTTP / Administration Server and Enterprise Manager t3	Both	You should tune this timeout based on the type of access to the administration console (whether it is planned to use the Oracle WebLogic Server Administration Console from application tier clients or clients external to the application tier).
BI Administration Console access	FW2	10201 (both)	HTTP / Administration Server and Enterprise Manager t3	Both	You should tune this timeout based on the type of access to the administration console (whether it is planned to use the Oracle WebLogic Server Administration Console from application tier clients or clients external to the application tier).
PRJ Administration Console access	FW2	8601	HTTP / Administration Server and Enterprise Manager t3	Both	You should tune this timeout based on the type of access to the administration console (whether it is planned to use the Oracle WebLogic Server Administration Console from application tier clients or clients external to the application tier).
PRC Administration Console access	FW2	8201	HTTP / Administration Server and Enterprise Manager t3	Both	You should tune this timeout based on the type of access to the administration console (whether it is planned to use the Oracle WebLogic Server Administration Console from application tier clients or clients external to the application tier).
Node Manager	N/A	5556	TCP/IP	N/A	N/A

Table 3–2 (Cont.) Ports Used

Type	Firewall	Port and Port Range	Protocol / Application	Inbound / Outbound	Other Considerations and Timeout Guidelines
Access Server access	FW2	5574-5575	OAP	Both	For actual values, see "Firewalls and Ports" in Oracle Fusion *Middleware Enterprise Deployment Guide for Oracle Identity Management*.
Identity Server access	FW2	6022	OAP	Inbound	
Database access for Oracle BI Server and Oracle BI Publisher JDBC Data Sources	FW2	Listening port for client connections to the listener (both)	SQL*Net	Both	Timeout depends on all database content and on the type of process model used for Oracle BI
Database access	FW3	1521 (both)	SQL*Net	Both	Timeout depends on all database content and on the type of process model used for Oracle Fusion Applications.
Coherence for deployment	N/A	8088 and 8089 (both)		N/A	N/A
Oracle Internet Directory access	FW3	389 (dst)	LDAP	Inbound	You should tune the directory server's parameters based on load balancer, and not the other way around.
Oracle Internet Directory access	FW3	636 (dst)	LDAP SSL	Inbound	You should tune the directory server's parameters based on load balancer, and not the other way around.
JOC for OWSM	N/A	9991	TCP/IP	N/A	N/A

Note: The firewall ports depend on the definition of TCP/IP ports.

3.8 Clock Synchronization

The clocks of all servers participating in the cluster must be synchronized to within one second difference. To accomplish this, use a single network time server and then point each server to that network time server.

The procedure for pointing to the network time server is different on different operating systems. Refer to your operating system documentation for more information.

4 Preparing the Database for an Enterprise Deployment

This chapter provides information about how the database tier is implemented in an enterprise deployment topology.

This chapter includes the following topics:

- Section 4.1, "Understanding the Database in the Enterprise Deployment Topology"
- Section 4.2, "Setting Up the Database"
- Section 4.3, "Creating and Starting the Database Services"
- Section 4.4, "Loading the Oracle Fusion Applications Repository into the Oracle RAC Database"
- Section 4.5, "Backing Up the Database"

4.1 Understanding the Database in the Enterprise Deployment Topology

The Oracle Fusion Applications reference enterprise deployment topology uses a single database for the following components:

- Oracle Fusion Applications metadata
- Oracle Fusion Applications transactional data
- Oracle Transactional Business Intelligence data
- Technology stack data, such as Oracle SOA Suite, Oracle Enterprise Manager Fusion Middleware Control, Oracle WebCenter Portal, and Oracle Essbase.
- Oracle Secure Enterprise Search data

Implementing Oracle Business Intelligence Data Warehouse requires a separate database for following components:

- Data Warehouse Administration Console (DAC)
- Informatica
- a Data Warehouse

For the enterprise topology, Oracle Real Application Clusters (Oracle RAC) databases are highly recommended. You must set up these databases before you can install and configure the Oracle Fusion Applications components. You install the Oracle Fusion Applications and Oracle Fusion Middleware metadata repositories into existing databases using the Fusion Applications Repository Creation Utility (Fusion Applications RCU).

4.2 Setting Up the Database

Before loading the metadata repository into your database, check that the database meets the requirements described in these sections:

- Database Host Requirements
- Supported Database Versions
- Minimum Database Configuration Parameters

> **Note:** When creating the database, ensure that the length of the Oracle System ID (SID) does not exceed eight (8) characters.
>
> For example:
>
> - *SID: abcd12345* is invalid
> - *SID: abcd123* is valid

4.2.1 Database Host Requirements

Note the following requirements for the hosts *FUSIONDBHOST1* and *FUSIONDBHOST2* in the data tier:

- **Oracle Clusterware**

  For Oracle Database 11*g* Release 2 (11.2.0.3) for Linux, refer to the *Oracle Database Installation Guide*.

- **Oracle Real Application Clusters**

  For Oracle RAC 11*g* Release 2 (11.2.0.3) for Linux or Oracle Database 10*g* Release 2 (10.2) for Linux, refer to the *Oracle Database Installation Guide*.

- **Oracle Automatic Storage Management** (optional)

  Oracle ASM gets installed for the node as a whole. It is recommended that you install it in a separate Oracle Home from the Database Oracle Home. This option comes in at runInstaller. In the Select Configuration page, select the **Configure Automatic Storage Management** option to create a separate Oracle ASM home.

4.2.2 Supported Database Versions

Oracle Fusion Applications requires the presence of a supported database and schemas. To check if your database is certified or to see all certified databases, refer to the supported platforms documentation for Oracle Fusion Applications.

To check the release of your database, you can query the `PRODUCT_COMPONENT_VERSION` view as follows:

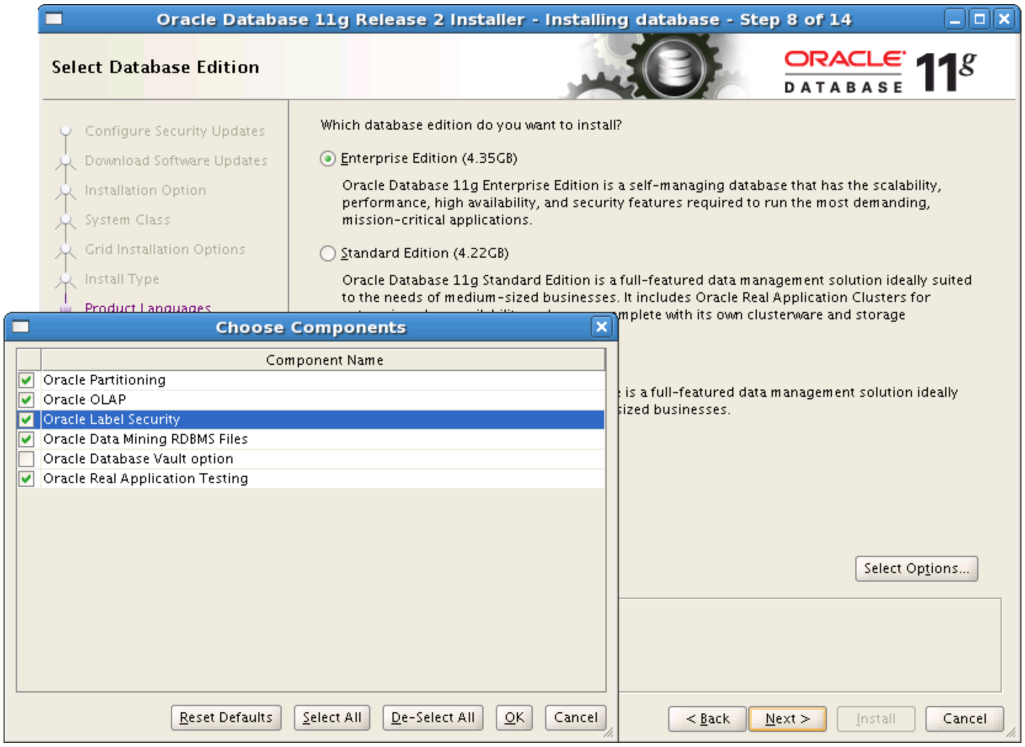
```
SQL> SELECT VERSION FROM SYS.PRODUCT_COMPONENT_VERSION WHERE PRODUCT LIKE
'Oracle%';
```

Notes:

- The database you use as the Oracle Fusion Applications supporting database must support the AL32UTF8 character set.
- When installing the database, please ensure that **Oracle Label Security** is enabled, as shown in Figure 4–1. In the case of an Oracle RAC installation, the Oracle Label Security should be enabled on all the nodes.

You enable Oracle Label Security in the Select Database Edition screen, shown in Figure 4–1, using Oracle Universal Installer.

Figure 4–1 Oracle Label Security



Oracle Database 11g Release 2 Installer - Installing database - Step 8 of 14

Select Database Edition

Which database edition do you want to install?

● Enterprise Edition (4.35GB)

Oracle Database 11g Enterprise Edition is a self-managing database that has the scalability, performance, high availability, and security features required to run the most demanding, mission-critical applications.

○ Standard Edition (4.22GB)

Oracle Database 11g Standard Edition is a full-featured data management solution ideally suited to the needs of medium-sized businesses. It includes Oracle Real Application Clusters for ... mplete with its own clusterware and storage

... is a full-featured data management solution ideally ... ized businesses.

Choose Components

	Component Name
☑	Oracle Partitioning
☑	Oracle OLAP
☑	Oracle Label Security
☑	Oracle Data Mining RDBMS Files
☐	Oracle Database Vault option
☑	Oracle Real Application Testing

4.2.3 Minimum Database Configuration Parameters

Table 4–1 shows the recommended minimum `init.ora` parameters for an Oracle database. The database shipped with the Oracle Fusion Applications software contains this configuration. When you run the Fusion Applications RCU, its prerequisite check feature checks to see that the database meets these minimum requirements.

Table 4–1 Minimum Requirements for Database Configuration

INST_ID Parameter	Value
_b_tree_bitmap_plans	FALSE
audit_trail	NONE
compatible	11.2.0
db_files	1024

Table 4–1 (Cont.) Minimum Requirements for Database Configuration

INST_ID Parameter	Value
db_recovery_file_dest_size	2147483648
db_writer_processes	1
disk_asynch_io	FALSE
fast_start_mttr_target	3600
filesystemio_options	Setall
job_queue_processes	10
log_buffer	10485760
log_checkpoints_to_alert	TRUE
max_dump_file_size	10M
memory_target	unset or N/A
nls_sort	BINARY
open_cursors	500
pga_aggregate_target	>= 8589934592 (8 GB)
plsql_code_type	NATIVE
processes	5000
session_cached_cursors	500
sga_target	>=19327352832 (18 GB)
trace_enabled	FALSE
undo_management	AUTO

For example, to use the `SHOW PARAMETER` command using SQL*Plus to check the value of the initialization parameter:

1. As the SYS user, enter the `SHOW PARAMETER` command:

   ```
   SQL> SHOW PARAMETER processes
   ```

2. Set the initialization parameter using the following commands:

   ```
   SQL> ALTER SYSTEM SET processes=5000 SCOPE=SPFILE;

   SQL> ALTER SYSTEM SET open_cursors=500 SCOPE=SPFILE;
   ```

3. Restart the database.

> **Note:** The method that you use to change a parameter's value depends on whether the parameter is static or dynamic, and on whether your database uses a parameter file or a server parameter file. See the *Oracle Database Administrator's Guide* for details on parameter files, server parameter files, and how to change parameter values.

4.3 Creating and Starting the Database Services

Oracle recommends using the Oracle Enterprise Manager Fusion Middleware Control Cluster Managed Services screen or SQL*Plus to create database services that client applications will use to connect to the database.

To configure this using SQL*Plus:

1. Use the CREATE_SERVICE subprogram to create the database service.

   Log in to SQL*Plus as the sysdba user and run the following command:

   ```
   SQL> EXECUTE DBMS_SERVICE.CREATE_SERVICE
   (SERVICE_NAME => 'fin.mycompany.com',
   NETWORK_NAME => 'fin.mycompany.com'
   );
   ```

2. Add the service to the database and assign it to the instances using srvctl:

   ```
   prompt> srvctl add service -d fusiondb -s fin.mycompany.com -r
   fusiondb1,fusiondb2
   ```

3. Start the service using srvctl:

   ```
   prompt> srvctl start service -d fusiondb -s fin.mycompany.com
   ```

4. Verify that the *fin* service is running on instance(s) *fusiondb1* and *fusiondb2*:

   ```
   prompt> srvctl status service -d fusiondb
   ```

> **Note:** For more information about the srvctl command, see the *Oracle Real Application Clusters Administration and Deployment Guide*.

Oracle recommends that a specific database service be used for a product suite even when they share the same database. It is also recommended that the database service used is different than the default database service. For example, for Oracle Fusion Financials the database would be *findb*.mycompany.com and the default service is one with the same name. The Oracle Fusion Financials install is configured to use the service *fin*.mycompany.com.

4.3.1 Updating the Kernel Parameters

This section describes how to update the kernel parameters for Linux before the database is installed.

To update the parameters:

1. Log in as root and add or edit the following values in the /etc/sysctl.conf file:

   ```
   fs.file-max = 6815744
   kernel.shmall = 2097152
   kernel.shmmax = 2147483648
   kernel.shmmni = 4096
   kernel.sem = 250 32000 100 128
   net.core.rmem_default = 4194304
   net.core.rmem_max = 4194304
   net.core.wmem_default = 262144
   net.core.wmem_max = 1048576
   net.ipv4.ip_forward = 0
   net.ipv4.conf.default.rp_filter = 1
   tcp.ipv4.tcp_wmem = 262144 262144 262144
   ```

```
tcp.ipv4.tcp_rmem = 4194304 4194304 4194304
fs.aio-max-nr = 1048576
net.ipv4.ip_local_port_range = 9000 65000
```

2. Execute the following command to activate the changes:

```
/sbin/sysctl -p
```

4.3.2 Adding a Database Patch

To add a patch to the database, set the path to `Opatch` in the database installation directory and run the following command:

```
./opatch napply ORACLE_BASE/repository/installers/database/patch -skip_duplicate
-skip_subset
```

For the location of the repository, see Section 5.3.1, "Creating the Installation Environment" in Chapter 5, "Using the Provisioning Process to Install Components for an Enterprise Deployment."

4.4 Loading the Oracle Fusion Applications Repository into the Oracle RAC Database

Before loading the Oracle Fusion Applications repository into a database, you must apply database patch 10220058 in order to run the Oracle Fusion Applications Repository Creation Utility (Fusion Applications RCU) with Oracle Database 11*g* Enterprise Edition Release 11.2.0.2.0. To find the patch, go to My Oracle Support (`https://support.oracle.com`) and click the **Patches & Updates** tab.

The Fusion Applications RCU components are included in the zipped Fusion Applications RCU file delivered in the provisioning framework. (The location of the file is *`ORACLE_BASE`*`/installers/apps_rcu/linux/rcuHome_fusionapps_linux.zip`.) Unzip the file to the *`RCU_HOME`* location on the *`FUSIONDBHOST1`* machine. For example, *`ORACLE_BASE`*`/rcu`.

Once you have the Fusion Applications RCU installed, do the following:

1. Copy all the required dump files locally on *`FUSIONDBHOST1`* (for example, to `/tmp`):

```
FUSIONDBHOST1> cd RCU_HOME/rcu/integration/fusionapps
FUSIONDBHOST1> cp export_fusionapps_dbinstall.zip /tmp
FUSIONDBHOST1> cd RCU_HOME/rcu/integration/biapps/schema
FUSIONDBHOST1> cp otbi.dmp /tmp
FUSIONDBHOST1> cd /tmp
FUSIONDBHOST1> unzip export_fusionapps_dbinstall.zip
```

Note: When running Fusion Applications RCU for Oracle RAC, you must copy the `export_fusionapps_dbinstall.zip` file as well as `otbi.dmp` to all the nodes of the Oracle RAC.

2. Create the `incident_logs` directory on *`FUSIONDBHOST1`*:

```
FUSIONDBHOST1> cd ORACLE_HOME
FUSIONDBHOST1> mkdir incident_logs
```

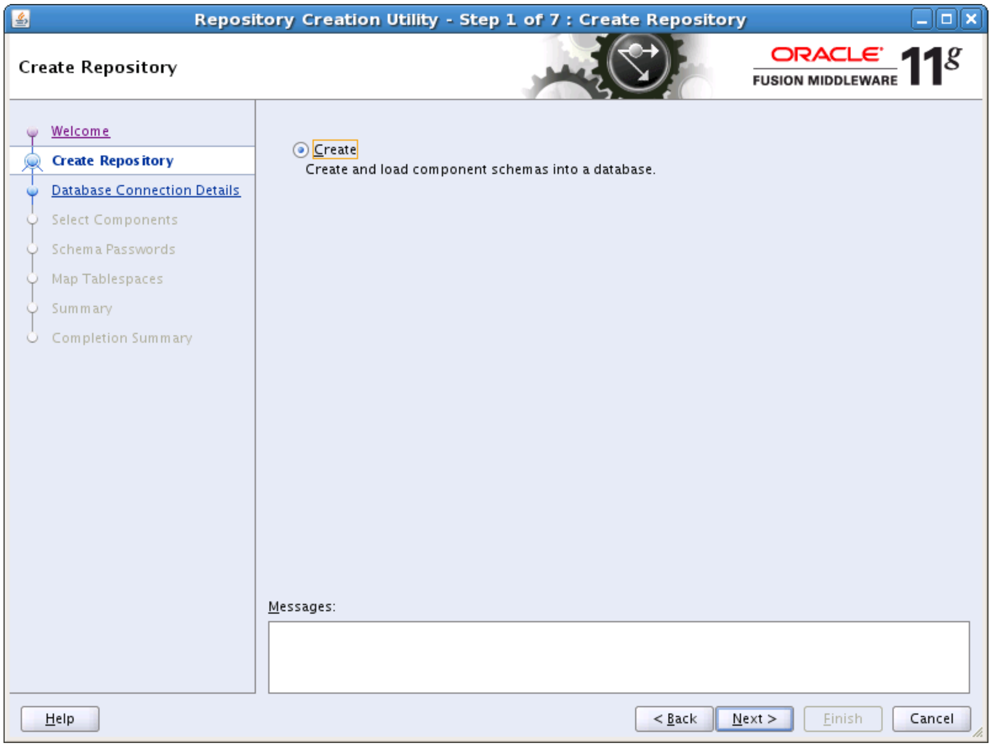
3. Start Fusion Applications RCU from the `/bin` directory in the Fusion Applications RCU home directory:

```
cd RCU_HOME/bin
./rcu
```

4. In the Welcome screen (if displayed), click **Next**.

5. In the Create Repository screen, shown in Figure 4–2, select **Create** to load component schemas into a database. Click **Next**.

Figure 4–2 Create Repository Screen



● Create

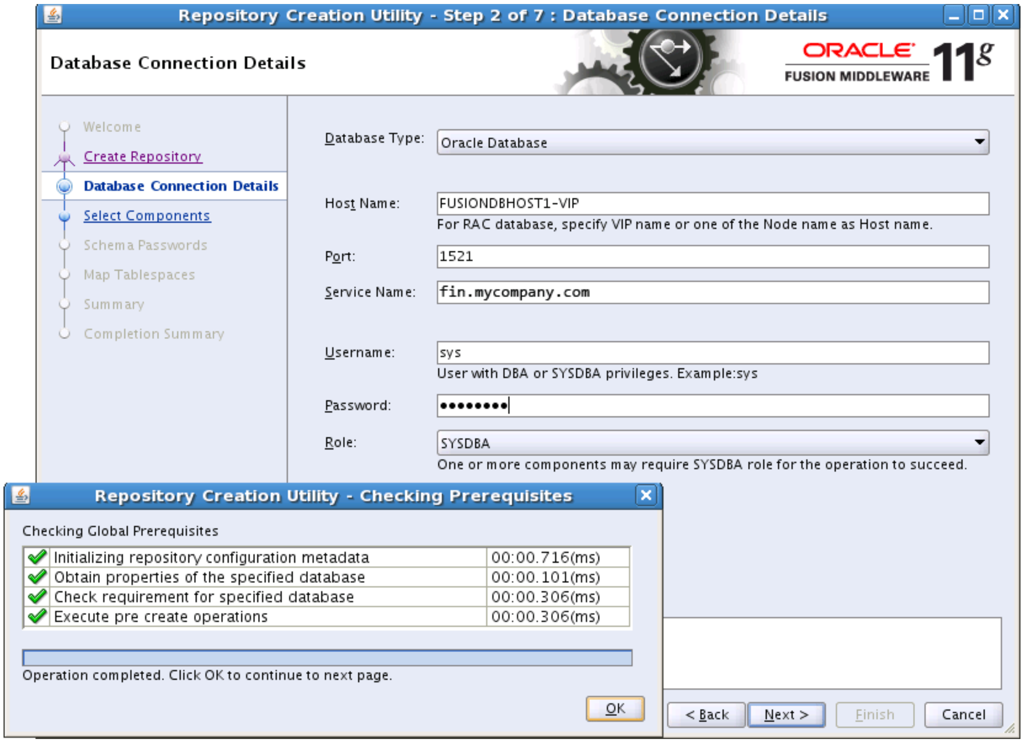
Create and load component schemas into a database.

6. In the Database Connection Details screen, shown in Figure 4–3, enter connect information for your database:

   - **Database Type**: Select **Oracle Database**
   - **Host Name**: Specify the name of the node on which the database resides. For the Oracle RAC database, specify the VIP name or one of the node names as the host name: `FUSIONDBHOST1-VIP`
   - **Port**: Specify the listen port number for the database; for example `1521`
   - **Service Name**: Specify the service name of the database (`fin.mycompany.com`)
   - **Username**: Specify the name of the user with DBA or SYSDBA privileges: `SYS`
   - **Password**: Enter the password for the SYS user
   - **Role**: Select the database user's role from the list: `SYSDBA` (required by the SYS user)

   Click **Next**.

Figure 4–3 Database Connection Details Screen


Repository Creation Utility - Step 2 of 7 : Database Connection Details
Database Connection Details
ORACLE FUSION MIDDLEWARE 11g
Welcome
Create Repository
Database Connection Details
Select Components
Schema Passwords
Map Tablespaces
Summary
Completion Summary
< Back
Next >
Finish
Cancel
Repository Creation Utility - Checking Prerequisites
OK

Database Type: Oracle Database

Host Name: FUSIONDBHOST1-VIP

For RAC database, specify VIP name or one of the Node name as Host name.

Port: 1521

Service Name: fin.mycompany.com

Username: sys

User with DBA or SYSDBA privileges. Example:sys

Password: ••••••••

Role: SYSDBA

One or more components may require SYSDBA role for the operation to succeed.

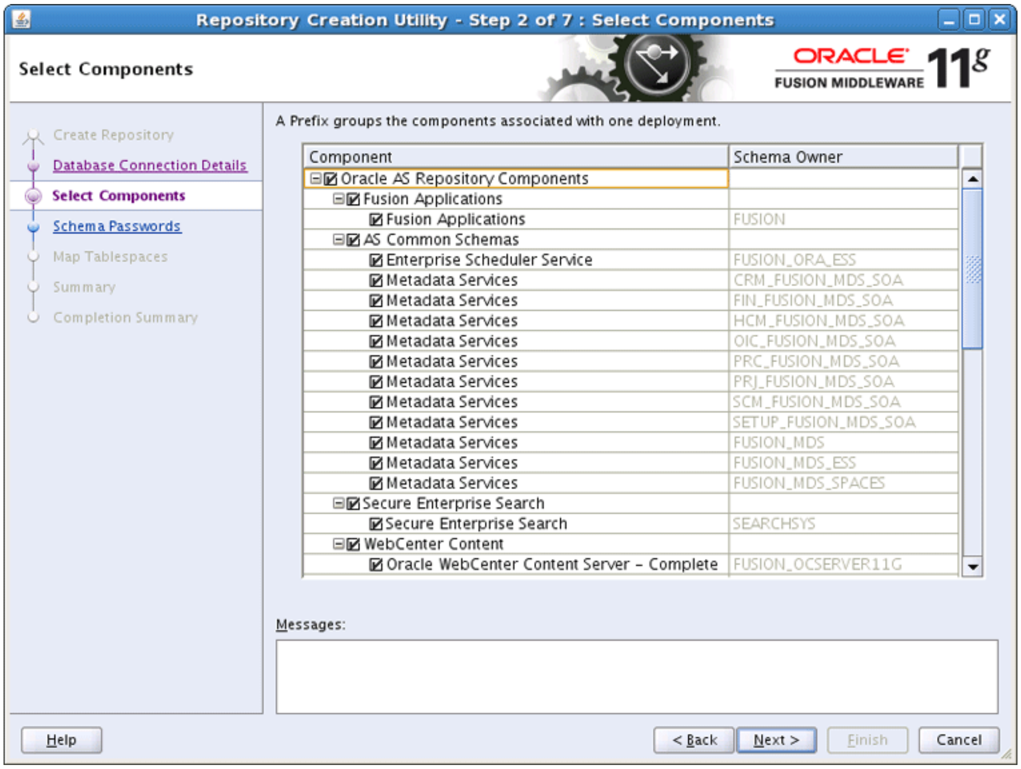
Checking Global Prerequisites

✓	Initializing repository configuration metadata	00:00.716(ms)
✓	Obtain properties of the specified database	00:00.101(ms)
✓	Check requirement for specified database	00:00.306(ms)
✓	Execute pre create operations	00:00.306(ms)

Operation completed. Click OK to continue to next page.

7. The Repository Creation Utility selects the required components automatically, as shown in Figure 4–4.

Figure 4–4 Select Components Screen

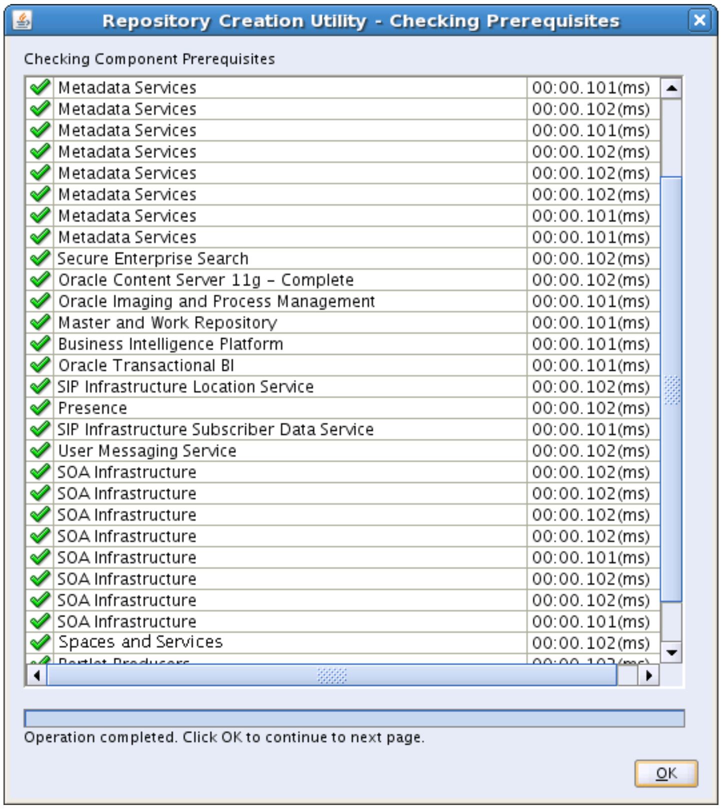


A Prefix groups the components associated with one deployment.

Component	Schema Owner
⊟☑ Oracle AS Repository Components	
⊟☑ Fusion Applications	
☑ Fusion Applications	FUSION
⊟☑ AS Common Schemas	
☑ Enterprise Scheduler Service	FUSION_ORA_ESS
☑ Metadata Services	CRM_FUSION_MDS_SOA
☑ Metadata Services	FIN_FUSION_MDS_SOA
☑ Metadata Services	HCM_FUSION_MDS_SOA
☑ Metadata Services	OIC_FUSION_MDS_SOA
☑ Metadata Services	PRC_FUSION_MDS_SOA
☑ Metadata Services	PRJ_FUSION_MDS_SOA
☑ Metadata Services	SCM_FUSION_MDS_SOA
☑ Metadata Services	SETUP_FUSION_MDS_SOA
☑ Metadata Services	FUSION_MDS
☑ Metadata Services	FUSION_MDS_ESS
☑ Metadata Services	FUSION_MDS_SPACES
⊟☑ Secure Enterprise Search	
☑ Secure Enterprise Search	SEARCHSYS
⊟☑ WebCenter Content	
☑ Oracle WebCenter Content Server - Complete	FUSION_OCSERVER11G

Click **Next**. The Repository Creation Utility checks the prerequisites, as shown in Figure 4–5.

Figure 4–5 Prerequisite Check



Repository Creation Utility - Checking Prerequisites

Checking Component Prerequisites

✓	Metadata Services	00:00.101(ms)
✓	Metadata Services	00:00.102(ms)
✓	Metadata Services	00:00.101(ms)
✓	Metadata Services	00:00.102(ms)
✓	Metadata Services	00:00.102(ms)
✓	Metadata Services	00:00.102(ms)
✓	Metadata Services	00:00.101(ms)
✓	Metadata Services	00:00.101(ms)
✓	Secure Enterprise Search	00:00.102(ms)
✓	Oracle Content Server 11g - Complete	00:00.102(ms)
✓	Oracle Imaging and Process Management	00:00.101(ms)
✓	Master and Work Repository	00:00.101(ms)
✓	Business Intelligence Platform	00:00.101(ms)
✓	Oracle Transactional BI	00:00.101(ms)
✓	SIP Infrastructure Location Service	00:00.102(ms)
✓	Presence	00:00.102(ms)
✓	SIP Infrastructure Subscriber Data Service	00:00.101(ms)
✓	User Messaging Service	00:00.102(ms)
✓	SOA Infrastructure	00:00.102(ms)
✓	SOA Infrastructure	00:00.102(ms)
✓	SOA Infrastructure	00:00.102(ms)
✓	SOA Infrastructure	00:00.102(ms)
✓	SOA Infrastructure	00:00.101(ms)
✓	SOA Infrastructure	00:00.102(ms)
✓	SOA Infrastructure	00:00.102(ms)
✓	SOA Infrastructure	00:00.101(ms)
✓	Spaces and Services	00:00.102(ms)
✓	Portlet Producers	00:00.102(ms)

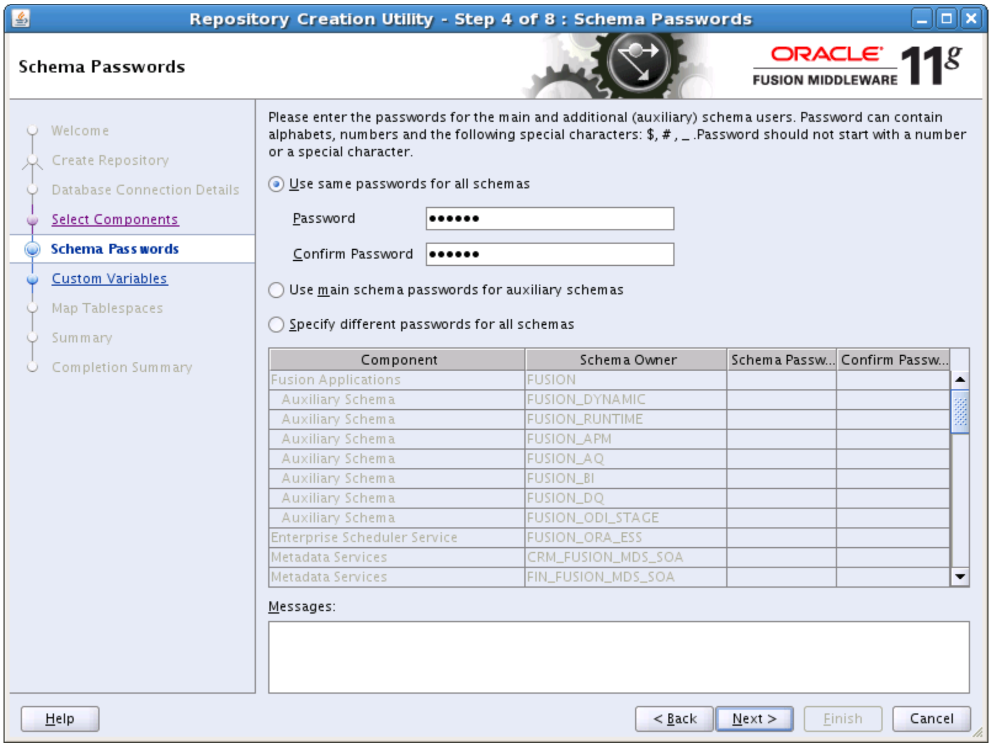
Operation completed. Click OK to continue to next page.

Click **OK**.

8. In the Schema Passwords screen, shown in Figure 4–6, enter passwords for the main and additional (auxiliary) schema users, and click **Next**.

> **Note:** For increased security, do the following:
>
> - Specify different schema passwords for all schemas
> - Ensure that all passwords are more than eight (8) characters in length.

Figure 4–6 Schema Passwords Screen



Please enter the passwords for the main and additional (auxiliary) schema users. Password can contain alphabets, numbers and the following special characters: $, #, _ .Password should not start with a number or a special character.

● Use same passwords for all schemas

Password ••••••

Confirm Password ••••••

○ Use main schema passwords for auxiliary schemas

○ Specify different passwords for all schemas

Component	Schema Owner	Schema Passw...	Confirm Passw...
Fusion Applications	FUSION		
Auxiliary Schema	FUSION_DYNAMIC		
Auxiliary Schema	FUSION_RUNTIME		
Auxiliary Schema	FUSION_APM		
Auxiliary Schema	FUSION_AQ		
Auxiliary Schema	FUSION_BI		
Auxiliary Schema	FUSION_DQ		
Auxiliary Schema	FUSION_ODI_STAGE		
Enterprise Scheduler Service	FUSION_ORA_ESS		
Metadata Services	CRM_FUSION_MDS_SOA		
Metadata Services	FIN_FUSION_MDS_SOA		

Messages:

9. In the Custom Variables screen, shown in Figure 4–7, enter the required values.

   Fusion Applications

   - **FUSIONAPPS_DBINSTALL_DP_DIR**: The directory on the database server where you unzipped `export_fusionapps_dbinstall.zip` and copied the `otbi.dmp` file. For example, `/tmp`.
   - **APPLCP_FILE_DIR**: Used by Oracle Enterprise Scheduler to store the log and output files. For example, *`ORACLE_HOME`*`/incident_logs`.
   - **APPLLOG_DIR**: Location of the PL/SQL log file from Oracle Fusion Applications PL/SQL procedures, on the database server. For example, *`ORACLE_HOME`*`/incident_logs`.
   - **OBIEE Backup Directory**: Location of the Oracle Business Intelligence Enterprise Edition dump files.

     > **Note:** When specifying an Oracle Business Intelligence Enterprise Edition (OBIEE) backup directory, set it to be a shared directory with read/write permissions for both *`FUSIONDB`* hosts.

   - **KEYFLEXCOMBFILTER**: Location of the Filter XMLSchema. For example, `/tmp`.

   Secure Enterprise Search

   - **Do you have Advanced Compression Option (ACO) License? Yes (Y) or No (N)**: Default is No.
   - **Do you have Oracle Partitioning option License? Yes (Y) or No (N)**: Default is No.

Master and Work Repository

Note: The default values are the **only** valid values. If you change any of these values, the ODI-related provisioning process will not work.

- **Master Repository ID**: Default = 501
- **Supervisor Password**: Enter and confirm your ODI supervisor password.
- **Work Repository Type**: (D) Development or (R). Default = D
- **Work Repository ID**: Default = 501
- **Work Repository Name**: Default = FUSIONAPPS_WREP
- **Work Repository Password**: Default = None. Enter and confirm your ODI supervisor password.

Oracle Transactional BI

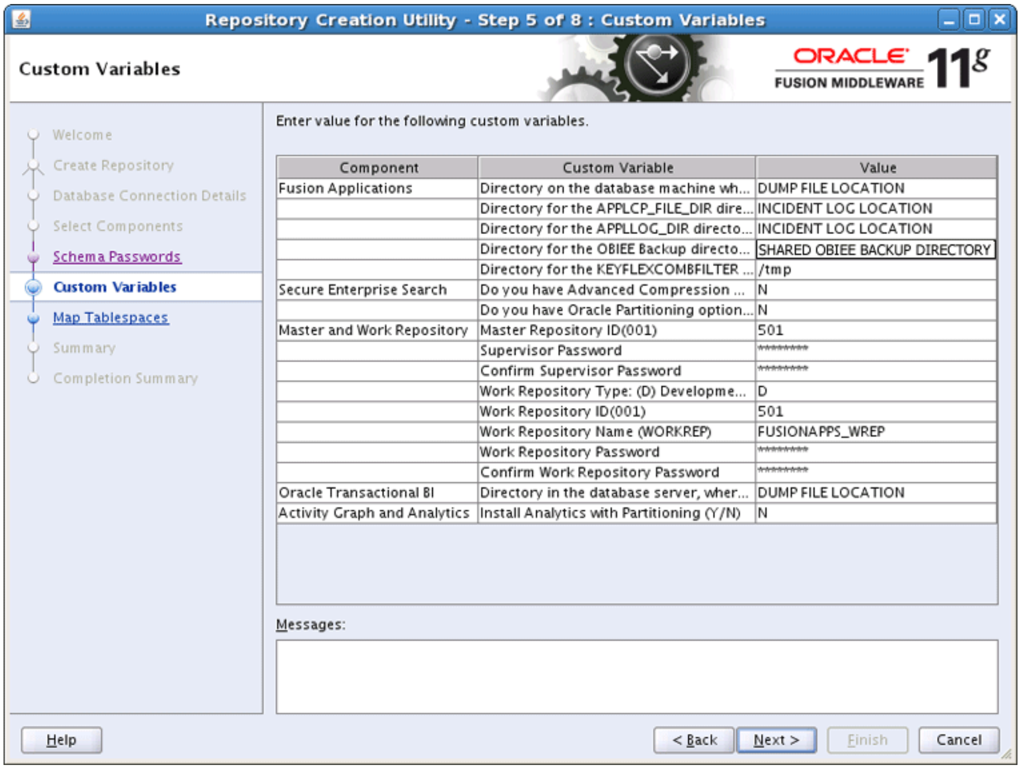
- Directory on the database server where Oracle Transactional Business Intelligence import and export files are stored. For example, `/tmp`.

Activity Graph and Analytics

- **Install Analytics with Partitioning (Y/N)**: Default is N.

Click **Next** to continue.

Figure 4–7 Custom Variables Screen



Enter value for the following custom variables.

Component	Custom Variable	Value
Fusion Applications	Directory on the database machine wh...	DUMP FILE LOCATION
	Directory for the APPLCP_FILE_DIR dire...	INCIDENT LOG LOCATION
	Directory for the APPLLOG_DIR directo...	INCIDENT LOG LOCATION
	Directory for the OBIEE Backup directo...	SHARED OBIEE BACKUP DIRECTORY
	Directory for the KEYFLEXCOMBFILTER ...	/tmp
Secure Enterprise Search	Do you have Advanced Compression ...	N
	Do you have Oracle Partitioning option...	N
Master and Work Repository	Master Repository ID(001)	501
	Supervisor Password	*********
	Confirm Supervisor Password	*********
	Work Repository Type: (D) Developme...	D
	Work Repository ID(001)	501
	Work Repository Name (WORKREP)	FUSIONAPPS_WREP
	Work Repository Password	*********
	Confirm Work Repository Password	*********
Oracle Transactional BI	Directory in the database server, wher...	DUMP FILE LOCATION
Activity Graph and Analytics	Install Analytics with Partitioning (Y/N)	N

10. In the Map Tablespaces screen, click **Next**.
11. In the Summary screen, click **Create**.
12. In the Completion Summary screen, click **Close**.

Note: If you encounter any issues while using the Repository Creation Utility, check the logs at `RCU_HOME/rcu/log`.

Note: Oracle recommends using the database used for identity management to store the Oracle WSM policies. It is therefore expected to use the IM database information for the OWSM MDS schemas, which will be different from the one used for the rest of SOA schemas. To create the required schemas in the database, repeat the steps above using the IM database information, but select only "AS Common Schemas: Metadata Services" in the Select Components screen (Step 7).

4.5 Backing Up the Database

After you have loaded the metadata repository in your database, you should make a backup.

Backing up the database is for the explicit purpose of quick recovery from any issue that may occur in the further steps. You can choose to use your backup strategy for the database for this purpose or simply make a backup using operating system tools or RMAN for this purpose. It is recommended that you use Oracle Recovery Manager for the database, particularly if the database was created using Oracle ASM. If possible, a cold backup using operating system tools such as tar can also be performed.

5

Using the Provisioning Process to Install Components for an Enterprise Deployment

This chapter describes the provisioning process that is used to install and configure components specifically required for an enterprise deployment.

For general information about provisioning and installation, see the "Overview" chapter in the *Oracle Fusion Applications Installation Guide*.

This chapter includes the following topics:

5.1 Understanding Provisioning

Provisioning is the entire set of operations required to install, configure, and deploy applications product offerings from a system point of view. It performs these operations:

- **Install** - operations related to laying down all the component needed to create an Oracle Fusion Applications environment.
- **Configure** - the tailoring of components based on the applications topology, the creating of Managed Server instances and cluster members, and the updating of endpoints and virtual hosts.
- **Deploy** - process that starts the Managed Servers and clusters and facilitates the actual use of product offerings.

Note: Provisioning does not supply users, tenants, or hardware.

For more information about Oracle Fusion Applications architecture, see "Key Oracle Fusion Applications Concepts" in the *Oracle Fusion Applications Administrator's Guide*.

5.2 Prerequisites for Using the Provisioning Process

Before starting the provisioning process, you must do the following:

- Make sure you first install the Oracle Identity Management stack for Oracle Fusion Applications. Follow the instructions in *Oracle Fusion Middleware Enterprise Deployment Guide for Oracle Identity Management (Oracle Fusion Applications Edition)* to install and configure these components.

  Keep a record of the configuration details. You must supply them to the Provisioning Wizard when you create your provisioning response file. For more information, see Section 5.3.2.16, "Identity Management Configuration Screen."

- Make sure you obtain the certificates file from the Oracle Identity Management installation. The installation contains all the Oracle Identity Management certificates.

  The following information from the Oracle Identity Management setup is used as input for provisioning and is required. (Note that this information is provided at the plan-generation stage in Figure 5–15 to Figure 5–18):

  – Superuser of the Oracle Identity Management setup

  – Identity Store host and port

  – Identity Store user name and password

  – Identity Store read-only user name and password

  – Oracle Identity Management Administration Server host, port, user name, and password

  – Oracle Identity Management Managed Server hostname and port

  – Oracle Identity Management HTTP internal endpoint URL

  – Oracle Identity Management HTTP(s) external endpoint URL

  – Oracle Access Manager Administration Server host name, port, user name, and password

  – Oracle Access Manager AAA server host name, port, access-server port, access-server identifier 1 and access-server identifier 2

  – Oracle Access Manager simple-mode passphrase

  – Oracle Platform Security Services Policy Store host name, port, read-only user name, and password

  – Oracle Platform Security Services Policy Store JPS root node

  – Oracle Identity Management database system user login, Oracle Identity Management/Oracle Metadata Services schema password

- Make sure all the virtual IPs shown in Table 3–1 in Chapter 3, "Preparing the Network for an Enterprise Deployment" have been created before you start the provisioning process. Ping the VIPs to ensure that they are live, and that the `etc/hosts` entries are correct. (The VIPs are required for the scale-out chapters that follow, and not for provisioning.)

5.3 Installing Components

This section covers the following topics:

- Section 5.3.1, "Creating the Installation Environment"

- Section 5.3.2, "Creating a New Provisioning Response File"
- Section 5.3.3, "Running the Provisioning Commands to Install Components"

5.3.1 Creating the Installation Environment

Oracle Fusion provisioning repositories consist of multiple installers from Oracle Fusion Middleware and Oracle Fusion Applications. In order to run the Fusion provisioning process, these installers must be in a predefined directory structure.

This section includes the following topics:

- Downloading the Provisioning Repository
- Installing the Provisioning Framework Bits

5.3.1.1 Downloading the Provisioning Repository

A zipped provisioning repository is included in the Oracle Fusion Applications Product Media Pack. See "Obtaining the Software" in *Oracle Fusion Applications Installation Guide* for instructions on how to get it.

Extract the contents of all the zipped files to the same target directory (`ORACLE_BASE/repository`) that is on a shared/network drive. By default, the installers are located in `repository_location/installers`.

5.3.1.2 Installing the Provisioning Framework Bits

The provisioning framework supplies the components needed to orchestrate the provisioning process. Once set up, this framework retrieves the components and installers silently when they are required.

5.3.1.2.1 Running the Provisioning Installer Run the installer from the directory where you created the provisioning repository. For example: `repository_location/installers/faprov/Disk1`.

> **Note:** If you are running a fresh install or are re-running the installer after cleaning up previously installed products, ensure that no `/etc/oraInst.loc` file exists.

To run the installer:

```
>FINHOST1 ./runInstaller
```

When prompted, enter the following JRE/JDK location:

```
repository_location/jdk6
```

Use the screen information in Table 5–1 as a guide when running the installer.

Note: In the case of a clean host, that is, one where the `/etc/oraInst.loc` file does not exist:

- The oraInventory creation panels will display prior to the start of the Provisioning Wizard
- A confirmation dialog asking you to execute `oracleRoot.sh` will display at the end of the installation
- On the Specify Inventory Directory screen, specify the location as *ORACLE_BASE*`/oraInventory`

Table 5–1 Provisioning Installer Screens

Screen Name	Description
Welcome	The standard Welcome screen is read-only and appears each time you start the provisioning framework installer. No action is required. Click **Next** to continue.
Prerequisite Checks	Analyzes the host computer to ensure that specific operating system prerequisites have been met. If any prerequisite check fails, the screen displays a short error message at the bottom. Fix the error and click **Retry**. If you want to ignore the error or warning message, click **Continue**. Click **Abort** to stop the prerequisite check process for all components. Click **Next** to continue.
Specify Installation Location	Specify a location where you want to install the provisioning framework (*ORACLE_BASE*`/repository`). This is the location where the Provisioning Wizard and the start commands for provisioning (`runProvisioning`) are installed. The Oracle Fusion Applications Provisioning framework must be installed on a shared disk in a location that is accessible to all hosts to be provisioned. Click **Next** to continue.
Installation Summary	Summarizes the selections you have made during this installation session. To change this configuration before installing, select one of the screens from the left navigation pane. Click Save to create a text file (response file) to use if you choose to perform the same installation at a later date. Click **Install** to continue installing this configuration.
Installation Progress	The progress indicator shows the percentage of the installation that is complete and indicates the location of the installation log file. Click **Next** when the progress indicator shows 100 percent.
Installation Complete	Summarizes the installation just completed. If you want to save the details to a text file, click Save and indicate a directory where you want to save the file. Click Finish to dismiss the screen and exit the installer.

/provisioning Directory Structure:

After installing the provisioning framework, the directories in *ORACLE_BASE*`/repository/provisioning` should be the following:

```
ant  bin  labelInfo.txt  lib  provisioning-build  provisioning-plan
```

```
template  util
```

Note: Installation logs are located in the *ORACLE_BASE*/oraInventory directory.

5.3.2 Creating a New Provisioning Response File

Before provisioning the Oracle Fusion Applications enterprise deployment environment, you must generate the provisioning response file, which will serve as the input for the actual provisioning process. You generate the provisioning response file by completing a number of wizard interview screens to collect the configuration details for your provisioning response file and save the file in a location that is accessible to the provisioning installers. Be sure to make a note of the provisioning response file name and location, as you must supply these when you run the physical installation.

Before launching the provisioning wizard, set JAVA_HOME and PATH. For example:

```
FINHOST1> export JAVA_HOME=ORACLE_BASE/repository/jdk6

FINHOST1> export PATH=$JAVA_HOME/bin:$PATH
```

Launch the provisioning wizard from any host in the enterprise deployment environment:

```
FINHOST1> cd ORACLE_BASE/repository/provisioning/bin

FINHOST1> ./provisioningWizard.sh
```

The Oracle Fusion Applications Provisioning Wizard is launched and the Welcome screen displays. The screen is read-only and displays each time you start the Wizard.

Click **Next**.

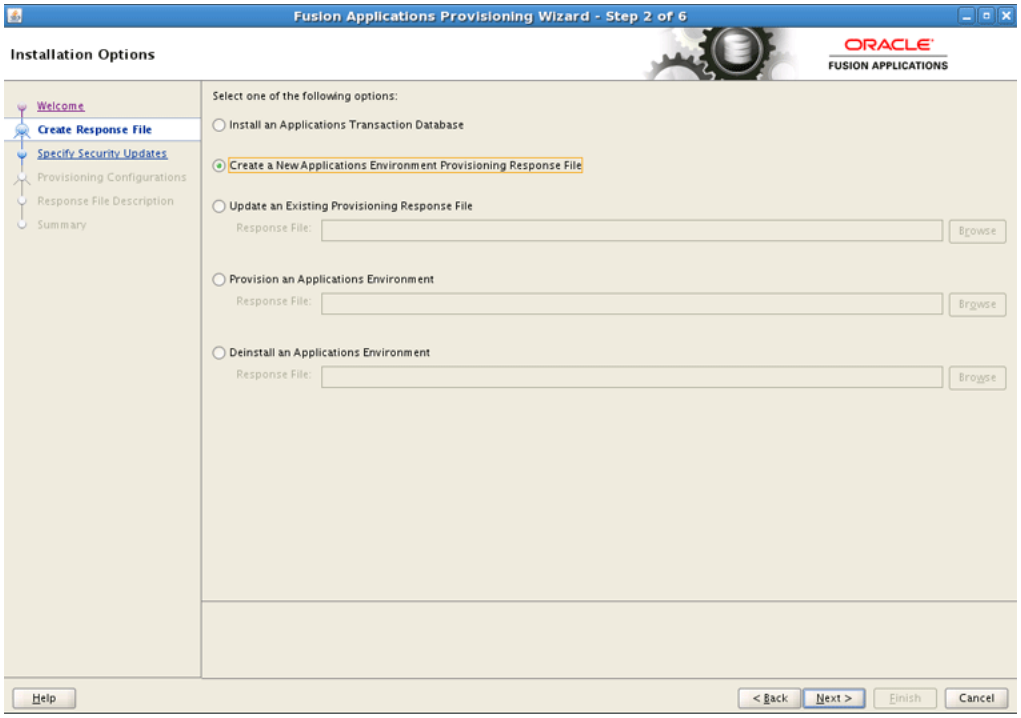
Note: When using the Oracle Fusion Applications Provisioning Wizard, you must enter the full path when asked to provide any path file (such as Applications Base, Application Configuration Directory, and so on). Using a symbolic link path will cause provisioning to fail in a later phase.

5.3.2.1 Installation Options Screen

In this screen, shown in Figure 5–1, select only the following task from the list of options:

Create a New Applications Environment Provisioning Response File - create a provisioning response file for a new Oracle Fusion Applications environment.

Figure 5–1 Installation Options Screen



Select one of the following options:

○ Install an Applications Transaction Database

● Create a New Applications Environment Provisioning Response File

○ Update an Existing Provisioning Response File

Response File:

○ Provision an Applications Environment

Response File:

○ Deinstall an Applications Environment

Response File:

Click **Next** to continue.

5.3.2.2 Specify Security Updates Screen

In this screen, you can set up a notification preference for security-related updates and installation-related information from Oracle Support.

- **Email** - specify your email address to have updates sent by this method.
- **I wish to receive security updates via My Oracle Support** - specify your **My Oracle Support Password** to have updates posted to your account.

Click **Next** to continue.

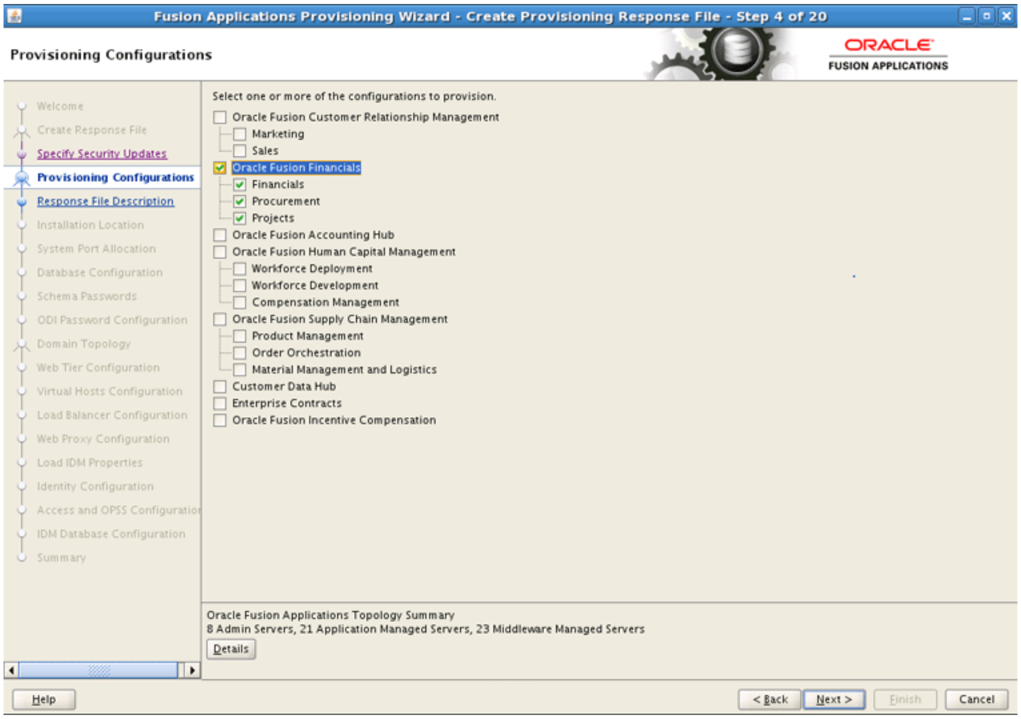
5.3.2.3 Provisioning Configurations Screen

This screen, shown in Figure 5–2, enables you to select the Oracle Fusion Financials options to configure.

Select only the Oracle Fusion Financials option, shown in Figure 5–2. When selected, the Financials, Procurement, and Projects options are automatically selected.

The information in the message pane displays a cumulative estimate of the number of Managed Servers made available based on the offerings you selected. Click **Details** to see a breakdown of servers by domain.

Figure 5–2 Provisioning Configurations Screen



Provisioning Configurations

Select one or more of the configurations to provision.

- ☐ Oracle Fusion Customer Relationship Management
  - ☐ Marketing
  - ☐ Sales
- ☑ Oracle Fusion Financials
  - ☑ Financials
  - ☑ Procurement
  - ☑ Projects
- ☐ Oracle Fusion Accounting Hub
- ☐ Oracle Fusion Human Capital Management
  - ☐ Workforce Deployment
  - ☐ Workforce Development
  - ☐ Compensation Management
- ☐ Oracle Fusion Supply Chain Management
  - ☐ Product Management
  - ☐ Order Orchestration
  - ☐ Material Management and Logistics
- ☐ Customer Data Hub
- ☐ Enterprise Contracts
- ☐ Oracle Fusion Incentive Compensation

Oracle Fusion Applications Topology Summary
8 Admin Servers, 21 Application Managed Servers, 23 Middleware Managed Servers

Click **Next** to continue.

5.3.2.4 Response File Description Screen

This *optional* screen lets you enter descriptive information to identify this response file, or create another version. This information becomes part of the summary document, and is listed under the Global settings on the **Summary** screen. It does not affect the content of your response file.

Update the response file name and click **Next** to continue.

5.3.2.5 Installation Location Screen

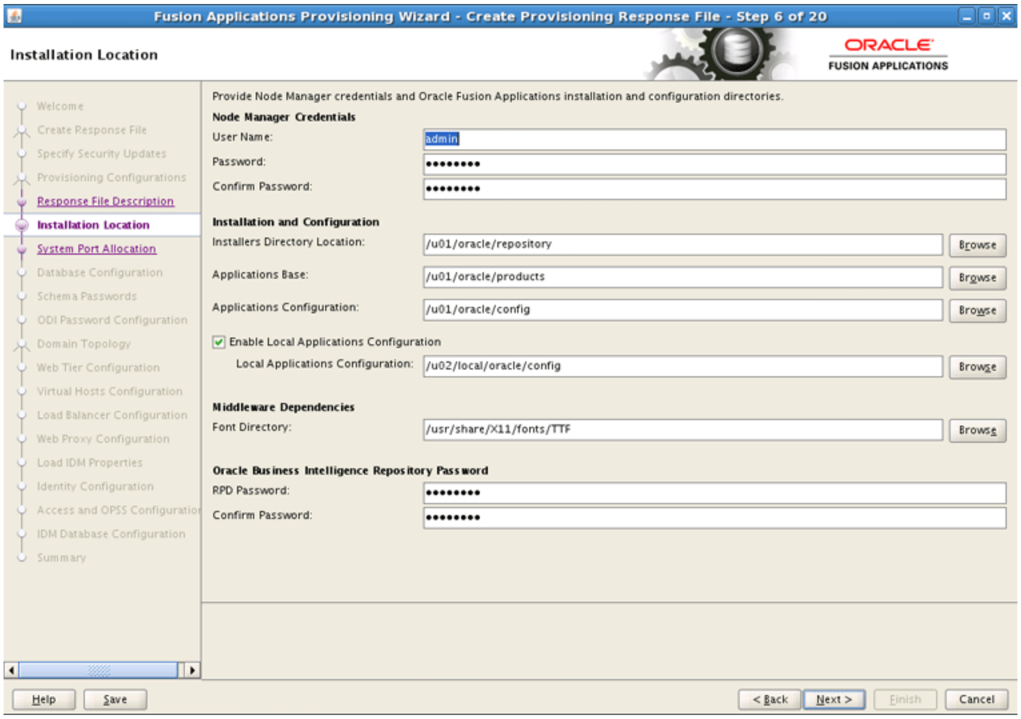
In this screen, shown in Figure 5–3, specify credentials for the node manager and supply the location of the various directories required for installation and configuration actions.

Use the values shown in the screen for your installation.

- **Node Manager Credentials** options - Add the values for the Node Manager credentials, which are used by Node Manager to start the Managed Server.
- **Installers Directory Location** - Specify the location of the repository you created. For example, *ORACLE_BASE*/repository.
- **Applications Base** - The root directory of all Oracle Fusion Applications and Oracle Fusion Middleware products. Typically, this location is on a shared disk, *ORACLE_BASE*/products.
- **Applications Configuration Directory** - Specify the path of the root directory where you want to write and manage the configuration files for all the domains, and from where the Administration Servers are started. Typically, this location is on a shared disk, *ORACLE_BASE*/config. (Note that *ORACLE_BASE*/config should be empty.)

- **Enable Local Applications Configuration** - Enable this option. When enabled, all the Managed Servers will run locally; only the Administration Server will run from the shared disk. Provisioning will run `pack` and `unpack`, and will create local domain directories.
- **Local Applications Configuration** - Specify a local-drive location, for example, `/u02/local/oracle/config`. This field is required if you selected **Enable Local Applications Configuration**.
- **Font Directory** - Enter the directory where the TrueType fonts are installed. The location varies on different operating systems, but is typically found at `/usr/share/X11/fonts/TTF`.
- **Oracle Business Intelligence Repository Password** options - Specify and confirm a password to allow access to the metadata repository (RPD) for both Oracle Business Intelligence Applications and Oracle Transactional Business Intelligence.

Figure 5–3 Installation Location Screen



Provide Node Manager credentials and Oracle Fusion Applications installation and configuration directories.

Node Manager Credentials

User Name: admin

Password: ••••••••

Confirm Password: ••••••••

Installation and Configuration

Installers Directory Location: /u01/oracle/repository

Applications Base: /u01/oracle/products

Applications Configuration: /u01/oracle/config

☑ Enable Local Applications Configuration

Local Applications Configuration: /u02/local/oracle/config

Middleware Dependencies

Font Directory: /usr/share/X11/fonts/TTF

Oracle Business Intelligence Repository Password

RPD Password: ••••••••

Confirm Password: ••••••••

Click **Next** to continue.

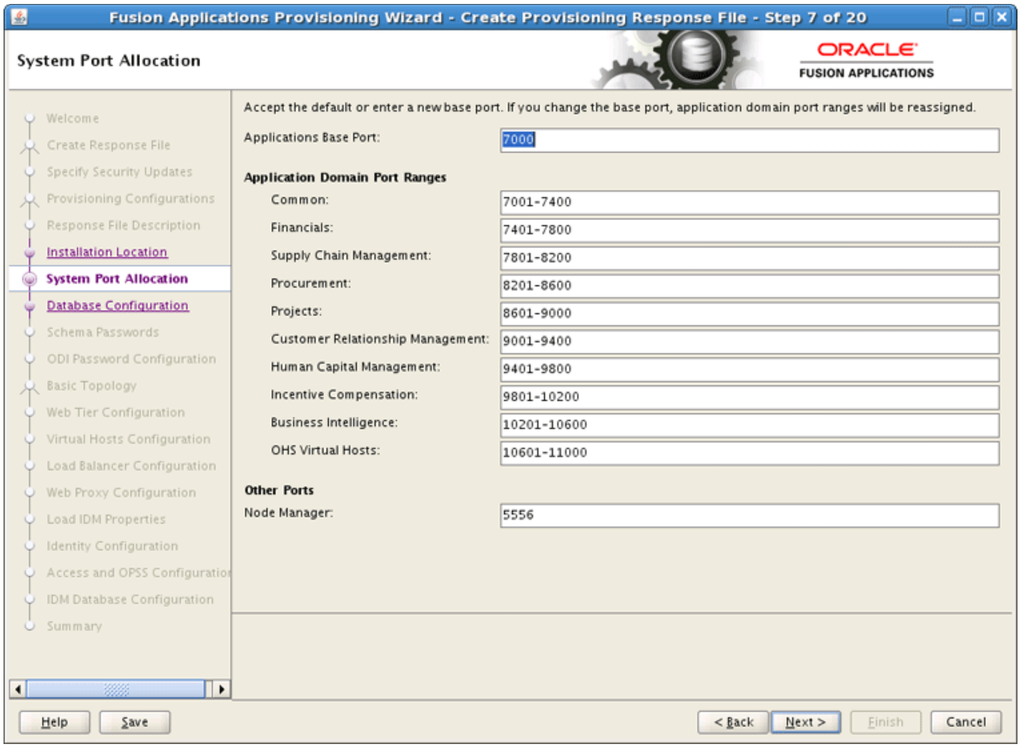
5.3.2.6 System Port Allocation Screen

In this screen, shown in Figure 5–4, accept the **Applications Base Port** value or enter a custom value. If you change the base port default, you must reset the domain port ranges accordingly. Port ranges must not overlap and must be stated as ascending values.

High and low port ranges are assigned by default to each product family per domain in the **Application Domain Port Ranges** list. The default range allotment for each product family is 399, with each family's range arranged in ascending order.

The **Other Ports** section contains the default value for the Node Manager port.

Figure 5–4 System Port Allocation Screen



Accept the default or enter a new base port. If you change the base port, application domain port ranges will be reassigned.

Applications Base Port: 7000

Application Domain Port Ranges

Common:	7001-7400
Financials:	7401-7800
Supply Chain Management:	7801-8200
Procurement:	8201-8600
Projects:	8601-9000
Customer Relationship Management:	9001-9400
Human Capital Management:	9401-9800
Incentive Compensation:	9801-10200
Business Intelligence:	10201-10600
OHS Virtual Hosts:	10601-11000

Other Ports

Node Manager: 5556

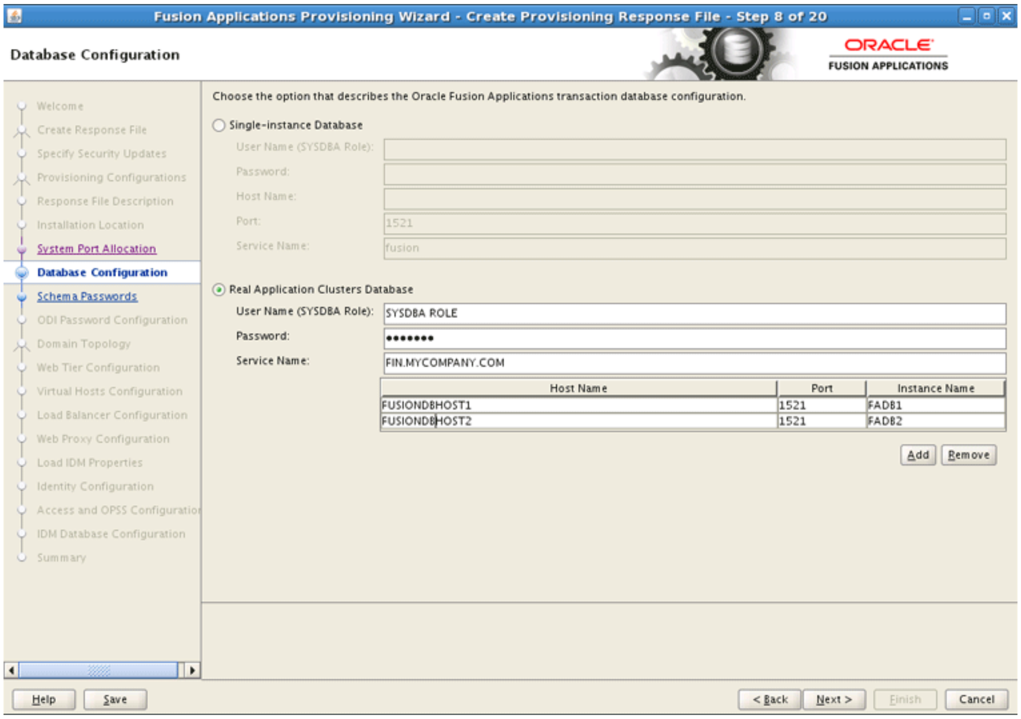
Click **Next** to continue.

5.3.2.7 Database Configuration Screen

In this screen, shown in Figure 5–5, click **Add** to create a line in the table for each instance in this database. Select a row and click **Remove** if you need to revise the table. Specify the following information for each instance:

- **User Name (SYSDBA Role)** - the user name of the `sysdba` role. This user name is used to upgrade schemas during the configuration phase. Note that the `sysdba` fields are not validated, so ensure that you enter the correct values.
- **Password** - the password of the sysdba role.
- **Host Name** - the name of the Oracle RAC host for each instance.
- **Port** - listening port of the database.
- **Instance Name** - the Oracle RAC database instance name
- **Service Name** - the global database name for the transaction database that you installed. Used to distinguish this database instance from other instances of Oracle Database running on the same host.

Figure 5–5 Database Configuration Screen



Choose the option that describes the Oracle Fusion Applications transaction database configuration.

○ Single-instance Database

User Name (SYSDBA Role):

Password:

Host Name:

Port: 1521

Service Name: fusion

● Real Application Clusters Database

User Name (SYSDBA Role): SYSDBA ROLE

Password: •••••••

Service Name: FIN.MYCOMPANY.COM

Host Name	Port	Instance Name
FUSIONDBHOST1	1521	FADB1
FUSIONDBHOST2	1521	FADB2

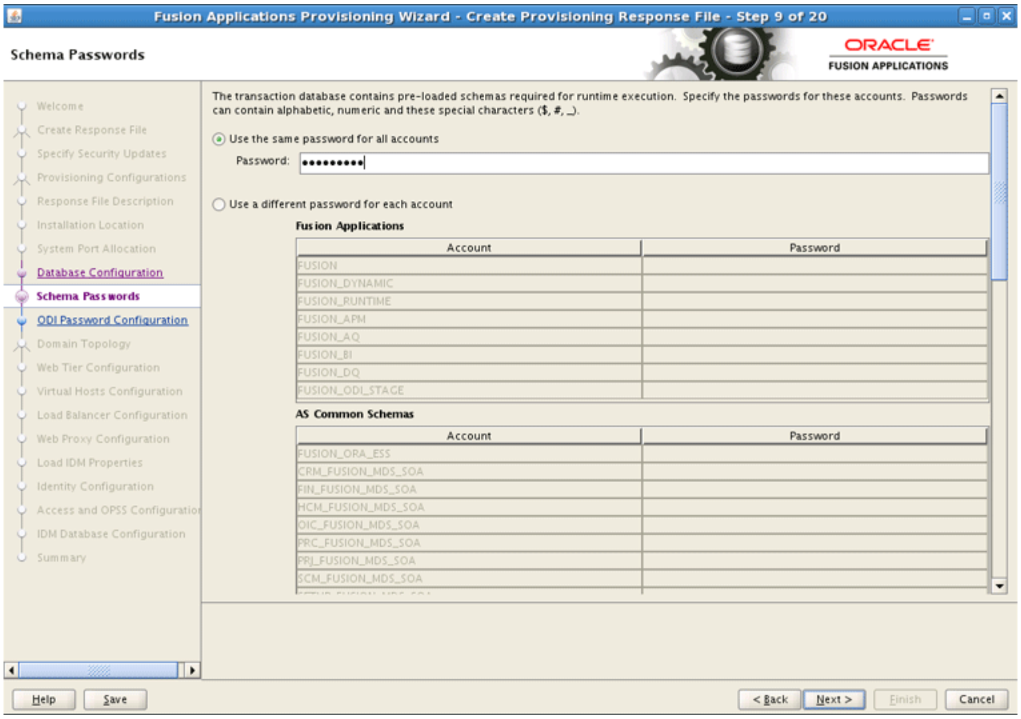
Click **Next** to continue.

5.3.2.8 Schema Passwords Screen

In this screen, shown in Figure 5–6, enter the same password for all the accounts or, if there are different passwords for each account, select **Use a different password for each account** and enter the passwords.

Note: It is recommended to use a separate password for each account in the production deployment.

Figure 5–6 Schema Passwords Screen



Schema Passwords

The transaction database contains pre-loaded schemas required for runtime execution. Specify the passwords for these accounts. Passwords can contain alphabetic, numeric and these special characters ($, #, _).

● Use the same password for all accounts

Password: ●●●●●●●●●

○ Use a different password for each account

Fusion Applications

Account	Password
FUSION	
FUSION_DYNAMIC	
FUSION_RUNTIME	
FUSION_APM	
FUSION_AQ	
FUSION_BI	
FUSION_DQ	
FUSION_ODI_STAGE	

AS Common Schemas

Account	Password
FUSION_ORA_ESS	
CRM_FUSION_MDS_SOA	
FIN_FUSION_MDS_SOA	
HCM_FUSION_MDS_SOA	
OIC_FUSION_MDS_SOA	
PRC_FUSION_MDS_SOA	
PRJ_FUSION_MDS_SOA	
SCM_FUSION_MDS_SOA	

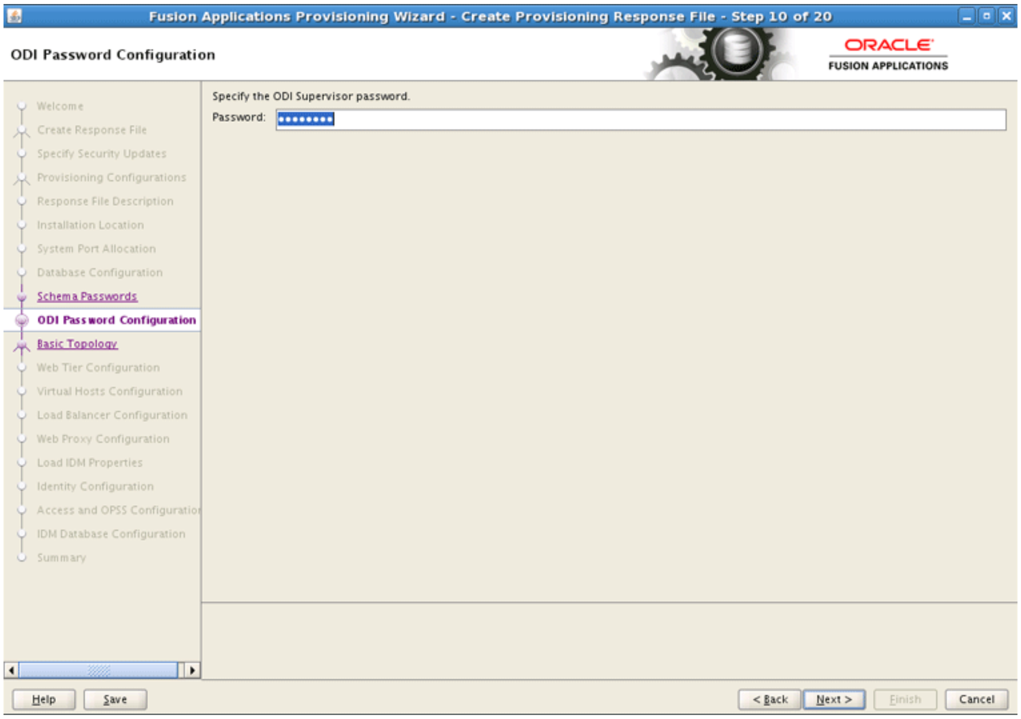
Click **Next** to continue.

5.3.2.9 ODI Password Configuration Screen

In this screen, shown in Figure 5–7, enter the Oracle Data Integrator Supervisor Password that was used when the Oracle Fusion Middleware Metadata Repository was loaded into the Oracle RAC database (see Figure 4–7 in Section 4.4, "Loading the Oracle Fusion Applications Repository into the Oracle RAC Database").

Click **Next** to continue.

Figure 5–7 ODI Password Configuration


Fusion Applications Provisioning Wizard - Create Provisioning Response File - Step 10 of 20
ODI Password Configuration
ORACLE
FUSION APPLICATIONS
Welcome
Create Response File
Specify Security Updates
Provisioning Configurations
Response File Description
Installation Location
System Port Allocation
Database Configuration
Schema Passwords
ODI Password Configuration
Basic Topology
Web Tier Configuration
Virtual Hosts Configuration
Load Balancer Configuration
Web Proxy Configuration
Load IDM Properties
Identity Configuration
Access and OPSS Configuratio
IDM Database Configuration
Summary
Help
Save
< Back
Next >
Finish
Cancel

Specify the ODI Supervisor password.

Password: ••••••••

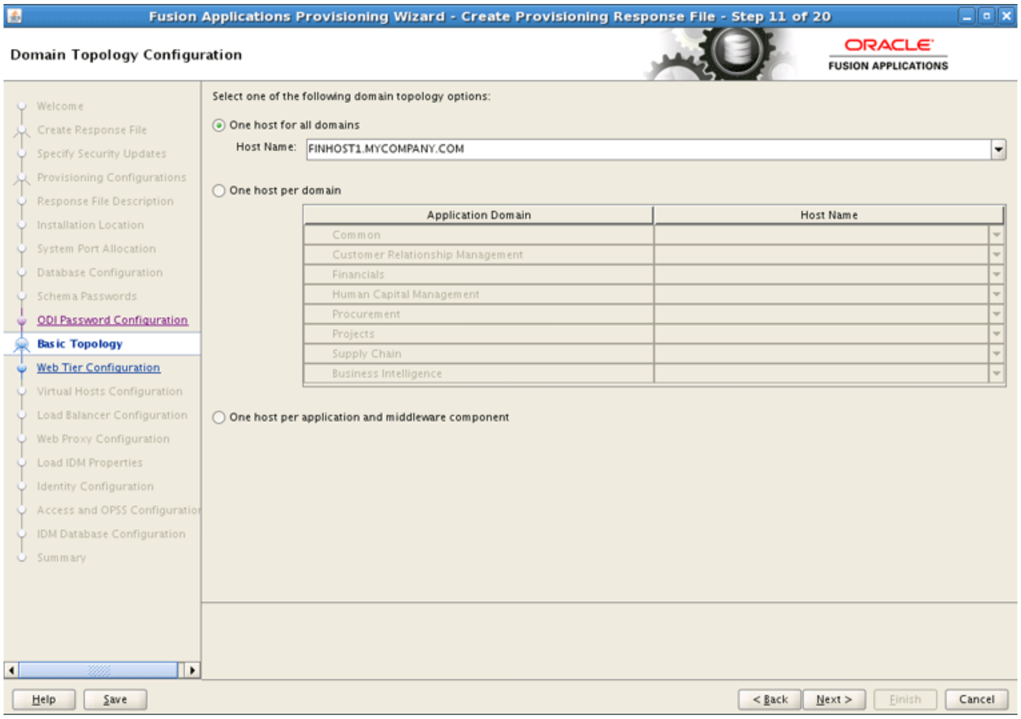
Click **Next** to continue.

5.3.2.10 Domain Topology Configuration Screen

In this screen, shown in Figure 5–8, determine the flow for the remaining wizard interview screens.

- **One host for all domains** - select this option to specify a **Host Name** if there is only one host and the ports are not changing.
- **One host per domain** - select this option if the domains are to be split among several machines. Use the dropdown list to select a **Host Name** for each application domain to be created.
- **One host per application and middleware component** - select this option when there are different hosts and ports to be modified.

Figure 5–8 Domain Topology Configuration Screen



Fusion Applications Provisioning Wizard - Create Provisioning Response File - Step 11 of 20

Domain Topology Configuration

Select one of the following domain topology options:

● One host for all domains

Host Name: FINHOST1.MYCOMPANY.COM

○ One host per domain

Application Domain	Host Name
Common	
Customer Relationship Management	
Financials	
Human Capital Management	
Procurement	
Projects	
Supply Chain	
Business Intelligence	

○ One host per application and middleware component

Click **Next** to continue.

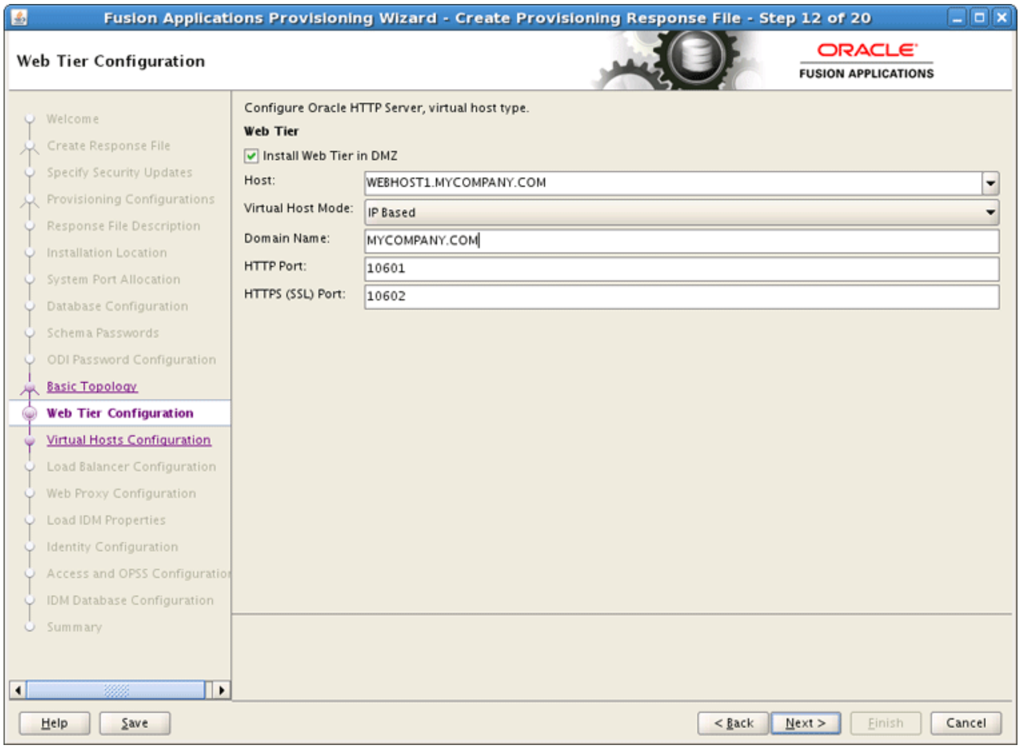
5.3.2.11 Web Tier Configuration Screen

This screen, shown in Figure 5–9, allows you to create virtual hosts on a single Oracle Web Tier that are either port-based or name-based for each product family domain that is created during installation. Specify an internal and an external port. The values assigned during installation are derived from the default HTTP port you name on this screen.

Web Tier

- **Install Web Tier in DMZ** - select this option if you set up a separate host for web tier installation. This host is set up as a demilitarized zone (DMZ), which does not have access to the shared file system. It cannot be used for any other host deployed, regardless of domain.
- **Host** - enter the name of the host where the Oracle HTTP Server will be installed and configured.
- **Virtual Host Mode** - select **IP-based** to create new DNS entries to use as virtual hosts. For example, `fin.mycompany.com`.
- **Domain Name** - specify a domain name (only if you select a name-based virtual host). For example, `mycompany.com`.
- **HTTP Port** - default port for the Web Tier. Should not require operating system administrator privileges. Use the default values.
- **HTTPS (SSL) Port** - secure port for the Web Tier. Should not require operating system administrator privileges. Use the default values.

Figure 5–9 Web Tier Configuration Screen



Fusion Applications Provisioning Wizard - Create Provisioning Response File - Step 12 of 20

Web Tier Configuration

Configure Oracle HTTP Server, virtual host type.

Web Tier

☑ Install Web Tier in DMZ

Host: WEBHOST1.MYCOMPANY.COM

Virtual Host Mode: IP Based

Domain Name: MYCOMPANY.COM

HTTP Port: 10601

HTTPS (SSL) Port: 10602

Click **Next** to continue.

5.3.2.12 Virtual Hosts Configuration Screen

This screen, shown in Figure 5–10, contains the configuration details for the domains on the virtual hosts.

Specify the following information for each application domain listed:

- **Internal Name** - the host name or IP address where the Webtier listens on the internal virtual host for this domain.
- **Internal Port** - port for this internal virtual host. Should be visible only from inside the firewall.
- **External Name** - the host name or IP address for the external virtual host for this product family or middleware dependency. The host:port should be visible from outside the firewall.
- **External Port** - port to be used for this external virtual host. The host:port should be visible from outside the firewall.

If you selected **Name-based** on the Web Tier Configuration screen, specify the following information for each domain listed:

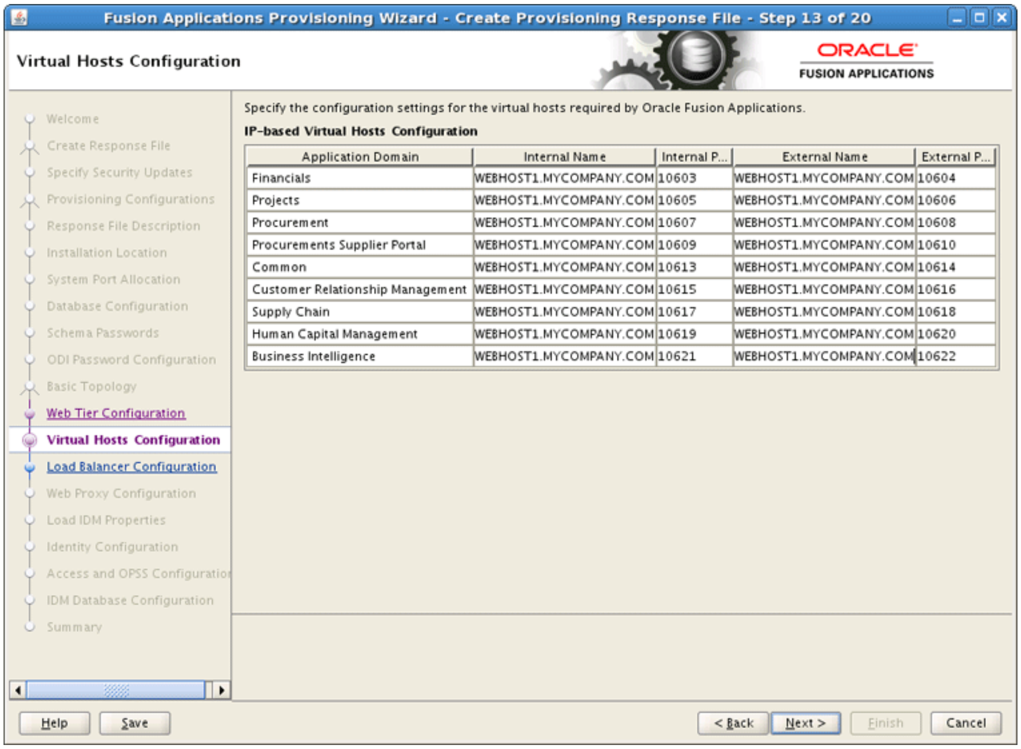
- **Internal.Name** - the DNS name for this internal virtual host. For example, for Financials, the name might be *fin-internal*.
- **External.Name** - the DNS name for this external virtual host. For example, for Financials, the name might be *fin*.

If you selected **Port-based** on the Web Tier Configuration screen, specify the following information for each domain listed:

- **Internal Port** - the port that is visible only from inside the firewall for this domain.

- **External Port** - the port that is visible from outside the firewall for this domain.

Figure 5–10 Virtual Hosts Configuration Screen



Fusion Applications Provisioning Wizard - Create Provisioning Response File - Step 13 of 20
Virtual Hosts Configuration
ORACLE
FUSION APPLICATIONS
Welcome
Create Response File
Specify Security Updates
Provisioning Configurations
Response File Description
Installation Location
System Port Allocation
Database Configuration
Schema Passwords
ODI Password Configuration
Basic Topology
Web Tier Configuration
Virtual Hosts Configuration
Load Balancer Configuration
Web Proxy Configuration
Load IDM Properties
Identity Configuration
Access and OPSS Configuratio
IDM Database Configuration
Summary
Help
Save
< Back
Next >
Finish
Cancel

Specify the configuration settings for the virtual hosts required by Oracle Fusion Applications.

IP-based Virtual Hosts Configuration

Application Domain	Internal Name	Internal P...	External Name	External P...
Financials	WEBHOST1.MYCOMPANY.COM	10603	WEBHOST1.MYCOMPANY.COM	10604
Projects	WEBHOST1.MYCOMPANY.COM	10605	WEBHOST1.MYCOMPANY.COM	10606
Procurement	WEBHOST1.MYCOMPANY.COM	10607	WEBHOST1.MYCOMPANY.COM	10608
Procurements Supplier Portal	WEBHOST1.MYCOMPANY.COM	10609	WEBHOST1.MYCOMPANY.COM	10610
Common	WEBHOST1.MYCOMPANY.COM	10613	WEBHOST1.MYCOMPANY.COM	10614
Customer Relationship Management	WEBHOST1.MYCOMPANY.COM	10615	WEBHOST1.MYCOMPANY.COM	10616
Supply Chain	WEBHOST1.MYCOMPANY.COM	10617	WEBHOST1.MYCOMPANY.COM	10618
Human Capital Management	WEBHOST1.MYCOMPANY.COM	10619	WEBHOST1.MYCOMPANY.COM	10620
Business Intelligence	WEBHOST1.MYCOMPANY.COM	10621	WEBHOST1.MYCOMPANY.COM	10622

Click **Next** to continue.

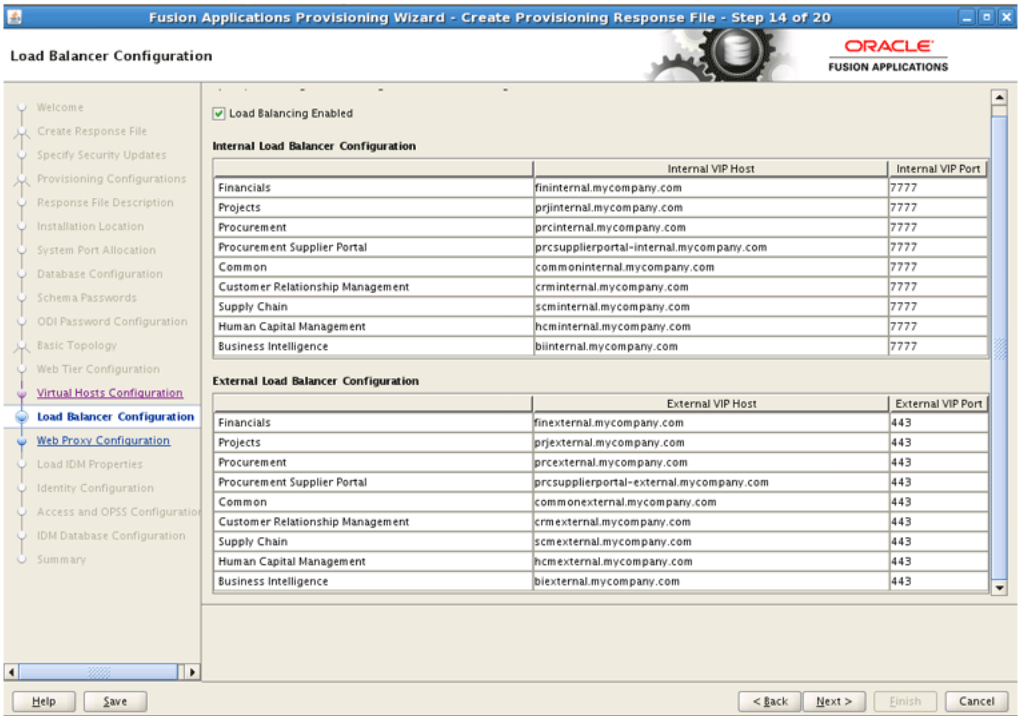
5.3.2.13 Load Balancer Configuration Screen

This screen, shown in Figure 5–11, enables you to distribute workload evenly across two or more hosts, network links, CPUs, hard drives, or other resources. Check **Load Balancing Enabled** to take advantage of this feature, and specify:

- **Internal Load Balancer Configuration** - the host and port for the internal Virtual IP (VIP).
- **External Load Balancer Configuration** - the host and port for external Virtual IP (VIP). It must have a publicly available address to be usable.

If you want to stop creating this response file and resume at a later date, click **Save**. This action creates a partial response file. A partial response file cannot be used to provision an environment.

Figure 5–11 Load Balancer Configuration Screen


Fusion Applications Provisioning Wizard - Create Provisioning Response File - Step 14 of 20
Load Balancer Configuration
ORACLE
FUSION APPLICATIONS
Welcome
Create Response File
Specify Security Updates
Provisioning Configurations
Response File Description
Installation Location
System Port Allocation
Database Configuration
Schema Passwords
ODI Password Configuration
Basic Topology
Web Tier Configuration
Virtual Hosts Configuration
Load Balancer Configuration
Web Proxy Configuration
Load IDM Properties
Identity Configuration
Access and OPSS Configuratio
IDM Database Configuration
Summary
Help
Save
< Back
Next >
Finish
Cancel

☑ Load Balancing Enabled

Internal Load Balancer Configuration

	Internal VIP Host	Internal VIP Port
Financials	fininternal.mycompany.com	7777
Projects	prjinternal.mycompany.com	7777
Procurement	prcinternal.mycompany.com	7777
Procurement Supplier Portal	prcsupplierportal-internal.mycompany.com	7777
Common	commoninternal.mycompany.com	7777
Customer Relationship Management	crminternal.mycompany.com	7777
Supply Chain	scminternal.mycompany.com	7777
Human Capital Management	hcminternal.mycompany.com	7777
Business Intelligence	biinternal.mycompany.com	7777

External Load Balancer Configuration

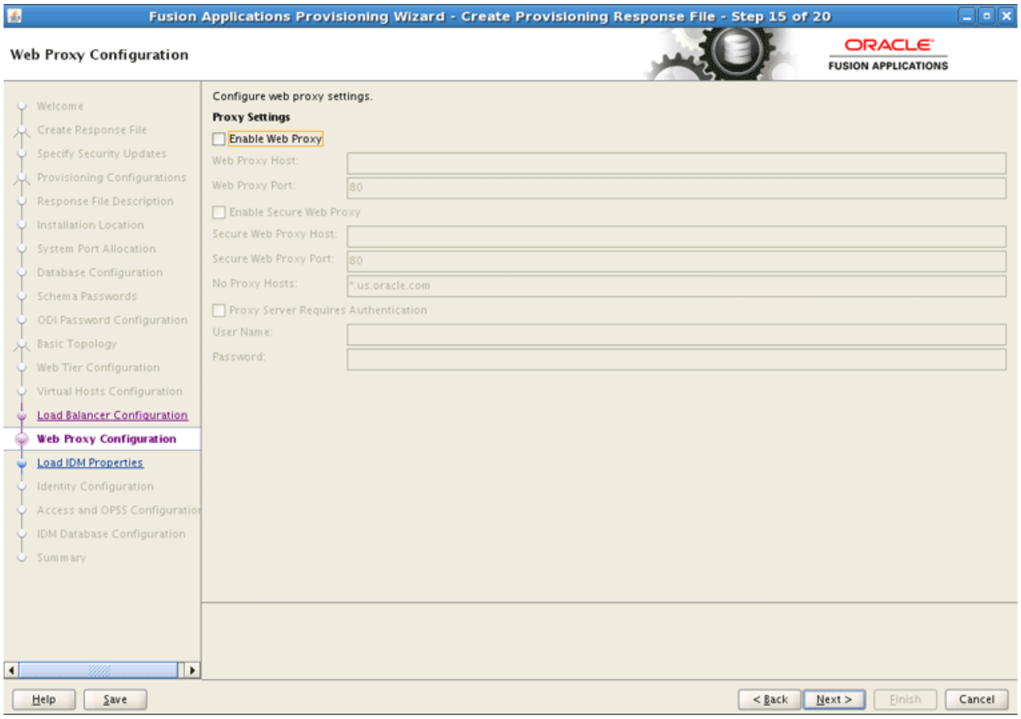
	External VIP Host	External VIP Port
Financials	finexternal.mycompany.com	443
Projects	prjexternal.mycompany.com	443
Procurement	prcexternal.mycompany.com	443
Procurement Supplier Portal	prcsupplierportal-external.mycompany.com	443
Common	commonexternal.mycompany.com	443
Customer Relationship Management	crmexternal.mycompany.com	443
Supply Chain	scmexternal.mycompany.com	443
Human Capital Management	hcmexternal.mycompany.com	443
Business Intelligence	biexternal.mycompany.com	443

Click **Next** to continue.

5.3.2.14 Web Proxy Configuration Screen

This screen, shown in Figure 5–12, allows you to create Proxy Settings to enable users who want to use a proxy server to connect to the Internet.

Figure 5–12 Web Proxy Configuration Screen



Configure web proxy settings.

Proxy Settings

☐ Enable Web Proxy

Web Proxy Host:

Web Proxy Port: 80

☐ Enable Secure Web Proxy

Secure Web Proxy Host:

Secure Web Proxy Port: 80

No Proxy Hosts: *.us.oracle.com

☐ Proxy Server Requires Authentication

User Name:

Password:

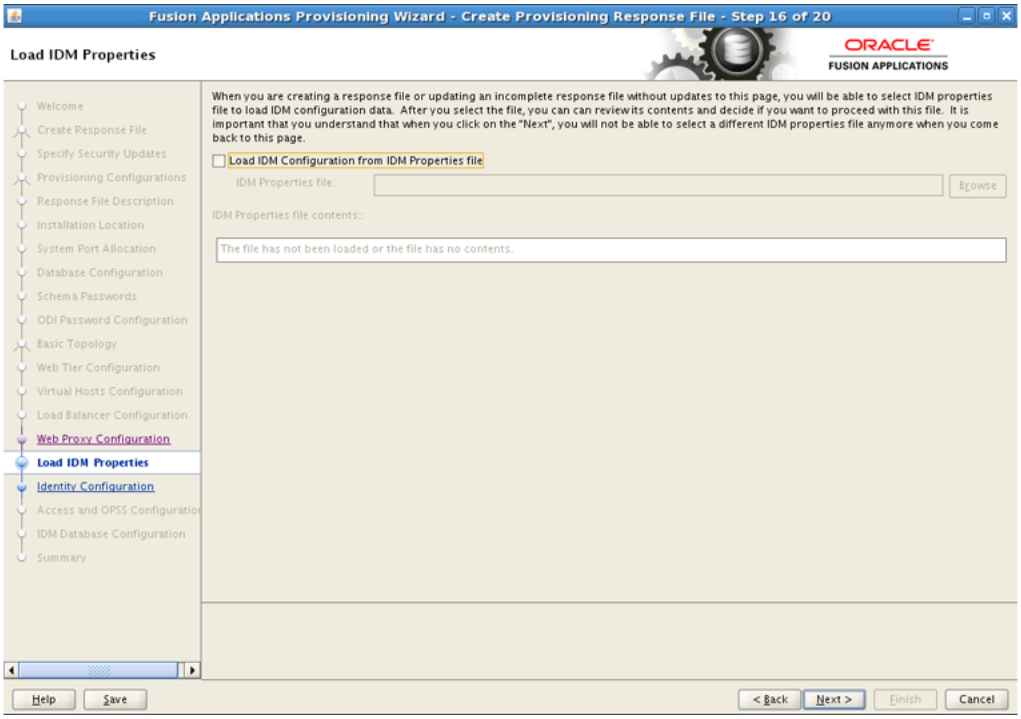
Click **Next** to continue.

5.3.2.15 Load IDM Properties Screen

When you are creating a response file or updating an incomplete response file without updates to this screen, shown in , you will be able to select the IDM properties file to load IDM configuration data. After you select the file, you can review the content and decide if you want to proceed with this file.

- **Load IDM Configuration from IDM Properties file** - select this check box if you want the values on the **Identity Management Configuration** screen and the **Access and Policy Management Configuration** screen to default to the values in the IDM properties file (for example, idmDomainConfig.param).
- **IDM Properties file** - enter the location of the file (for example, `idmDomainConfig.param`): *`IDM_ORACLE_HOME`*`/idmtools/bin/idmDomainConfig.param`.
- **IDM Properties file contents** - if you have selected a valid IDM properties file, the contents will be displayed. This field is read-only and cannot be modified.

Figure 5–13 Load IDM Properties Screen



When you are creating a response file or updating an incomplete response file without updates to this page, you will be able to select IDM properties file to load IDM configuration data. After you select the file, you can can review its contents and decide if you want to proceed with this file. It is important that you understand that when you click on the "Next", you will not be able to select a different IDM properties file anymore when you come back to this page.

□ Load IDM Configuration from IDM Properties file

IDM Properties file:

IDM Properties file contents::

The file has not been loaded or the file has no contents.

Click **Next** to continue.

5.3.2.16 Identity Management Configuration Screen

In these screens, shown in Figure 5–14 and Figure 5–15, enter the **Identity Management Configuration** parameters for the identity management infrastructure associated with this environment.

- **Super User Name** - enter the name of an existing user that should be granted administrator and functional setup privileges.
- **Create Administrators Group** - indicate whether you created an "Administrators" group, whose members have specialized privileges for all Oracle Fusion Middleware components.
- **Create Monitors Group** - indicate whether you created a "Monitors" group, whose members have read-only administrative privileges to Oracle WebLogic domains.
- **Create Operators Group** - indicate whether you created an "Operators" group, whose members have Monitors privileges to Oracle WebLogic domains.
- **Identity Store Server Type** - indicate the type of identity store you set up: Oracle Internet Directory (OID) or Oracle Virtual Directory (OVD).

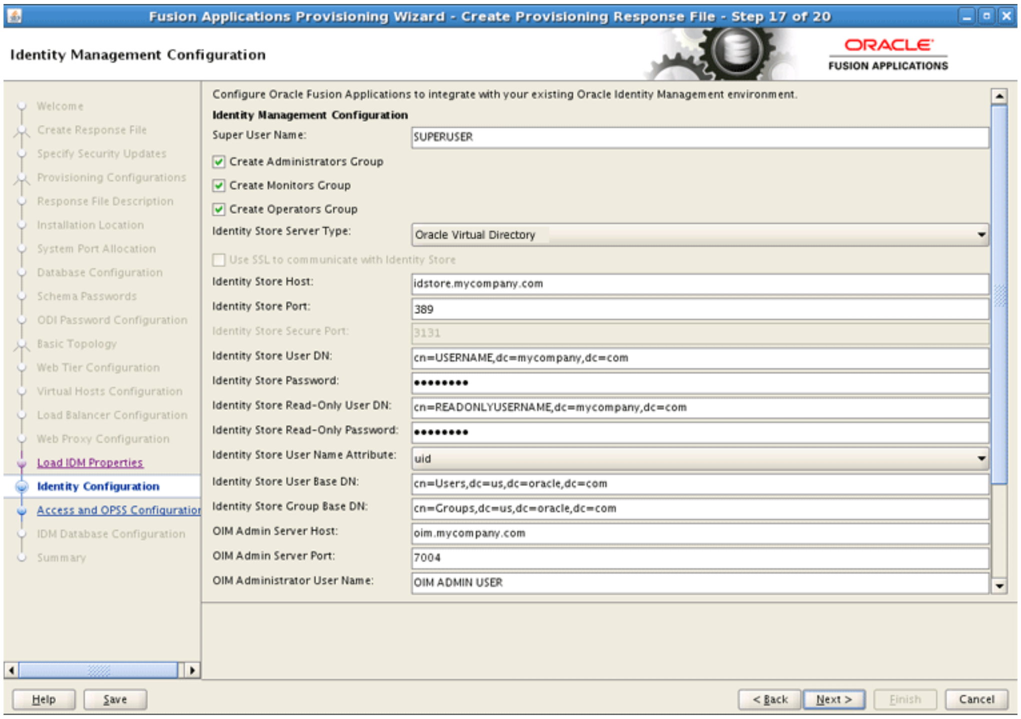
> **Important: If the Oracle Identity Manager being used is in the form of an Oracle Identity Manager enterprise deployment, select the "Oracle Virtual Directory" option.**

- **Use SSL to communicate with Identity Store** - this feature is currently not enabled.

- **Identity Store Host** - enter the host or DNS name for your identity store LDAP service. (The value can be the Load Balancer host of the Oracle Identity Management enterprise deployment setup.)
- **Identity Store Port** - port assigned to the identity store.
- **Identity Store Secure Port** - the SSL port for the identity store. (This option is currently not available.)
- **Identity Store User DN** - enter the Distinguished Name of the user you set up with read-write access to the LDAP.
- **Identity Store Password** - enter the password you set up for the user with read-write access to the LDAP.
- **Identity Store Read-Only User DN** - the Distinguished Name of the user with read-only access to the Identity Store LDAP.
- **Identity Store Read-Only Password** - enter the password you set up for the identity store read-only user.
- **Identity Store User Name Attribute** - the type of user name attribute you configured in the identity store. Valid values are: user ID (uid), common name (CN), or email address.
- **Identity Store User Base DN** - enter the root Distinguished Name assigned to the upload of applications user data. This is the root for all the user data in your identity store.
- **Identity Store Group Base DN** - enter the root Distinguished Name for all the group data in your identity store.
- **OIM Admin Server Host** - enter the name of the host where the OIM Administration Server is installed. (This value can be either the host name or the VIP name of host.)
- **OIM Admin Server Port** - the port where the OIM Administration Server listens.
- **OIM Administrator User Name** - enter the Distinguished Name you set up as the OIM administrator.
- **OIM Administrator Password** - enter the password you set up for the OIM administrator.
- **OIM Managed Server Host** - enter the virtual or real host name of the Oracle Identity Manager Managed Server where SPML callback and other OIM services are running. (This value can be either the host name or the VIP name of host.)
- **OIM Managed Server Port** - enter the virtual or real port where the Oracle Identity Manager Managed Server listens.
- **OIM HTTP Internal Endpoint URL** - the access point on the Oracle HTTP Server for Oracle Identity Manager services in an Oracle Identity Management enterprise deployment, or the Oracle Identity Manager Managed Server access point for a non-enterprise deployment. This URL is used for deployment.

  Enter the `http` termination address of Oracle Access Manager. Terminates at either a load balancer or the Oracle HTTP Server.
- **OIM HTTP(S) External Endpoint URL** - the access point to use for taxonomy. This is not used for deployment. Note that a non-secure connection is used unless you provide an `https` URL.

Figure 5–14 Identity Management Configuration Screen (1)


Fusion Applications Provisioning Wizard - Create Provisioning Response File - Step 17 of 20
Identity Management Configuration
ORACLE
FUSION APPLICATIONS
Welcome
Create Response File
Specify Security Updates
Provisioning Configurations
Response File Description
Installation Location
System Port Allocation
Database Configuration
Schema Passwords
ODI Password Configuration
Basic Topology
Web Tier Configuration
Virtual Hosts Configuration
Load Balancer Configuration
Web Proxy Configuration
Load IDM Properties
Identity Configuration
Access and OPSS Configuratior
IDM Database Configuration
Summary
Help
Save
< Back
Next >
Finish
Cancel

Configure Oracle Fusion Applications to integrate with your existing Oracle Identity Management environment.

Identity Management Configuration

Super User Name: SUPERUSER

☑ Create Administrators Group

☑ Create Monitors Group

☑ Create Operators Group

Identity Store Server Type: Oracle Virtual Directory

□ Use SSL to communicate with Identity Store

Identity Store Host: idstore.mycompany.com

Identity Store Port: 389

Identity Store Secure Port: 3131

Identity Store User DN: cn=USERNAME,dc=mycompany,dc=com

Identity Store Password: ••••••••

Identity Store Read-Only User DN: cn=READONLYUSERNAME,dc=mycompany,dc=com

Identity Store Read-Only Password: ••••••••

Identity Store User Name Attribute: uid

Identity Store User Base DN: cn=Users,dc=us,dc=oracle,dc=com

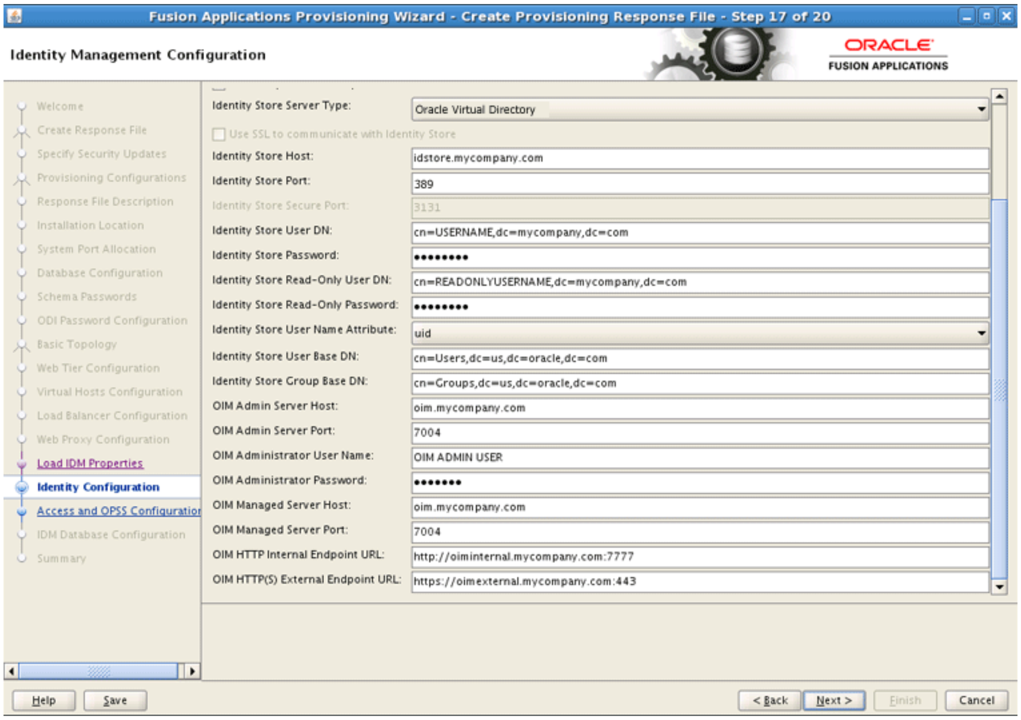
Identity Store Group Base DN: cn=Groups,dc=us,dc=oracle,dc=com

OIM Admin Server Host: oim.mycompany.com

OIM Admin Server Port: 7004

OIM Administrator User Name: OIM ADMIN USER

Figure 5–15 Identity Management Configuration Screen (2)


Fusion Applications Provisioning Wizard - Create Provisioning Response File - Step 17 of 20
Identity Management Configuration
ORACLE
FUSION APPLICATIONS
Welcome
Create Response File
Specify Security Updates
Provisioning Configurations
Response File Description
Installation Location
System Port Allocation
Database Configuration
Schema Passwords
ODI Password Configuration
Basic Topology
Web Tier Configuration
Virtual Hosts Configuration
Load Balancer Configuration
Web Proxy Configuration
Load IDM Properties
Identity Configuration
Access and OPSS Configuratior
IDM Database Configuration
Summary
Help
Save
< Back
Next >
Finish
Cancel

Identity Store Server Type: Oracle Virtual Directory

□ Use SSL to communicate with Identity Store

Identity Store Host: idstore.mycompany.com

Identity Store Port: 389

Identity Store Secure Port: 3131

Identity Store User DN: cn=USERNAME,dc=mycompany,dc=com

Identity Store Password: ••••••••

Identity Store Read-Only User DN: cn=READONLYUSERNAME,dc=mycompany,dc=com

Identity Store Read-Only Password: ••••••••

Identity Store User Name Attribute: uid

Identity Store User Base DN: cn=Users,dc=us,dc=oracle,dc=com

Identity Store Group Base DN: cn=Groups,dc=us,dc=oracle,dc=com

OIM Admin Server Host: oim.mycompany.com

OIM Admin Server Port: 7004

OIM Administrator User Name: OIM ADMIN USER

OIM Administrator Password: •••••••

OIM Managed Server Host: oim.mycompany.com

OIM Managed Server Port: 7004

OIM HTTP Internal Endpoint URL: http://oiminternal.mycompany.com:7777

OIM HTTP(S) External Endpoint URL: https://oimexternal.mycompany.com:443

Click **Next** to continue.

5.3.2.17 Access and Policy Management Configuration Screen

Access and Policy Management Configuration provides identity administration and security functions such as Single Sign-On and policy management. In these screens, shown in Figure 5–16 and Figure 5–17, supply the following parameters to integrate with your existing Oracle Identity Management environment:

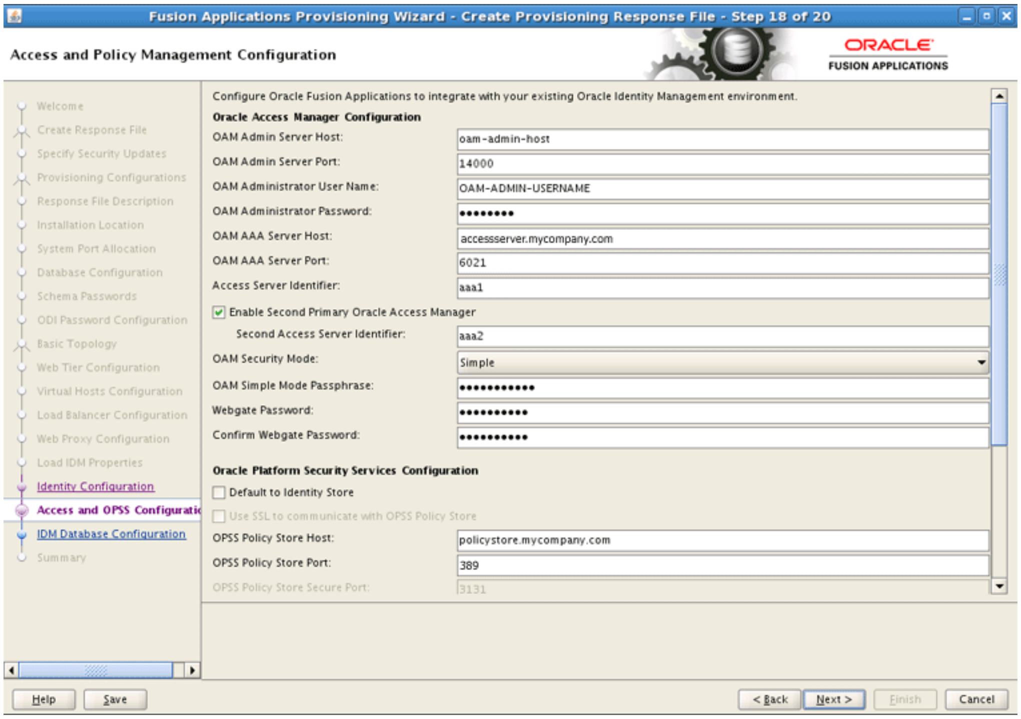
- **OAM Admin Server Host** - enter the name of the host where the Oracle Access Manager Administration Server is installed.
- **OAM Admin Server Port** - the port where the Oracle Access Manager Administration Server listens.
- **OAM Administrator User Name** - enter the name you assigned this user when you installed Oracle Access Manager.
- **OAM Administrator Password** - enter the password you assigned this user when you installed Oracle Access Manager.
- **OAM AAA Server Host** - enter the name of the proxy host where Oracle Access Manager is installed. (This value can be either the host name or the VIP name of host.)
- **OAM AAA Server Port** - the port number for the Oracle Access Manager listener on the OAM proxy host..
- **Access Server Identifier** - name used to identify the Oracle Access Server.
- **Enable Second Primary Oracle Access Manager** - select this check box to name a second Primary Oracle Access Manager for high availability.
- **Second Access Server Identifier** - enter the name of the second Primary Oracle Access Manager Server.

> **Note:** After connecting to the primary access server, provisioning is able to get the secondary access server connection information.

- **OAM Security Mode** - enter the OAM transport security mode that you set up for this access server when you installed Oracle Access Manager. Values are Simple or Open.
- **OAM Simple Mode Passphrase** - enter the passphrase that you set up to secure the communication with the OAM Server. Required only if the mode is specified as Simple.
- **Webgate Password/Confirm Password** - specify a password for the Resource WebGate. It must contain at least eight alphanumeric characters and at least one digit or punctuation mark. Re-type to Confirm the password. If seeding of security data is disabled, the password must be the existing WebGate password.
- **Default to Identity Store** - the default values of this section depend on whether this field is enabled. If the checkbox is unchecked, which is the default, the **OPSS Policy Store Host**, **OPSS Policy Store Read-Write User Name** and **OPSS Policy Store Password** fields are empty by default and do not inherit values from your identity store.
- **Use SSL to communicate with OPSS Policy Store** - this option is currently not available.
- **OPSS Policy Store Host** - enter the host name for OID where Oracle Platform Security Services (OPSS) policies are to be seeded. (The value can be the Load Balancer host of the Oracle Identity Management enterprise deployment setup.)

- **OPSS Policy Store Port** - number of the OID port for OPSS policy store.
- **OPSS Policy Store Secure Port** - the secure port for OID.
- **OPSS Policy Store Read-Write User Name** - enter the Distinguished Name of the user that you set up with write privileges to the OPSS policy store.
- **OPSS Policy Store Password** - enter the password that you set up for the OPSS policy store user with read-write privileges.
- **OPSS Policy Store JPS Root Node** - enter the Distinguished Name of the node to be used as the OPSS policy root for Oracle Fusion Applications. This field is read-only and the default value is set as `cn=FAPolicies`.
- **Create OPSS Policy Store JPS Root Node** - select this option to create the OPSS JPS Root Node; this option **must** be enabled.
- **IDM Keystore File** - enter the location of the JKS keystore containing the certificates for the Oracle Identity Management components. (This option is currently not available.)
- **IDM Keystore Password** - enter the password that you set up for the IDM Keystore File. (This option is currently not available.)

Figure 5–16 Access and Policy Management Configuration Screen (1)



Access and Policy Management Configuration

Configure Oracle Fusion Applications to integrate with your existing Oracle Identity Management environment.

Oracle Access Manager Configuration

OAM Admin Server Host: oam-admin-host

OAM Admin Server Port: 14000

OAM Administrator User Name: OAM-ADMIN-USERNAME

OAM Administrator Password: ••••••••

OAM AAA Server Host: accessserver.mycompany.com

OAM AAA Server Port: 6021

Access Server Identifier: aaa1

☑ Enable Second Primary Oracle Access Manager

Second Access Server Identifier: aaa2

OAM Security Mode: Simple

OAM Simple Mode Passphrase: •••••••••••

Webgate Password: ••••••••••

Confirm Webgate Password: ••••••••••

Oracle Platform Security Services Configuration

☐ Default to Identity Store

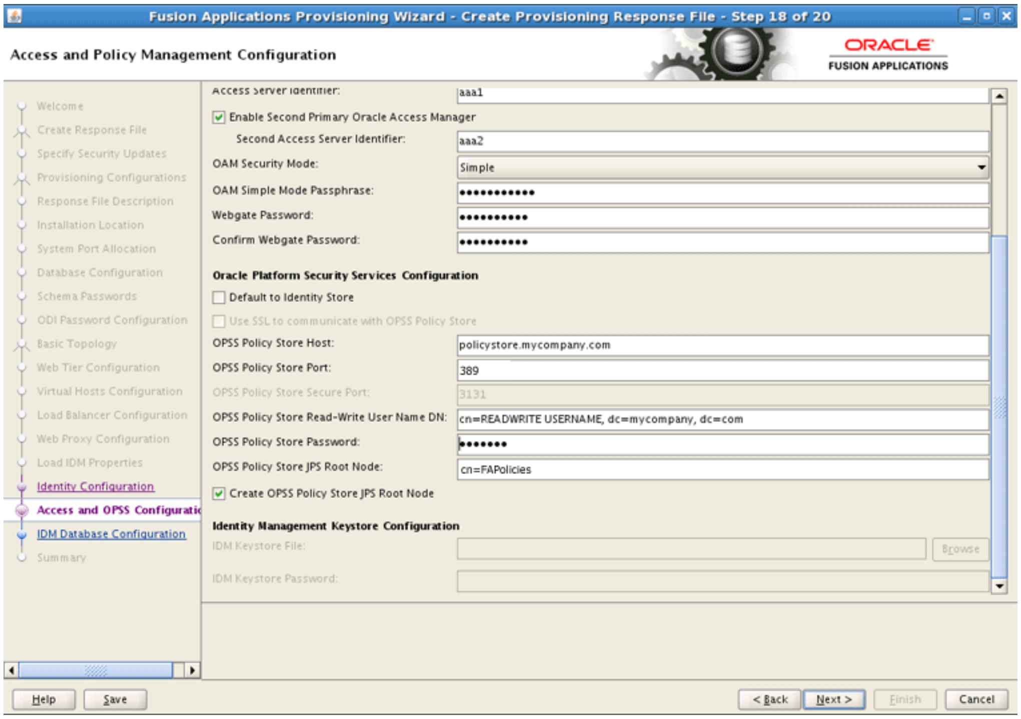
☐ Use SSL to communicate with OPSS Policy Store

OPSS Policy Store Host: policystore.mycompany.com

OPSS Policy Store Port: 389

OPSS Policy Store Secure Port: 3131

Figure 5–17 Access and Policy Management Configuration Screen (2)


Fusion Applications Provisioning Wizard - Create Provisioning Response File - Step 18 of 20
Access and Policy Management Configuration
ORACLE
FUSION APPLICATIONS
Welcome
Create Response File
Specify Security Updates
Provisioning Configurations
Response File Description
Installation Location
System Port Allocation
Database Configuration
Schema Passwords
ODI Password Configuration
Basic Topology
Web Tier Configuration
Virtual Hosts Configuration
Load Balancer Configuration
Web Proxy Configuration
Load IDM Properties
Identity Configuration
Access and OPSS Configuratic
IDM Database Configuration
Summary
Help
Save
< Back
Next >
Finish
Cancel

Access Server Identifier: aaa1

☑ Enable Second Primary Oracle Access Manager

Second Access Server Identifier: aaa2

OAM Security Mode: Simple

OAM Simple Mode Passphrase: ●●●●●●●●●●●

Webgate Password: ●●●●●●●●●●

Confirm Webgate Password: ●●●●●●●●●●

Oracle Platform Security Services Configuration

☐ Default to Identity Store

☐ Use SSL to communicate with OPSS Policy Store

OPSS Policy Store Host: policystore.mycompany.com

OPSS Policy Store Port: 389

OPSS Policy Store Secure Port: 3131

OPSS Policy Store Read-Write User Name DN: cn=READWRITE USERNAME, dc=mycompany, dc=com

OPSS Policy Store Password: ●●●●●●●

OPSS Policy Store JPS Root Node: cn=FAPolicies

☑ Create OPSS Policy Store JPS Root Node

Identity Management Keystore Configuration

IDM Keystore File: Browse

IDM Keystore Password:

Click **Next** to continue.

5.3.2.18 IDM Database Configuration Screen

In this screen, shown in Figure 5–18, enter the configuration details you specified when you installed the database for the Oracle Identity Manager (OIM).

Select **Real Application Clusters Database** if you have installed an OIM database based on Oracle Real Application Clusters (Oracle RAC). Specify the **Service Name**.

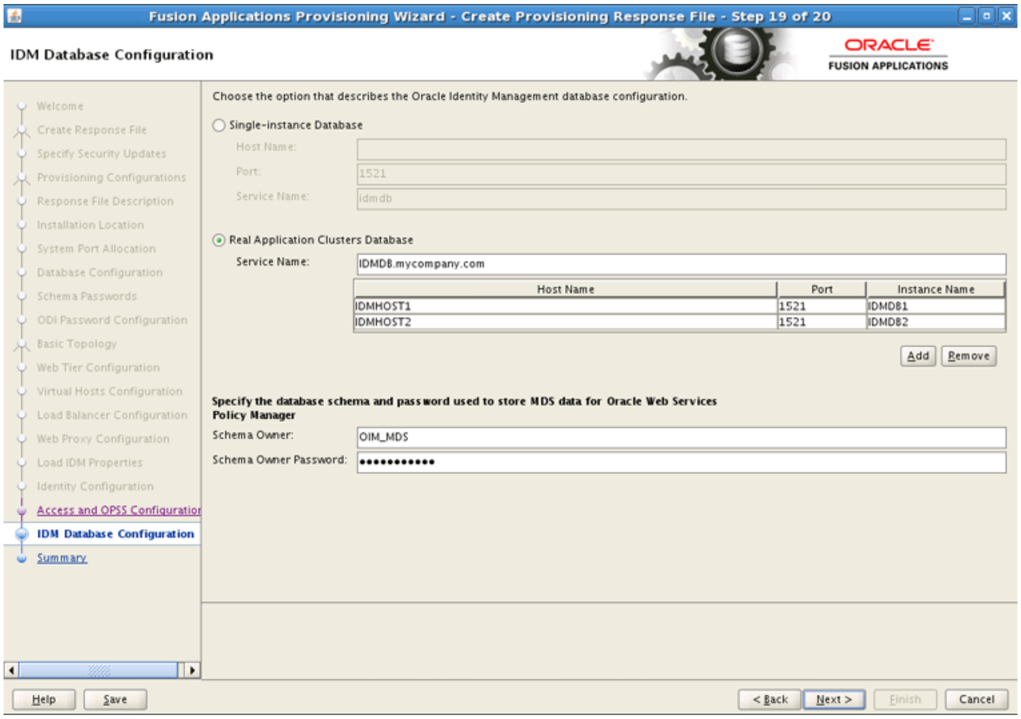
To identify the Oracle RAC instances, click **Add** to create a new row in the table. To delete a row, select it and click **Remove**. Enter the following information for each instance:

- **Host Name** - the name of the Oracle RAC host where you have installed the OIM database. In this field, you select an existing host or enter a new one. As you enter values for a new host, the list of hosts is populated with the new information.
- **Port** - listening port of the RDBMS.
- **Instance Name** - the Oracle RAC database instance name
- **Service Name** - the global database name for the transaction database that you installed. Used to distinguish this database instance from other instances of Oracle Database running on the same host.

Specify the database schema and password used to store the Metadata Service (MDS) Repository data for Oracle Web Services Policy Manager.

- **Schema Owner** - the MDS schema in the OIM database that is used by Oracle Web Services Policy Manager.
- **Schema Owner Password** - the password for the MDS schema.

Figure 5–18 IDM Database Configuration Screen



IDM Database Configuration

Choose the option that describes the Oracle Identity Management database configuration.

○ Single-instance Database

Host Name:

Port: 1521

Service Name: idmdb

● Real Application Clusters Database

Service Name: IDMDB.mycompany.com

Host Name	Port	Instance Name
IDMHOST1	1521	IDMDB1
IDMHOST2	1521	IDMDB2

Specify the database schema and password used to store MDS data for Oracle Web Services Policy Manager

Schema Owner: OIM_MDS

Schema Owner Password: ●●●●●●●●●●●

Click **Next** to continue.

5.3.2.19 Summary Screen

Review the information on this screen. If it is not what you expected or intended, click **Back** to return to the interview flow screen that needs to be changed, or click the name of the screen in the left navigation pane.

Descriptive information for this response file (if any) and database connection details are displayed under **Global Settings**. Each ***product family*** **Domain** to be created is listed along with the configuration details you have previously entered.

If you are satisfied with the information as displayed, specify the following information:

- **Provisioning Response File Name** - the executable file that contains the configuration details of this provisioning response file.
- **Provisioning Summary** - a text document that summarizes the details of this provisioning response file. You cannot use this file to execute the response file.
- **Directory** - the directory path to the location where you save the response file and the summary document.

Make a note of the name and location where you saved the executable file. You must supply this information to the Installation Wizard for other options.

Click **Finish** to save the `*file_name*.rsp` and `provisioning.summary` files to `*ORACLE_BASE*/repository/provisioning/bin`.

5.3.3 Running the Provisioning Commands to Install Components

The provisioning commands that install components perform the following tasks:

- Set up WEBHOST1

- Run the pre-verify phase
- Run the installation phase

Prerequisites for running the provisioning commands

Before running the provisioning commands which run the ant targets (preverify, install, and so on), do the following:

- Check the latest Oracle Fusion Applications release notes for any known workarounds.
- Ensure that the preverify target is passed before you move on to other targets.
- Ensure that all commands with ant targets say "Build Successful" when they pass.
- Set the *JAVA_HOME* variable to *ORACLE_BASE*/repository/jdk6.
- On *FINHOST1* and *WEBHOST1*, create the /etc/oraInst.loc file with the following entries:

  inventory_loc=*ORACLE_BASE*/oraInventory

  inst_group=usergroup
- For commands that fail, use the following location to debug:

  ORACLE_BASE/products/logs/provisioning/*FINHOST1*/runProvisioning-*targetname*.log

Notes:

- In the provisioning commands that follow in these sections, the -override parameter takes the option override.properties. The override.properties file contains the changes that are required for responseFile values.
- The override.properties file can be an empty file. The values it contains exist only to overwrite the responseFile values.
- If for any reason you need to run any target again, run the following:

  ```
  ./runProvisioning.sh -responseFile ./file_name.rsp -override
  ./overrides.properties -target cleanup-targetname

  ./runProvisioning.sh -responseFile ./file_name.rsp -override
  ./overrides.properties -target restore-targetname
  ```

  Then run the target again.

Task 1 Set up *WEBHOST1*

For this task, *WEBHOST1* is the host you configured in Figure 5–9, and *WEBHOST1* and *FINHOST1* do not have a common shared storage. From *FINHOST1*, copy *ORACLE_BASE*/repository to *ORACLE_BASE* on *WEBHOST1*.

Be sure to maintain the same directory structure on *WEBHOST1*.

Task 2 Run the pre-verify phase

Run the following commands from *ORACLE_BASE*/repository/provisioning/bin:

- **On *FINHOST1* :** ./runProvisioning.sh -responseFile ./*file_name*.rsp -override ./overrides.properties -target preverify

- **On *WEBHOST1*:** `./runProvisioning.sh -responseFile ./file_name.rsp -override ./overrides.properties -target preverify`

Task 3 Run the installation phase

Run the following commands from `ORACLE_BASE/repository/provisioning/bin`:

- **On *FINHOST1* :** `./runProvisioning.sh -responseFile ./file_name.rsp -override ./overrides.properties -target install`
- **On *WEBHOST1*:** `./runProvisioning.sh -responseFile ./file_name.rsp -override ./overrides.properties -target install`

> **Note:** If the relative path for the response file (`./file_name.rsp`) and override properties (`./override.properties`) does not work, give a fully qualified path instead.

5.4 Configuring Components

The provisioning commands that configure components perform the following tasks:

- Run the pre-configure phase
- Run the configure phase
- Run the configure secondary phase
- Run the post-configure phase
- Run the start-up phase
- Run the validate phase
- Configure email servers

> **Note:** If any target fails and you have to run the configure stage again, you only need to cleanup/restore the target on that host and then run the target again.
>
> To run cleanup/restore:
>
> ```
> ./runProvisioning.sh -responseFile ./file_name.rsp -override
> ./overrides.properties -target cleanup-configure
>
> ./runProvisioning.sh -responseFile ./file_name.rsp -override
> ./overrides.properties -target restore-configure
> ```
>
> Once the cleanup and restore builds are successful, you can run the configure target again.
>
> This applies to all tasks related to configuring components.

> **Note:** If the relative path for the response file (`./file_name.rsp`) and override properties (`./override.properties`) does not work, give a fully qualified path instead.

Task 1 Run the pre-configure phase

Before running the pre-configure phase, copy the `ORACLE_BASE/products/webtier_dmz_artifacts.zip` file from the *FINHOST1* non-DMZ computers to *WEBHOST1* `ORACLE_BASE/products`.

Run the following commands from `ORACLE_BASE/repository/provisioning/bin`:

- **On *FINHOST1*:** `./runProvisioning.sh -responseFile ./file_name.rsp -override ./overrides.properties -target preconfigure`
- **On *WEBHOST1*:** `./runProvisioning.sh -responseFile ./file_name.rsp -override ./overrides.properties -target preconfigure`

Task 2 Run the configure phase

Run the following commands from `ORACLE_BASE/repository/provisioning/bin`:

- **On *FINHOST1*:** `./runProvisioning.sh -responseFile ./file_name.rsp -override ./overrides.properties -target configure`
- **On *WEBHOST1*:** `./runProvisioning.sh -responseFile ./file_name.rsp -override ./overrides.properties -target configure`

Task 3 Run the configure secondary phase

Run the following commands from `ORACLE_BASE/repository/provisioning/bin`:

- **On *FINHOST1*:** `./runProvisioning.sh -responseFile ./file_name.rsp -override ./overrides.properties -target configure-secondary`
- **On *WEBHOST1*:** `./runProvisioning.sh -responseFile ./file_name.rsp -override ./overrides.properties -target configure-secondary`

Task 4 Run the post-configure phase

Run the following commands from `ORACLE_BASE/repository/provisioning/bin`:

- **On *FINHOST1*:** `./runProvisioning.sh -responseFile ./file_name.rsp -override ./overrides.properties -target postconfigure`
- **On *WEBHOST1*:** `./runProvisioning.sh -responseFile ./file_name.rsp -override ./overrides.properties -target postconfigure`

Task 5 Run the start-up phase

Run the following commands from `ORACLE_BASE/repository/provisioning/bin`:

- **On *FINHOST1*:** `./runProvisioning.sh -responseFile ./file_name.rsp -override ./overrides.properties -target startup`
- **On *WEBHOST1*:** `./runProvisioning.sh -responseFile ./file_name.rsp -override ./overrides.properties -target startup`

Task 6 Run the validate phase

Run the following commands from `ORACLE_BASE/repository/provisioning/bin`:

- **On *FINHOST1*:** `./runProvisioning.sh -responseFile ./file_name.rsp -override ./overrides.properties -target validate`
- **On *WEBHOST1*:** `./runProvisioning.sh -responseFile ./file_name.rsp -override ./overrides.properties -target validate`

Once all the scripts have run successfully, Oracle Fusion Financials provisioning is complete. For information about the resulting directory structure, see Section 3.4.1, "Directory Structure."

For information about the tasks these scripts perform, see *Oracle Fusion Applications Installation Guide*.

> **Note:** If target validation fails with the errors "Managed server state unknown" and "URL validation errors", simply ignore the errors.

Task 7 Configure email servers

To configure an email server as a delivery channel to be used with Oracle Business Intelligence Publisher, see "Adding an E-mail Server" in the chapter "Setting Up Delivery Destinations" in *Oracle Fusion Middleware Administrator's Guide for Oracle Business Intelligence Publisher (Oracle Fusion Applications Edition)*.

5.5 Performing Post-Provisioning Tasks

After provisioning, there are several tasks you must perform.

5.5.1 Validation

After provisioning, access the following URLs, ensuring that the Administration console is visible:

- `http://fininternal.mycompany.com:7777/console`
- `http://crminternal.mycompany.com:7777/console`
- `http://hcminternal.mycompany.com:7777/console`
- `http://scminternal.mycompany.com:7777/console`
- `http://commoninternal.mycompany.com:7777/console`
- `http://biinternal.mycompany.com:7777/console`
- `http://prjinternal.mycompany.com:7777/console`
- `http://prcinternal.mycompany.com:7777/console`

For the following URLs, ensure that the Oracle Fusion Applications login screen is visible.

- `https://finexternal.mycompany.com/ledger/faces/LedgerWorkArea`
- `https://finexternal.mycompany.com/payables/faces/PaymentLandingPage`
- `https://prcexternal.mycompany.com/procurement/faces/PrcPoPurchasingWorkarea`
- `https://prjexternal.mycompany.com/projectsFinancials/faces/PRJProjectWorkarea`
- `https://commonexternal.mycompany.com/homePage/faces/AtkHomePageWelcome`
- `https://biexternal.mycompany.com/analytics`

5.5.2 Other Tasks

Other post-installation tasks include the following:

- Applying patches to your new environment
- Creating upgradeLDAPUsersForSSO.props
- Adding privileges to IDStore and Policy Store entities
- Reconciling users and roles from the IDStore into Oracle Identity Manager
- Deleting Oracle Business Intelligence restart files

For information about performing these tasks, see "Postinstallation Tasks" in *Oracle Fusion Applications Installation Guide*.

5.6 Starting and Stopping the Provisioned Environment

The `fastartstop.sh` script offers a wide range of options to start and stop the servers in the provisioned Oracle Fusion Applications environment. The script resides in the following location:

```
ORACLE_BASE/products/fusionapps/applications/fastartstop.sh
```

For example:

```
./fastartstop.sh -Start|-Stop|-Bounce|-StartBIPS|-StopBIPS
-all|-domains domain_name,domain_nameN,domain_nameN|-BIPServerComponents
-all|-domains "domain_name(server:all,server:managed_server_
name|AdminServer),domain_name(server:all,server:managed_server_
name|AdminServer)"|-BIPServerComponents
[-componentType OHS |-componentDomain component_domain_name][iasInstance=instance_
id][iasComponent=component_id][-processType=component_type]
[-clusterType soa]
-username user_name
-appbase FA_ORACLE_HOME
[-loglevel log_level]
[-timeout timeout_period]
[--help]
```

For more information, see "Starting and Stopping" in the *Oracle Fusion Applications Administrator's Guide*.

6 Scaling Out Oracle HTTP Server

The first Oracle HTTP Server was configured during the provisioning process (see Chapter 5). This chapter describes how to scale out Oracle HTTP Server for additional hosts.

This chapter includes the following topics:

- Section 6.1, "Performing the Scaleout"
- Section 6.2, "Performing WebGate Post-Installation Steps"
- Section 6.3, "Installing WebGate Patches"
- Section 6.4, "Wiring Oracle HTTP Server with Load Balancer"
- Section 6.5, "Validating Oracle HTTP Server on WEBHOST2"

6.1 Performing the Scaleout

To scale out Oracle HTTP Server:

1. Reboot *WEBHOST2* to start the scaleout from a clean machine.

   Note: *WEBHOST2* and *WEBHOST1* should be identical machines.

2. Create the directory *ORACLE_BASE*/repository/installers with the same user that installed Oracle HTTP Server on *WEBHOST1*.
3. Copy or ftp the installers from *WEBHOST1* to *WEBHOST2*:

   ```
   WEBHOST1> ORACLE_BASE/repository/installers/webgate
   ```

   to

   ```
   WEBHOST2> ORACLE_BASE/repository/installers
   ```

   ```
   WEBHOST1> ORACLE_BASE/repository/installers/webtier
   ```

   to

   ```
   WEBHOST2> ORACLE_BASE/repository/installers
   ```

4. Run the following command to install Oracle Web Tier on *WEBHOST2* (oraInventory should be located in *ORACLE_BASE*/oraInventory):

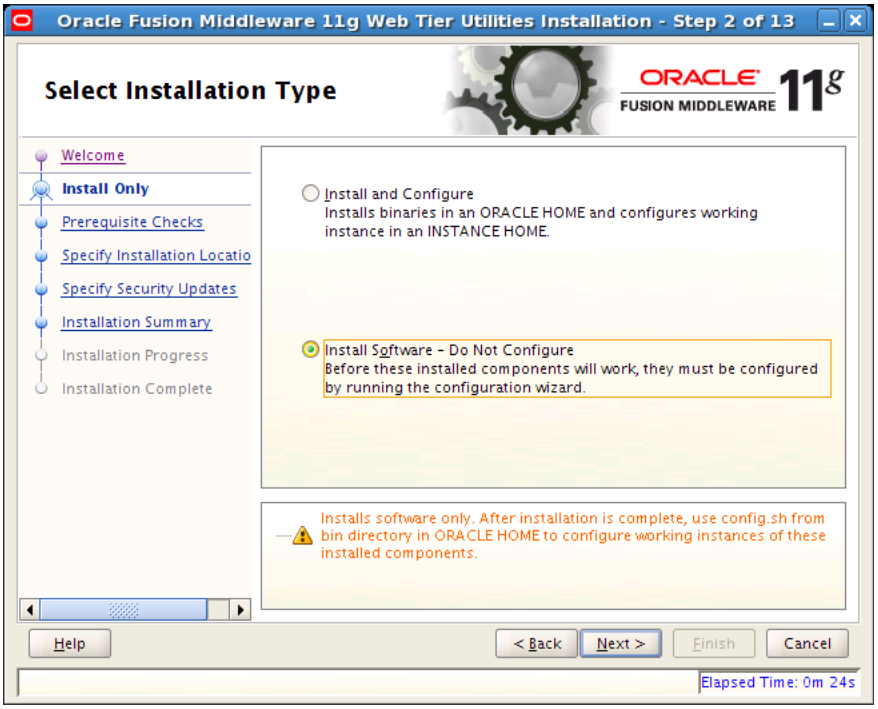
   ```
   ORACLE_BASE/repository/installers/webtier/Disk1/runInstaller
   ```

The Oracle Fusion Middleware 11*g* Oracle Web Tier Utilities Configuration Welcome window opens.

5. Click **Next** to start the installation.

   The Select Installation Type window, shown in Figure 6–1, opens.

Figure 6–1 Select Installation Type Window



Oracle Fusion Middleware 11g Web Tier Utilities Installation - Step 2 of 13

Select Installation Type

○ Install and Configure
Installs binaries in an ORACLE HOME and configures working instance in an INSTANCE HOME.

● Install Software - Do Not Configure
Before these installed components will work, they must be configured by running the configuration wizard.

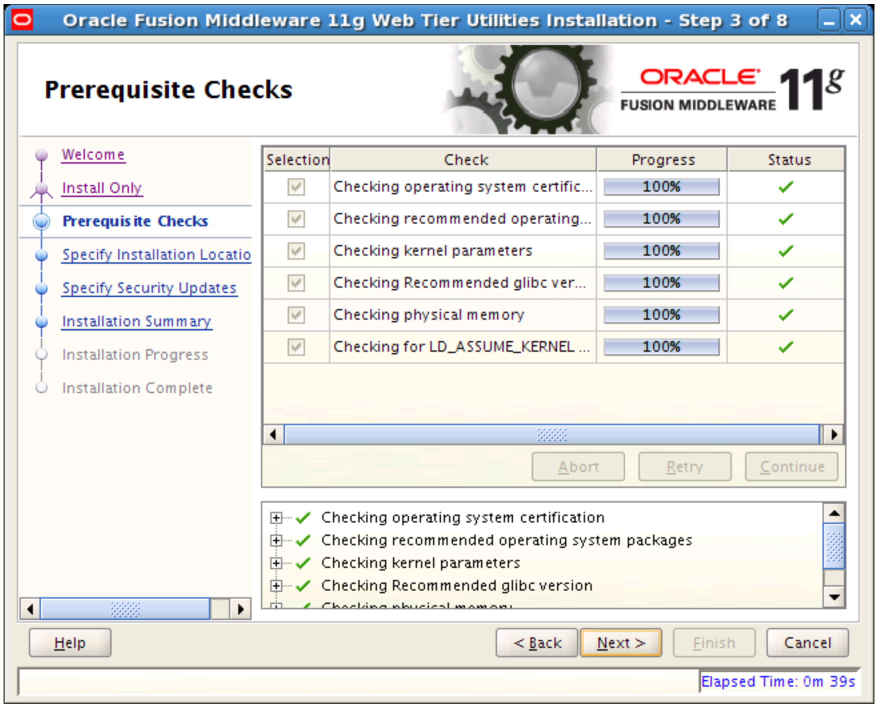
Installs software only. After installation is complete, use config.sh from bin directory in ORACLE HOME to configure working instances of these installed components.

Elapsed Time: 0m 24s

6. **Select Install Software - Do Not Configure** and click **Next**.

   The Prerequisite Checks window, shown in Figure 6–2, opens.

Figure 6–2 Prerequisite Checks Window



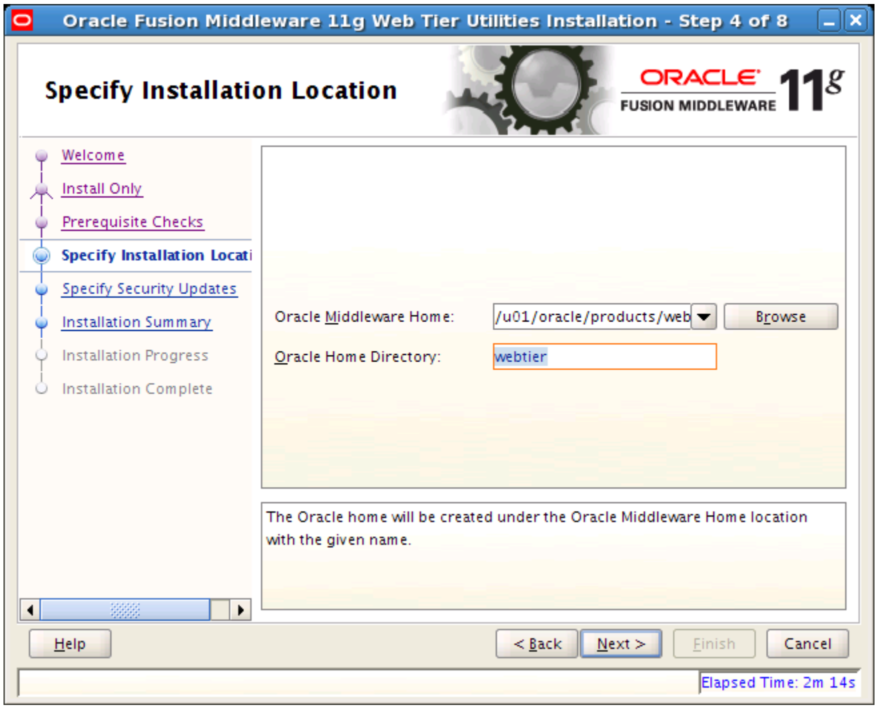
Selection	Check	Progress	Status
☑	Checking operating system certific...	100%	✓
☑	Checking recommended operating...	100%	✓
☑	Checking kernel parameters	100%	✓
☑	Checking Recommended glibc ver...	100%	✓
☑	Checking physical memory	100%	✓
☑	Checking for LD_ASSUME_KERNEL ...	100%	✓

✓ Checking operating system certification
✓ Checking recommended operating system packages
✓ Checking kernel parameters
✓ Checking Recommended glibc version
✓ Checking physical memory

Elapsed Time: 0m 39s

Click **Next**. The Specify Installation Location window, shown in Figure 6–3, opens.

Figure 6–3 Specify Installation Location Window


Oracle Fusion Middleware 11g Web Tier Utilities Installation - Step 4 of 8
Specify Installation Location
ORACLE FUSION MIDDLEWARE 11g
Welcome
Install Only
Prerequisite Checks
Specify Installation Locati
Specify Security Updates
Installation Summary
Installation Progress
Installation Complete
Browse
Help
< Back
Next >
Finish
Cancel

Oracle Middleware Home: /u01/oracle/products/web

Oracle Home Directory: webtier

The Oracle home will be created under the Oracle Middleware Home location with the given name.

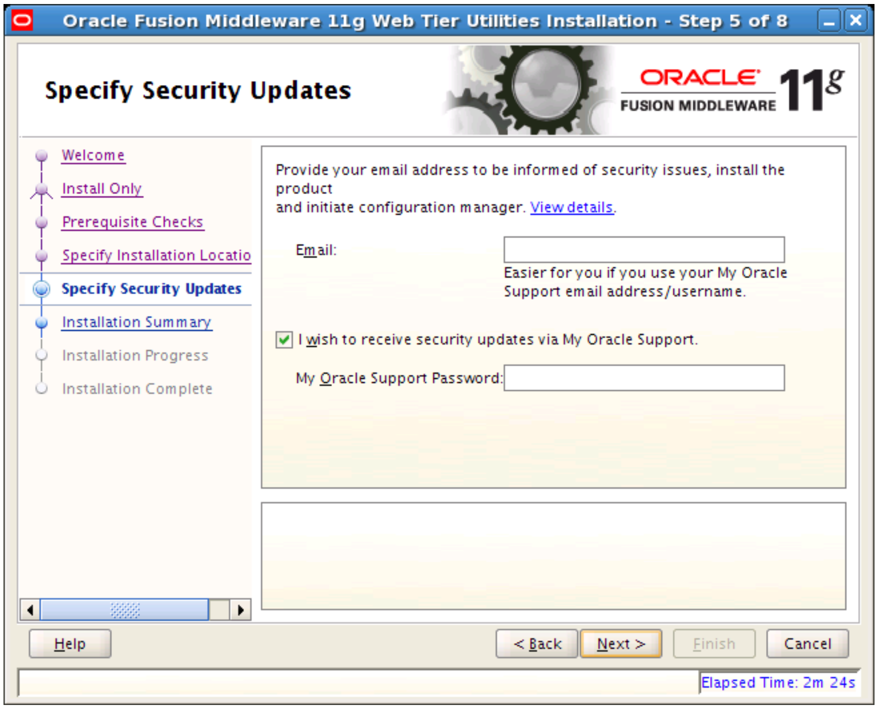
Elapsed Time: 2m 14s

Select the path to Oracle Middleware Home and enter a name for the home directory. For example, `/u01/oracle/products/webtier_mwhome/`. Click **Next**.

7. In the Specify Security Updates window, shown in Figure 6–4, do the following:

- Enter an email address
- Indicate that you wish to receive security updates from My Oracle Support
- Enter your My Oracle Support password

Figure 6–4 Specify Security Updates Window



Oracle Fusion Middleware 11g Web Tier Utilities Installation - Step 5 of 8

Specify Security Updates

Provide your email address to be informed of security issues, install the product and initiate configuration manager. View details.

Email:

Easier for you if you use your My Oracle Support email address/username.

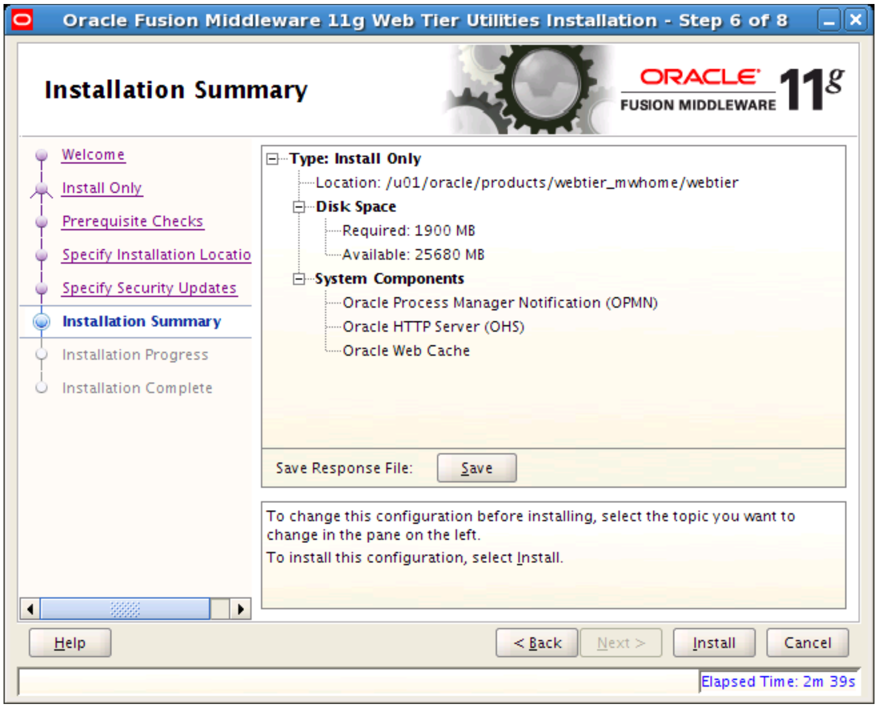
☑ I wish to receive security updates via My Oracle Support.

My Oracle Support Password:

Elapsed Time: 2m 24s

Click **Next**. The Installation Summary window, shown in Figure 6–5, opens.

Figure 6–5 Installation Summary Window



Oracle Fusion Middleware 11g Web Tier Utilities Installation - Step 6 of 8

Installation Summary

Type: Install Only
Location: /u01/oracle/products/webtier_mwhome/webtier
Disk Space
Required: 1900 MB
Available: 25680 MB
System Components
Oracle Process Manager Notification (OPMN)
Oracle HTTP Server (OHS)
Oracle Web Cache

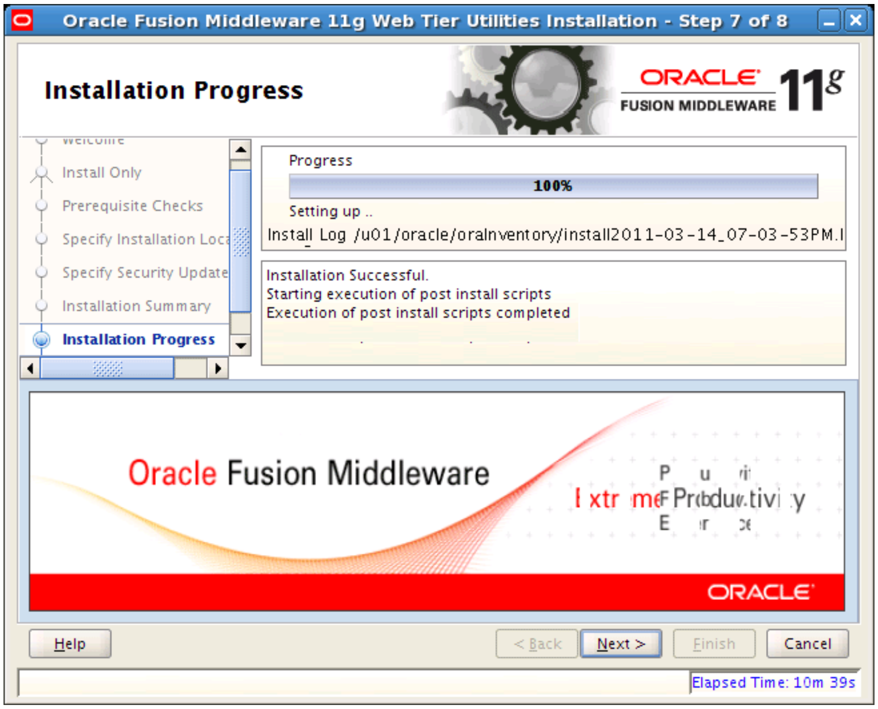
Save Response File: Save

To change this configuration before installing, select the topic you want to change in the pane on the left.
To install this configuration, select Install.

Elapsed Time: 2m 39s

8. Click **Install**. The Installation Progress window, shown in Figure 6–6, opens.

Figure 6–6 Installation Progress Window



Oracle Fusion Middleware 11g Web Tier Utilities Installation - Step 7 of 8

Installation Progress

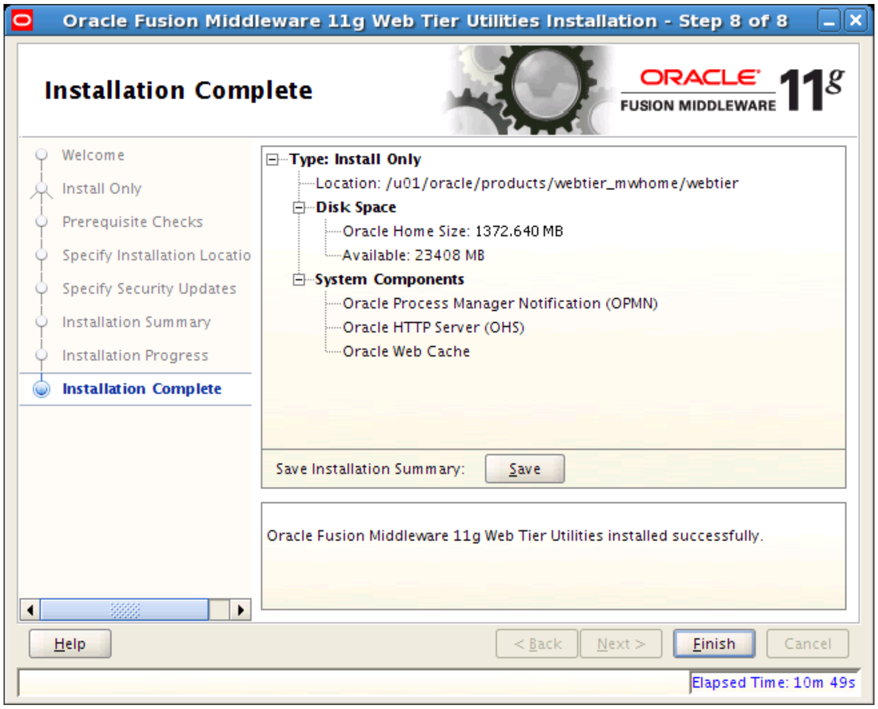
Progress
100%
Setting up ..
Install Log /u01/oracle/oraInventory/install2011-03-14_07-03-53PM.l

Installation Successful.
Starting execution of post install scripts
Execution of post install scripts completed

Elapsed Time: 10m 39s

Click **Next** when the installation has finished. The Installation Complete window, shown in Figure 6–7, opens.

Figure 6–7 Installation Complete Window



Oracle Fusion Middleware 11g Web Tier Utilities Installation - Step 8 of 8

Installation Complete

Type: Install Only
- Location: /u01/oracle/products/webtier_mwhome/webtier
- **Disk Space**
  - Oracle Home Size: 1372.640 MB
  - Available: 23408 MB
- **System Components**
  - Oracle Process Manager Notification (OPMN)
  - Oracle HTTP Server (OHS)
  - Oracle Web Cache

Save Installation Summary:

Oracle Fusion Middleware 11g Web Tier Utilities installed successfully.

Elapsed Time: 10m 49s

Click **Finish**.

9. View the directory structure that has been created:

```
cd ORACLE_BASE/products/webtier_mwhome
```

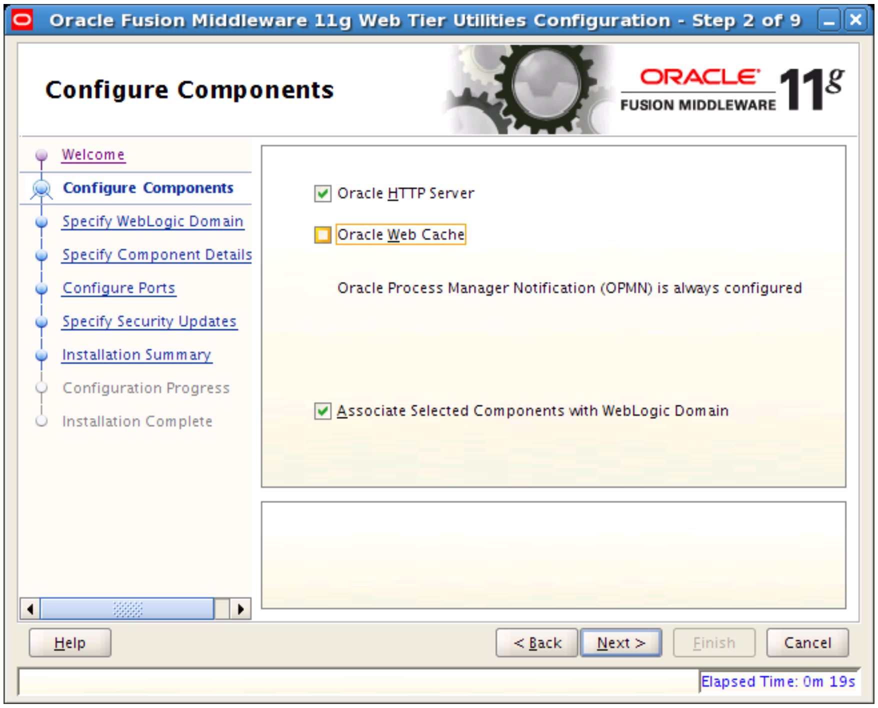
10. Begin configuring the Oracle Web Tier components:

```
cd ORACLE_BASE/products/webtier_mwhome/webtier/bin
```

```
run ./config.sh
```

The Configure Components window, shown in Figure 6–8, opens.

Figure 6–8 Configure Components Window



☑ Oracle HTTP Server

□ Oracle Web Cache

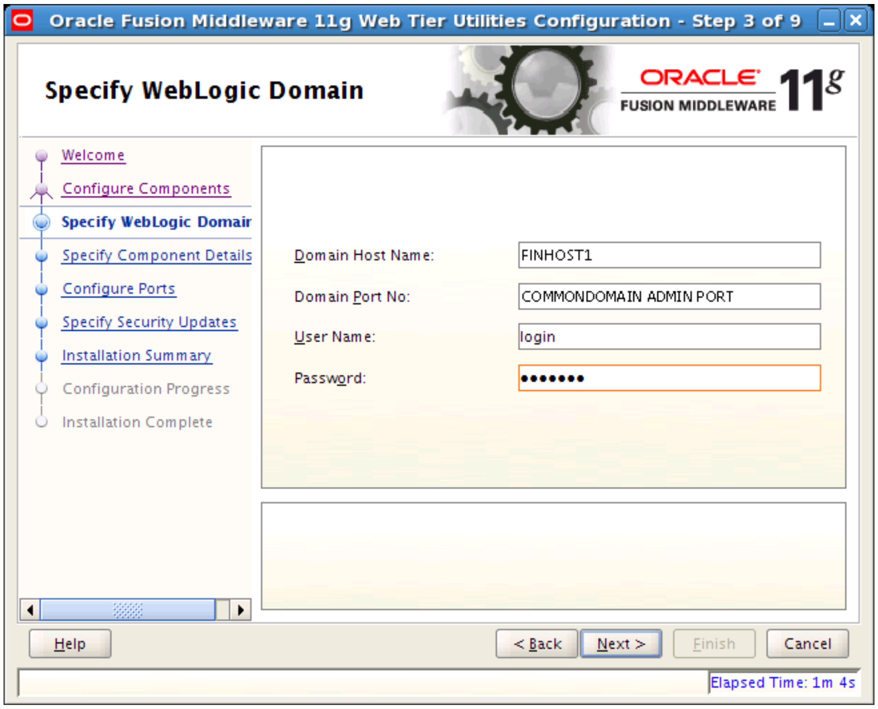
Oracle Process Manager Notification (OPMN) is always configured

☑ Associate Selected Components with WebLogic Domain

11. Select **Oracle HTTP Server** and **Associate Selected Components with WebLogic Domain**.

12. Click **Next**. The Specify WebLogic Domain window, shown in Figure 6–9, opens.

Figure 6–9 Specify WebLogic Domain Window



Domain Host Name: FINHOST1

Domain Port No: COMMONDOMAIN ADMIN PORT

User Name: login

Password: •••••••

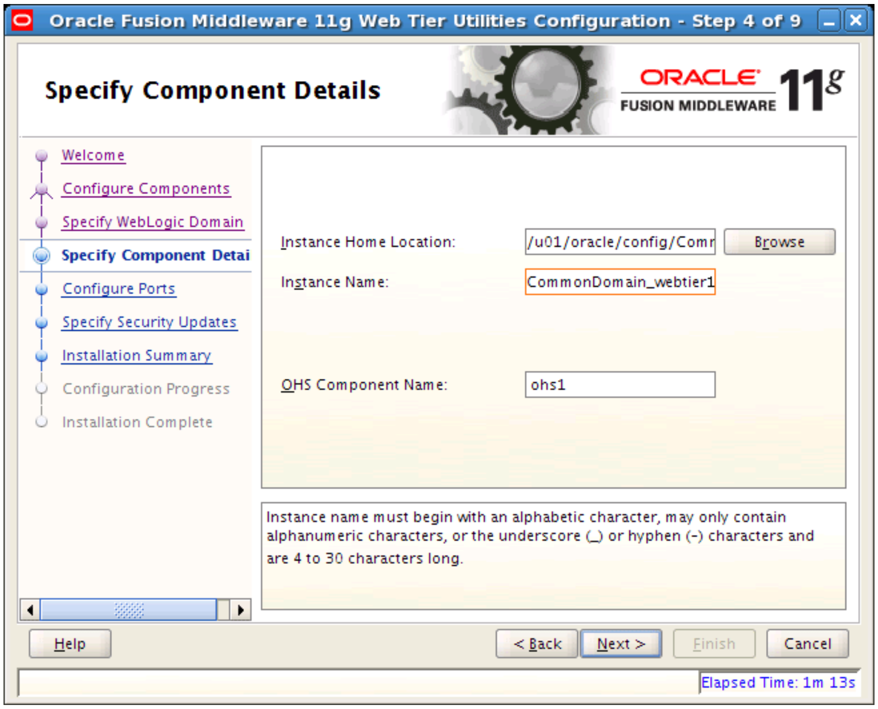
13. Enter the following:

- a domain host name; for example, `FINHOST1`
- a domain port number; for example, `COMMONDOMAIN ADMIN PORT`
- your CommonDomain Administration Server user name
- your CommonDomainAdministration Server password

> **Note:** Associate Oracle HTTP Server with the CommonDomain that Provisioning installed in Chapter 5.

14. Click **Next**. The Specify Component Details window, shown in Figure 6–10, opens.

Figure 6–10 Specify Component Details Window



Oracle Fusion Middleware 11g Web Tier Utilities Configuration - Step 4 of 9

Specify Component Details

Instance Home Location: /u01/oracle/config/Comr

Instance Name: CommonDomain_webtier1

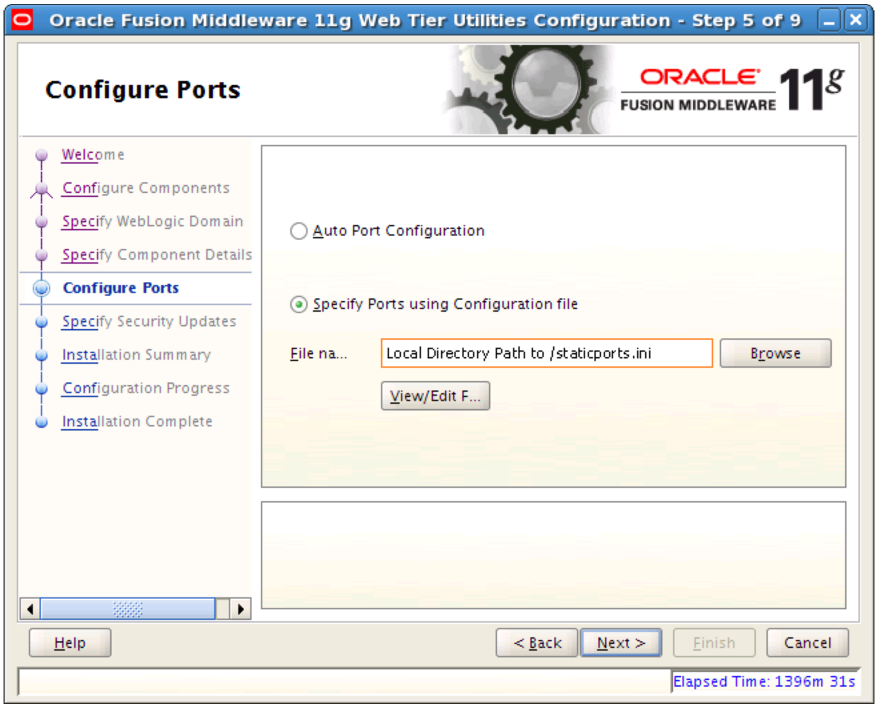
OHS Component Name: ohs1

Instance name must begin with an alphabetic character, may only contain alphanumeric characters, or the underscore (_) or hyphen (-) characters and are 4 to 30 characters long.

Elapsed Time: 1m 13s

15. Do the following:
    - Select the instance home location; for example, `/u01/oracle/config/CommonDomain_webtier1`
    - Enter the instance name; for example, `CommonDomain_webtier1`
    - Enter the Oracle HTTP Server component name; for example `ohs1`
16. Click **Next**. The Configure Ports window, shown in Figure 6–11, opens.

Figure 6–11 Configure Ports Window (1)



Oracle Fusion Middleware 11g Web Tier Utilities Configuration - Step 5 of 9

Configure Ports

○ Auto Port Configuration

● Specify Ports using Configuration file

File na... Local Directory Path to /staticports.ini

Elapsed Time: 1396m 31s

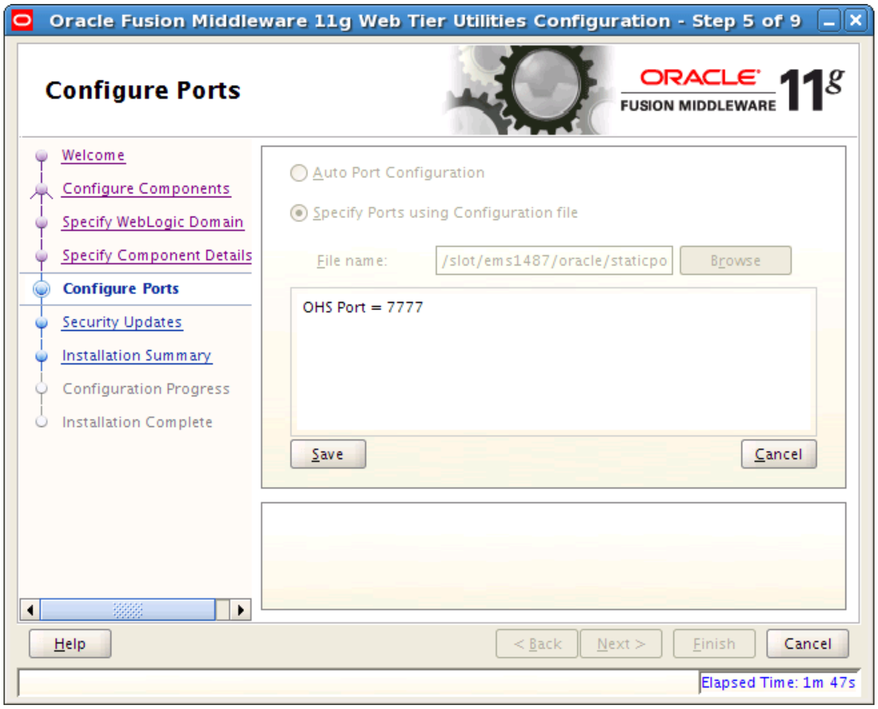
Note: Copy the `staticports.ini` file from `repository/installers/webtier/Disk1/stage/Response` to *`ORACLE_BASE`*`/staticports.ini`.

---

17. Select **Specify Ports using Configuration file** and click **View/Edit**.

    In the text field that displays, shown in Figure 6–12, enter `OHS port = 7777`.

Figure 6–12 Configure Ports Window (2)



Oracle Fusion Middleware 11g Web Tier Utilities Configuration - Step 5 of 9

Configure Ports

○ Auto Port Configuration

● Specify Ports using Configuration file

File name: /slot/ems1487/oracle/staticpo

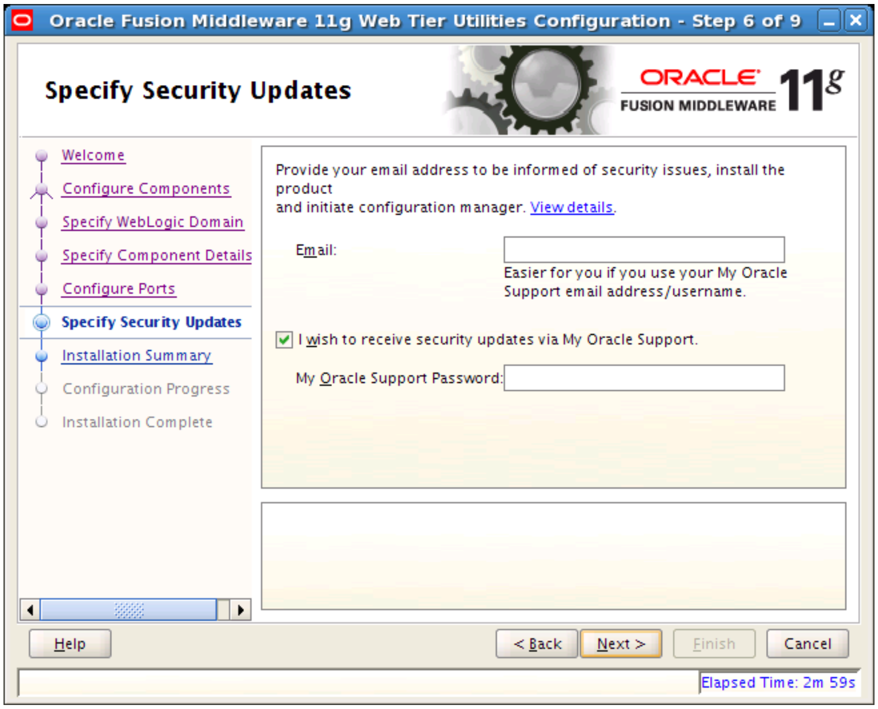
OHS Port = 7777

Elapsed Time: 1m 47s

Click **Save** and then click **Next**.

The Specify Security Updates window, shown in Figure 6–13, opens.

Figure 6–13 Specify Security Updates



Oracle Fusion Middleware 11g Web Tier Utilities Configuration - Step 6 of 9

Specify Security Updates

Provide your email address to be informed of security issues, install the product and initiate configuration manager. View details.

Email:

Easier for you if you use your My Oracle Support email address/username.

☑ I wish to receive security updates via My Oracle Support.

My Oracle Support Password:

Elapsed Time: 2m 59s

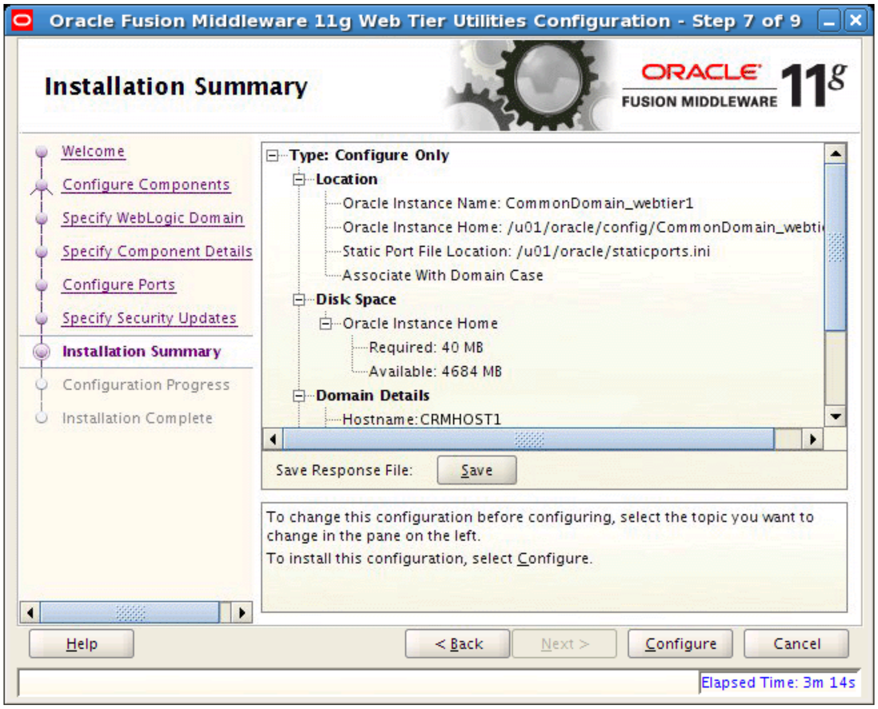
18. Do the following:

- Enter an email address

- Indicate that you wish to receive security updates from My Oracle Support
- Enter your My Oracle Support password

19. Click **Next**. The Installation Summary window, shown in Figure 6–14, opens.

Figure 6–14 Installation Summary Window



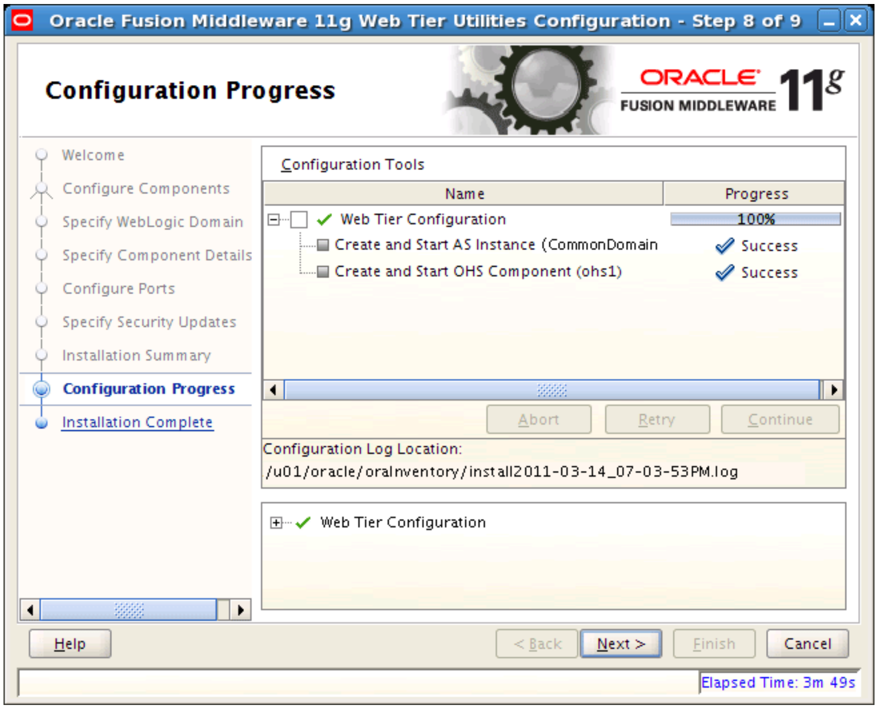
```
Type: Configure Only
  Location
    Oracle Instance Name: CommonDomain_webtier1
    Oracle Instance Home: /u01/oracle/config/CommonDomain_webti
    Static Port File Location: /u01/oracle/staticports.ini
    Associate With Domain Case
  Disk Space
    Oracle Instance Home
      Required: 40 MB
      Available: 4684 MB
  Domain Details
    Hostname:CRMHOST1
```

To change this configuration before configuring, select the topic you want to change in the pane on the left.

To install this configuration, select Configure.

20. Click **Configure** to install the configuration. The Configuration Progress window, shown in Figure 6–15, opens.

Figure 6–15 Configuration Progress Window



Oracle Fusion Middleware 11g Web Tier Utilities Configuration - Step 8 of 9

Configuration Progress

Name	Progress
Web Tier Configuration	100%
Create and Start AS Instance (CommonDomain	Success
Create and Start OHS Component (ohs1)	Success

Configuration Log Location:
/u01/oracle/oraInventory/install2011-03-14_07-03-53PM.log

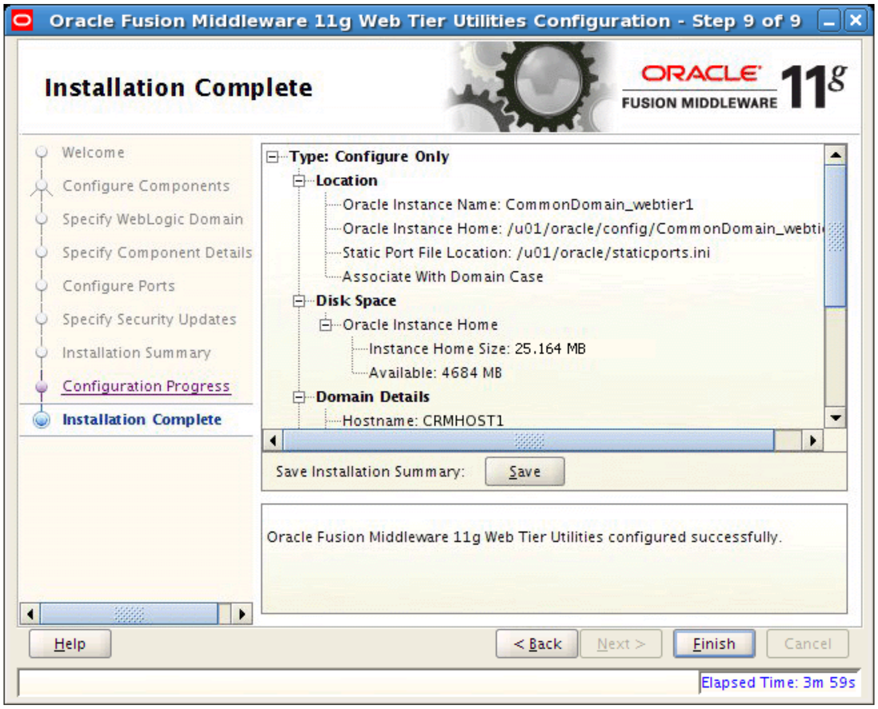
✓ Web Tier Configuration

Elapsed Time: 3m 49s

21. Click **Next**.

When the installation completes, the Installation Complete window, shown in Figure 6–16, opens.

Figure 6–16 Installation Complete Window



Oracle Fusion Middleware 11g Web Tier Utilities Configuration - Step 9 of 9

Installation Complete

Type: Configure Only
- Location
  - Oracle Instance Name: CommonDomain_webtier1
  - Oracle Instance Home: /u01/oracle/config/CommonDomain_webti
  - Static Port File Location: /u01/oracle/staticports.ini
  - Associate With Domain Case
- Disk Space
  - Oracle Instance Home
    - Instance Home Size: 25.164 MB
    - Available: 4684 MB
- Domain Details
  - Hostname: CRMHOST1

Save Installation Summary:

Oracle Fusion Middleware 11g Web Tier Utilities configured successfully.

Elapsed Time: 3m 59s

22. Click **Finish**.

23. Copy or `ftp` the FusionVirtualHost files from *WEBHOST1* to *WEBHOST2*:

```
WEBHOST1> ORACLE_BASE/config/CommonDomain_webtier/config/OHS/ohs1/moduleconf
```

to

```
WEBHOST2> ORACLE_BASE/config/CommonDomain_webtier1/config/OHS/ohs1/moduleconf/
```

24. After the copy, change all *WEBHOST1* entries in the `.conf` files to *WEBHOST2*.
25. Restart the Oracle HTTP Server instance:

```
WEBHOST2> cd ORACLE_BASE/config/CommonDomain_webtier1/bin

WEBHOST2> ./opmnctl stopall
WEBHOST2> ./opmnctl startall
```

26. From *ORACLE_BASE*`/repository/installers/webgate/Disk1`, start the WebGate installation:

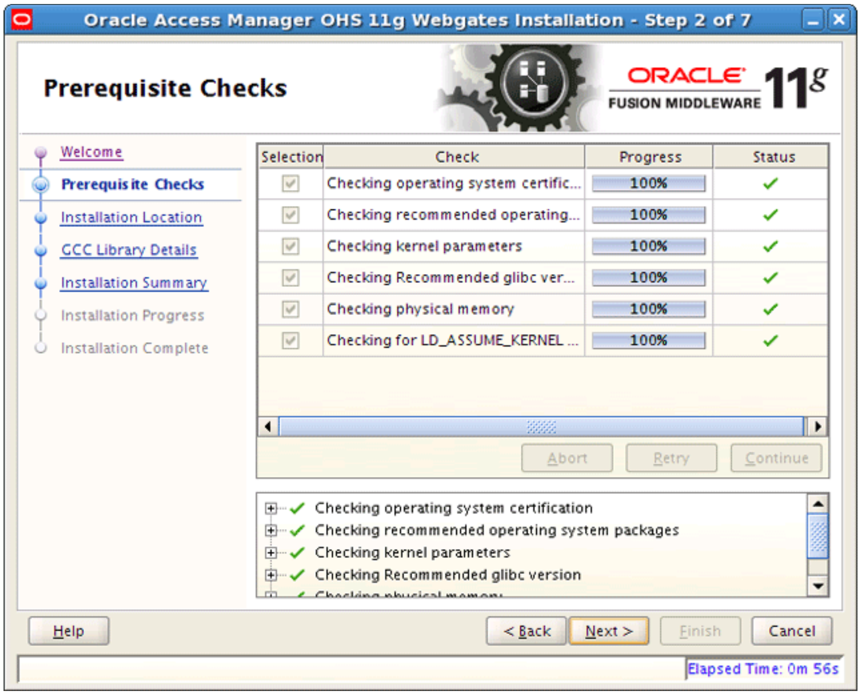
```
./runInstaller
```

27. When prompted, specify the path to the JDK:

```
ORACLE_BASE/repository/jdk6
```

28. When the Welcome window opens, click **Next**. The Prerequisite Checks window, shown in Figure 6–17, opens.

Figure 6–17 Prerequisite Checks Window

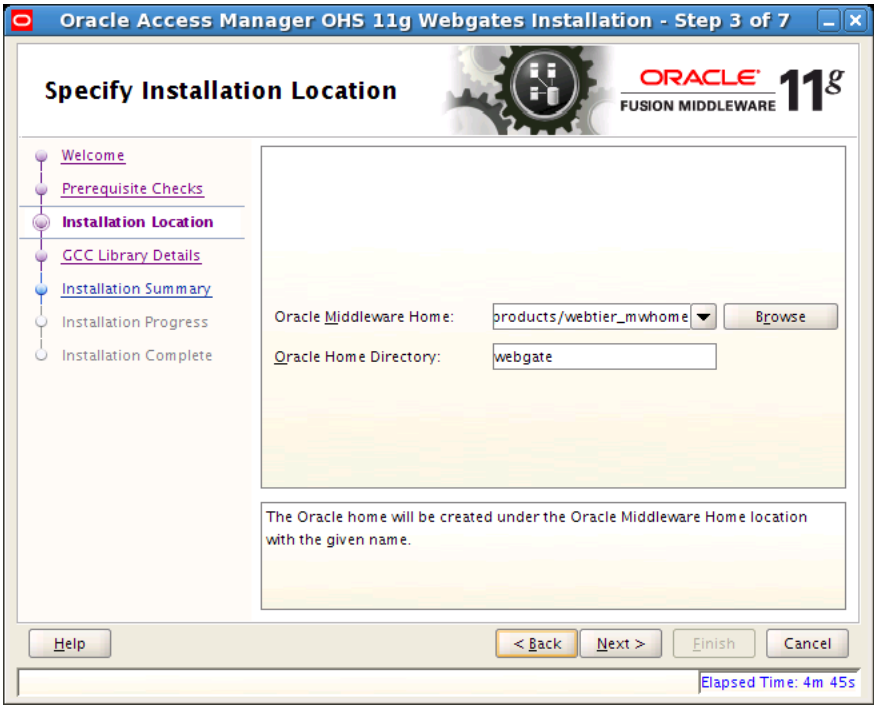


Selection	Check	Progress	Status
☑	Checking operating system certific...	100%	✓
☑	Checking recommended operating...	100%	✓
☑	Checking kernel parameters	100%	✓
☑	Checking Recommended glibc ver...	100%	✓
☑	Checking physical memory	100%	✓
☑	Checking for LD_ASSUME_KERNEL ...	100%	✓

```
⊞ ✓ Checking operating system certification
⊞ ✓ Checking recommended operating system packages
⊞ ✓ Checking kernel parameters
⊞ ✓ Checking Recommended glibc version
⊞ ✓ Checking physical memory
```

29. When the checking process completes, click **Next**. The Installation Location window, shown in Figure 6–18, opens.

Figure 6–18 Installation Location Window



Oracle Access Manager OHS 11g Webgates Installation - Step 3 of 7

Specify Installation Location

Oracle Middleware Home: products/webtier_mwhome

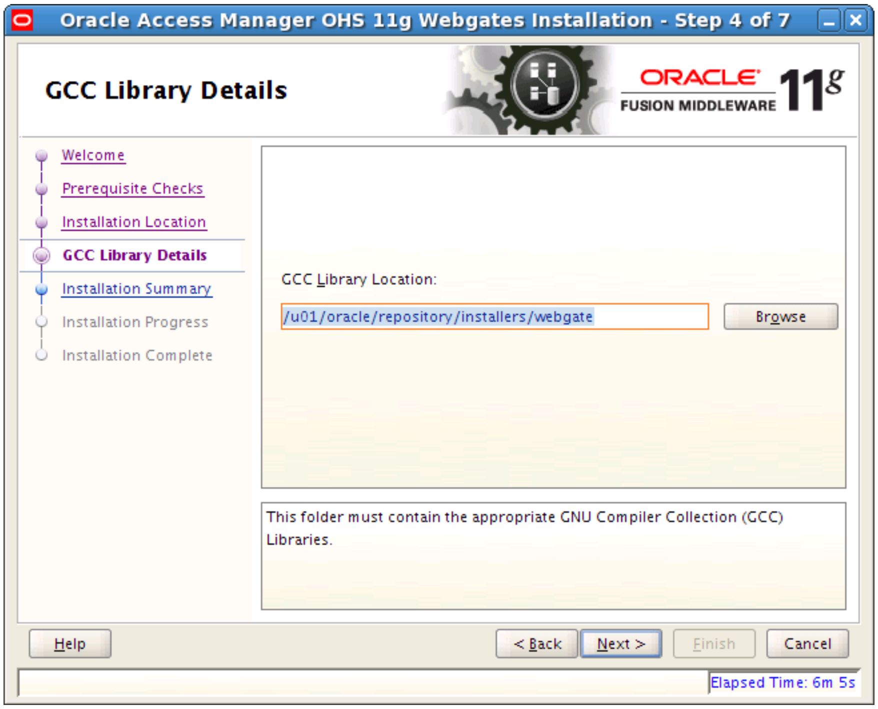
Oracle Home Directory: webgate

The Oracle home will be created under the Oracle Middleware Home location with the given name.

Elapsed Time: 4m 45s

30. Enter an Oracle Middleware Home location Oracle Home Directory, `ORACLE_BASE/products/webtier_mwhome`, and click **Next**. The GCC Library Details window, shown in Figure 6–19, opens.

Figure 6–19 GCC Library Details Window



Oracle Access Manager OHS 11g Webgates Installation - Step 4 of 7

GCC Library Details

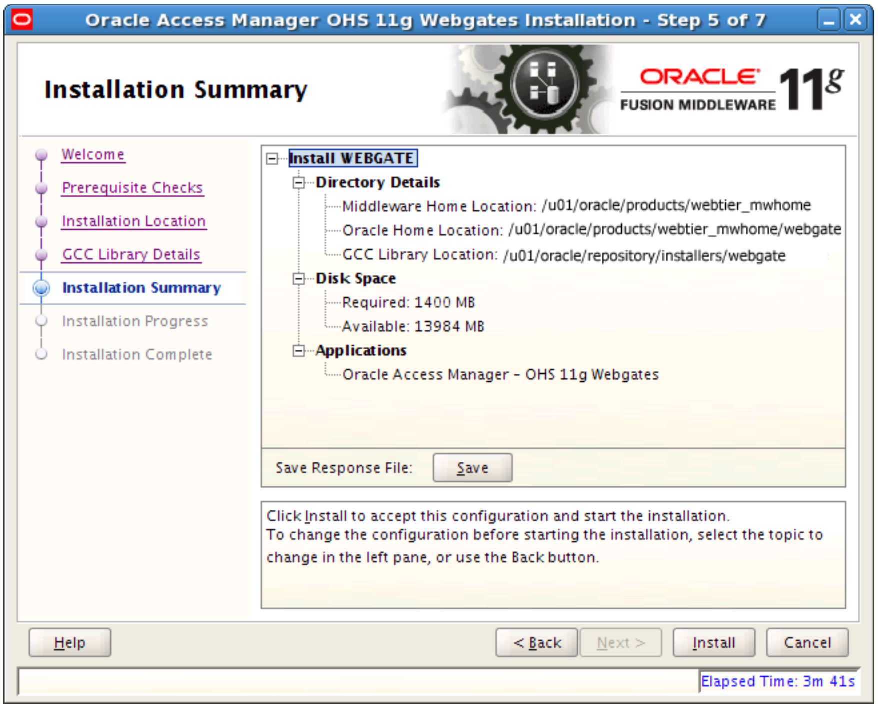
GCC Library Location: /u01/oracle/repository/installers/webgate

This folder must contain the appropriate GNU Compiler Collection (GCC) Libraries.

Elapsed Time: 6m 5s

31. Enter the location for the GCC runtime libraries and click **Next**. The Installation Summary window, shown in Figure 6–20, opens.

Figure 6–20 Installation Summary Window



Oracle Access Manager OHS 11g Webgates Installation - Step 5 of 7

Installation Summary

- Install WEBGATE
  - Directory Details
    - Middleware Home Location: /u01/oracle/products/webtier_mwhome
    - Oracle Home Location: /u01/oracle/products/webtier_mwhome/webgate
    - GCC Library Location: /u01/oracle/repository/installers/webgate
  - Disk Space
    - Required: 1400 MB
    - Available: 13984 MB
  - Applications
    - Oracle Access Manager - OHS 11g Webgates

Save Response File:

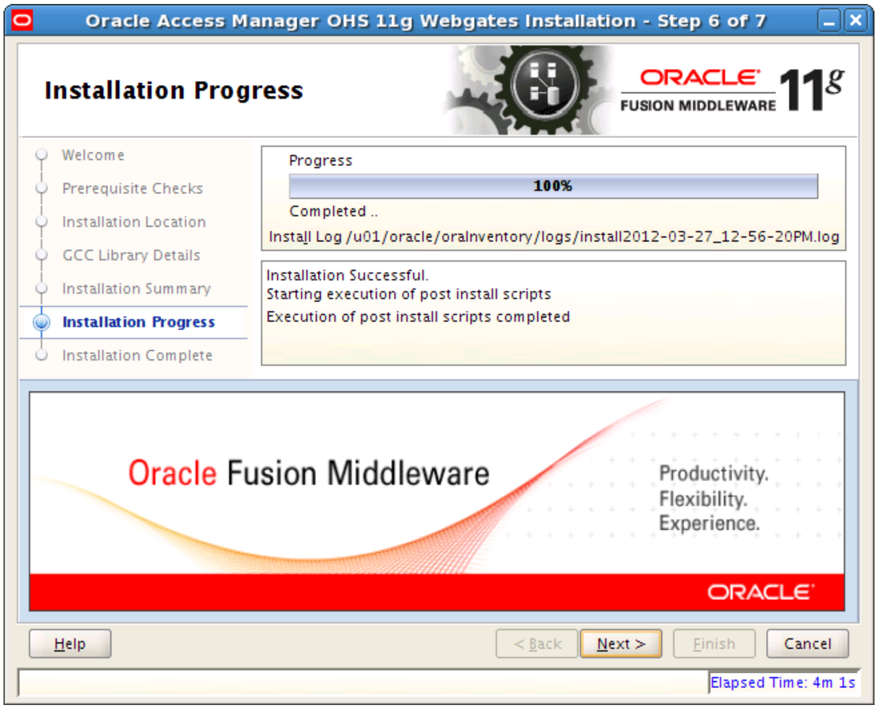
Click Install to accept this configuration and start the installation.
To change the configuration before starting the installation, select the topic to change in the left pane, or use the Back button.

Elapsed Time: 3m 41s

32. Click **Save** if you wish to save the response file. Click **Install** to start the installation. Following an interim window, the one shown in Figure 6–21 opens.

    During installation, a progress window, shown in Figure 6–21, opens.

Figure 6–21 Installation Progress Window



Oracle Access Manager OHS 11g Webgates Installation - Step 6 of 7

Installation Progress

Progress

100%

Completed ..

Install Log /u01/oracle/oraInventory/logs/install2012-03-27_12-56-20PM.log

Installation Successful.
Starting execution of post install scripts
Execution of post install scripts completed

Elapsed Time: 4m 1s

33. When the installation finishes, click **Next**. The Installation Complete window opens.

34. Click **Save** if you wish to save the installation details. Click **Finish** to complete the WebGate installation.

6.2 Performing WebGate Post-Installation Steps

After installing WebGate, do the following:

1. Add LD_LIBRARY_PATH to *ORACLE_BASE*/products/webtier_mwhome/webtier/lib:

   ```
   WEBHOST2> export LD_LIBRARY_PATH=ORACLE_BASE/products/webtier
   ```

2. Run the following commands:

   ```
   # Usage: deployWebGateInstance.sh -w <WebGate_instancedir> -oh WebGate_Oracle_
   Home

   $  cd ORACLE_BASE/products/webtier_mwhome/webgate/webgate/ohs/tools/
   deployWebGate

   $ ./deployWebGateInstance.sh -w ORACLE_BASE/config/CommonDomain_
   webtier1/config/OHS/ohs1 -oh ORACLE_BASE/products/webtier_mwhome/webgate

   $  cd /ORACLE_BASE/products/webtier_mwhome/webgate/webgate/ohs/tools/setup/
   InstallTools

   $ ./EditHttpConf -w ORACLE_BASE/config/CommonDomain_webtier1/config/OHS/ohs1
   -oh ORACLE_BASE/products/webtier_mwhome/webgate -o webgate.conf
   ```

3. Do the following on *WEBHOST1*:

   a. From *ORACLE_BASE*/config/CommonDomain_webtier/config/OHS/ohs1/webgate/config, copy the following to *ORACLE_BASE*/config/CommonDomain_webtier1/config/OHS/ohs1/webgate/config on *WEBHOST2*:

   ```
   "ObAccessClient.xml","cwallet.sso","password.xml"
   ```

   b. From *ORACLE_BASE*/config/CommonDomain_webtier/config/OHS/ohs1/webgate/config/simple, copy the following to *ORACLE_BASE*/config/CommonDomain_webtier1/config/OHS/ohs1/webgate/config/simple on *WEBHOST2*:

   ```
   "aaa_key.pem","aaa_cert.pem"
   ```

6.3 Installing WebGate Patches

If the *ORACLE_BASE*/repository/installers/webgate location has a patch directory, perform the steps in this section. If prompted, specify the JDK location.

To install WebGate patches, do the following:

1. Change directory to *ORACLE_BASE*/repository/installers/webgate/patch/.

2. If the directory under patch exists, set the path to the Opatch directory to *ORACLE_BASE*/products/webtier_mwhome/webgate/OPatch.

> **Note:** Running the `$ which opatch` command will give you the path specified in Step 2.

3. Install all the patches in *`ORACLE_BASE`*`/repository/installers/webgate/patch/`.
4. Run the following command:

   ```
   ./opatch apply -jre jdk_location
   ```

   For example:

   ```
   ./opatch apply -jre ORACLE_BASE/repository/jdk6/jre
   ```

   After you install the patches, restart the web server. Oracle HTTP Server scaleout is complete, and *`WEBHOST1`* and *`WEBHOST2`* should behave identically.

6.4 Wiring Oracle HTTP Server with Load Balancer

Configure your load balancer to route all HTTP requests to the hosts running Oracle HTTP Server, that is, *`WEBHOST1`* and *`WEBHOST2`*.

To prevent repeat authorization from occurring, enable sticky session (insert cookie) on the load balancer when Oracle HTTP Server is the front end to Oracle WebLogic Server.

You also must set Monitors for HTTP.

6.5 Validating Oracle HTTP Server on WEBHOST2

To validate once the installation is complete:

1. Check that it is possible to access the Oracle HTTP Server home page using the following URLs:
   - `http://webhost1.mycompany.com:10601`
   - `http://webhost2.mycompany.com:7777`
2. Stop *`WEBHOST1`*:

   ```
   WEBHOST1> cd /u01/oracle/config/CommonDomain_webtier/bin

   WEBHOST1> ./opmnctl stopall
   ```

3. Access the following URLs to ensure that the Administration console is visible:
   - `http://fininternal.mycompany.com:7777/console`
   - `http://hcminternal.mycompany.com:7777/console`
   - `http://scminternal.mycompany.com:7777/console`
   - `http://commoninternal.mycompany.com:7777/console`
   - `http://biinternal.mycompany.com:7777/console`
   - `http://prjinternal.mycompany.com:7777/console`
   - `http://prcinternal.mycompany.com:7777/console`
4. Access the following URLs to ensure that the Oracle Fusion Applications login screen is visible:

- `https://finexternal.mycompany.com/ledger/faces/LedgerWorkArea`
- `https://finexternal.mycompany.com/payables/faces/PaymentLandingPage`
- `https://prcexternal.mycompany.com/procurement/faces/PrcPoPurchasingWorkarea`
- `https://prjexternal.mycompany.com/projectsFinancials/faces/PRJProjectWorkarea`
- `https://commonexternal.mycompany.com/homePage/faces/AtkHomePageWelcome`
- `https://biexternal.mycompany.com/analytics`

5. Run the following commands:

```
WEBHOST1> cd /u01/oracle/config/CommonDomain_webtier/bin

WEBHOST1> ./opmnctl startall
```

7 Setting Up Node Manager for an Enterprise Deployment

This chapter describes how to configure Node Manager in accordance with enterprise deployment recommendations.

This chapter includes the following topics:

- Section 7.1, "Setting Up Node Manager for FINHOST2"
- Section 7.2, "Creating the Identity Keystore on FINHOST2"

7.1 Setting Up Node Manager for FINHOST2

Do the following:

1. Run the following command:

   ```
   FINHOST2> cd ORACLE_BASE/config/nodemanager
   ```

2. In the `nodemanager` directory, copy the content of the node-specific directory to *FINHOST2*. In this case, *FINHOST1* is the node-specific directory.

   ```
   FINHOST2> cp -r FINHOST1 FINHOST2
   ```

3. Change directory to *FINHOST2*. You should see the following files:

   ```
   nm_data.properties   nodemanager.log   startNodeManagerWrapper.sh
   nodemanager.domains  nodemanager.properties
   ```

   > **Note:** Manually delete any lock files that may be present. For example, `nodemanager.log.lck`.

4. In the `nodemanager.domains` file, edit all the domain paths that are local to *FINHOST2*. For example, `FINDomain=/u02/local/oracle/config/domains/`*`FINHOST2`*`/FINDomain`.

   > **Note:** Because BIDomain is a bit different, an example path would be `BIDomain=/u02/local/oracle/config/domains/`*`FINHOST1`*`/BIDomain`.

5. In the `startNodeManagerWrapper.sh` file, change `NM_HOME` to *`ORACLE_BASE`*`/config/nodemanager/`*`FINHOST2`*.

6. In the `nodemanager.properties` file:

- Add or modify the following lines:

  ```
  KeyStores=CustomIdentityAndCustomTrust
  CustomIdentityKeyStoreFileName=ORACLE_BASE/config/keystores/FINHOST2_
  fusion_identity.jks
  CustomIdentityPrivateKeyPassPhrase=keypassword
  CustomIdentityAlias=FINHOST2_fusion
  ```

  Note: *keypassword* is the password given in the *ORACLE_BASE*/repository/provisioning/provisioning-plan/enterprise_devtxk_generic.properties file

- Ensure that the path to the local machine /u02/local/oracle/nodemanager/ exists, and that the LogFile value is pointing to /u02/local/oracle/nodemanager/*FINHOST2*.log.
- Ensure that the path for DomainsFile and NodeManagerHome are correct for *FINHOST2*.

7.2 Creating the Identity Keystore on FINHOST2

Provisioning has created the identity keystore *FINHOST1*_fusion_identity.jks for *FINHOST1*. Subsequently, the identity keystore *FINHOST2*_fusion_identity.jks must be created for *FINHOST2*.

Do the following to create the keystore:

1. Change directory to ORACLE_BASE/config/keystores.

   Ensure the *FINHOST1*_fusion_identity.jks and fusion_trust.jks files are present.
2. Back up fusion_trust.jks to fusion_trust.jks.org.
3. Run the following command to set the CLASSPATH:

   ```
   FINHOST2> source ORACLE_BASE/products/fusionapps/wlserver_10.3/server/
   bin/setWLSEnv.sh
   ```

   Ensure that the CLASSPATH has been set:

   ```
   FINHOST2> which keytool
   ```

   The output should point to the *ORACLE_BASE*/products/fusionapps/jdk6/jre/bin/keytool.
4. Run the following command to create the keypair for *FINHOST2*_fusion_identity.jks:

   ```
   FINHOST2> keytool -genkeypair -keyalg RSA -alias FINHOST2_fusion -keypass
   keypassword -keystore FINHOST2_fusion_identity.jks -storepass keystorepassword
   -validity 180 -dname 'CN=FINHOST2, OU=defaultOrganizationUnit,
   O=defaultOrganization, C=US'
   ```

   where

   - *keystorepassword* is the password given in the provisioning response file (check provisioning.setup.common.core.keystore.password in the provisioning response file)

- *keypassword* is the password given in the provisioning response file (check `provisioning.setup.common.core.key.password` in the provisioning response file)

Notes:

- It is recommended to keep the commands in a file and then execute it.
- Since the passwords in the response file are encrypted, take note of or save the passwords when you are creating the response file.

---

5. Run the following command to export the certs:

```
FINHOST2> keytool -exportcert -alias FINHOST2_fusion
-keystore FINHOST2_fusion_identity.jks
-storepass keystorepassword -rfc -file /tmp/appIdentityKeyStore.jks
```

Note: If the alias *FINHOST2*_fusion exists, run this command to delete it:

```
keytool -delete -alias FINHOST2_fusion -keystore fusion_trust.jks
-storepass keystorepassword
```

The following command will display the certificates in the trust keystore:

```
keytool -list -keystore fusion_trust.jks -storepass
keystorepassword
```

---

6. Run the following command to import the certs:

```
FINHOST2> keytool -importcert -noprompt -alias FINHOST2_fusion -file
/tmp/appIdentityKeyStore.jks -keystore fusion_trust.jks -storepass
keystorepassword
```

7. Verify that the file *FINHOST2*_fusion_identity.jks has been created in the directory *ORACLE_BASE*/config/keystores directory.

8. Start Node Manager on *FINHOST2* by running the following command:

```
ORACLE_BASE/config/nodemanager/FINHOST2/startNodeManagerWrapper.sh &
```

8 Scaling Out the Oracle Fusion Financials Domain

This chapter describes how to scale out the Oracle Fusion Financials domain.

This chapter includes the following topics:

8.1 Overview of the Oracle Fusion Financials Domain

The Oracle Fusion Financials domain provides Oracle Fusion Financials with Currency, Calendar, and other functionality. The Oracle Fusion Financials domain exposes setup portlets that the Oracle Fusion Financials implementation manager can use via Functional Setup Manager.

Figure 2–3 in Chapter 2, "Introduction to the Enterprise Deployment Reference Topologies," shows the topology for the Oracle Fusion Financials domain within the overall reference enterprise deployment topology.

8.2 Prerequisites for Scaling Out the Oracle Fusion Financials Domain

Before you begin, ensure the following:

- Node Manager has been started in the Secure Sockets Layer (SSL) mode by following the instructions in Chapter 7, "Setting Up Node Manager for an Enterprise Deployment"
- You are starting with a clean machine if it is the first time it is being used for a scale out
- The `/etc/hosts` file has proper entries. To verify, ping this machine with the fully qualified name of the machine
- The user created on *`FINHOST2`* should be the same as the user on *`FINHOST1`*

- The directory structure `/u01/oracle` is mounted to same shared file system as *FINHOST1*
- The directory structure `/u02/local/oracle/config` on *FINHOST2* has been created
- The initial Oracle Fusion Financials deployment on *FINHOST1* has already been done and verified by provisioning

8.3 Adding a New Machine in the Oracle WebLogic Server Console

To add a new machine:

1. Log in to the Administration Server: `http://`*`fininternal`*`.mycompany.com:7777/console`.
2. Navigate to **FinancialDomain > Environment > Machines**.

   LocalMachine is located in the right-hand pane.
3. In the left-hand pane, click **Lock & Edit**.
4. In the right-hand pane, first click **New** to add the remote machine, and then specify the following:
   - Name - enter *FINHOST2*
   - Machine operating system - Unix
5. Click **Next**.
6. In the window that opens, set the following attributes:
   - Type - SSL
   - Listen Address - <*FINHOST2*>

   Note: The "localhost" default value here is wrong.

   - Listen port - 5556
7. Click **Finish** and activate the changes.

   Note: If you get an error when activating the changes, see Section 20.8.18, "Administration Console Redirects from Internal URL to Container URL after Activation" for the temporary solution.

8.4 Packing and Unpacking the Managed Server Domain Home

Since the *FINHOST1* domain directory file system is also available from *FINHOST2*, both `pack` and `unpack` commands can be executed from *FINHOST2*.

To pack and unpack the Managed Server domain home:

1. Change directory to *ORACLE_BASE*`/products/fusionapps/oracle_common/common/bin`.
2. Run the `pack` command:

```
FINHOST2> ./pack.sh -managed=true -domain=ORACLE_BASE/config/domains/
FINHOST1/FinancialDomain -template=ORACLE_BASE/user_templates/
FinancialDomain_managed.jar -template_name=
"Financial_Managed_Server_Domain"
```

3. Ensure that `/u02/local/oracle/config/domains/`*`FINHOST2`*`/FinancialDomain` is empty, and then run the `unpack` command:

   ```
   FINHOST2> ./unpack.sh -domain=/u02/local/oracle/config/domains/FINHOST2/
   FinancialDomain -template=ORACLE_BASE/user_templates/
   FinancialDomain_managed.jar
   ```

   Here, *`ORACLE_BASE`* is shared, and `/u02/local` is local to *`FINHOST2`*.

8.5 Cloning Managed Servers and Assigning Them to FINHOST2

To add a Managed Server and assign it to *`FINHOST2`*:

1. Log in to the Administration Server: `http://`*`fininternal`*`.mycompany.com:7777/console`.
2. Navigate to **FinancialDomain > Environment > Servers**.
3. Switch to **Lock & Edit** mode.
4. Select the ***Managed_Servers*** checkbox (for example, **GeneralLedgerServer_1**) and then click **Clone**.
5. Specify the following Server Identity attributes:

   - Server Name - `GeneralLedgerServer_2`

     Note: To ensure consistency in naming, copy the name of the server shown in **Server Identity** and paste it into the **Server Name** field. Then change the number to "_2".

   - Server Listen Address - <*`FINHOST2`*>
   - Server Listen Port - leave "as is"

     Note: For Oracle SOA Suite server, add a port value that is different than the `soa_server1` server value. This will help in server migration.

6. Click **OK**.

   You now should see the newly cloned server, `GeneralLedgerServer_2`.

7. Click **GeneralLedgerServer_2** and change the following attributes:

   - Machine - <*`FINHOST2`*>
   - Cluster Name - accept the default, GeneralLedgerCluster

     Note: Ensure that this cluster name is the same as the cluster name of the original Managed Server.

8. Click **Save** and then **Activate Changes**.
9. Navigate to **FinancialDomain > Environment > Servers** .
10. From the **Name** column, click the **GeneralLedgerServer_2** scaled-out server link.

11. Click **Lock & Edit**, and then select the **Configuration** tab.
12. Select the **Keystores** tab, and ensure that the keystores value is **Custom Identity and Custom Trust**.
13. Do the following:

    a. Change the Custom Identity Keystore path to point to the `ORACLE_BASE/config/keystores/FINHOST2_fusion_identity.jks` file.

    b. Leave the Custom Identity Keystore type blank.

    c. Change the Custom Identity Keystore Passphrase entry. This should be the same as the *keystorepassword* field described in the first bullet in Step 4 in Section 7.2, "Creating the Identity Keystore on FINHOST2."

    d. Re-enter the Confirm Custom Identity Keystore Passphrase.

    e. Ensure that the Confirm Custom Trust Keystore path is pointing to the `ORACLE_BASE/config/keystores/fusion_trust.jks` file.

    f. Leave the Custom Trust Keystore type blank.

    g. Change the Custom Trust Keystore Passphrase entry. This should be the same as the *keystorepassword* field described in the first bullet in Step 4 in Section 7.2, "Creating the Identity Keystore on FINHOST2."

    h. Re-enter the Custom Trust Keystore Passphrase.

    i. Click **Save**.

14. Select the **SSL** tab.

    a. Make sure that Identity and Trust Locations is set to **Keystores**.

    b. Change the Private Key Alias to `FINHOST2_fusion`.

    c. Change the Private Key Passphrase to the *keypassword*, as described in the second bullet in Step 4 in Section 7.2, "Creating the Identity Keystore on FINHOST2."

    d. Re-enter the *keypassword* from Step c for the Confirm Private Key Passphrase.

    e. Click **Save**.

15. Select the **Server Start** tab.

    Change the Arguments to reflect the name of your cloned Managed Server and make sure the server group is the correct cluster name. For example, you should see the following:

    ```
    -DJDBCProgramName=DS/FinancialDomain/GeneralLedgerServer_2
    -Dserver.group=GeneralLedgerCluster
    ```

    Click **Save**.

16. Select the **Logging** tab, and then select the **HTTP** tab.
17. Do the following:

    a. Change the Log file name to `logs/access.log.%yyyyMMdd%`.

    b. Change the rotation type to **By Time**.

    c. Leave the **Limit number of retained files** option unchecked.

    d. Leave the **Rotate log file on startup** option unchecked.

    e. Click **Save**.

   f. Expand **Advanced**.

   g. Change the format to **Extended**.

   h. Change the extended logging format fields to the following:

      ```
      date time time-taken cs-method cs-uri
      sc-status sc(X-ORACLE-DMS-ECID)
      cs(ECID-Context) cs(Proxy-Remote-User)
      cs(Proxy-Client-IP)
      ```

   i. Click **Save**.

18. Click **Activate Changes**.

19. Repeat Steps 2 to 18 for all the Managed Servers on this domain.

20. Set the following environment variable on *FINHOST2*:

    ```
    WLST_PROPERTIES="-Dweblogic.security.SSL.trustedCAKeyStore=ORACLE_BASE/
    config/keystores/fusion_trust.jks"
    ```

21. Stop the domain's Administration Server:

    ```
    FINHOST1> ORACLE_BASE/config/domains/FINHOST1/
    FinancialDomain/bin/stopWebLogic.sh
    ```

22. Restart the domain's Administration Server:

    ```
    FINHOST2> ORACLE_BASE/products/fusionapps/wlserver_10.3/common/bin/wlst.sh

    FINHOST2> nmConnect(username='<username>', password='<password>',
    domainName='FinancialDomain', host='FINHOST1',port='5556',
    nmType='ssl', domainDir='ORACLE_BASE/config/domains/FINHOST1/FinancialDomain')

    FINHOST2> nmStart('AdminServer')
    ```

    Note: The *username* and *password* used in the `nmConnect` are the Node Manager credentials (username and password) specified when creating the provisioning response file. This is shown in Figure 5–3 in "Using the Provisioning Process to Install Components for an Enterprise Deployment".

23. Run the newly created Managed Servers:

    a. Log in to the Administration Server: `http://`*`fininternal`*`.mycompany.com:7777/console`.

    b. Navigate to **FinancialDomain** > **Environment** > **Servers** > **Control**.

    c. Select the newly created Managed Servers and click **Start**.

    d. Navigate to **FinancialDomain** > **Environment** > **Servers** and check the **State** to verify that the newly created Managed Servers are running.

8.6 Oracle HTTP Server Configuration

To configure Oracle HTTP Server:

1. On *WEBHOST1*:

   a. Change directory to *`ORACLE_BASE`*`/config/CommonDomain_webtier/config/OHS/ohs1/moduleconf`.

   b. Copy `FusionVirtualHost_fin.conf` to `FusionVirtualHost_fin.conf.org`.

2. Edit the `FusionVirtualHost_fin.conf` file, adding the scaled-out host and port to all the WebLogic Application Clusters. Add this to both the Internal and External part of the `FusionVirtualHost_fin.conf` file. Example 8–1 shows sample code for GeneralLedgerServer.

   Notes:

   - Do not add these values for Oracle Enterprise Manager, Oracle WebLogic Server Administration Console, or Oracle Authorization Policy Manager.
   - If the Managed Servers are running on VIPs, replace *`FINHOST1`* and *`FINHOST2`* with the VIP addresses in Example 8–1.

Example 8–1 Sample "GeneralLedgerServer" Code

```
<Location /GeneralLedger>
    SetHandler weblogic-handler
    WebLogicCluster <FINHOST1:port>,<FINHOST2:port>
</Location>
```

3. Repeat Step 2 for all applications.
4. Restart Oracle HTTP Server: `cd` to *`ORACLE_BASE`*`/config/CommonDomain_webtier/bin` and enter the following:

```
WEBHOST1> ./opmnctl stopall
WEBHOST1> ./opmnctl startall
```

5. Repeat Steps 1 through 4 on *`WEBHOST2`*.

8.7 Configuring Server Migration for the Managed Servers

Server migration is required for proper failover of Oracle Fusion Financials components in the event of failure in any of the *`FINHOST1`* and *`FINHOST2`* nodes. For more information, see Chapter 18, "Setting Up Server Migration for an Enterprise Deployment."

8.8 Validating the System

You should verify URLs to ensure that the appropriate routing and failover are working.

To verify the URLs:

1. Log in to the `FinancialDomain` Oracle WebLogic Server Administration Console and stop all the Managed Servers on *`FINHOST1`* while the Managed Servers on *`FINHOST2`* are running.
2. Access the following URLs to verify that routing and failover are functioning properly. (Ensure the log in prompt is visible.)
   - `https://finexternal.mycompany.com/ledger/faces/JournalEntryPage`
   - `https://finexternal.mycompany.com/payables/faces/InvoiceWorkbench`
   - `https://finexternal.mycompany.com/receivables/faces/ReceiptsWorkArea`

- `https://finexternal.mycompany.com/receivables/faces/TransactionsWorkArea`

3. Log in to the `FinancialDomain` Oracle WebLogic Server Administration Console and stop all the Managed Servers on *`FINHOST2`*.
4. Start the Managed Servers on *`FINHOST1`*.
5. Repeat Step 2. (Ensure the log in prompt is visible.)
6. Start all the Managed Servers on *`FINHOST2`* and verify that they are running on *`FINHOST1`* and *`FINHOST2`*.

9 Scaling Out the Oracle Fusion Customer Relationship Management Domain

This chapter describes how to scale out the Oracle Fusion Customer Relationship Management domain.

This chapter includes the following topics:

- Section 9.1, "Overview of the Oracle Fusion Customer Relationship Management Domain"
- Section 9.2, "Prerequisites for Scaling Out the Oracle Fusion Customer Relationship Management Domain"
- Section 9.3, "Adding a New Machine in the Oracle WebLogic Server Console"
- Section 9.4, "Packing and Unpacking the Managed Server Domain Home"
- Section 9.5, "Cloning Managed Servers and Assigning Them to FINHOST2"
-
- Section 9.6, "Oracle HTTP Server Configuration"
- Section 9.7, "Configuring Server Migration for the Managed Servers"
- Section 9.8, "Validating the System"

9.1 Overview of the Oracle Fusion Customer Relationship Management Domain

The Oracle Fusion Customer Relationship Management application is a very distributed and modularized one. Applications within Oracle Fusion Customer Relationship Management, which are deployed on the domain, are the following:

- Contract Management
- CRM Analytics
- CRM Common

In addition to the applications, the Oracle Fusion Customer Relationship Management domain also contains Oracle Fusion Customer Relationship Management Analytics, which is the Oracle BI Enterprise Edition broker application that interfaces with Oracle Application Development Framework, Oracle BI Enterprise Edition, and Oracle Data Integrator agent for data import flow.

Figure 2–4 in Chapter 2, "Introduction to the Enterprise Deployment Reference Topologies,"shows the topology for the Oracle Fusion Customer Relationship Management domain within the overall reference enterprise deployment topology.

9.2 Prerequisites for Scaling Out the Oracle Fusion Customer Relationship Management Domain

Before you begin, ensure the following:

- Node Manager has been started in the Secure Sockets Layer (SSL) mode by following the instructions in Chapter 7, "Setting Up Node Manager for an Enterprise Deployment"
- You are starting with a clean machine if it is the first time it is being used for a scale out
- The `/etc/hosts` file has proper entries. To verify, ping this machine with the fully qualified name of the machine
- The user created on *`FINHOST2`* should be the same as the user on *`FINHOST1`*
- The directory structure `/u01/oracle` is mounted to same shared file system as *`FINHOST1`*
- The directory structure `/u02/local/oracle/config` on *`FINHOST2`* has been created
- The initial Oracle Fusion Financials deployment on *`FINHOST1`* has already been done and verified by provisioning

9.3 Adding a New Machine in the Oracle WebLogic Server Console

To add a new machine:

1. Log in to the Administration Server: `http://`*`crminternal`*`.mycompany.com:7777/console`.
2. Navigate to **CRMDomain** > **Environment** > **Machines**.

   LocalMachine is located in the right-hand pane.
3. In the left-hand pane, click **Lock & Edit**.
4. In the right-hand pane, first click **New** to add the remote machine, and then specify the following:
   - Name - enter *`FINHOST2`*
   - Machine operating system - Unix
5. Click **Next**.
6. In the window that opens, set the following attributes:
   - Type - SSL
   - Listen Address - <*`FINHOST2`*>

   Note: The "localhost" default value here is wrong.

   - Listen port - 5556
7. Click **Finish** and activate the changes.

Note: If you get an error when activating the changes, see Section 20.8.18, "Administration Console Redirects from Internal URL to Container URL after Activation" for the temporary solution.

9.4 Packing and Unpacking the Managed Server Domain Home

Since the *FINHOST1* domain directory file system is also available from *FINHOST2*, both the pack and unpack commands can be executed from *FINHOST2*.

To pack and unpack the Managed Server domain home:

1. Change directory to *ORACLE_BASE*/products/fusionapps/oracle_common/common/bin.
2. Run the pack command:

```
FINHOST2> ./pack.sh -managed=true -domain=ORACLE_BASE/config/domains/
FINHOST1/CRMDomain -template=ORACLE_BASE/user_templates/
CRMDomain_managed.jar -template_name="CRM_Managed_Server_Domain"
```

3. Ensure that /u02/local/oracle/config/domains/*FINHOST2*/CRMDomain is empty, and then run the unpack command:

```
FINHOST2> ./unpack.sh -domain=/u02/local/oracle/config/domains/
FINHOST2/CRMDomain -template=ORACLE_BASE/user_templates/CRMDomain_managed.jar
```

   Here, *ORACLE_BASE* is shared, and /u02/local is local to *FINHOST2*.

9.5 Cloning Managed Servers and Assigning Them to FINHOST2

To add a Managed Server and assign it to *FINHOST2*:

1. Log in to the Administration Server: http://*crminternal*.mycompany.com:7777/console.
2. Navigate to **FinancialDomain > Environment > Servers**.
3. Switch to **Lock & Edit** mode.
4. Select the ***Managed_Server*** checkbox (for example, **ContractManagementServer_1**) and then click **Clone**.
5. Specify the following server identity attributes:
   - Server Name - ContractManagementServer_2

     Note: To ensure consistency in naming, copy the name of the server shown in **Server Identity** and paste it into the **Server Name** field. Then change the number to "_2".

   - Server Listen Address - <*FINHOST2*>
   - Server Listen Port - leave "as is"

     Note: For Oracle SOA Suite server, add a port value that is different than the soa_server1 server value. This will help in server migration.

6. Click **OK**.

   You now should see the newly cloned sales server, ContractManagementServer_2.

7. Click **ContractManagementServer_2** and change the following attributes:

   - Machine - <*FINHOST2*>
   - Cluster Name - accept the default, ContractManagementCluster

   > **Note:** Ensure that this cluster name is the same as the cluster name of the original Managed Server.

8. Click **Save** and then **Activate Changes**.
9. Navigate to **CRMDomain > Environment > Servers**.
10. From the **Name** column, click the **ContractManagementServer_2** scaled-out server link.
11. Click **Lock & Edit**, and then select the **Configuration** tab.
12. Select the **Keystores** tab, and ensure that the keystores value is **Custom Identity and Custom Trust**.
13. Do the following:

    a. Change the Custom Identity Keystore path to point to the `ORACLE_BASE/config/keystores/FINHOST2_fusion_identity.jks` file.

    b. Leave the Custom Identity Keystore type blank.

    c. Change the Custom Identity Keystore Passphrase entry. This should be the same as the *keystorepassword* field described in the first bullet in Step 4 in Section 7.2, "Creating the Identity Keystore on FINHOST2."

    d. Re-enter the Confirm Custom Identity Keystore Passphrase.

    e. Ensure that the Confirm Custom Trust Keystore path is pointing to the `ORACLE_BASE/config/keystores/fusion_trust.jks` file.

    f. Leave the Custom Trust Keystore type blank.

    g. Change the Custom Trust Keystore Passphrase entry. This should be the same as the *keystorepassword* field described in the first bullet in Step 4 in Section 7.2, "Creating the Identity Keystore on FINHOST2."

    h. Re-enter the Custom Trust Keystore Passphrase.

    i. Click **Save**.

14. Select the **SSL** tab.

    a. Make sure that Identity and Trust Locations is set to **Keystores**.

    b. Change the Private Key Alias to `FINHOST2_fusion`.

    c. Change the Private Key Passphrase to the *keypassword*, as described in the second bullet in Step 4 in Section 7.2, "Creating the Identity Keystore on FINHOST2."

    d. Re-enter the *keypassword* from Step c for the Confirm Private Key Passphrase.

    e. Click **Save**.

15. Select the **Server Start** tab.

    Change the Arguments to reflect the name of your cloned Managed Server and make sure the server group is the correct cluster name. For example, you should see the following:

```
-DJDBCProgramName=DS/CRMDomain/ContractManagementServer_2
-Dserver.group=ContractManagementCluster
```

Click **Save**.

16. Select the **Logging** tab, and then select the **HTTP** tab.
17. Do the following:
    a. Change the Log file name to `logs/access.log.%yyyyMMdd%`.
    b. Change the rotation type to **By Time**.
    c. Leave the **Limit number of retained files** option unchecked.
    d. Leave the **Rotate log file on startup** option unchecked.
    e. Click **Save**.
    f. Expand **Advanced**.
    g. Change the format to **Extended**.
    h. Change the extended logging format fields to the following:

    ```
    date time time-taken cs-method cs-uri
    sc-status sc(X-ORACLE-DMS-ECID)
    cs(ECID-Context) cs(Proxy-Remote-User)
    cs(Proxy-Client-IP)
    ```

    i. Click **Save**.
18. Click **Activate Changes**.
19. Repeat Steps 2 to 18 for all the Managed Servers on this domain.
20. Set the following environment variable on *FINHOST2*:

    ```
    WLST_PROPERTIES="-Dweblogic.security.SSL.trustedCAKeyStore=ORACLE_BASE/
    config/keystores/fusion_trust.jks"
    ```

21. Stop the domain's Administration Server:

    ```
    FINHOST1> ORACLE_BASE/config/domains/FINHOST1/CRMDomain/bin/stopWebLogic.sh
    ```

22. Restart the domain's Administration Server:

    ```
    FINHOST2> ORACLE_BASE/products/fusionapps/wlserver_10.3/common/bin/wlst.sh

    FINHOST2> nmConnect(username='username', password='password',
    domainName='CRMDomain', host='FINHOST1',port='5556',
    nmType='ssl', domainDir='ORACLE_BASE/config/domains/FINHOST1/CRMDomain')

    FINHOST2> nmStart('AdminServer')
    ```

    Note: The *username* and *password* used in the `nmConnect` are the Node Manager credentials (username and password) specified when creating the provisioning response file. This is shown in Figure 5–3 in "Using the Provisioning Process to Install Components for an Enterprise Deployment".

23. Run the newly created Managed Servers:
    a. Log in to the Administration Server: `http://crminternal.mycompany.com:7777/console`.

   b. Navigate to **CRMDomain > Environment > Servers > Control**.

   c. Select the newly created Managed Servers and click **Start**.

   d. Navigate to **CRMDomain > Environment > Servers** and check the **State** to verify that the newly created Managed Servers are running.

9.6 Oracle HTTP Server Configuration

To configure Oracle HTTP Server:

1. On *WEBHOST1*:

   a. Change directory to *ORACLE_BASE*/config/CommonDomain_webtier/config/OHS/ohs1/moduleconf.

   b. Copy FusionVirtualHost_crm.conf to FusionVirtualHost_crm.conf.org.

2. Edit the FusionVirtualHost_crm.conf file, adding the scaled-out host and port to all the WebLogic Application Clusters. Add this to both the Internal and External part of the FusionVirtualHost_crm.conf file. Example 9–1 shows sample code for ContactManagementServer.

> **Notes:**
>
> - Do not add these values for Oracle Enterprise Manager, Oracle WebLogic Server Administration Console, or Oracle Authorization Policy Manager.
> - If the Managed Servers are running on VIPs, replace *FINHOST1* and *FINHOST2* with the VIP addresses in Example 9–1.

Example 9–1 Sample "ContractManagementServer" Code

```
<Location /contractManagement>
    SetHandler weblogic-handler
    WebLogicCluster <FINHOST1:port>,<FINHOST2:port>
</Location>
```

3. Repeat Step 2 for all applications.

4. Restart Oracle HTTP Server: cd to *ORACLE_BASE*/config/CommonDomain_webtier/bin and enter the following:

```
WEBHOST1> ./opmnctl stopall
WEBHOST1> ./opmnctl startall
```

5. Repeat Steps 1 through 4 on *WEBHOST2*.

9.7 Configuring Server Migration for the Managed Servers

Server migration is required for proper failover of Oracle Fusion Financials components in the event of failure in any of the *FINHOST1* and *FINHOST2* nodes. For more information, see Chapter 18, "Setting Up Server Migration for an Enterprise Deployment."

9.8 Validating the System

You should verify URLs to ensure that the appropriate routing and failover is working from Oracle HTTP Server to the ContractManagementCluster.

To verify the URLs:

1. Log in to the `CRMDomain` Oracle WebLogic Server Administration Console and stop all the Managed Servers on *`FINHOST1`* while the Managed Servers on *`FINHOST2`* are running.
2. Access the following URLs to verify that routing and failover are functioning properly. (Ensure the log in prompt is visible.)
   - `https://crmexternal.mycompany.com/contractManagement/faces/ContractsDashboard`
3. Log in to the `CRMDomain` Oracle WebLogic Server Administration Console and stop all the Managed Servers on *`FINHOST2`*.
4. Start the Managed Servers on *`FINHOST1`*.
5. Repeat Step 2. (Ensure the log in prompt is visible.)
6. Start all the Managed Servers on *`FINHOST2`* and verify that they are running on *`FINHOST1`* and *`FINHOST2`*.

10 Scaling Out the Oracle Fusion Common Domain

This chapter describes how to scale out the Oracle Fusion Common domain.

This chapter includes the following topics:

10.1 Overview of the Oracle Fusion Common Domain

The Oracle Fusion Common domain is shared by all Oracle Fusion Applications product families. Oracle Fusion Financials implementation is dependent on the Oracle Fusion Common domain for the following components:

- Oracle Fusion Functional Setup Manager, for all setup task flows
- Help Portal, for centralized help
- Home page application, which has the Oracle Fusion Financials home page and launch pad
- Oracle WebCenter Content, to store all marketing collateral as well as all attachments. Import flow also uses WebCenter Content to stage the CSV files that the user uploads
- Oracle WebCenter Content: Imaging, for end-to-end management of document images within enterprise business processes
- Oracle Secure Enterprise Search
- Oracle WebCenter Community Space and forums

- Oracle WebLogic Communication Services (OWLCS) and Oracle WebLogic SIP Server

Figure 2–5 in Chapter 2, "Introduction to the Enterprise Deployment Reference Topologies," shows the topology for the Oracle Fusion Common domain within the overall reference enterprise deployment topology.

10.2 Prerequisites for Scaling Out the Oracle Fusion Common Domain

Before you begin, ensure the following:

- Node Manager has been started in the Secure Sockets Layer (SSL) mode by following the instructions in Chapter 7, "Setting Up Node Manager for an Enterprise Deployment"
- You are starting with a clean machine if it is the first time it is being used for a scale out
- The `/etc/hosts` file has proper entries. To verify, ping this machine with the fully qualified name of the machine
- The user created on *`FINHOST2`* should be the same as the user on *`FINHOST1`*
- The directory structure `/u01/oracle` is mounted to same shared file system as *`FINHOST1`*
- The directory structure `/u02/local/oracle/config` on *`FINHOST2`* has been created
- The initial Oracle Fusion Financials deployment on *`FINHOST1`* has already been done and verified by provisioning

10.3 Adding a New Machine in the Oracle WebLogic Server Console

To add a new machine:

1. Log in to the Administration Server: `http://`*`commoninternal`*`.mycompany.com:7777/console`.
2. Navigate to **CommonDomain > Environment > Machines**.

   LocalMachine is located in the right-hand pane.
3. In the left-hand pane, click **Lock & Edit**.
4. In the right-hand pane, first click **New** to add the remote machine, and then specify the following:
   - Name - enter *`FINHOST2`*
   - Machine operating system - Unix
5. Click **Next**.
6. In the window that opens, set the following attributes:
   - Type - SSL
   - Listen Address - <*`FINHOST2`*>

     Note: The "localhost" default value here is wrong.
   - Listen port - 5556

7. Click **Finish** and activate the changes.

> **Note:** If you get an error when activating the changes, see Section 20.8.18, "Administration Console Redirects from Internal URL to Container URL after Activation" for the temporary solution.

10.4 Creating a Common Location for the Oracle WebCenter Content Managed Servers

Do the following:

1. Ensure that the `UCM_server1` Managed Server is functioning properly. You should be able to access and log in to the following:
   - `http://`*`FINHOST1`*`:7012/cs`
2. Shut down the `UCM_server1` Managed Server:
   a. Log in to the Oracle WebLogic Server Administration Console (`http://commoninternal.mycompany.com:7777/console`).
   b. In the Domain Structure window, first navigate to **Environment > Servers**, and then select the **Control** tab.
   c. Select the **UCM_server1** checkbox.
   d. Click **Shutdown** and then **Force Shutdown Now**.
3. Copy *`FINHOST1`* `/u02/local/oracle/config/domains/`*`FINHOST1`*`/CommonDomain/ucm/cs` directory from the local to the shared location: *`ORACLE_BASE`*`/config/domains/`*`FINHOST1`*`/CommonDomain/ucm/cs`.
4. In the *`ORACLE_BASE`*`/config/domains/`*`FINHOST1`*`/CommonDomain/ucm/cs/bin/intradoc.cfg` file and the `/u02/local/oracle/config/domains/`*`FINHOST1`*`/CommonDomain/ucm/cs/bin/intradoc.cfg` file on *`FINHOST1`*, create the variables `IntradocDir`, `vaultDir`, and `weblayoutDir` if they do not already exist, and point them to the shared location, *`ORACLE_BASE`*`/config/domains/`*`FINHOST1`*`/CommonDomain/ucm/cs`.
5. Start the `UCM_server1` Managed Server.

10.5 Packing and Unpacking the Managed Server Domain Home

Since the *`FINHOST1`* domain directory file system is also available from *`FINHOST2`*, both the `pack` and `unpack` commands can be executed from *`FINHOST2`*.

To pack and unpack the Managed Server domain home:

1. Change directory to *`ORACLE_BASE`*`/products/fusionapps/oracle_common/common/bin`.
2. Run the `pack` command:

```
FINHOST2> ./pack.sh -managed=true -domain=ORACLE_BASE/config/domains/
FINHOST1/CommonDomain -template=ORACLE_BASE/user_templates/
CommonDomain_managed.jar -template_name="Common_Managed_Server_Domain"
```

3. Ensure that `/u02/local/oracle/config/domains/`*`FINHOST2`*`/CommonDomain` is empty, and then run the `unpack` command:

   ```
   FINHOST2> ./unpack.sh -domain=/u02/local/oracle/config/domains/FINHOST2/
   CommonDomain -template=ORACLE_BASE/user_templates/CommonDomain_managed.jar
   ```

   Here, *`ORACLE_BASE`* is shared, and `/u02/local` is local to *`FINHOST2`*.

10.6 Cloning Managed Servers and Assigning Them to FINHOST2

To add a Managed Server and assign it to *`FINHOST2`*:

1. Log in to the Administration Server: `http://`*`commoninternal`*`.mycompany.com:7777/console`.
2. Navigate to **CommonDomain > Environment > Servers**.
3. Switch to **Lock & Edit** mode.
4. Select the ***Managed_Server*** checkbox (for example, **HomePageServer_1**) and then click **Clone**.
5. Specify the following Server Identity attributes:
   - Server Name - `HomePageServer_2`

     Note: To ensure consistency in naming, copy the name of the server shown in **Server Identity** and paste it into the **Server Name** field. Then change the number to "_2".

   - Server Listen Address - <*`FINHOST2`*>
   - Server Listen Port - leave "as is"

     Note: For Oracle SOA Suite server, add a port value that is different than the `soa_server1` server value. This will help in server migration.

6. Click **OK**.

   You now should see the newly cloned sales server, `HomePageServer_2`.
7. Click **HomePageServer_2** and change the following attributes:
   - Machine - <*`FINHOST2`*>
   - Cluster Name - accept the default, HomePageCluster

     Note: Ensure that this cluster name is the same as the cluster name of the original Managed Server.

8. Click **Save** and then **Activate Changes**.
9. Navigate to **CommonDomain > Environment > Servers**.
10. From the **Name** column, click the **HomepageServer_2** scaled-out server link.

11. Click **Lock & Edit**, and then select the **Configuration** tab.
12. Select the **Keystores** tab, and then ensure that the keystores value is **Custom Identity and Custom Trust**.
13. Do the following:
    a. Change the Custom Identity Keystore path to point to the `ORACLE_BASE/config/keystores/FINHOST2_fusion_identity.jks` file.
    b. Leave the Custom Identity Keystore type blank.
    c. Change the Custom Identity Keystore Passphrase entry. This should be the same as the *keystorepassword* field described in the first bullet in Step 4 in Section 7.2, "Creating the Identity Keystore on FINHOST2."
    d. Re-enter the Confirm Custom Identity Keystore Passphrase.
    e. Ensure that the Confirm Custom Trust Keystore path is pointing to the `ORACLE_BASE/config/keystores/fusion_trust.jks` file.
    f. Leave the Custom Trust Keystore type blank.
    g. Change the Custom Trust Keystore Passphrase entry. This should be the same as the *keystorepassword* field described in the first bullet in Step 4 in Section 7.2, "Creating the Identity Keystore on FINHOST2."
    h. Re-enter the Custom Trust Keystore Passphrase.
    i. Click **Save**.
14. Select the **SSL** tab.
    a. Make sure that Identity and Trust Locations is set to **Keystores**.
    b. Change the Private Key Alias to `FINHOST2_fusion`.
    c. Change the Private Key Passphrase to the *keypassword*, as described in the second bullet in Step 4 in Section 7.2, "Creating the Identity Keystore on FINHOST2."
    d. Re-enter the *keypassword* from Step c for the Confirm Private Key Passphrase.
    e. Click **Save**.
15. Select the **Server Start** tab.

    Change the Arguments to reflect the name of your cloned Managed Server and make sure the server group is the correct cluster name. For example, you should see the following:

    ```
    -DJDBCProgramName=DS/CommonDmain/HomePageServer_2
    -Dserver.group=HomePageCluster
    ```

    Click **Save**.
16. Select the **Logging** tab, and then select the **HTTP** tab.
17. Do the following:
    a. Change the Log file name to `logs/access.log.%yyyyMMdd%`.
    b. Change the rotation type to **By Time**.
    c. Leave the **Limit number of retained files** option unchecked.
    d. Leave the **Rotate log file on startup** option unchecked.
    e. Click **Save**.

   f. Expand **Advanced**.

   g. Change the format to **Extended**.

   h. Change the extended logging format fields to the following:

   ```
   date time time-taken cs-method cs-uri
   sc-status sc(X-ORACLE-DMS-ECID)
   cs(ECID-Context) cs(Proxy-Remote-User)
   cs(Proxy-Client-IP)
   ```

   i. Click **Save**.

18. Click **Activate Changes**.

19. Repeat Steps 2 to 18 for all the Managed Servers on this domain.

20. Set the following environment variable on *FINHOST2*:

    ```
    WLST_PROPERTIES="-Dweblogic.security.SSL.trustedCAKeyStore=ORACLE_BASE/
    config/keystores/fusion_trust.jks"
    ```

21. Stop the domain's Administration Server:

    ```
    FINHOST1> ORACLE_BASE/config/domains/FINHOST1/CommonDomain/bin/stopWebLogic.sh
    ```

22. Restart the domain's Administration Server:

[[Windows support]]

```
FINHOST2> ORACLE_BASE/products/fusionapps/wlserver_10.3/common/bin/wlst.sh

FINHOST2> nmConnect(username='<username>', password='<password>',
domainName='CommonDomain', host='FINHOST1',port='5556',
nmType='ssl', domainDir='ORACLE_BASE/config/domains/FINHOST1/CommonDomain')

FINHOST2> nmStart('AdminServer')
```

Note: The *username* and *password* used in the nmConnect are the Node Manager credentials (username and password) specified when creating the provisioning response file. This is shown in Figure 5–3 in "Using the Provisioning Process to Install Components for an Enterprise Deployment".

[[Begin temporary workaround]]

23. For the wlcs_sipstate2 scaled-out server only, do the following:

    a. Change directory to:

    ```
    ORACLE_BASE/config/domains/FINHOST1/CommonDomain/config/custom
    ```

    b. In the datatier.xml file, after the following line:

    ```
    <server-name>wlcs_sipstate1</server-name>
    ```

    add

    ```
    <server-name>wlcs_sipstate2</server-name>
    ```

[[End temporary workaround]]

24. Ensure that the edits you made in Step 4 in Section 10.4 you also make to the `intradoc.cfg` file in `/u02/local/oracle/config/domains/`*`FINHOST2`*`/CommonDomain/ucm/cs/bin`.

25. Run the newly created Managed Servers:

    a. Log in to the Administration Server: `http://`*`commoninternal`*`.mycompany.com:7777/console`.

    b. Navigate to **CommonDomain** > **Environment** > **Servers** > **Control**.

    c. Select the newly created Managed Servers (except for the `IPM_server2` server) and click **Start**.

    d. Navigate to **CommonDomain** > **Environment** > **Servers** and check the **State** to verify that the newly created Managed Servers are running.

10.7 Configuring Oracle WebCenter Content: Imaging

This section describes the additional steps you must perform in order to complete the Oracle WebCenter Content scale out.

This section includes the following topics:

- Section 10.7.1, "Configuring a JMS Persistence Store"
- Section 10.7.2, "Configuring the WebCenter Content Server"
- Section 10.7.3, "Configuring a Default Persistence Store for Transaction Recovery"
- Section 10.7.4, "Adding the Oracle Imaging Server Listen Addresses to the List of Allowed Hosts in Oracle WebCenter Content"
- Section 10.7.5, "Creating a Connection to Oracle WebCenter Content"

10.7.1 Configuring a JMS Persistence Store

You must configure the location for all persistence stores to a directory visible from both nodes. Change all persistent stores to use this shared base directory.

To configure the file store for *`FINHOST2`*:

1. Log in to the Oracle WebLogic Server Administration Console (`http://commoninternal.mycompany.com:7777/console`).

2. In the Domain Structure window, expand the **Services** node and then click the **Persistence Stores** node.

   The Summary of Persistent Stores page displays.

3. In the Change Center, click **Lock & Edit**.

4. Click **New**, and then **Create File Store**.

5. Enter the following directory information:

   - **Name**: For example, `IPMJMSFileStore_auto_2`
   - **Target**: `IPM_server2`
   - **Directory**: *`ORACLE_BASE`*`/config/domains/`*`FINHOST1`*`/CommonDomain`

6. Click **Save** and **Activate Changes**.

7. In the Domain Structure window, expand the **Services** node and then click the **Messaging** > **JMS Servers** node.

The Summary of JMS Servers page displays.

8. Click **Lock & Edit**, then click **New**.
9. Enter a name (for example, `IpmJmsServer_1`), then select **IPMJMSFileStore_auto_2** in the Persistence Store dropdown list.
10. Click **Next**.
11. Select **IPM_server2** as the target.
12. Click **Finish** and **Activate Changes**.
13. Start the `IPM_server2` server.

10.7.2 Configuring the WebCenter Content Server

To configure the WebCenter Content server, create a *`COMMONUCMVH1`* TCP VIP with an unused port on the load-balancing router (LBR) with *`FINHOST1`*`:7012` and *`FINHOST2`*`:7012` as its members.

After scaling out the Oracle WebCenter Portal Managed Server, do the following:

1. Log in to: `http://commoninternal.mycompany.com:7777/em`.

> **Note:** If you don't see WebCenter Content after logging in to Oracle Enterprise Manager, bounce the WebCenter Content Managed Servers.

2. Navigate to **Farm_CommonDomain > WebCenter > Portal > Spaces > webcenter (1.1.*.*) (wc_spaces) > WebCenter Portal** (top left or right pane) > **Settings > Service configuration**.

   Click **Content Repository**.
3. Highlight **WebCenter-UCM** and click **Edit**.
4. Select **Socket**, then enter *`COMMONUCMVH1`* as the host and the LBR port for the server.
5. If updating the first instance of `wc_spaces` did not automatically update the second instance, repeat Step 2 through Step 4 for `wc_spaces2`.
6. Restart the Oracle WebCenter Portal Managed Servers.

10.7.3 Configuring a Default Persistence Store for Transaction Recovery

Each server has a transaction log which stores information about committed transactions that are coordinated by the server that may not have been completed. Oracle WebLogic Server uses this transaction log for recovery from system crashes or network failures. To leverage the migration capability of the Transaction Recovery Service for the servers within a cluster, store the transaction log in a location accessible to a server and its backup servers.

> **Note:** Preferably, this location should be a dual-ported SCSI disk or on a Storage Area Network (SAN).

To set the location for the default persistence store:

1. Log in to the Oracle WebLogic Server Administration Console (`http://commoninternal.mycompany.com:7777/console`).

2. In the Change Center, click **Lock & Edit**.
3. In the Domain Structure window, expand the **Environment** node and then click the **Servers** node.

   The Summary of Servers page displays.
4. Click the name of the server (represented as a hyperlink) in the **IPM_server1** table. The settings page for the selected server opens with the **Configuration** tab active.
5. Open the **Services** tab.
6. In the Default Store section of the page, enter the path to the folder where the default persistent stores will store its data files. For example, create a directory

   ```
   FINHOST1> ORACLE_BASE/config/domains/FINHOST1/CommonDomain/tlogs
   ```
7. Click **Save**.
8. Repeat Steps 1 through 7 for the `IPM_server2` Managed Server.
9. Click **Activate Changes**.
10. Restart the Managed Servers to activate the changes (ensure that Node Manager is up and running):

    a. Log in to the Oracle WebLogic Server Administration Console (`http://commoninternal.mycompany.com:7777/console`).

    b. In the Summary of Servers screen, select the **Control** tab.

    c. Select **IPM_server1** and **IPM_server2** in the table and then click **Shutdown**.

    d. Restart the `IPM_server1` and `IPM_server2` Managed Servers.

Notes:

- To enable migration of the Transaction Recovery service, specify a location on a persistent storage solution that is available to other servers in the cluster. Both `IPM_server1` and `IPM_server2` must be able to access this directory.
- Ensure the following the path exists on your machine: `/usr/share/X11/fonts/TTF`.

10.7.4 Adding the Oracle Imaging Server Listen Addresses to the List of Allowed Hosts in Oracle WebCenter Content

Perform these steps to add the host names of the `IPM_server1` and `IPM_server2` Managed Servers to the SocketHostNameSecurityFilter parameter list:

1. Open the following file in a text editor:

   ```
   ORACLE_BASE/config/domains/FINHOST1/CommonDomain/ucm/cs/config/config.cfg
   ```
2. Remove or comment out the following line:

   ```
   SocketHostAddressSecurityFilter=127.0.0.1|FINHOST1|FINHOST2|0.0.0.0.0.0.0.1
   ```
3. Add the following two lines to include the `IPM_server1` and `IPM_server2` listen addresses to the list of addresses that are allowed to connect to Oracle WebCenter Content:

   ```
   SocketHostAddressSecurityFilter=localhost|localhost.mycompany.com|FINHOST1|
   ```

```
FINHOST2|COMMONIPMVH1|COMMONIPMVH2

AlwaysReverseLookupForHost=Yes
```

4. Save the modified `config.cfg` file and restart the Oracle WebCenter Content servers for the changes to take effect.

10.7.5 Creating a Connection to Oracle WebCenter Content

To create a connection to Oracle WebCenter Content Server:

1. Log in to the `IPM_server1` Imaging console at `https://commonexternal.mycompany.com/imaging`.
2. In the left-hand pane, click **Manage Connections**, and then **Create Content Server Connection**.
3. Enter a name and description for the new connection, and then click **Next**.
4. In the Connection Settings screen, do the following:
   - Make sure the **Use Local Content Server** checkbox is selected.
   - Set the Content Server port to `7034`.

     The port value should be the value of the `IntradocServerPort` from *`ORACLE_BASE`*`/config/domains/`*`FINHOST1`*`/CommonDomain/ucm/cs/config/config.cfg`.
   - Add two servers to the Content Server pool:
     - *`FINHOST1`*: `7034`
     - *`FINHOST2`*: `7034`

   Click **Next**.
5. In the Connection Security screen, leave the default selections for the WebLogic user, and then click **Next**.
6. Review the connection details and click **Submit**.

10.8 Oracle HTTP Server Configuration

To configure Oracle HTTP Server:

1. On *`WEBHOST1`*:

   a. Change directory to *`ORACLE_BASE`*`/config/CommonDomain_webtier/config/OHS/ohs1/moduleconf`.

   b. Copy `FusionVirtualHost_fs.conf` to `FusionVirtualHost_fs.conf.org`.
2. Edit the `FusionVirtualHost_fs.conf` file, adding the scaled-out host and port to all the WebLogic Application Clusters. Add this to both the Internal and External part of the `FusionVirtualHost_fs.conf` file. Example 10–1 shows sample code for HomePageServer.

Notes:

- Do not add these values for Oracle Enterprise Manager, Oracle WebLogic Server Administration Console, or Oracle Authorization Policy Manager.
- If the Managed Servers are running on VIPs, replace *FINHOST1* and *FINHOST2* with the VIP addresses in Example 10–1.

Example 10–1 Sample "HomePageServer" Code

```
<Location /HomePage>
    SetHandler weblogic-handler
    WebLogicCluster <CRMHOST1FINHOST1:port>,<CRMHOST2FINHOST2:port>
</Location>
```

3. Repeat Step 2 for all applications.
4. Restart Oracle HTTP Server: `cd` to *ORACLE_BASE*`/config/CommonDomain_webtier/bin` and enter the following:

```
WEBHOST1> ./opmnctl stopall
WEBHOST1> ./opmnctl startall
```

5. Repeat Steps 1 through 4 on *WEBHOST2*.

10.9 Configuring Server Migration for the Managed Servers

Server migration is required for proper failover of Oracle Fusion Financials components in the event of failure in any of the *FINHOST1* and *FINHOST2* nodes. For more information, see Chapter 18, "Setting Up Server Migration for an Enterprise Deployment."

10.10 Validating the System

You should verify URLs to ensure that the appropriate routing and failover are working.

To verify the URLs:

1. Log in to the `CommonDomain` Oracle WebLogic Server Administration Console and stop all the Managed Servers on *FINHOST1* while the Managed Servers on *FINHOST2* are running.
2. Access the following URLs to verify that routing and failover are functioning properly. (Ensure the log in prompt is visible.)
   - `https://commonexternal.mycompany.com/helpPortal/faces/AtkHelpPortalMain`
   - `https://commonexternal.mycompany.com/homePage/faces/AtkHomePageWelcome`
3. Log in to the `CommonDomain` Oracle WebLogic Server Administration Console and stop all the Managed Servers on *FINHOST2*.
4. Start the Managed Servers on *FINHOST1*.
5. Repeat Step 2. (Ensure the log in prompt is visible.)
6. Start all the Managed Servers on *FINHOST2* and verify that they are running on *FINHOST1* and *FINHOST2*.

11

Scaling Out the Oracle Fusion Human Capital Management Domain

This chapter describes how to scale out the Oracle Fusion Human Capital Management domain.

This chapter includes the following topics:

11.1 Overview of the Oracle Fusion Human Capital Management Domain

The Oracle Fusion Human Capital Management domain provides the user-management flow needed to create a user, which is executed via Oracle Fusion Human Capital Management/Oracle Identity Management integration. The flow is available as part of Customer Data Management.

Figure 2–6 in Chapter 2, "Introduction to the Enterprise Deployment Reference Topologies,"shows the topology for the Oracle Fusion Human Capital Management domain within the overall reference enterprise deployment topology.

11.2 Prerequisites for Scaling Out the Oracle Fusion Human Capital Management Domain

Before you begin, ensure the following:

- Node Manager has been started in the Secure Sockets Layer (SSL) mode by following the instructions in Chapter 7, "Setting Up Node Manager for an Enterprise Deployment"
- You are starting with a clean machine if it is the first time it is being used for a scale out

- The `/etc/hosts` file has proper entries. To verify, ping this machine with the fully qualified name of the machine
- The user created on *FINHOST2* should be the same as the user on *FINHOST1*
- The directory structure `/u01/oracle` is mounted to same shared file system as *FINHOST1*
- The directory structure `/u02/local/oracle/config` on *FINHOST2* has been created
- The initial Oracle Fusion Financials deployment on *FINHOST1* has already been done and verified by provisioning

11.3 Adding a New Machine in the Oracle WebLogic Server Console

To add a new machine:

1. Log in to the Administration Server: `http://`*hcminternal*`.mycompany.com:7777/console`.
2. Navigate to **HCMDomain > Environment > Machines**.

   LocalMachine is located in the right-hand pane.
3. In the left-hand pane, click **Lock & Edit**.
4. In the right-hand pane, first click **New** to add the remote machine, and then specify the following:
   - Name - enter *FINHOST2*
   - Machine operating system - Unix
5. Click **Next**.
6. In the window that opens, set the following attributes:
   - Type - SSL
   - Listen Address - <*FINHOST2*>

     Note: The "localhost" default value here is wrong.

   - Listen port - 5556
7. Click **Finish** and activate the changes.

   Note: If you get an error when activating the changes, see Section 20.8.18, "Administration Console Redirects from Internal URL to Container URL after Activation" for the temporary solution.

11.4 Packing and Unpacking the Managed Server Domain Home

Since the *FINHOST1* domain directory file system is also available from *FINHOST2*, both `pack` and `unpack` commands can be executed from *FINHOST2*.

To pack and unpack the Managed Server domain home:

1. Change directory to *ORACLE_BASE*`/products/fusionapps/oracle_common/common/bin`.
2. Run the `pack` command:

```
FINHOST2> ./pack.sh -managed=true -domain=ORACLE_
BASE/config/domains/FINHOST1/HCMDomain -template=ORACLE_BASE/user_templates/
HCMDomain_managed.jar -template_name="HCM_Managed_Server_Domain"
```

3. Ensure that `/u02/local/oracle/config/domains/FINHOST2/HCMDomain` is empty, and then run the *FINHOST2* command:

   ```
   FINHOST2> ./unpack.sh -domain=/u02/local/oracle/config/domains/
   FINHOST2/HCMDomain -template=ORACLE_BASE/user_templates/HCMDomain_managed.jar
   ```

   Here, *ORACLE_BASE* is shared, and `/u02/local` is local to *FINHOST2*.

11.5 Cloning Managed Servers and Assigning Them to FINHOST2

To add a Managed Server and assign it to *FINHOST2*:

1. Log in to the Administration Server:
   `http://hcminternal.mycompany.com:7777/console`
2. Navigate to **HCMDomain > Environment > Servers**.
3. Switch to **Lock & Edit** mode.
4. Select the ***Managed_Server*** checkbox (for example, **CoreSetupServer_1**) and then click **Clone**.
5. Specify the following Server Identity attributes:
   - Server Name - `CoreSetupServer_2`

     > **Note:** To ensure consistency in naming, copy the name of the server shown in **Server Identity** and paste it into the **Server Name** field. Then change the number to "_2".

   - Server Listen Address - <*FINHOST2*>
   - Server Listen Port - leave "as is"

     > **Note:** For Oracle SOA Suite server, add a port value that is different than the `soa_server1` server value. This will help in server migration.

6. Click **OK**.

   You now should see the newly cloned sales server, `CoreSetupServer_2`.
7. Click **CoreSetupServer_2** and change the following attributes:
   - Machine - <*FINHOST2*>
   - Cluster Name - accept the default, CoreSetupCluster

     > **Note:** Ensure that this cluster name is the same as the cluster name of the original Managed Server.

8. Click **Save** and then **Activate Changes**.

9. Navigate to **HCMDomain** > **Environment** > **Servers**.
10. From the **Name** column, click the **CoreSetupServer_2** scaled-out server link.
11. Click **Lock & Edit**, and then select the **Configuration** tab.
12. Select the **Keystores** tab, and then ensure that the keystores value is **Custom Identity and Custom Trust**.
13. Do the following:
    a. Change the Custom Identity Keystore path to point to the `ORACLE_BASE/config/keystores/FINHOST2_fusion_identity.jks` file.
    b. Leave the Custom Identity Keystore type blank.
    c. Change the Custom Identity Keystore Passphrase entry. This should be the same as the *keystorepassword* field described in the first bullet in Step 4 in Section 7.2, "Creating the Identity Keystore on FINHOST2."
    d. Re-enter the Confirm Custom Identity Keystore Passphrase.
    e. Ensure that the Confirm Custom Trust Keystore path is pointing to the `ORACLE_BASE/config/keystores/fusion_trust.jks` file.
    f. Leave the Custom Trust Keystore type blank.
    g. Change the Custom Trust Keystore Passphrase entry. This should be the same as the *keystorepassword* field described in the first bullet in Step 4 in Section 7.2, "Creating the Identity Keystore on FINHOST2."
    h. Re-enter the Custom Trust Keystore Passphrase.
    i. Click **Save**.
14. Select the **SSL** tab.
    a. Make sure that Identity and Trust Locations is set to **Keystores**.
    b. Change the Private Key Alias to `FINHOST2_fusion`.
    c. Change the Private Key Passphrase to the *keypassword*, as described in the second bullet in Step 4 in Section 7.2, "Creating the Identity Keystore on FINHOST2."
    d. Re-enter the *keypassword* from Step c for the Confirm Private Key Passphrase.
    e. Click **Save**.
15. Select the **Server Start** tab.

    Change the Arguments to reflect the name of your cloned Managed Server and make sure the server group is the correct cluster name. For example, you should see the following:

    ```
    -DJDBCProgramName=DS/HCMDomain/CoreSetupServer_2
    -Dserver.group=CoreSetupCluster
    ```

    Click **Save**.
16. Select the **Logging** tab, and then select the **HTTP** tab.
17. Do the following:
    a. Change the Log file name to `logs/access.log.%yyyyMMdd%`.
    b. Change the rotation type to **By Time**.
    c. Leave the **Limit number of retained files** option unchecked.

d. Leave the **Rotate log file on startup** option unchecked.

e. Click **Save**.

f. Expand **Advanced**.

g. Change the format to **Extended**.

h. Change the extended logging format fields to the following:

```
date time time-taken cs-method cs-uri
sc-status sc(X-ORACLE-DMS-ECID)
cs(ECID-Context) cs(Proxy-Remote-User)
cs(Proxy-Client-IP)
```

i. Click **Save**.

18. Click **Activate Changes**.

19. Repeat Steps 2 to 18 for all the Managed Servers on this domain.

20. Set the following environment variable on *FINHOST2*:

```
WLST_PROPERTIES="-Dweblogic.security.SSL.trustedCAKeyStore=ORACLE_BASE/
config/keystores/fusion_trust.jks"
```

21. Stop the domain's Administration Server:

```
FINHOST1> ORACLE_BASE/config/domains/FINHOST1/HCMDomain/bin/stopWebLogic.sh
```

22. Restart the domain's Administration Server:

```
FINHOST2> ORACLE_BASE/products/fusionapps/wlserver_10.3/common/bin/wlst.sh

FINHOST2> nmConnect(username='<username>', password='<password>',
domainName='HCMDomain', host='FINHOST1',port='5556',
nmType='ssl', domainDir='ORACLE_BASE/config/domains/FINHOST1/HCMDomain')

FINHOST2> nmStart('AdminServer')
```

> **Note:** The *username* and *password* used in the nmConnect are the Node Manager credentials (username and password) specified when creating the provisioning response file. This is shown in Figure 5–3 in "Using the Provisioning Process to Install Components for an Enterprise Deployment".

23. Run the newly created Managed Servers:

a. Log in to the Administration Server: `http://hcminternal.mycompany.com:7777/console`.

b. Navigate to **HCMDomain > Environment > Servers > Control**.

c. Select the newly created Managed Servers and click **Start**.

d. Navigate to **HCMDomain > Environment > Servers** and check the **State** to verify that the newly created Managed Servers are running.

11.6 Oracle HTTP Server Configuration

To configure Oracle HTTP Server:

1. On *WEBHOST1*:

   a. Change directory to *ORACLE_BASE*/config/CommonDomain_webtier/config/OHS/ohs1/moduleconf.

   b. Copy FusionVirtualHost_hcm.conf to FusionVirtualHost_hcm.conf.org.

2. Edit the FusionVirtualHost_hcm.conf file, adding the scaled-out host and port to all the WebLogic Application Clusters. Add this to both the Internal and External part of the FusionVirtualHost_hcm.conf file. Example 11–1 shows sample code for CoreSetupServer.

   Notes:

   - Do not add these values for Oracle Enterprise Manager, Oracle WebLogic Server Administration Console, or Oracle Authorization Policy Manager.
   - If the Managed Servers are running on VIPs, replace *FINHOST1* and *FINHOST2* with the VIP addresses in Example 11–1.

Example 11–1 Sample "CoreSetupServer" Code

```
<Location /hcmCoreSetup>
    SetHandler weblogic-handler
    WebLogicCluster <FINHOST1:port>,<FINHOST2:port>
</Location>
```

3. Repeat Step 2 for all applications.

4. Restart Oracle HTTP Server: cd to *ORACLE_BASE*/config/CommonDomain_webtier/bin and enter the following:

```
WEBHOST1> ./opmnctl stopall
WEBHOST1> ./opmnctl startall
```

5. Repeat Steps 1 through 4 on *WEBHOST2*.

11.7 Configuring Server Migration for the Managed Servers

Server migration is required for proper failover of Oracle Fusion Financials components in the event of failure in any of the *FINHOST1* and *FINHOST2* nodes. For more information, see Chapter 18, "Setting Up Server Migration for an Enterprise Deployment."

11.8 Validating the System

You should verify URLs to ensure that the appropriate routing and failover are working.

To verify the URLs:

1. Log in to the HCMDomain Oracle WebLogic Server Administration Console and stop all the Managed Servers on *FINHOST1* while the Managed Servers on *FINHOST2* are running.

2. Access the following URLs to verify that routing and failover are functioning properly. (Ensure the log in prompt is visible.)

   - https://hcmexternal.mycompany.com/hcmCore/faces/AddPersonUiShellMainPage

- `https://hcmexternal.mycompany.com/hcmCore/faces/PersonSearch`

3. Log in to the `HCMDomain` Oracle WebLogic Server Administration Console and stop all the Managed Servers on *`FINHOST2`*.
4. Start the Managed Servers on *`FINHOST1`*.
5. Repeat Step 2. (Ensure the log in prompt is visible.)
6. Start all the Managed Servers on *`FINHOST2`* and verify that they are running on *`FINHOST1`* and *`FINHOST2`*.

12

Scaling Out the Oracle Fusion Supply Chain Management Domain

This chapter describes how to scale out the Oracle Fusion Supply Chain Management domain.

This chapter includes the following topics:

12.1 Overview of the Oracle Fusion Supply Chain Management Domain

Oracle Fusion Financials uses Oracle Fusion Supply Chain Management for products and product groups. The Oracle Fusion Supply Chain Management domain provides the flows to import any existing customer product and product catalog into Oracle Fusion Financials.

Figure 2–7 in Chapter 2, "Introduction to the Enterprise Deployment Reference Topologies," shows the topology for the Oracle Fusion Supply Chain Management domain within the overall reference enterprise deployment topology.

12.2 Prerequisites for Scaling Out the Oracle Fusion Supply Chain Management Domain

Before you begin, ensure the following:

- Node Manager has been started in the Secure Sockets Layer (SSL) mode by following the instructions in Chapter 7, "Setting Up Node Manager for an Enterprise Deployment"
- You are starting with a clean machine if it is the first time it is being used for a scale out

- The /etc/hosts file has proper entries. To verify, ping this machine with the fully qualified name of the machine
- The user created on *FINHOST2* should be the same as the user on *FINHOST1*
- The directory structure /u01/oracle is mounted to same shared file system as *FINHOST1*
- The directory structure /u02/local/oracle/config on *FINHOST2* has been created
- The initial Oracle Fusion Financials deployment on *FINHOST1* has already been done and verified by provisioning

12.3 Adding a New Machine in the Oracle WebLogic Server Console

To add a new machine:

1. Log in to the Administration Server: http://*scminternal*.mycompany.com:7777/console.
2. Navigate to **SCMDomain > Environment > Machines**.

   Local Machine is located in the right-hand pane.
3. In the left-hand pane, click **Lock & Edit**.
4. In the right-hand pane, first click **New** to add the remote machine, and then specify the following:
   - Name - enter *FINHOST2*
   - Machine operating system - Unix
5. Click **Next**.
6. In the window that opens, set the following attributes:
   - Type - SSL
   - Listen Address - <*FINHOST2*>

   Note: The "localhost" default value here is wrong.

   - Listen port - 5556
7. Click **Finish** and activate the changes.

   Note: If you get an error when activating the changes, see Section 20.8.18, "Administration Console Redirects from Internal URL to Container URL after Activation" for the temporary solution.

12.4 Packing and Unpacking the Managed Server Domain Home

Since the *FINHOST1* domain directory file system is also available from *FINHOST2*, both pack and unpack commands can be executed from *FINHOST2*.

To pack and unpack the Managed Server domain home:

1. Change directory to *ORACLE_BASE*/products/fusionapps/oracle_common/common/bin.
2. Run the pack command:

```
FINHOST2> ./pack.sh -managed=true -domain=ORACLE_BASE/config/domains/
FINHOST1/SCMDomain -template=ORACLE_BASE/user_templates/
SCMDomain_managed.jar -template_name="SCM_Managed_Server_Domain"
```

3. Ensure that `/u02/local/oracle/config/domains/FINHOST2/SCMDomain` is empty, and then run the `unpack` command:

   ```
   FINHOST2> ./unpack.sh -domain=/u02/local/oracle/config/domains/FINHOST2/
   SCMDomain -template=ORACLE_BASE/user_templates/SCMDomain_managed.jar
   ```

   Here, *ORACLE_BASE* is shared, and `/u02/local` is local to *FINHOST2*.

12.5 Cloning Managed Servers and Assigning Them to FINHOST2

To add a Managed Server and assign it to *FINHOST2*:

1. Log in to the Administration Server: `http://scminternal.mycompany.com:7777/console`.
2. Navigate to **SCMDomain > Environment > Servers**.
3. Switch to **Lock & Edit** mode.
4. Select the ***Managed_Server*** checkbox (for example, **CostManagementServer_1**) and then click **Clone**.
5. Specify the following Server Identity attributes:
   - Server Name - `CostManagementServer_2`

     Note: To ensure consistency in naming, copy the name of the server shown in **Server Identity** and paste it into the **Server Name** field. Then change the number to "_2".

   - Server Listen Address - <*FINHOST2*>
   - Server Listen Port - leave "as is"

     Note: For Oracle SOA Suite server, add a port value that is different than the `soa_server1` server value. This will help in server migration.

6. Click **OK**.

   You now should see the newly cloned sales server, `CostManagementServer_2`.

7. Click **CostManagementServer_2** and change the following attributes:
   - Machine - <*FINHOST2*>
   - Cluster Name - accept the default, CostManagementCluster

     Note: Ensure that this cluster name is the same as the cluster name of the original Managed Server.

8. Click **Save** and then **Activate Changes**.
9. Navigate to **SCMDomain > Environment > Servers**.

10. From the **Name** column, click the **CostManagementServer_2** scaled-out server link.
11. Click **Lock & Edit**, and then select the **Configuration** tab.
12. Select the **Keystores** tab, and ensure that the keystores value is **Custom Identity and Custom Trust**.
13. Do the following:
    a. Change the Custom Identity Keystore path to point to the *ORACLE_BASE*/config/keystores/*FINHOST2*_fusion_identity.jks file.
    b. Leave the Custom Identity Keystore type blank.
    c. Change the Custom Identity Keystore Passphrase entry. This should be the same as the *keystorepassword* field described in the first bullet in Step 4 in Section 7.2, "Creating the Identity Keystore on FINHOST2."
    d. Re-enter the Confirm Custom Identity Keystore Passphrase.
    e. Ensure that the Confirm Custom Trust Keystore path is pointing to the *ORACLE_BASE*/config/keystores/fusion_trust.jks file.
    f. Leave the Custom Trust Keystore type blank.
    g. Change the Custom Trust Keystore Passphrase entry. This should be the same as the *keystorepassword* field described in the first bullet in Step 4 in Section 7.2, "Creating the Identity Keystore on FINHOST2."
    h. Re-enter the Custom Trust Keystore Passphrase.
    i. Click **Save**.
14. Select the **SSL** tab.
    a. Make sure that Identity and Trust Locations is set to **Keystores**.
    b. Change the Private Key Alias to *FINHOST2*_fusion.
    c. Change the Private Key Passphrase to the *keypassword*, as described in the second bullet in Step 4 in Section 7.2, "Creating the Identity Keystore on FINHOST2."
    d. Re-enter the *keypassword* from Step c for the Confirm Private Key Passphrase.
    e. Click **Save**.
15. Select the **Server Start** tab.

    Change the Arguments to reflect the name of your cloned Managed Server and make sure the server group is the correct cluster name. For example, you should see the following:

    ```
    -DJDBCProgramName=DS/SCMDomain/CostManagementServer_2
    -Dserver.group=CostManagementCluster
    ```

    Click **Save**.
16. Select the **Logging** tab, and then select the **HTTP** tab.
17. Do the following:
    a. Change the Log file name to logs/access.log.%yyyyMMdd%.
    b. Change the rotation type to **By Time**.
    c. Leave the **Limit number of retained files** option unchecked.

   d. Leave the **Rotate log file on startup** option unchecked.
   e. Click **Save**.
   f. Expand **Advanced**.
   g. Change the format to **Extended**.
   h. Change the extended logging format fields to the following:

      ```
      date time time-taken cs-method cs-uri
      sc-status sc(X-ORACLE-DMS-ECID)
      cs(ECID-Context) cs(Proxy-Remote-User)
      cs(Proxy-Client-IP)
      ```

   i. Click **Save**.

18. Click **Activate Changes**.
19. Repeat Steps 2 to 18 for all the Managed Servers on this domain.
20. Set the following environment variable on *FINHOST2*:

    ```
    WLST_PROPERTIES="-Dweblogic.security.SSL.trustedCAKeyStore=ORACLE_BASE/
    config/keystores/fusion_trust.jks"
    ```

21. Stop the domain's Administration Server:

    ```
    FINHOST1> ORACLE_BASE/config/domains/FINHOST1/SCMDomain/bin/stopWebLogic.sh
    ```

22. Restart the domain's Administration Server:

    ```
    FINHOST2> ORACLE_BASE/products/fusionapps/wlserver_10.3/common/bin/wlst.sh

    FINHOST2> nmConnect(username='<username>', password='<password>',
    domainName='SCMDomain', host='FINHOST1',port='5556',
    nmType='ssl', domainDir='ORACLE_BASE/config/domains/FINHOST1/SCMDomain')

    FINHOST2> nmStart('AdminServer')
    ```

    > **Note:** The *username* and *password* used in the `nmConnect` are the Node Manager credentials (username and password) specified when creating the provisioning response file. This is shown in Figure 5–3 in "Using the Provisioning Process to Install Components for an Enterprise Deployment".

23. Run the newly created Managed Servers:
   a. Log in to the Administration Server: `http://`*`scminternal`*`.mycompany.com:7777/console`.
   b. Navigate to **SCMDomain > Environment > Servers > Control**.
   c. Select the newly created Managed Servers and click **Start**.
   d. Navigate to **SCMDomain > Environment > Servers** and check the **State** to verify that the newly created Managed Servers are running.

12.6 Oracle HTTP Server Configuration

To configure Oracle HTTP Server:

1. On *WEBHOST1*:

  a. Change directory to *ORACLE_BASE*/config/CommonDomain_webtier/config/OHS/ohs1/moduleconf.

  b. Copy FusionVirtualHost_scm.conf to FusionVirtualHost_scm.conf.org.

2. Edit the FusionVirtualHost_scm.conf file, adding the scaled-out host and port to all the WebLogic Application Clusters. Add this to both the Internal and External part of the FusionVirtualHost_scm.conf file. Example 12–1 shows sample code for CostManagementServer.

> **Notes:**
>
> - Do not add these values for Oracle Enterprise Manager, Oracle WebLogic Server Administration Console, or Oracle Authorization Policy Manager.
> - If the Managed Servers are running on VIPs, replace *FINHOST1* and *FINHOST2* with the VIP addresses in Example 12–1.

Example 12–1 Sample "CostManagementServer" Code

```
<Location /costManagement>
    SetHandler weblogic-handler
    WebLogicCluster <FINHOST1:port>,<FINHOST2:port>
</Location>
```

3. Repeat Step 2 for all applications.

4. Restart Oracle HTTP Server: cd to *ORACLE_BASE*/config/CommonDomain_webtier/bin and enter the following:

```
WEBHOST1> ./opmnctl stopall
WEBHOST1> ./opmnctl startall
```

5. Repeat Steps 1 through 4 on *WEBHOST2*.

12.7 Configuring Server Migration for the Managed Servers

Server migration is required for proper failover of Oracle Fusion Financials components in the event of failure in any of the *FINHOST1* and *FINHOST2* nodes. For more information, see Chapter 18, "Setting Up Server Migration for an Enterprise Deployment."

12.8 Validating the System

You should verify URLs to ensure that the appropriate routing and failover are working.

To verify the URLs:

1. Log in to the SCMDomain Oracle WebLogic Server Administration Console and stop all the Managed Servers on *FINHOST1* while the Managed Servers on *FINHOST2* are running.

2. Access the following URL to verify that routing and failover are functioning properly. (Ensure the log in prompt is visible.)

   - https://scmexternal.mycompany.com/costManagement/faces/ItemCostProfileWorkarea

3. Log in to the `SCMDomain` Oracle WebLogic Server Administration Console and stop all the Managed Servers on *FINHOST2*.
4. Start the Managed Servers on *FINHOST1*.
5. Repeat Step 2. (Ensure the log in prompt is visible.)
6. Start all the Managed Servers on *FINHOST2* and verify that they are running on *FINHOST1* and *FINHOST2*.

13

Scaling Out the Oracle Fusion Projects Domain

This chapter describes how to scale out the Oracle Fusion Projects domain.

This chapter includes the following topics:

13.1 Overview of the Oracle Fusion Projects Domain

The Oracle Fusion Projects domain supports the following products:

- Project Foundation
- Project Costing
- Project Billing
- Project Control
- Project Performance Reporting

It integrates with the Oracle Essbase server in the Oracle Business Intelligence domain to support Project Performance Reporting functionality.

Figure 2–7 in Chapter 2, "Introduction to the Enterprise Deployment Reference Topologies," shows the topology for the Oracle Fusion Projects domain within the overall reference enterprise deployment topology.

13.2 Prerequisites for Scaling Out the Oracle Fusion Projects Domain

Before you begin, ensure the following:

- Node Manager has been started in the Secure Sockets Layer (SSL) mode by following the instructions in Chapter 7, "Setting Up Node Manager for an Enterprise Deployment"

- You are starting with a clean machine if it is the first time it is being used for a scale out
- The `/etc/hosts` file has proper entries. To verify, ping this machine with the fully qualified name of the machine
- The user created on *FINHOST2* should be the same as the user on *FINHOST1*
- The directory structure `/u01/oracle` is mounted to same shared file system as *FINHOST1*
- The directory structure `/u02/local/oracle/config` on *FINHOST2* has been created
- The initial Oracle Fusion Financials deployment on *FINHOST1* has already been done and verified by provisioning

13.3 Adding a New Machine in the Oracle WebLogic Server Console

To add a new machine:

1. Log in to the Administration Server: `http://`*prjinternal*`.mycompany.com:7777/console`.
2. Navigate to **ProjectsDomain > Environment > Machines**.

   LocalMachine is located in the right-hand pane.
3. In the left-hand pane, click **Lock & Edit**.
4. In the right-hand pane, first click **New** to add the remote machine, and then specify the following:
   - Name - enter *FINHOST2*
   - Machine operating system - Unix
5. Click **Next**.
6. In the window that opens, set the following attributes:
   - Type - SSL
   - Listen Address - <*FINHOST2*>

     Note: The "localhost" default value here is wrong.
   - Listen port - 5556
7. Click **Finish** and activate the changes.

   Note: If you get an error when activating the changes, see Section 20.8.18, "Administration Console Redirects from Internal URL to Container URL after Activation" for the temporary solution.

13.4 Packing and Unpacking the Managed Server Domain Home

Since the *FINHOST1* domain directory file system is also available from *FINHOST2*, both the `pack` and `unpack` commands can be executed from the *FINHOST2*.

To pack and unpack the Managed Server domain home:

1. Change directory to `ORACLE_BASE/products/fusionapps/oracle_common/common/bin`.

2. Run the `pack` command:

   ```
   FINHOST2> ./pack.sh -managed=true -domain=ORACLE_BASE/config/domains/
   FINHOST1/ProjectsDomain -template=ORACLE_BASE/user_templates/
   ProjectsDomain_managed.jar -template_name=
   "Projects_Managed_Server_Domain"
   ```

3. Ensure that `/u02/local/oracle/config/domains/FINHOST2/ProjectsDomain` is empty, and then run the `unpack` command:

   ```
   FINHOST2> ./unpack.sh -domain=/u02/local/oracle/config/domains/FINHOST2/
   ProjectsDomain -template=ORACLE_BASE/user_templates/
   ProjectsDomain_managed.jar
   ```

   Here, *`ORACLE_BASE`* is shared, and `/u02/local` is local to *`FINHOST2`*.

13.5 Cloning Managed Servers and Assigning Them to FINHOST2

To add a Managed Server and assign it to *`FINHOST2`*:

1. Log in to the Administration Server: `http://`*`prjinternal`*`.mycompany.com:7777/console`.

2. Navigate to **ProjectsDomain > Environment > Servers**.

3. Switch to **Lock & Edit** mode.

4. Select the ***Managed_Servers*** checkbox (for example, **ProjectsFinancialsServer_1**) and then click **Clone**.

5. Specify the following Server Identity attributes:

   - Server Name - `ProjectsFinancialsServer_2`

     Note: To ensure consistency in naming, copy the name of the server shown in **Server Identity** and paste it into the **Server Name** field. Then change the number to "_2".

   - Server Listen Address - <*`FINHOST2`*>

   - Server Listen Port - leave "as is"

     Note: For Oracle SOA Suite server, add a port value that is different than the `soa_server1` server value. This will help in server migration.

6. Click **OK**.

   You now should see the newly cloned server, `ProjectsFinancialsServer_2`.

7. Click **ProjectsFinancialsServer_2** and change the following attributes:

   - Machine - <*`FINHOST2`*>

   - Cluster Name - accept the default, ProjectsFinancialsCluster

> **Note:** Ensure that this cluster name is the same as the cluster name of the original Managed Server.

8. Click **Save** and then **Activate Changes**.
9. Navigate to **ProjectsDomain > Environment > Servers**.
10. From the **Name** column, click the **ProjectsFinancialsServer_2** scaled-out server link.
11. Click **Lock & Edit**, and then select the **Configuration** tab.
12. Select the **Keystores** tab, and ensure that the keystores value is **Custom Identity and Custom Trust**.
13. Do the following:
    a. Change the Custom Identity Keystore path to point to the `ORACLE_BASE/config/keystores/FINHOST2_fusion_identity.jks` file.
    b. Leave the Custom Identity Keystore type blank.
    c. Change the Custom Identity Keystore Passphrase entry. This should be the same as the *keystorepassword* field described in the first bullet in Step 4 in Section 7.2, "Creating the Identity Keystore on FINHOST2."
    d. Re-enter the Confirm Custom Identity Keystore Passphrase.
    e. Ensure that the Confirm Custom Trust Keystore path is pointing to the `ORACLE_BASE/config/keystores/fusion_trust.jks` file.
    f. Leave the Custom Trust Keystore type blank.
    g. Change the Custom Trust Keystore Passphrase entry. This should be the same as the *keystorepassword* field described in the first bullet in Step 4 in Section 7.2, "Creating the Identity Keystore on FINHOST2."
    h. Re-enter the Custom Trust Keystore Passphrase.
    i. Click **Save**.
14. Select the **SSL** tab.
    a. Make sure that Identity and Trust Locations is set to **Keystores**.
    b. Change the Private Key Alias to `FINHOST2_fusion`.
    c. Change the Private Key Passphrase to the *keypassword*, as described in the second bullet in Step 4 in Section 7.2, "Creating the Identity Keystore on FINHOST2."
    d. Re-enter the *keypassword* from Step c for the Confirm Private Key Passphrase.
    e. Click **Save**.
15. Select the **Server Start** tab.

    Change the Arguments to reflect the name of your cloned Managed Server and make sure the server group is the correct cluster name. For example, you should see the following:

    ```
    -DJDBCProgramName=DS/ProjectsDomain/ProjectsFinancialsServer_2
    -Dserver.group=ProjectsFinancialsCluster
    ```

    Click **Save**.

16. Select the **Logging** tab, and then select the **HTTP** tab.
17. Do the following:
    a. Change the Log file name to `logs/access.log.%yyyyMMdd%`.
    b. Change the rotation type to **By Time**.
    c. Leave the **Limit number of retained files** option unchecked.
    d. Leave the **Rotate log file on startup** option unchecked.
    e. Click **Save**.
    f. Expand **Advanced**.
    g. Change the format to **Extended**.
    h. Change the extended logging format fields to the following:

    ```
    date time time-taken cs-method cs-uri
    sc-status sc(X-ORACLE-DMS-ECID)
    cs(ECID-Context) cs(Proxy-Remote-User)
    cs(Proxy-Client-IP)
    ```

    i. Click **Save**.
18. Click **Activate Changes**.
19. Repeat Steps 2 to 18 for all the Managed Servers on this domain.
20. Set the following environment variable on *FINHOST2*:

```
WLST_PROPERTIES="-Dweblogic.security.SSL.trustedCAKeyStore=ORACLE_BASE/
config/keystores/fusion_trust.jks"
```

21. Stop the domain's Administration Server:

```
FINHOST1> CRACLE_BASE/config/domains/FINHOST1/
ProjectsDomain/bin/stopWebLogic.sh
```

22. Restart the domain's Administration Server:

```
FINHOST2> ORACLE_BASE/products/fusionapps/wlserver_10.3/common/bin/wlst.sh

FINHOST2> nmConnect(username='<username>', password='<password>',
domainName='ProjectsDomain', host='FINHOST1',port='5556',
nmType='ssl', domainDir='ORACLE_BASE/config/domains/FINHOST1/ProjectsDomain')

FINHOST2> nmStart('AdminServer')
```

Note: The *username* and *password* used in the `nmConnect` are the Node Manager credentials (username and password) specified when creating the provisioning response file. This is shown in Figure 5–3 in "Using the Provisioning Process to Install Components for an Enterprise Deployment".

23. Run the newly created Managed Servers:
    a. Log in to the Administration Server: `http://prjinternal.mycompany.com:7777/console`.
    b. Navigate to **ProjectsDomain** > **Environment** > **Servers** > **Control**.
    c. Select the newly created Managed Servers and click **Start**.

d. Navigate to **ProjectsDomain** > **Environment** > **Servers** and check the **State** to verify that the newly created Managed Servers are running.

13.6 Oracle HTTP Server Configuration

To configure Oracle HTTP Server:

1. On *WEBHOST1*:

   a. Change directory to *ORACLE_BASE*/config/CommonDomain_webtier/config/OHS/ohs1/moduleconf.

   b. Copy FusionVirtualHost_prj.conf to FusionVirtualHost_prj.conf.org.

2. Edit the FusionVirtualHost_prj.conf file, adding the scaled-out host and port to all the WebLogic Application Clusters. Add this to both the Internal and External part of the FusionVirtualHost_prj.conf file. Example 13–1 shows sample code for ProjectsFinancialsServer.

Notes:

- Do not add these values for Oracle Enterprise Manager, Oracle WebLogic Server Administration Console, or Oracle Authorization Policy Manager.
- If the Managed Servers are running on VIPs, replace *FINHOST1* and *FINHOST2* with the VIP addresses in Example 13–1.

Example 13–1 Sample "ProjectsFinancialsServer" Code

```
<Location /projectsFinancials>
    SetHandler weblogic-handler
    WebLogicCluster <FINHOST1:port>,<FINHOST2:port>
</Location>
```

3. Repeat Step 2 for all applications.

4. Restart Oracle HTTP Server: cd to *ORACLE_BASE*/config/CommonDomain_webtier/bin and enter the following:

```
WEBHOST1> ./opmnctl stopall
WEBHOST1> ./opmnctl startall
```

5. Repeat Steps 1 through 4 on *WEBHOST2*.

13.7 Configuring Server Migration for the Managed Servers

Server migration is required for proper failover of Oracle Fusion Projects components in the event of failure in any of the FINHOST1 and FINHOST2 nodes. For more information, see Chapter 18, "Setting Up Server Migration for an Enterprise Deployment."

13.8 Validating the System

You should verify URLs to ensure that the appropriate routing and failover are working.

To verify the URLs:

1. Log in to the `ProjectsDomain` Oracle WebLogic Server Administration Console and stop all the Managed Servers on the *`FINHOST1`* while the Managed Servers on *`FINHOST2`* are running.
2. Access the following URLs to verify that routing and failover are functioning properly. (Ensure the log in prompt is visible.)
   - `https://prjexternal.mycompany.com/projectsFinancials/faces/PRJProjectWorkarea`
   - `https://prjexternal.mycompany.com/projectsFinancials/faces/PrjCostWorkArea`
3. Log in to the `ProjectsDomain` Oracle WebLogic Server Administration Console and stop all the Managed Servers on *`FINHOST2`*.
4. Start the Managed Servers on *`FINHOST1`*.
5. Repeat Step 2. (Ensure the log in prompt is visible.)
6. Start all the Managed Servers on *`FINHOST2`* and verify that they are running on *`FINHOST1`* and *`FINHOST2`*.

14 Scaling Out the Oracle Fusion Procurement Domain

This chapter describes how to scale out the Oracle Fusion Projects domain.

This chapter includes the following topics:

14.1 Overview of the Oracle Fusion Procurement Domain

The Oracle Fusion Procurement domain supports the following products:

- Oracle Fusion Procurement Contracts
- Oracle Fusion Purchasing
- Oracle Fusion Self Service Procurement
- Oracle Fusion Sourcing
- Oracle Fusion Supplier Model
- Oracle Fusion Supplier Portal

Oracle Fusion Procurement integrates with the Oracle Business Intelligence domain for both embedded and PDF reports used by the Procurement and Supplier Portal applications.

Figure 2–8 in Chapter 2, "Introduction to the Enterprise Deployment Reference Topologies," shows the topology for the Oracle Fusion Procurement domain within the overall reference enterprise deployment topology.

14.2 Prerequisites for Scaling Out the Oracle Fusion Procurement Domain

Before you begin, ensure the following:

- Node Manager has been started in the Secure Sockets Layer (SSL) mode by following the instructions in Chapter 7, "Setting Up Node Manager for an Enterprise Deployment"
- You are starting with a clean machine if it is the first time it is being used for a scale out
- The `/etc/hosts` file has proper entries. To verify, ping this machine with the fully qualified name of the machine
- The user created on *`FINHOST2`* should be the same as the user on *`FINHOST1`*
- The directory structure `/u01/oracle` is mounted to same shared file system as *`FINHOST1`*
- The directory structure `/u02/local/oracle/config` on *`FINHOST2`* has been created
- The initial Oracle Fusion Financials deployment on *`FINHOST1`* has already been done and verified by provisioning

14.3 Adding a New Machine in the Oracle WebLogic Server Console

To add a new machine:

1. Log in to the Administration Server: `http://`*`prcinternal`*`.mycompany.com:7777/console`.
2. Navigate to **ProcurementDomain** > **Environment** > **Machines**.

   LocalMachine is located in the right-hand pane.
3. In the left-hand pane, click **Lock & Edit**.
4. In the right-hand pane, first click **New** to add the remote machine, and then specify the following:
   - Name - enter *`FINHOST2`*
   - Machine operating system - Unix
5. Click **Next**.
6. In the window that opens, set the following attributes:
   - Type - SSL
   - Listen Address - <*`FINHOST2`*>

     Note: The "localhost" default value here is wrong.
   - Listen port - 5556
7. Click **Finish** and activate the changes.

   Note: If you get an error when activating the changes, see Section 20.8.18, "Administration Console Redirects from Internal URL to Container URL after Activation" for the temporary solution.

14.4 Packing and Unpacking the Managed Server Domain Home

Since the *FINHOST1* domain directory file system is also available from *FINHOST2*, both the pack and unpack commands can be executed from the *FINHOST2*.

To pack and unpack the Managed Server domain home:

1. Change directory to *ORACLE_BASE*/products/fusionapps/oracle_common/common/bin.
2. Run the pack command:

   ```
   FINHOST2> ./pack.sh -managed=true -domain=ORACLE_BASE/config/domains/
   FINHOST1/ProcurementDomain -template=ORACLE_BASE/user_templates/
   ProcurementDomain_managed.jar -template_name=
   "Procurement_Managed_Server_Domain"
   ```

3. Ensure that /u02/local/oracle/config/domains/*FINHOST2*/ProcurementDomain is empty, and then run the unpack command:

   ```
   FINHOST2> ./unpack.sh -domain=/u02/local/oracle/config/domains/FINHOST2/
   ProcurementDomain -template=ORACLE_BASE/user_templates/
   ProcurementDomain_managed.jar
   ```

   Here, *ORACLE_BASE* is shared, and /u02/local is local to *FINHOST2*.

14.5 Cloning Managed Servers and Assigning Them to FINHOST2

To add a Managed Server and assign it to *FINHOST2*:

1. Log in to the Administration Server: http://*prcinternal*.mycompany.com:7777/console.
2. Navigate to **ProcurementDomain > Environment > Servers**.
3. Switch to **Lock & Edit** mode.
4. Select the ***Managed_Servers*** checkbox (for example, **ProcurementServer_1**) and then click **Clone**.
5. Specify the following Server Identity attributes:

   - Server Name - ProcurementServer_2

     Note: To ensure consistency in naming, copy the name of the server shown in **Server Identity** and paste it into the **Server Name** field. Then change the number to "_2".

   - Server Listen Address - <*FINHOST2*>
   - Server Listen Port - leave "as is"

     Note: For Oracle SOA Suite server, add a port value that is different than the soa_server1 server value. This will help in server migration.

6. Click **OK**.

   You now should see the newly cloned server, ProcurementServer_2.

7. Click **ProcurementServer_2** and change the following attributes:

- Machine - <*FINHOST2*>
- Cluster Name - accept the default, ProcurementCluster

> **Note:** Ensure that this cluster name is the same as the cluster name of the original Managed Server.

8. Click **Save** and then **Activate Changes**.
9. Navigate to **ProcurementDomain > Environment > Servers**.
10. From the **Name** column, click the **ProcurementServer_2** scaled-out server link.
11. Click **Lock & Edit**, and then select the **Configuration** tab.
12. Select the **Keystores** tab, and ensure that the keystores value is **Custom Identity and Custom Trust**.
13. Do the following:

    a. Change the Custom Identity Keystore path to point to the `ORACLE_BASE/config/keystores/FINHOST2_fusion_identity.jks` file.

    b. Leave the Custom Identity Keystore type blank.

    c. Change the Custom Identity Keystore Passphrase entry. This should be the same as the *keystorepassword* field described in the first bullet in Step 4 in Section 7.2, "Creating the Identity Keystore on FINHOST2."

    d. Re-enter the Confirm Custom Identity Keystore Passphrase.

    e. Ensure that the Confirm Custom Trust Keystore path is pointing to the `ORACLE_BASE/config/keystores/fusion_trust.jks` file.

    f. Leave the Custom Trust Keystore type blank.

    g. Change the Custom Trust Keystore Passphrase entry. This should be the same as the *keystorepassword* field described in the first bullet in Step 4 in Section 7.2, "Creating the Identity Keystore on FINHOST2."

    h. Re-enter the Custom Trust Keystore Passphrase.

    i. Click **Save**.

14. Select the **SSL** tab.

    a. Make sure that Identity and Trust Locations is set to **Keystores**.

    b. Change the Private Key Alias to `FINHOST2_fusion`.

    c. Change the Private Key Passphrase to the *keypassword*, as described in the second bullet in Step 4 in Section 7.2, "Creating the Identity Keystore on FINHOST2."

    d. Re-enter the *keypassword* from Step c for the Confirm Private Key Passphrase.

    e. Click **Save**.

15. Select the **Server Start** tab.

    Change the Arguments to reflect the name of your cloned Managed Server and make sure the server group is the correct cluster name. For example, you should see the following:

    ```
    -DJDBCProgramName=DS/ProcurementDomain/ProcurementServer_2
    -Dserver.group=ProcurementCluster
    ```

Click **Save**.

16. Select the **Logging** tab, and then select the **HTTP** tab.

17. Do the following:

    a. Change the Log file name to `logs/access.log.%yyyyMMdd%`.

    b. Change the rotation type to **By Time**.

    c. Leave the **Limit number of retained files** option unchecked.

    d. Leave the **Rotate log file on startup** option unchecked.

    e. Click **Save**.

    f. Expand **Advanced**.

    g. Change the format to **Extended**.

    h. Change the extended logging format fields to the following:

    ```
    date time time-taken cs-method cs-uri
    sc-status sc(X-ORACLE-DMS-ECID)
    cs(ECID-Context) cs(Proxy-Remote-User)
    cs(Proxy-Client-IP)
    ```

    i. Click **Save**.

18. Click **Activate Changes**.

19. Repeat Steps 2 to 18 for all the Managed Servers on this domain.

20. Set the following environment variable on *FINHOST2*:

    ```
    WLST_PROPERTIES="-Dweblogic.security.SSL.trustedCAKeyStore=ORACLE_BASE/
    config/keystores/fusion_trust.jks"
    ```

21. Stop the domain's Administration Server:

    ```
    FINHOST1> CRACLE_BASE/config/domains/FINHOST1/
    ProcurementDomain/bin/stopWebLogic.sh
    ```

22. Restart the domain's Administration Server:

    ```
    FINHOST2> ORACLE_BASE/products/fusionapps/wlserver_10.3/common/bin/wlst.sh

    FINHOST2> nmConnect(username='<username>', password='<password>',
    domainName='ProcurementDomain', host='FINHOST1',port='5556',
    nmType='ssl', domainDir='ORACLE_
    BASE/config/domains/FINHOST1/ProcurementDomain')

    FINHOST2> nmStart('AdminServer')
    ```

    Note: The *username* and *password* used in the `nmConnect` are the Node Manager credentials (username and password) specified when creating the provisioning response file. This is shown in Figure 5–3 in "Using the Provisioning Process to Install Components for an Enterprise Deployment".

23. Run the newly created Managed Servers:

    a. Log in to the Administration Server: `http://prcinternal.mycompany.com:7777/console`.

b. Navigate to **ProcurementDomain** > **Environment** > **Servers** > **Control**.

c. Select the newly created Managed Servers and click **Start**.

d. Navigate to **ProcurementDomain** > **Environment** > **Servers** and check the **State** to verify that the newly created Managed Servers are running.

14.6 Oracle HTTP Server Configuration

To configure Oracle HTTP Server:

1. On *WEBHOST1*:

   a. Change directory to `ORACLE_BASE/config/CommonDomain_webtier/config/OHS/ohs1/moduleconf`.

   b. Copy `FusionVirtualHost_prc.conf` to `FusionVirtualHost_prc.conf.org`.

2. Edit the `FusionVirtualHost_prc.conf` and `FusionVirtualHost_prc.supplierportal.conf` files, adding the scaled-out host and port to all the WebLogic Application Clusters. Add this to both the Internal and External part of the `FusionVirtualHost_prc.conf` file. Example 14–1 shows sample code for ProcurementServer.

   Notes:

   - Do not add these values for Oracle Enterprise Manager, Oracle WebLogic Server Administration Console, or Oracle Authorization Policy Manager.
   - If the Managed Servers are running on VIPs, replace *FINHOST1* and *FINHOST2* with the VIP addresses in Example 14–1.

Example 14–1 Sample "ProcurementServer" Code

```
<Location /procurement>
    SetHandler weblogic-handler
    WebLogicCluster <FINHOST1:port>,<FINHOST2:port>
</Location>
```

3. Repeat Step 2 for all applications.

4. Restart Oracle HTTP Server: `cd` to `ORACLE_BASE/config/CommonDomain_webtier/bin` and enter the following:

```
WEBHOST1> ./opmnctl stopall
WEBHOST1> ./opmnctl startall
```

5. Repeat Steps 1 through 4 on *WEBHOST2*.

14.7 Configuring Server Migration for the Managed Servers

Server migration is required for proper failover of Oracle Fusion Procurement components in the event of failure in any of the FINHOST1 and FINHOST2 nodes. For more information, see Chapter 18, "Setting Up Server Migration for an Enterprise Deployment."

14.8 Validating the System

You should verify URLs to ensure that the appropriate routing and failover are working.

To verify the URLs:

1. Log in to the `ProcurementDomain` Oracle WebLogic Server Administration Console and stop all the Managed Servers on the *`FINHOST1`* while the Managed Servers on *`FINHOST2`* are running.
2. Access the following URLs to verify that routing and failover are functioning properly. (Ensure the log in prompt is visible.)
   - `https://prcexternal.mycompany.com/procurement/faces/PrcPoPurchasingWorkarea`
   - `https://prcexternal.mycompany.com/supplierPortal/faces/PrcPosSupplierPortalWorkarea`
3. Log in to the `ProcurementDomain` Oracle WebLogic Server Administration Console and stop all the Managed Servers on *`FINHOST2`*.
4. Start the Managed Servers on *`FINHOST1`*.
5. Repeat Step 2. (Ensure the log in prompt is visible.)
6. Start all the Managed Servers on *`FINHOST2`* and verify that they are running on *`FINHOST1`* and *`FINHOST2`*.

15 Scaling Out the Oracle Business Intelligence Domain

This chapter describes how to scale out the Oracle Business Intelligence domain.

This chapter includes the following topics:

15.1 Overview of the Oracle Business Intelligence Domain

Oracle Fusion Financials uses Oracle Business Intelligence Foundation's common set of Oracle Business Intelligence tools and shared services that enable the Enterprise Performance Management system.

Oracle Fusion Financials uses the following Oracle Business Intelligence tools for financial reporting and analysis purposes:

- Oracle Essbase
- Oracle Business Intelligence Publisher (Oracle BI Publisher)
- Oracle Transaction Business Intelligence
- Oracle Business Intelligence Analytics

Oracle Essbase

Oracle Fusion General Ledger combines the traditional general ledger functionality with Oracle Essbase functionality, which is seamlessly embedded within the Oracle Fusion General Ledger. At the time users create their chart of accounts, the balances cube is created automatically. Later, if you make a change such as a cost center is added or a date effective hierarchy is modified, the General Ledger automatically creates or modifies the corresponding balances cube hierarchy. As transactions or journals are posted, the General Ledger automatically updates the multidimensional cube. Unlike a data warehouse, no batch programs need to be run to populate the balances cube; it is all happening in real time when a journal is posted.

Oracle Business Intelligence Publisher

Oracle BI Publisher provides the ability to create and format high quality reports across Oracle Fusion Financials applications. It applies templates, which users design in familiar desktop tools, to standard extracts and reports. For example, it is used widely used in Oracle Fusion Payments for formatting of the check payments and electronic payment files.

Oracle Transaction Business Intelligence

Oracle Transaction Business Intelligence is widely used in Oracle Fusion Financials as a reporting tool. Using Oracle Transaction Business Intelligence, users can perform adhoc queries directly from transaction tables using drag-and-drop functionality to build custom reports in real time from the various Oracle Fusion Financials applications. It helps immensely in reducing the need to build and maintain customized reports.

Oracle Business Intelligence Analytics

Oracle Business Intelligence Analytics provides day-to -day key performance indicators (KPIs) of any item in Oracle Fusion Financials. Intelligence and analytics are embedded within the context of business transactions to help users complete the transitions. For example, before users post a journal, the system will tell them the impact the journal will have on the account balances. This eliminates the need to navigate to a separate page to run a query or run a report. End users will not be distracted from the task at hand, reporting and process demand is reduced, and smarter decisions are made in the context of the transaction.

Figure 2–10 in Chapter 2, "Introduction to the Enterprise Deployment Reference Topologies," shows the topology for the Oracle Business Intelligence domain within the overall reference enterprise deployment topology.

15.2 Prerequisites for Scaling Out the Oracle Business Intelligence Domain

Before you begin, ensure the following:

- Node Manager has been started in the Secure Sockets Layer (SSL) mode by following the instructions in Chapter 7, "Setting Up Node Manager for an Enterprise Deployment"
- You are starting with a clean machine if it is the first time it is being used for a scale out
- The `/etc/hosts` file has proper entries. To verify, ping this machine with the fully qualified name of the machine
- The user created on *FINHOST2* should the same as the user on *FINHOST1*
- The directory structure `/u01/oracle` is mounted to same shared file system as *FINHOST1*
- The directory structure `/u02/local/oracle/config` on *FINHOST2* has been created
- The initial Oracle Fusion Financials deployment on *FINHOST1* has already been done and verified by provisioning

- The Administration Console's **Follow Configuration Changes** feature has been disabled (to eliminate redirections):

  1. Log into the Administration Console (`http://biinternal.mycompany.com:7777/console`) and go to **Preferences > Shared Preferences**.
  2. Deselect **Follow Configuration Changes** and click **Save**.

15.3 Starting the Default Node Manager

To start the default Node Manager:

1. Stop any Node Manager running on *FINHOST2* using one of the following methods:

   - Use Ctrl+C in the shell where it was started.
   - Use the standard process-identification and kill commands in the operating system appropriate to Oracle Fusion Financials and the Oracle Fusion Applications enterprise deployment.

2. Change directory to `ORACLE_BASE/products/fusionapps/wlserver_10.3/common/nodemanager` and edit the `nodemanager.properties` file with the following:

   ```
   SecureListener=false
   ```

3. Change directory to `ORACLE_BASE/products/fusionapps/oracle_common/common/bin` and run the following script:

   ```
   ./setNMProps.sh
   ```

4. Change directory to `ORACLE_BASE/products/fusionapps/wlserver_10.3/server/bin` and run the following script:

   ```
   ./startNodeManager.sh
   ```

   Node Manager starts on *FINHOST2*.

   Note: Steps 2 through 4 will enable Node Manager on *FINHOST2* and the Administrator Console to communicate on Plain Socket.

15.4 Prerequisites for Scaling Out Oracle Business Intelligence on FINHOST2

Prerequisites include the following:

- Configuring JMS for Oracle BI Publisher
- Setting the Listen Address for bi_server1 Managed Server

15.4.1 Configuring JMS for Oracle BI Publisher

You must configure the location for all persistence stores to a directory visible from both nodes. Change all persistent stores to use this shared base directory.

1. Log in to the Administration Console (`http://biinternal.mycompany.com:7777/console`).

2. In the Domain Structure window, expand the **Services** node and then click the **Persistent Stores** node. The Summary of Persistent Stores page is displayed.
3. In the Change Center, click **Lock & Edit**.
4. Click **BipJmsStore** and enter a directory that is located in the shared storage. This shared storage is accessible from both *FINHOST1* and *FINHOST2*:

   ```
   ORACLE_BASE/config/domains/FINHOST1/BIDomain/BipJmsStore
   ```

5. Click **Save** and then click **Activate Changes**.

   The changes will not take effect until the Managed Server is restarted.

6. Do the following:

   a. Ensure that Node Manager is up and running.

   b. On the Summary of Servers page, select the **Control** tab.

   c. Select **bi_server1** in the table and then click **Shutdown**.

   d. After the server has shut down, select **bi_server1** in the table and then click **Start**.

7. Run the following commands to restart the Oracle Business Intelligence system components:

   ```
   $ cd /u02/local/oracle/config/BIInstance/bin
   $ ./opmnctl stopall
   $ ./opmnctl startall
   ```

15.4.2 Setting the Listen Address for bi_server1 Managed Server

Make sure that you have performed the steps described in Section 16.1, "Enabling Virtual IPs on FINHOST1 and FINHOST2" before setting the `bi_server1` listen address.

To set the listen address for the Managed Server:

1. Log in to the Administration Console (`http://biinternal.mycompany.com:7777/console`).
2. In the Change Center, click **Lock & Edit**.
3. Expand the **Environment** node in the Domain Structure window.
4. Click **Servers**. The Summary of Servers page is displayed.
5. Select **bi_server1** in the table. The Settings page for `bi_server1` is displayed.
6. Set the **Listen Address** to *BIVH1*.

   > **Note:** Both *BIVH1* and *BIVH2* are pingable.

7. Click **Save**.
8. Click **Activate Changes**.
9. The changes will not take effect until the `bi_server1` Managed Server is restarted (ensure that Node Manager is up and running):

   a. On the Summary of Servers page, select the **Control** tab.

   b. Select **bi_server1** in the table and then click **Shutdown**.

c. After the server has shut down, select **bi_server1** in the table and then click **Start**.

10. Restart the Oracle Business Intelligence system components, as follows:

```
$ cd /u02/local/oracle/config/BIInstance/bin
$ ./opmnctl stopall
$ ./opmnctl startll
```

15.4.3 Updating the FusionVirtualHost_bi.conf Configuration File

To enable Oracle HTTP Server to route to `bi_cluster`, which contains the `bi_servern` Managed Servers, you must set the WebLogicCluster parameter to the list of nodes in the cluster:

1. On *WEBHOST1* and *WEBHOST2*, update the WebLogicCluster parameter in the `ORACLE_BASE/config/CommonDomain_webtiern/config/OHS/ohs1/moduleconf/FusionVirtualHost_bi.conf` file to contain a cluster list of virtual host:port entries.

> **Note:** You must update the `FusionVirtualHost_bi.conf` file in two locations:
>
> - Under the internal virtual host for Oracle Business Intelligence
> - Under the external virtual host for Oracle Business Intelligence

For example, for the internal virtual host:

```
<LocationMatch ^/analytics/>
SetHandler weblogic-handler
WebLogicCluster BIVH1:10217,BIVH2:10217
</LocationMatch>
```

For the external virtual host:

```
<LocationMatch ^/analytics/>
SetHandler weblogic-handler
WebLogicCluster BIVH1:10217,BIVH2:10217
WLProxySSL ON
WLProxySSLPassThrough ON
RewriteEngine ON
RewriteOptions inherit
</LocationMatch>
```

2. Restart Oracle HTTP Server on both *WEBHOST1* and *WEBHOST2*:

```
WEBHOST1> ORACLE_BASE/config/CommonDomain_webtier/bin/opmnctl restartproc
ias-component=ohs1
WEBHOST2> ORACLE_BASE/config/CommonDomain_webtier1/bin/opmnctl restartproc
ias-component=ohs1
```

The servers specified in the WebLogicCluster parameters are only important at startup time for the plug-in. The list must provide at least one running cluster member for the plug-in to discover other members in the cluster. The listed cluster member must be running when Oracle HTTP Server is started. Oracle WebLogic Server and the plug-in work together to update the server list automatically with new, failed, and recovered cluster members.

Sample scenarios include:

- **Example 1:** If you have a two-node cluster and then add a third member, you do not need to update the configuration to add the third member. The third member will be discovered dynamically at run time.
- **Example 2:** You have a three-node cluster, but only two nodes are listed in the configuration. However, if both listed nodes are down when you start Oracle HTTP Server, then the plug-in would fail to route to the cluster. You must ensure that at least one of the listed nodes is running when you start Oracle HTTP Server.

  If you list all the members of the cluster, then you guarantee you can route to the cluster, assuming at least one member is running when Oracle HTTP Server is started. For more information on configuring the Oracle WebLogic Serverplug-in, see *Oracle Fusion Middleware Using Web Server 1.1 Plug-Ins with Oracle WebLogic Server*.

15.5 Scaling Out Oracle Business Intelligence Components

This section describes how to scale out the Oracle Business Intelligence system using the Configuration Assistant. It is assumed that an Oracle Business Intelligence *ORACLE_BASE* (binaries) has already been installed and is available from *`FINHOST1`* and *`FINHOST2`*, and that a domain with an Administration Server has been created. This is the domain that will be extended in this chapter to support Oracle Business Intelligence components.

Important: Oracle strongly recommends that you read the Oracle Fusion Middleware release notes for any additional installation and deployment considerations before starting the setup process.

This section includes the following topics:

- Section 15.5.1, "Scaling Out the Oracle Business Intelligence System on FINHOST2"
- Section 15.5.2, "Starting Node Manager in SSL Mode"
- Section 15.5.3, "Scaling Out the System Components"
- Section 15.5.4, "Configuring Secondary Instances of Singleton System Components"
- Section 15.5.5, "Configuring the bi_server2 Managed Server"
- Section 15.5.6, "Performing Additional Configuration for Oracle Business Intelligence High Availability"
- Section 15.5.7, "Configuring a Default Persistence Store for Transaction Recovery"
- Section 15.5.8, "Starting and Validating Oracle Business Intelligence on FINHOST2"
- Section 15.5.9, "Validating Access Through Oracle HTTP Server"
- Section 15.5.10, "Configuring Node Manager for the Managed Servers"
- Section 15.5.11, "Configuring Server Migration for the Managed Servers"

15.5.1 Scaling Out the Oracle Business Intelligence System on FINHOST2

To scale out the Oracle Business Intelligence system:

1. Ensure that the `bi_server1` server is running.
2. Change directory to the location of the Configuration Assistant:

   ```
   FINHOST2> ORACLE_BASE/products/fusionapps/bi/bin
   ```

3. Start the Oracle Business Intelligence Configuration Assistant:

   ```
   FINHOST2> ./config.sh
   ```

4. In the Welcome screen, click **Next**.
5. In the Prerequisite Checks screen, verify that all checks complete successfully, and then click **Next**.
6. In the Create or Scale out BI System screen, select **Scale Out BI System** and enter the following:
   - **Host Name:** *FINHOST1*
   - **Port:** `10201`
   - **User name:** *WLS_Administrator*
   - **User Password:** *WLS_Administrator_password*

   Click **Next**.
7. In the Scale Out BI System Details screen, enter the following:
   - **Middleware Home:** *ORACLE_BASE* `/products/fusionapps` (dimmed)
   - **Oracle Home:** *ORACLE_BASE*`/products/fusionapps/bi` (dimmed)
   - **WebLogic Server Home:** *ORACLE_BASE*`/products/fusionapps/wlserver_10.3` (dimmed)
   - **Domain Home:** `/u02/local/oracle/config/domains/`*FINHOST1* `/BIDomain`
   - **Applications Home:** `/u02/local/oracle/config/applications/`*FINHOST1*`/BIDomain`
   - **Instance Home:** Defaults to `/u02/local/oracle/config/BIInstance1`
   - **Instance Name:** `BIInstance1` (dimmed)

   Click **Next**.
8. In the Configure Ports screen, select "Specify Ports using Configuration File."

   Use the `bi_staticports.ini` file from the *ORACLE_BASE*`/products/ports` directory.

   Click **Next**.
9. In the Specify Security Updates screen, choose whether you want to receive security updates from Oracle support and if you do, enter your e-mail address.

   Click **Next**.
10. In the Summary screen, click **Configure**.
11. In the Configuration Progress screen, verify that all the Configuration Tools have completed successfully and click **Next**.
12. In the Complete screen, click **Finish**.

15.5.2 Starting Node Manager in SSL Mode

To start Node Manager in SSL mode:

1. Stop the default Node Manager running on *FINHOST2* using one of the following methods:
   - Use CTRL+C in the shell where it was started
   - Use the standard process-identification and kill commands in the operating system appropriate to Oracle Fusion Financials and the Oracle Fusion Applications enterprise deployment.
2. Start Node Manager in SSL mode on *FINHOST2*:

   ```
   FINHOST2> cd ORACLE_BASE/config/nodemanager/FINHOST2

   FINHOST2> ./startNodeManagerWrapper.sh
   ```

3. Update the Node Manager for the *FINHOST2* machine using the Oracle WebLogic Server Console by doing the following:

   a. Log in to the Administration Server: `http://biinternal.mycompany.com:7777/console`.

   b. Navigate to **BIDomain> Environment > Machines**.

   c. In the left-hand pane, click **Lock & Edit**.

   d. In the right-hand pane, click *FINHOST2*.

   e. In the window that opens, click the **Node Manager** tab and set the following attributes:

   – Type - SSL

   – Listen Address - <*FINHOST2*>

   – Listen Port - 5556
4. Click **Save** and then **Activate Changes**.

   The changes will not take effect until the `bi_server2` Managed Server is restarted.
5. Do the following:

   a. Stop the Administration Server:

   ```
   FINHOST1> ORACLE_BASE/config/domains/FINHOST1/BIDomain/bin/stopWebLogic.sh
   ```

   b. Connect to the Administration Server through `nmConnect` and start the Administration Server using `nmstart`:

   – Set the following environment variable:

   ```
   WLST_PROPERTIES="-Dweblogic.security.SSL.trustedCAKeyStore=
   ORACLE_BASE/config/keystores/fusion_trust.jks"
   ```

   – Start the Administration Server:

   ```
   FINHOST1> cd ORACLE_BASE/products/fusionapps/
   wlserver_10.3/common/bin

   FINHOST1> ./wlst.sh
   ```

   – In the WLST shell, execute the following command:

   ```
   wls:/offline> nmConnect (username='Admin_User',password='Admin_
   ```

```
Password',host='FINHOST1',port='5556', nmType='ssl', domainDir=
'ORACLE_BASE/config/domains/FINHOST1/BIDomain')

wls:/nm/domain_name> nmStart ('AdminServer')
```

Note: The username and password used in `nmConnect` are the Node Manager credentials (username and password) specified when creating the provisioning response file. This is shown in Figure 5–2 in Chapter 5, "Using the Provisioning Process to Install Components for an Enterprise Deployment."

c. Restart the `bi_server2` Managed Server:

   – On the Summary of Servers page, select the **Control** tab.

   – Select **bi_server2** in the table and then click **Shutdown**.

   – After the server has shut down, select **bi_server2** in the table and then click **Start**.

15.5.3 Scaling Out the System Components

To scale out the system components, do the following in Oracle Enterprise Manager Fusion Middleware Control:

1. Log in to Fusion Middleware Control (`http://biinternal.mycompany.com:7777/em`).
2. Expand the **Business Intelligence** node in the Farm_BIDomain window.
3. Click **coreapplication**.
4. Click **Capacity Management**, then click **Scalability**.
5. Click **Lock and Edit Configuration**.
6. For the *FINHOST2* BIInstance1 Oracle instance, increment the Oracle Business Intelligence components by 1:
   - BI Servers
   - Presentation Servers
   - JavaHosts
7. Change the **Port Range From** and **Port Range To** to be the same as the *FINHOST1* BIInstance Oracle instance.
8. Click **Apply**.
9. Click **Activate Changes**.

You do not need to restart at this point, because you will perform a restart after completing the steps in Section 15.5.4, "Configuring Secondary Instances of Singleton System Components."

15.5.4 Configuring Secondary Instances of Singleton System Components

Oracle Business Intelligence Scheduler and Oracle Business Intelligence Cluster Controller are singleton components that operate in active/passive mode. Configure a secondary instance of these components so that they are distributed for high availability.

To configure secondary instances, do the following in Fusion Middleware Control:

1. Log in to Fusion Middleware Control (`http://biinternal.mycompany.com:7777/em`).
2. Expand the **Business Intelligence** node in the Farm_BIDomain window.
3. Click **coreapplication**.
4. Click **Availability**, then click **Failover**.
5. Click **Lock and Edit Configuration** to activate the Primary/Secondary Configuration section of the Availability tab.
6. Specify the Secondary Host/Instance for BI Scheduler and BI Cluster Controller.
7. Click **Apply**.

   Under Potential Single Points of Failure, no problem should be reported for BI Scheduler and BI Cluster Controller.
8. Click **Activate Changes**.
9. Click **Restart to apply recent changes**.
10. From **Manage System**, click **Restart**.
11. Click **Yes** when prompted to confirm that you want to restart all Business Intelligence components.

15.5.5 Configuring the bi_server2 Managed Server

This section explains how to configure the `bi_server2` Managed Server, and contains the following topics:

- Section 15.5.5.1, "Setting the Listen Address for the bi_server2 Managed Server"
- Section 15.5.5.2, "Configuring Custom Identity and Custom Trust for the bi_server2 Managed Server"
- Section 15.5.5.3, "Disabling Host Name Verification for the bi_server2 Managed Server"
- Section 15.5.5.4, "Adding bi_server2 System Properties to the Server Start Tab"

15.5.5.1 Setting the Listen Address for the bi_server2 Managed Server

Make sure that you have performed the steps described in Section 16.1, "Enabling Virtual IPs on FINHOST1 and FINHOST2" before setting the `bi_server2` listen address.

To set the listen address for the Managed Server:

1. Log in to the Oracle WebLogic Server Administration Console (`http://biinternal.mycompany.com:7777/console`).
2. In the Change Center, click **Lock & Edit**.
3. Expand the **Environment** node in the Domain Structure window.
4. Click **Servers**. The Summary of Servers page is displayed.
5. Select **bi_server2** in the table. The settings page for `bi_server2` is displayed.
6. Set the **Listen Address** to *`BIVH2`*.
7. Click **Save**.

8. Click **Activate Changes**.

   The changes will not take effect until the Managed Server is restarted.

9. Do the following:

   a. Ensure that Node Manager is up and running.

   b. On the Summary of Servers page, select the **Control** tab.

   c. Select **bi_server2** in the table and then click **Shutdown**.

   d. After the server has shut down, select **bi_server2** in the table and then click **Start**.

15.5.5.2 Configuring Custom Identity and Custom Trust for the bi_server2 Managed Server

To configure custom identity and custom trust:

1. Log in to the Oracle WebLogic Server Administration Console (`http://biinternal.mycompany.com:7777/console`).

2. In the Change Center, click **Lock & Edit**.

3. Expand the **Environment** node in the Domain Structure window.

4. Click **Servers**.

   The Summary of Servers page displays.

5. Select **bi_server2** in the table. The Settings page for `bi_server2` displays.

6. Click **Keystores**, and then do the following:

   a. Click **Change** next to **Demo Identity and Demo Trust**.

   b. Select **Custom Identity and Custom Trust** from the **Keystores** dropdown list and click **Save**.

   c. Under **Identity**, do the following:

      – Change the Custom Identity Keystore entry to point to the *`ORACLE_BASE`*`/config/keystores/`*`FINHOST2`*`_fusion_identity.jks` file.

      – Enter and confirm the Custom Identity Keystore Passphrase. This should be the same as the *keystorepassword* field described in the first bullet in Step 4 in Section 7.2, "Creating the Identity Keystore on FINHOST2."

   d. Under **Trust**, do the following:

      – Change the Custom Identity Keystore entry to point to the *`ORACLE_BASE`*`/config/keystores/fusion_trust.jks` file.

      – Enter and confirm the Custom Trust Keystore Passphrase. This should be the same as the *keystorepassword* field described in the first bullet in Step 4 in Section 7.2, "Creating the Identity Keystore on FINHOST2."

      – Click **Save**.

7. Click **SSL**, and then do the following:

   a. Ensure that Identity and Trust Locations is set to **Keystores**.

   b. Under **Identity**, do the following:

      – Change the Private Key Alias to *`FINHOST2_fusion`*.

– Enter and confirm the Private Key Passphrase to the *keypassword*, as described in the second bullet in Step 4 in Section 7.2, "Creating the Identity Keystore on FINHOST2."

– Click **Save**.

8. Click **Activate Changes**.

9. Set the following property in `ORACLE_BASE/products/fusionapps/wlserver_10.3/common/bin/wlst.sh`:

```
WLST_PROPERTIES=" -Dweblogic.wlstHome='${WLST_HOME}'
-Dweblogic.security.SSL.trustedCAKeyStore=ORACLE_BASE/config/keystores/
fusion_trust.jks ${WLST_PROPERTIES}"
```

15.5.5.3 Disabling Host Name Verification for the bi_server2 Managed Server

This step is required if you have not set up the appropriate certificates to authenticate the different nodes with the Administration Server (see Chapter 7, "Setting Up Node Manager for an Enterprise Deployment"). If you have not configured the server certificates, you will receive errors when managing the different WebLogic servers. To avoid these errors, disable host name verification while setting up and validating the topology, and enable it again once the enterprise deployment topology configuration is complete as described in Chapter 7, "Setting Up Node Manager for an Enterprise Deployment."

To disable host name verification:

1. Log in to Oracle WebLogic Server Administration Console (`http://biinternal.mycompany.com:7777/console`).
2. Click **Lock & Edit**.
3. Expand the **Environment** node in the Domain Structure window.
4. Click **Servers**. The Summary of Servers page is displayed.
5. Select **bi_server2** in the table. The settings page for the server is displayed.
6. Click the **SSL** tab.
7. Expand the **Advanced** section of the page.
8. Set **Host Name Verification** to **None**.
9. Click **Save**.
10. Click **Activate Changes**.
11. The change will not take effect until the `bi_server2` Managed Server is restarted (make sure that Node Manager is up and running):
    a. In the Summary of Servers screen, select the **Control** tab.
    b. Select **bi_server2** in the table and then click **Shutdown**.
    c. Restart **bi_server2**.
12. Restart the Oracle Business Intelligence system components:

```
$ cd /u02/local/oracle/config/BIInstance1/bin
$ ./opmnctl stopall
$ ./opmnctl startall
```

15.5.5.4 Adding bi_server2 System Properties to the Server Start Tab

After scaling out the `bi_server2` Managed Server, you must add a new system property to the **Server Start** tab of this Managed Server.

1. Log in to the Oracle WebLogic Server Administration Console (`http://biinternal.mycompany.com:7777/console`).
2. Click **Lock & Edit**.
3. Expand the **Environment** node in the Domain Structure window.
4. Click **Servers**.

   The Summary of Servers page displays.
5. Select **bi_server2** in the table.

   The settings page for the server displays.
6. Click **Server Start**.
7. Add the following property to the arguments:

   ```
   -DJDBCProgramName=DS/BIDomain/bi_server2
   ```
8. Click **Save** and then **Activate Changes**.
9. Restart the `bi_server2` Managed Server (ensure sure that Node Manager is up and running):
   a. In the Summary of Servers screen, select the **Control** tab.
   b. Select **bi_server2** in the table and then click **Shutdown**.
   c. Restart `bi_server2`.
10. Restart the BI System Components:

    ```
    $ cd /u02/local/oracle/config/BIInstance1/bin
    $ ./opmnctl stopall
    $ ./opmnctl startall
    ```

15.5.6 Performing Additional Configuration for Oracle Business Intelligence High Availability

This section describes additional high availability configuration tasks for Oracle BI Enterprise Edition, Oracle Real-Time Decisions, Oracle BI Publisher, and Oracle Financial Reports. It includes the following topics:

- Section 15.5.6.1, "Additional Configuration Tasks for Oracle BI Scheduler"
- Section 15.5.6.2, "Additional Configuration Tasks for Oracle Real-Time Decisions"
- Section 15.5.6.3, "Additional Configuration Tasks for Oracle BI Publisher"
- Section 15.5.6.4, "Additional Configuration Tasks for Oracle BI for Microsoft Office"
- Section 15.5.6.5, "Additional Configuration Tasks for Oracle Financial Reporting"

15.5.6.1 Additional Configuration Tasks for Oracle BI Scheduler

If you use server-side scripts with Oracle BI Scheduler, it is recommended that you configure a shared directory for the scripts so that they can be shared by all Oracle BI Scheduler components in a cluster.

Perform these steps only if you are using server-side scripts.

To share Oracle BI Scheduler scripts:

1. Create an *ORACLE_BASE*/config/BIShared/OracleBISchedulerComponent/coreapplication_obisch1 directory.
2. From *FINHOST1*, copy the default Oracle BI Scheduler scripts (for example, /u02/local/oracle/config/BIInstance/bifoundation/OracleBISchedulerComponent/coreapplication_obisch1/scripts/common) and custom Oracle BI Scheduler scripts (for example, /u02/local/oracle/config/BIInstance/bifoundation/OracleBISchedulerComponent/coreapplication_obisch1/scripts/scheduler) to the following location:

   ORACLE_BASE/config/BIShared/OracleBISchedulerComponent/coreapplication_obisch1
3. Update the SchedulerScriptPath and DefaultScriptPath elements of the Oracle BI Scheduler instanceconfig.xml file, as follows:

   - SchedulerScriptPath: Refers to the path where Oracle BI Scheduler-created job scripts are stored. Change this to the path of the shared BI Scheduler scripts location.
   - DefaultScriptPath: Specifies the path where user-created job scripts (not agents) are stored. Change this to the path of the shared BI Scheduler scripts location.

   The instanceconfig.xml files for Oracle BI Scheduler are in the following locations:

   On *FINHOST1*: /u02/local/oracle/config/BIInstance/config/OracleBISchedulerComponent/coreapplication_obisch1

   On *FINHOST2*: /u02/local/oracle/config/BIInstance1/config/OracleBISchedulerComponent/coreapplication_obisch1

   You must update these files for each Oracle BI Scheduler component in the deployment.
4. Restart the Oracle BI Scheduler component.

   On *FINHOST1*:

   ```
   $ cd /u02/local/oracle/config/BIInstance/bin
   $ ./opmnctl stopproc
   ias-component=coreapplication_obisch1
   $ ./opmnctl startproc
   ias-component=coreapplication_obisch1
   ```

   On *FINHOST2*:

   ```
   $ cd /u02/local/oracle/config/BIInstance1/bin
   $ ./opmnctl stopproc
   ias-component=coreapplication_obisch1
   $ ./opmnctl startproc
   ias-component=coreapplication_obisch1
   ```

15.5.6.2 Additional Configuration Tasks for Oracle Real-Time Decisions

This sections contains the following topics:

- Section 15.5.6.2.1, "Configuring Oracle Real-Time Decisions Clustering Properties"

- Section 15.5.6.2.2, "Adding Oracle RTD System Properties to the Server Start Tab"

15.5.6.2.1 Configuring Oracle Real-Time Decisions Clustering Properties Perform these steps in Fusion Middleware Control to set up cluster-specific configuration properties for Oracle RTD. You only need to perform the steps on one of the nodes in your deployment. You do not need to set cluster-specific configuration properties for Oracle RTD for subsequent nodes.

1. Log in to Fusion Middleware Control (`http://biinternal.mycompany.com:7777/em`).
2. Expand the **Application Deployments** node in the Farm_BIDomain window.
3. Expand **OracleRTD(11.1.1)(bi_cluster)**.
4. Click any node under it. For example, **OracleRTD(11.1.1)(bi_server1)**.
5. In the right pane, click **Application Deployment**, and then select **System MBean Browser**.
6. In the System MBean Browser pane, expand **Application Defined MBeans**.
7. For any one of the servers under OracleRTD, navigate to the MBean and set the attribute, as shown in Table 15–1. Other servers automatically get updated with the value you set.

Table 15–1 Oracle RTD MBean Attributes and Values for Clustering

MBean	Attribute	Value
SDClusterPropertyManager -> Misc	DecisionServiceAddress	http://biinternal.mycompany.com :7777

8. Click **Apply**.

15.5.6.2.2 Adding Oracle RTD System Properties to the Server Start Tab After scaling out Oracle RTD, use the Administration Console to add three system properties to the **Server Start** tab of each Managed Server.

1. Log in to the Oracle WebLogic Server Administration Console (`http://biinternal.mycompany.com:7777/console`).
2. Click **Lock & Edit**.
3. Expand the **Environment** node in the Domain Structure window.
4. Click **Servers**.

   The Summary of Servers page displays.
5. Select **bi_server<1,2>** in the table.

   The settings page for the server displays.
6. Click **Server Start**.
7. Add the following property to the arguments:

   ```
   -Drtd.clusterRegistryJobIntervalMs=12000
   -Drtd.clusterDepartureThresholdMs=50000
   -Drtd.clusterDepartureThreshold2Ms=50000
   ```
8. Click **Save** and then **Activate Changes**.

9. Restart the `bi_server<1,2>` Managed Server (ensure sure that Node Manager is up and running):

   a. In the Summary of Servers screen, select the **Control** tab.

   b. Select **bi_server<1,2>** in the table and then click **Shutdown**.

   c. Restart `bi_server<1,2>`.

10. Restart the BI System Components:

```
$ cd /u02/local/oracle/config/BIInstance1/bin
$ ./opmnctl stopall
$ ./opmnctl startall
```

Performing this task enables an instance of Oracle RTD to be migrated successfully from one host to another in the event of a failure of a Managed Server.

Even after these changes, if the server migration finishes in less than 50 seconds, the Oracle RTD batch framework will be in an inconsistent state.

If the enterprise has deployed any RTD Inline Services that host Batch Job implementations, and if after a server migration the batch console command, "batch-names", or its brief name, "bn", shows no registered batch jobs, then the Oracle RTD Batch Manager service must be stopped and restarted. To do this, perform these steps:

1. In Fusion Middleware Control, expand the **WebLogic Domain** node in the left pane. Then, right-click **BIDomain** and select **System MBean Browser**.

2. Locate **SDPropertyManager > Misc MBean** under **Application Defined MBeans > OracleRTD > Server:bi_server*n***.

   Be sure to select the **Misc MBean** that corresponds to the local node where you are making the change. For example, if you are connecting to *`APPHOST1`*, then make sure to update the attribute associated with `bi_server1`.

3. Set the **BatchManagerEnabled** attribute to **false** and click **Apply**.

4. Set the **BatchManagerEnabled** attribute back to **true** and click **Apply**. Performing this task causes the Batch Manager to stop and be restarted.

   When it restarts, it will be running on either the same server as before, or on a different server.

5. After restarting Batch Manager, note that the corresponding MBean does not always immediately get refreshed on the server where Batch Manager comes back up, so this is not a concern. Instead, verify that Batch Manager is now operational by using the Batch Console tool:

   a. Locate the zip file for the Oracle RTD client tools in the following location:

   ```
   ORACLE_BASE/products/fusionapps/bi/clients/rtd/rtd_client_11.1.1.zip
   ```

   b. Because most Oracle RTD client tools do not run on UNIX, unzip this file in a location on a Windows machine (referred to here as *RTD_HOME*). Then, locate the batch console jar file in:

   ```
   RTD_HOME/client/Batch/batch-console.jar
   ```

   c. Change to this directory and execute the jar, passing to it the URL and port of either the Managed Server, or of the cluster proxy:

   ```
   java -jar batch-console.jar -url http://SERVER:PORT
   ```

d. When prompted, enter the user name and password of a user who is a member of the Administrator role, BI_Adminstrator role, or some other role authorized to administer Oracle RTD batch jobs.

e. When prompted for a command, enter `bn`:

```
Checking server connection...
command: bn
    CrossSellSelectOffers
command:quit
```

If Batch Manager has successfully restarted, then the `bn` command lists the names of all batch implementations hosted by all deployed RTD Inline Services.

The commonly deployed example, CrossSell, hosts a batch implementation named CrossSellSelectOffers, shown in the preceeding example.

15.5.6.3 Additional Configuration Tasks for Oracle BI Publisher

Perform the steps in this section on each machine where Oracle BI Publisher is configured.

This section includes the following topics:

- Section 15.5.6.3.1, "Configuring Integration with Oracle BI Presentation Services"
- Section 15.5.6.3.2, "Setting the Oracle BI EE Data Source"
- Section 15.5.6.3.3, "Configuring JMS for BI Publisher"

15.5.6.3.1 Configuring Integration with Oracle BI Presentation Services To configure Oracle BI Publisher integration with Oracle BI Presentation Services:

1. Log in to Oracle BI Publisher (`http://biinternal.mycompany.com:7777/xmlpserver`) with Administrator credentials and select the **Administration** tab.
2. Under **Integration**, select **Oracle BI Presentation Services**.
3. Verify and update the following:
   - **Server Protocol:** http
   - **Server:** biinternal.mycompany.com
   - **Port:** 7777
   - **URL Suffix:** analytics-ws/saw.dll
4. Click **Apply**.
5. Under System Maintenance, select **Server Configuration**.

   In the Catalog section, change the BI Publisher Repository value to the shared location for the Configuration Folder.
6. Click **Apply**.
7. Restart your Oracle BI Publisher application:

   a. Log in to the Administration Console (`http://biinternal.mycompany.com:7777/console`).

   b. Click **Deployments** in the Domain Structure window.

   c. Select **bipublisher(11.1.1)**.

d. Click **Stop**, and then select **When Work Completes** or **Force Stop Now**.

e. After the application has stopped, click **Start** and then **Start Servicing All requests**.

15.5.6.3.2 Setting the Oracle BI EE Data Source

The Oracle BI EE Data Source must point to the clustered Oracle BI Servers through the Cluster Controllers. Perform this task in Oracle BI Publisher.

To set the Oracle BI EE data source in Oracle BI Publisher:

1. Log in to Oracle BI Publisher (`http://biinternal.mycompany.com:7777/xmlpserver`) with Administrator credentials and select the **Administration** tab.
2. Under **Data Sources**, select **JDBC Connection**.
3. Update the Oracle BI EE data source setting by changing the **Connection String** parameter to the following:

```
jdbc:oraclebi://primary_cluster_controller_host:primary_cluster_controller_
port/PrimaryCCS=primary_cluster_controller_host;PrimaryCCSPort=primary_cluster_
controller_port;SecondaryCCS=secondary_cluster_controller_host;
SecondaryCCSPort=secondary_cluster_controller_port;
```

   For example:

```
jdbc:oraclebi://FINHOST1:10212/PrimaryCCS=FINHOST1;PrimaryCCSPort=10212;
SecondaryCCS=FINHOST2;SecondaryCCSPort=10212;
```

> **Note:** Since the Cluster Controller Port may be different between *FINHOST1* and *FINHOST2*, you can use the following procedure to check the port being used:
>
> 1. Log in to the Oracle Enterprise Manager Console: `http://biinternal.mycompany.com:7777/em` .
> 2. Expand **Farm_Domain > Business Intelligence > coreapplication**.
> 3. Navigate to **Availability**.
> 4. Check the port number used by the Cluster Controller on *FINHOST1* and *FINHOST2*.

4. Do one of the following:
   - Select **Use System User**.
   - Deselect **Use System User** and specify BIImpersonateUser credentials.

   For more information, see "Credentials for Connecting to the Oracle BI Presentation Catalog" in *Oracle Fusion Middleware Developer's Guide for Oracle Business Intelligence Enterprise Edition*.
5. Click **Test Connection**. You should receive a "Connection established successfully" message.
6. Click **Apply**.

15.5.6.3.3 Configuring JMS for BI Publisher

You must configure the location for all persistence stores to a directory visible from both nodes. Change all persistent stores to use this shared base directory.

On *FINHOST2*:

1. Log in to the Oracle WebLogic Server Administration Console (`http://biinternal.mycompany.com:7777/console`).
2. In the Domain Structure window, expand the **Services** node and then click the **Persistence Stores** node. The Summary of Persistence Stores page is displayed.
3. Click **Lock & Edit**.
4. Click **New**, and then **Create File Store**.
5. Enter a name (for example, `BipJmsStore2`) and target (for example, `bi_server2`). Enter a directory that is located in shared storage so that it is accessible from both *`FINHOST1`* and *`FINHOST2`*:

   ```
   ORACLE_BASE/config/domains/FINHOST1/BIDomain/BipJmsStore
   ```
6. Click **OK** and then **Activate Changes**.
7. In the Domain Structure window, expand the **Services** node and then click the **Messaging > JMS Servers** node. The Summary of JMS Servers page is displayed.
8. Click **Lock & Edit**.
9. Click **New**.
10. Enter a name (for example, `BipJmsServer2`) and in the **Persistence Store** drop-down list, select **BipJmsStore2** and click **Next**.
11. Select **bi_server2** as the target.
12. Click **Finish** and **Activate Changes**.
13. In the Domain Structure window, expand the **Services** node and then click the **Messaging > JMS Modules** node. The JMS Modules page is displayed.
14. In the Change Center, click **Lock & Edit**.
15. Click **BIPJmsResource** and then click the **Subdeployments** tab.
16. Select **BipJmsSubDeployment** under **Subdeployments**.
17. Add the new Oracle BI Publisher JMS Server (**BipJmsServer2**) as an additional target for the subdeployment.
18. Click **Save** and then **Activate Changes**.

To validate, do the following:

1. Log in to each Oracle BI Publisher URL.
2. Navigate to **System Maintenance > Administration > Scheduler Diagonistics**.

   All statuses should be in a Passed state and both instances should be visible.

15.5.6.4 Additional Configuration Tasks for Oracle BI for Microsoft Office

This section includes the following topics:

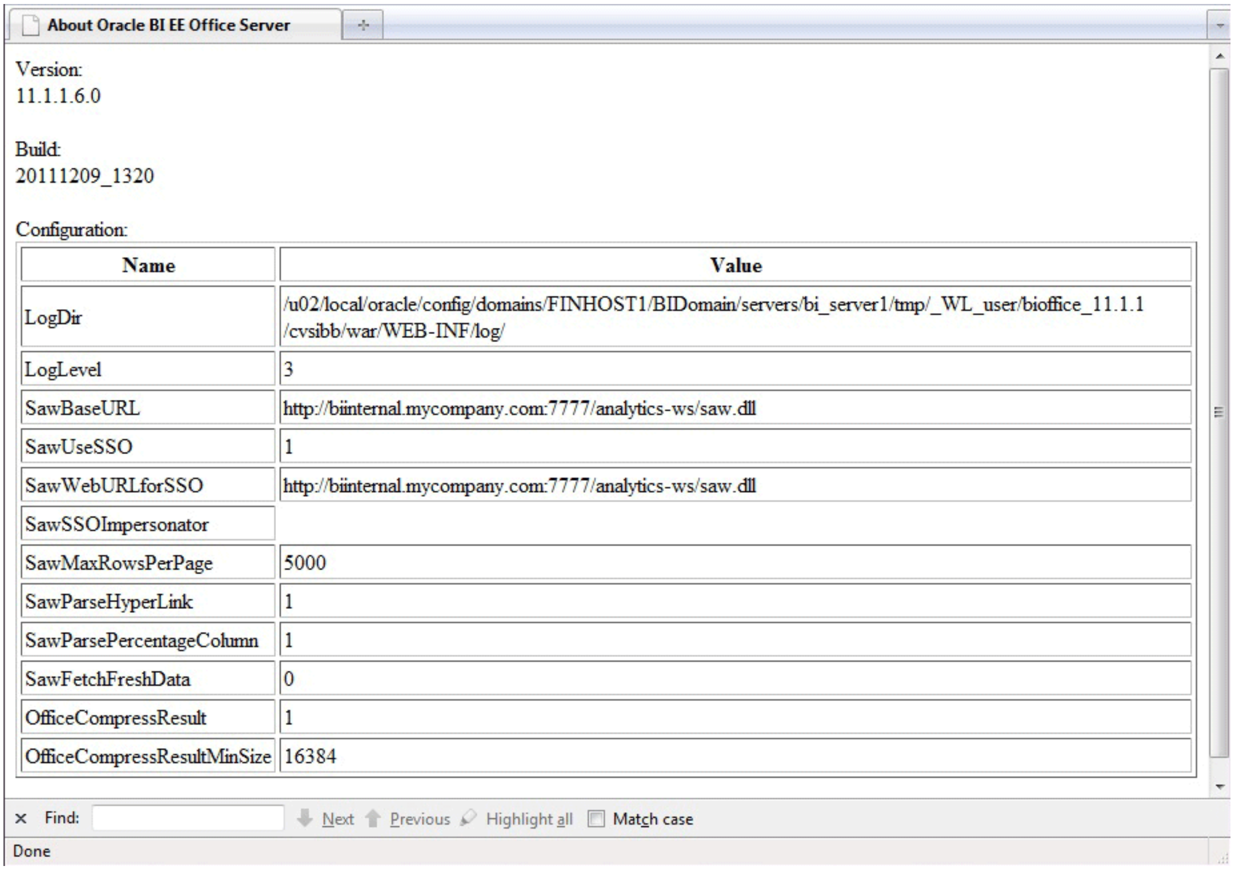
- Section 15.5.6.4.1, "Configuring Oracle BI for Microsoft Office Properties"
- Section 15.5.6.4.2, "Validating Oracle BI for Microsoft Office"

15.5.6.4.1 Configuring Oracle BI for Microsoft Office Properties To perform additional configuration tasks for Oracle BI for Microsoft Office:

1. Validate the Oracle BI Enterprise Edition Office Server setup by accessing `http://biinternal.mycompany.com:7777/bioffice/about.jsp`.

The About Oracle BI EE Office Server page is displayed, as shown in Figure 15–1.

Figure 15–1 About Oracle BI EE Office Server Page



Version:
11.1.1.6.0

Build:
20111209_1320

Configuration:

Name	Value
LogDir	/u02/local/oracle/config/domains/FINHOST1/BIDomain/servers/bi_server1/tmp/_WL_user/bioffice_11.1.1/cvsibb/war/WEB-INF/log/
LogLevel	3
SawBaseURL	http://biinternal.mycompany.com:7777/analytics-ws/saw.dll
SawUseSSO	1
SawWebURLforSSO	http://biinternal.mycompany.com:7777/analytics-ws/saw.dll
SawSSOImpersonator	
SawMaxRowsPerPage	5000
SawParseHyperLink	1
SawParsePercentageColumn	1
SawFetchFreshData	0
OfficeCompressResult	1
OfficeCompressResultMinSize	16384

2. Go to the Oracle BI Enterprise Edition Office Server directory. For example:

   ```
   /u02/local/oracle/config/domains/FINHOST1/BIDomain/servers/bi_
   server1/tmp/_WL_user/bioffice_11.1.1/cvsibb/war/WEB-INF
   ```

   If you are not sure how to locate the Oracle BI Enterprise Edition Office Server directory, check the **LogDir** parameter on the About Oracle BI EE Office Server page. The Oracle BI Enterprise Edition Office Server directory is the parent directory of the log directory.

   > **Note:** You can determine the exact location for *FINHOSTn* by using the following URL: `http://BIVHn:10217/bioffice/about.jsp`.

3. On both *`FINHOST1`* and *`FINHOST2`*, open bioffice.xml for editing and modify the BI Office properties shown in Table 15–2.

Table 15–2 BI Office Properties in bioffice.xml

Property Name	Valid Value	Description
SawBaseURL	http://biinternal.mycompany.com:7777/analytics/saw.dll or http://biinternal.mycompany.com:7777/analytics-ws/saw.dll	Load Balancer Virtual Server Name URL for Oracle BI Presentation Services. **Important:** If SSO is enabled, then enter the URL for the protected analytics servlet that you deployed when configuring BI Office to integrate with the SSO-enabled Oracle BI Server. The URL that is specified for this property is used for Web services requests between the BI Office Server and Presentation Services.
SawUseSSO	0 = No (Default) 1 = Yes	Set this property to `1` if the Oracle Business Intelligence implementation is enabled for SSO.
SawWebURLforSSO	http://biinternal.mycompany.com:7777/analytics/saw.dll	When SSO is enabled, use this property to enter the public URL that allows external users to access Oracle Business Intelligence using SSO from the Oracle BI Add-in for Microsoft Office.

4. Restart the BI Office application:
   a. Log in to the Administration Console (`http://biinternal.mycompany.com:7777/console`).
   b. Click **Deployments** in the Domain Structure window.
   c. Select **bioffice(11.1.1)**.
   d. Click **Stop**.
   e. After the application has stopped, click **Start**.
5. Validate that the **SawBaseURL** parameter has been updated on the About Oracle BI EE Office Server page.

15.5.6.4.2 Validating Oracle BI for Microsoft Office To validate configuration for Oracle BI for Microsoft Office:

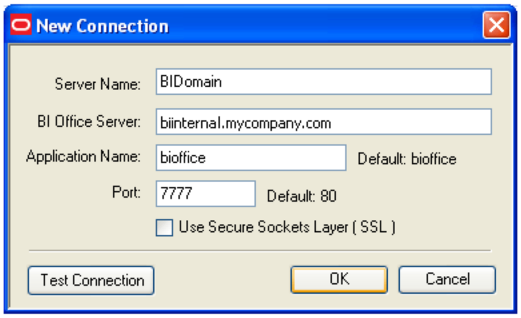
1. Log in to Oracle BI Presentation Services at:

   `http://biinternal.mycompany.com:7777/analytics`
2. In the lower left pane, under the Get Started heading, select **Download BI Desktop Tools** and then select **Oracle BI for MS Office**.
3. Install Oracle BI for Microsoft by running the Oracle BI Office InstallShield Wizard.
4. Open Microsoft Excel or Microsoft PowerPoint.
5. From the **Oracle BI** menu, select **Preferences**.
6. In the **Connections** tab, select **New**.
7. Enter values for the following fields:
   - **Server Name:** Provide a name for the connection.

- **BI Office Server:** Provide the URL for the Oracle BI Office Server.
- **Application Name:** Enter the Application Name that you defined for the Oracle BI Office Server when you deployed the Oracle BI Office Server application to WLS. The default name is **bioffice**.
- **Port:** Enter the Oracle BI Office Server port number.

Figure 15–2 shows the New Connection dialog.

Figure 15–2 New Connection Dialog for Oracle BI Office



Server Name: BIDomain

BI Office Server: biinternal.mycompany.com

Application Name: bioffice Default: bioffice

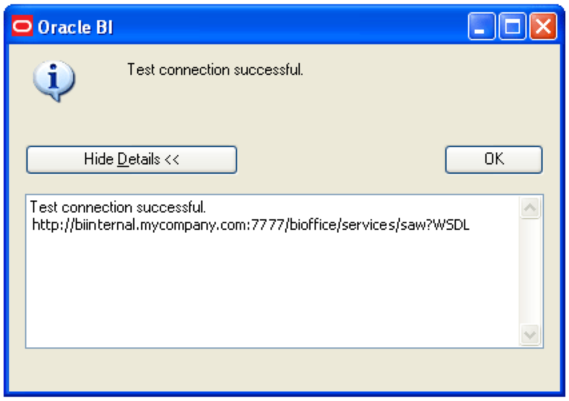
Port: 7777 Default: 80

☐ Use Secure Sockets Layer (SSL)

8. Click **Test Connection** to test the connection between the add-in and the Oracle BI Office Server.

   Successful connections receive a "Test connection successful" message, as shown in Figure 15–3.

Figure 15–3 Test Connection Successful Message

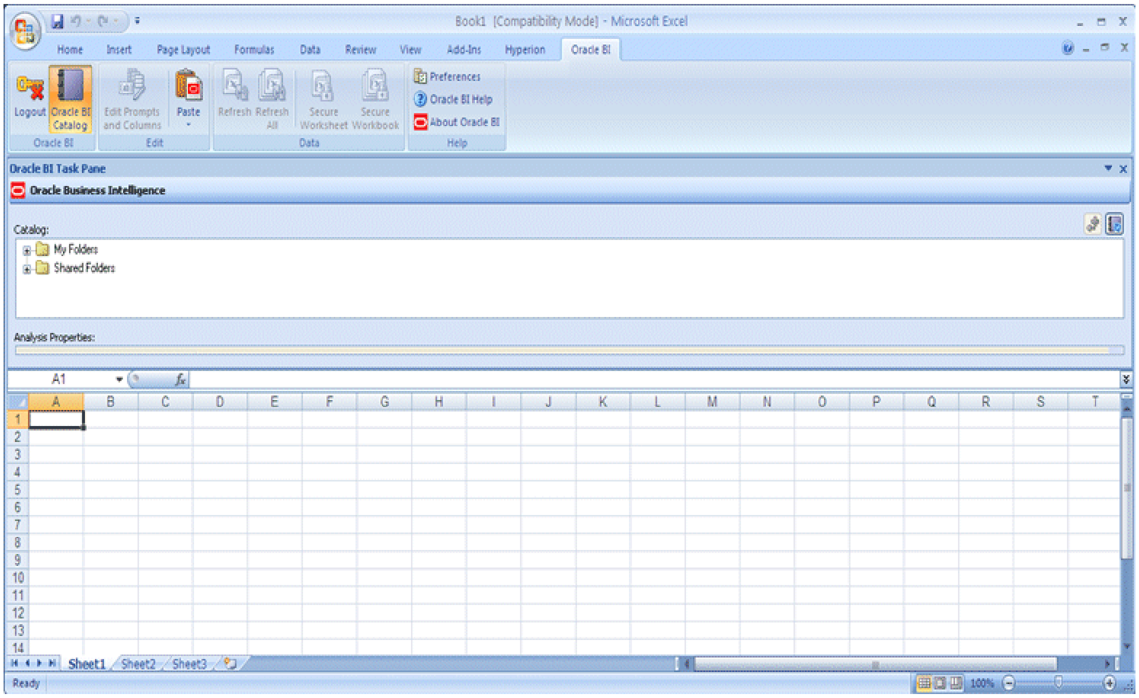


Test connection successful.

```
Test connection successful.
http://biinternal.mycompany.com:7777/bioffice/services/saw?WSDL
```

9. Log in as an Administrator (for example, `weblogic`) and validate that you can access the Oracle BI Task Pane, as shown in Figure 15–4.

Figure 15–4 Oracle BI Task Pane in Microsoft Excel



15.5.6.5 Additional Configuration Tasks for Oracle Financial Reporting

There are additional configuration tasks to perform for Oracle Financial Reporting. Do the following on *FINHOST1* and *FINHOST2*:

1. Update the `VARIABLE_VALUE_LIMIT` from 30720 to 3072000 in the `NQSConfig.INI` file. For example,

   ```
   VARIABLE_VALUE_LIMIT = 3072000;
   ```

   On *FINHOST1*, this file is located in `/u02/local/oracle/config/BIInstance/config/OracleBIServerComponent/coreapplication_obis1`.

   On *FINHOST2*, this file is located in `/u02/local/oracle/config/BIInstance1/config/OracleBIServerComponent/coreapplication_obis1`.

2. Run the following commands to restart the Oracle Business Intelligence system components:

   ```
   $ cd /u02/local/oracle/config/BIInstancen/bin
   $ ./opmnctl stopall
   $ ./opmnctl startall
   ```

15.5.7 Configuring a Default Persistence Store for Transaction Recovery

Each server has a transaction log that stores information about committed transactions that are coordinated by the server that may not have been completed. The WebLogic Server uses this transaction log for recovery from system crashes or network failures. To leverage the migration capability of the Transaction Recovery Service for the servers within a cluster, store the transaction log in a location accessible to a server and its backup servers.

> **Note:** Preferably, this location should be a dual-ported SCSI disk or on a Storage Area Network (SAN).

To set the location for the default persistence store:

1. Log in to the Oracle WebLogic Server Administration Console (`http://biinternal.mycompany.com:7777/console`).
2. In the Change Center, click **Lock & Edit**.
3. In the Domain Structure window, expand the **Environment** node and then click the **Servers** node. The Summary of Servers page is displayed.
4. Click **bi_server1** in the table. The Settings page for the selected server is displayed, and defaults to the Configuration tab.
5. Navigate to **Configuration** > **Services**.
6. In the Default Store section of the page, enter the path to the folder where the default persistent stores will store its data files. For example:

   ```
   FINHOST1> ORACLE_BASE/config/domains/FINHOST1/BIDomain/tlogs
   ```

7. Click **Save**.
8. Repeat Steps 1 through 7 for the `bi_server2` Managed Server.
9. Click **Activate Changes**.
10. Start the Managed Servers to activate the changes (ensure that Node Manager is up and running):

    a. Log in to the Oracle WebLogic Server Administration Console (`http://biinternal.mycompany.com:7777/console`).

    b. In the Summary of Servers screen, select the **Control** tab.

    c. Select **bi_server1** and **bi_server2** in the table and then click **Shutdown**.

    d. Start the `bi_server1` and `bi_server2` servers.

    e. Restart the Oracle Business Intelligence system components:

    ```
    $ cd /u02/local/oracle/config/BIInstancen/bin
    $ ./opmnctl stopall
    $ ./opmnctl startall
    ```

> **Note:** To enable migration of the Transaction Recovery service, specify a location on a persistent storage solution that is available to other servers in the cluster. Both `bi_server1` and `bi_server2` must be able to access this directory.

15.5.8 Starting and Validating Oracle Business Intelligence on FINHOST2

This section includes the following topics:

- Section 15.5.8.1, "Starting the bi_server2 Managed Server"
- Section 15.5.8.2, "Starting the Oracle Business Intelligence System Components"
- Section 15.5.8.3, "Validating Oracle Business Intelligence URLs"

15.5.8.1 Starting the bi_server2 Managed Server

To start the bi_server2 Managed Server:

1. Start the bi_server2 Managed Server using the Oracle WebLogic Server Administration Console, as follows:

    a. Log in to the Oracle WebLogic Server Administration Console (http://biinternal.mycompany.com:7777/console).

    b. Expand the **Environment** node in the **Domain Structure** window.

    c. Select **Servers**. The Summary of Servers page is displayed.

    d. Click the **Control** tab.

    e. Select **bi_server2** and then click **Start**.

2. Verify that the server status is reported as "Running" in the Administration Console. If the server is shown as "Starting" or "Resuming," wait for the server status to change to "Started." If another status is reported (such as "Admin" or "Failed"), check the server output log files for errors.

15.5.8.2 Starting the Oracle Business Intelligence System Components

You can control Oracle Business Intelligence system components using opmnctl commands.

To start the Oracle Business Intelligence system components using the opmnctl command-line tool:

1. Go to the directory that contains the Oracle Process Manager and Notification Server command-line tool, located in /u02/local/oracle/config/BIInstance1/bin.

2. Run the opmnctl command to start the Oracle Business Intelligence system components:

    - ./opmnctl startall: Starts Oracle Process Manager and Notification Server and all Oracle Business Intelligence system components

    - ./opmnctl start: Starts Oracle Process Manager and Notification Server only

    - ./opmnctl startproc ias-component=*component_name*: Starts a particular system component. For example, where coreapplication_obips1 is the Presentation Services component:

    ```
    ./opmnctl startproc ias-component=coreapplication_obips1
    ```

3. Check the status of the Oracle Business Intelligence system components:

    ```
    ./opmnctl status
    ```

15.5.8.3 Validating Oracle Business Intelligence URLs

Access the following URLs:

- Access http://BIVH2:10217/analytics to verify the status of bi_server2.

- Access http://BIVH2:10217/wsm-pm to verify the status of Web Services Manager. Click **Validate Policy Manager**. A list of policies and assertion templates available in the data is displayed.

    Note: The configuration is incorrect if no policies or assertion templates appear.

- Access http://BIVH2:10217/xmlpserver to verify the status of the Oracle BI Publisher application.

- Access http://BIVH2:10217/ui to verify the status of the Oracle Real-Time Decisions application.
- Access http://BIVH2:10217/mapviewer to verify the status of the map view functionality in Oracle BI EE.
- Access http://BIVH2:10217/hr to verify Financial Reporting.
- Access http://BIVH2:10217/calcmgr/index.htm to verify Calculation Manager.
- Access http://BIVH2:10217/aps/Test to verify APS.
- Access http://BIVH2:10217/workspace to verify workspace.

15.5.9 Validating Access Through Oracle HTTP Server

You should verify URLs to ensure that the appropriate routing and failover is working from Oracle HTTP Server to bi_cluster. Perform these steps to verify the URLs:

1. While bi_server2 is running, stop bi_server1 using the Oracle WebLogic Server Administration Console.
2. Access the following URLs to verify that routing and failover is functioning properly:
   - http://WEBHOST1:10621/analytics
   - http://WEBHOST1:10621/xmlpserver
   - http://WEBHOST1:10621/ui (access only available on Microsoft Internet Explorer 7 or 8)
   - http://WEBHOST1:10621/hr
   - http://WEBHOST1:10621/calcmgr/index.htm
   - http://WEBHOST1:10621/aps/Test
   - http://WEBHOST1:10621/workspace
3. Start bi_server1 from the Oracle WebLogic Server Administration Console.
4. Stop bi_server2 from the Oracle WebLogic Server Administration Console.
5. Access the following URLs to verify that routing and failover is functioning properly:
   - http://WEBHOST1:10621/analytics
   - http://WEBHOST1:10621/xmlpserver
   - http://WEBHOST1:10621/ui (access only available on Microsoft Internet Explorer 7 or 8)
   - http://WEBHOST1:10621/hr
   - http://WEBHOST1:10621/calcmgr/index.htm
   - http://WEBHOST1:10621/aps/Test
   - http://WEBHOST1:10621/workspace
6. Start bi_server2 from the Oracle WebLogic ServerAdministration Console.

15.5.10 Configuring Node Manager for the Managed Servers

Oracle recommends using host name verification for the communication between Node Manager and the servers in the domain. This requires the use of certificates for the different addresses communicating with the Administration Server and other servers. See Chapter 7, "Setting Up Node Manager for an Enterprise Deployment" for further details. The procedures in that chapter must be performed twice using the information provided in Table 15–3.

Table 15–3 Details for Host Name Verification for Node Manager and Servers

Run	Host Name (Host)	Server Name (WLS_SERVER)
Run1:	*FINHOST1*	bi_server1
Run2:	*FINHOST2*	bi_server2

Note: If you configured Node Manager for the Managed Servers earlier, you do not need to configure it again.

15.5.11 Configuring Server Migration for the Managed Servers

Server Migration is required for proper failover of the Oracle BI Publisher components in the event of failure in any of the *FINHOST1* and *FINHOST2* nodes. For more information, see Chapter 18, "Setting Up Server Migration for an Enterprise Deployment."

15.6 Configuring Oracle Essbase Clustering

This section describes how to configure secondary instances of Oracle Essbase Agent so that they are distributed for high availability.

Prerequisite steps for configuring Oracle Essbase clustering:

1. On *FINHOST1* or *FINHOST2*, delete or rename the `EssFOConfig.properties` file in the Essbase shared folder under *ORACLE_BASE*/config/BIShared/Essbase/essbaseserver1.

2. On *FINHOST1*, update the following properties in the `/u02/local/oracle/config/BIInstance/bin/essbase_ha/EssFOConfig.properties` file:

```
SYSTEM_HOST=FINHOST1
SYSTEM_HOST1=FINHOST1
SYSTEM_HOST2=FINHOST2

SYSTEM_CLUSTER_NAME=essbasecluster1
SYSTEM_CLUSTER_INST1=essbasecluster1-inst1
SYSTEM_CLUSTER_INST2=essbasecluster1-inst2

SYSTEM_CLUSTER_INSTANCE1=BIInstance
SYSTEM_CLUSTER_INSTANCE2=BIInstance1

SYSTEM_AGENT_PORTNUMBER1=10215
SYSTEM_AGENT_PORTNUMBER2=10215
```

Perform the following steps in Fusion Middleware Control:

1. Log in to Fusion Middleware Control (`http://biinternal.mycompany.com:7777/em`).

2. Expand the **Business Intelligence** node in the Farm_BIDomain window.

3. Click **coreapplication**.
4. Click **Availability**, then click **Failover**.
5. Click **Lock and Edit Configuration** to activate the Primary/Secondary Configuration section of the **Availability** tab.
6. Specify the Secondary Host/Instance for Essbase Agent.
7. Ensure the **Shared Folder Path** is set to `ORACLE_BASE/config/BIShared/Essbase/essbaseserver1` and click **Apply**.

   Under Potential Single Points of Failure, no problems should be reported for Essbase Agent.
8. Click **Activate Changes**.
9. Under Manage System, click **Restart**.
10. Click **Yes** in the confirmation dialog.

15.6.1 Redefining the Essbase Cluster Name After Essbase Scale Out

During provisioning, a cluster names *Essbase_FA_Cluster* is created and the Essbase server instance is attached to it as the child component. During Essbase scale out, Oracle Enterprise Manager Fusion Middleware Control creates another cluster, *essbasecluster1*, and re-associates the existing Essbase server instance, as well as the failover instance, to it as a child component. Subsequently, Oracle Fusion Applications cannot connect because it requires that the Essbase cluster name be *Essbase_FA_Cluster*, and there are no child components to route the request.

We can, however, modify the Enterprise Performance Management registry to rename and reassociate the correct failover cluster to *Essbase_FA_Cluster* using the `ORACLE_INSTANCE/config/foundation/11.1.2.0/epmsys_registry.sh` script .

Before Essbase scale out, run the following `epmsys_registry.sh` command to view the cluster configuration:

```
/u02/local/oracle/config/BIInstance/config/foundation/11.1.2.0/epmsys_registry.sh
view CLUSTER
```

Clusters before Essbase scale out:

Components matching the tree expression component - Component 1

- Name - Essbase_FA_Cluster
- ID - 3ca3a8f001c35ec03702edd51392e0b9a84S7ff5
- Type - CLUSTER
- Host - `FINHOST1.mycompany.com`
- Hyperion home - `ORACLE_BASE/products/fusionapps/bi`
- Properties -
  - instance_home = `ORACLE_BASE/oracle/config/BIInstance`
  - version = 11.1.2.0
  - Hyperion home = `ORACLE_BASE/products/fusionapps/bi`
  - clusterType = standalone
- Files - None
- Parent components -

- Parent 1
    - Name - `HOST:`*`FINHOST1`*`.mycompany.com`
    - ID - 3ca3a8f001c35ec02be4ba1b13936f46960S7ffd
    - Type - HOST
- Parent 2 -
    - Name - ESSBASE_PRODUCT
    - ID - 3ca3a8f001c35ec0S1f5c35871393aa6b8e2S8000
    - Type - ESSBASE_PRODUCT

- Child components -
    - Child 1 -
        - Name - essbaseserver1
        - ID - 3ca3a8f001c35ec03702edd51392e0b9a84S7fef
        - TYPE - ESSBASE_SERVER

Clusters after Essbase scale out:

Components matching the tree expression component - Component 1

- Name - essbasecluster1
- ID - 3ca3a8f001c35ec05131d2d013942deab62S8000
- Type - CLUSTER
- Host - *`FINHOST1`*`.mycompany.com`
- Hyperion home - *`ORACLE_BASE`*`/products/fusionapps/bi`
- Properties -
    - instance_home = `/u02/local/oracle/config/BIInstance`
    - version = 11.1.2.1.0
    - clusterType = failover
- Files - None
- Parent components -
    - Parent 1 -
        - Name - `HOST:`*`FINHOST1`*`.mycompany.com`
        - ID - 3ca3a8f001c35ec02be4ba1b13936f46960S7ffd
        - Type - HOST
    - Parent 2 -
        - Name - ESSBASE_PRODUCT
        - ID - 3ca3a8f001c35ec0S1f5c35871393aa6b8e2S8000
        - Type - ESSBASE_PRODUCT
- Child components -
    - Child 1 -
        - Name - Essbase_FA_Cluster-inst2

  - ID - 3ca3a8f001c35ec0S20db0f8913942dee18cS8000
  - TYPE - ESSBASE_SERVER
- Child 2 -
  - Name - essbasecluster1-inst1
  - ID - 3ca3a8f001c35ec0S9a68fe013942decbd0S8000
  - TYPE - ESSBASE_SERVER

Components matching the tree expression component - Component 2

- Name - Essbase_FA_Cluster
- ID - 3ca3a8f001c35ec03702edd51392e0b9a84S7ff5
- Type - CLUSTER
- Host - *FINHOST1*.mycompany.com
- Hyperion home - *ORACLE_BASE*/oracle/config/BIInstance
- Properties -
  - instance_home = /u02/local/oracle/config/BIInstance
  - version = 11.1.2.0
  - clusterType = standalone
- Files - None
- Parent components -
  - Parent 1 -
    - Name - HOST:*FINHOST1*.mycompany.com
    - ID - 3ca3a8f001c35ec02be4ba1b13936f46960S7ffd
    - Type - HOST
  - Parent 2 -
    - Name - ESSBASE_PRODUCT
    - ID - 3ca3a8f001c35ec0S1f5c35871393aa6b8e2S8000
    - Type - ESSBASE_PRODUCT
- Child components - None

Components matching the tree expression component - Component 3

- Name - EssbaseCluster-1
- ID - fb3106d88daf85447df9798113942c96966S7ff7
- Type - CLUSTER
- Host - *FINHOST2*.mycompany.com
- Hyperion home - *ORACLE_BASE*/oracle/config/BIInstance
- Properties -
  - instance_home = /u02/local/oracle/config/BIInstance
  - version = 11.1.2.0
  - clusterType = standalone

- Files - None
- Parent components -
  - Parent 1 -
    - Name - ESSBASE_PRODUCT
    - ID - 3ca3a8f001c35ec0S1f5c35871393aa6b8e2S8000
    - Type - ESSBASE_PRODUCT
  - Parent 2 -
    - Name - `FINHOST2.mycompany.com`
    - ID - fb3106d88daf85447df9798113942c96966S7ffa
    - Type - HOST
- Child components - None

Defining the missing child components under *Essbase_FA_Cluster* in the Enterprise Performance Management registry after Essbase scale out is a two-step process:

1. Rename the original pre-scaled-out *Essbase_FA_Cluster* to *Essbase_nonHA_Cluster*.
2. Rename the scaled-out *essbasecluster1* to *Essbase_FA_Cluster*.

Do the following on *FINHOST1*

1. Shut down the Oracle Business Intelligence Domain - Oracle Business Intelligence Domain Administration Server, Oracle Business Intelligence Managed Servers, and Oracle Process Manager and Notification Server system components on *FINHOST1* and *FINHOST2*.
2. Connect to the Oracle Fusion Applications database (FusionDB) and back up the following tables:
   - `FUSION_BIPLATFORM.HSS_COMPONENT_TYPES`
   - `FUSION_BIPLATFORM.HSS_COMPONENT_TIERS`
   - `FUSION_BIPLATFORM.HSS_COMPONENT`
   - `FUSION_BIPLATFORM.HSS_COMPONENT_PROPERTY_VALUES`
   - `FUSION_BIPLATFORM.HSS_COMPONENT_FILES`
   - `FUSION_BIPLATFORM.HSS_COMPONENT_LINKS`

   For example, to back up the `FUSION_BIPLATFORM.HSS_COMPONENT_TYPES` table, use the following SQL:

   ```
   create table FUSION_BIPLATFORM.HSS_COMPONENT_TYPES_bk as
   select * from FUSION_BIPLATFORM.HSS_COMPONENT_TYPES;
   ```

3. Rename *Essbase_FA_Cluster* to *Essbase_nonHA_Cluster* using `epmsys_registry.sh`:

   ```
   /u02/local/oracle/config/BIInstance/config/foundation/11.1.2.0/
   epmsys_registry.sh

   updateproperty \#<ID of Essbase_FA_Cluster>/@name Essbase_nonHA_Cluster
   ```

   For example:

   ```
   /u02/local/oracle/config/BIInstance/config/foundation/11.1.2.0/epmsys_
   registry.sh
   ```

```
updateproperty \#3ca3a8f001c35ec03702edd51392e0b9a84S7ff5/@name
Essbase_nonHA_Cluster
```

4. Rename *essbasecluster1* to *Essbase_FA_Cluster* using `empsys_registry.sh`:

   ```
   /u02/local/oracle/config/BIInstance/config/foundation/11.1.2.0/
   epmsys_registry.sh

   updateproperty \#<ID of essbasecluster1>/@name Essbase_FA_Cluster
   ```

   For example:

   ```
   /u02/local/oracle/config/BIInstance/config/foundation/11.1.2.0/
   epmsys_registry.sh
   updateproperty \#3ca3a8f001c35ec05131d2d013942deab62S8000/
   @name Essbase_FA_Cluster
   ```

5. View the cluster information:

   ```
   /u02/local/oracle/config/BIInstance/config/foundation/11.1.2.0/
   epmsys_registry.sh view CLUSTER
   ```

   - Components matching the tree expression component - Component 1
     - Name - Essbase_FA_Cluster
     - ID - 3ca3a8f001c35ec05131d2d013942deab62S8000
     - Type - CLUSTER
     - Host - *`FINHOST1`*`.mycompany.com`
     - Hyperion home - *`ORACLE_BASE`*`/products/fusionapps/bi`
     - Properties -
       - instance_home = `/u02/local/oracle/config/BIInstance`
       - version = 11.1.2.1.0
       - clusterType = failover
     - Files - None
     - Parent components -

       Parent 1 -
       - Name - `HOST:`*`FINHOST1`*`.mycompany.com`
       - ID - 3ca3a8f001c35ec02be4ba1b13936f46960S7ffd
       - Type - HOST

       Parent 2 -
       - Name - ESSBASE_PRODUCT
       - ID - 3ca3a8f001c35ec0S1f5c35871393aa6b8e2S8000
       - Type - ESSBASE_PRODUCT
     - Child components -

       Child 1 -
       - Name - essbasecluster1-inst2
       - ID - 3ca3a8f001c35ec0S20db0f8913942dee18cS8000

* Type - ESSBASE_SERVER

Child 2 -

* Name - essbasecluster1-inst1
* ID - 3ca3a8f001c35ec0S9a68fe013942decbd0S8000
* Type - ESSBASE_SERVER

- Components matching the tree expression component - Component 2
  - Name - Essbase_nonHA_Cluster
  - ID - 3ca3a8f001c35ec03702edd51392e0b9a84S7ff5
  - Host - *FINHOST1*.mycompany.com
  - Type - CLUSTER
  - Hyperion home - *ORACLE_BASE*/products/fusionapps/bi
  - Properties -

    * instance_home = /u02/local/oracle/config/BIInstance
    * version = 11.1.2.0
    * Hyperion home - *ORACLE_BASE*/products/fusionapps/bi
    * clusterType = standalone
  - Files - None
  - Parent components -

    Parent 1 -

    * Name - HOST:*FINHOST1*.mycompany.com
    * ID - 3ca3a8f001c35ec02be4ba1b13936f46960S7ffd
    * Type - HOST

    Parent 2 -

    * Name - ESSBASE_PRODUCT
    * ID - 3ca3a8f001c35ec0S1f5c35871393aa6b8e2S8000
    * Type - ESSBASE_PRODUCT
  - Child components - None
- Components matching the tree expression component - Component 3
  - Name - EssbaseCluster-1
  - ID - fb3106d88daf85447df9798113942c96966S7ff7
  - Type - CLUSTER
  - Host - *FINHOST2*.mycompany.com
  - Hyperion home - *ORACLE_BASE*/products/fusionapps/bi
  - Properties -

    * instance_home = /u02/local/oracle/config/BIInstance
    * version = 11.1.2.0
    * clusterType = standalone

  - Files - None
  - Parent components -

    Parent 1 -

    * Name - ESSBASE_PRODUCT

    * ID - 3ca3a8f001c35ec0S1f5c35871393aa6b8e2S8000

    * Type - ESSBASE_PRODUCT

    Parent 2 -

    * Name - `HOST:`*`FINHOST2`*

    * ID - fb3106d88daf85447df9798113942c96966S7ffa

    * Type - HOST
  - Child components - None

6. Start the Oracle Business Intelligence Domain - Oracle Business Intelligence Domain Administration Server, Oracle Business Intelligence Managed Servers, and Oracle Process Manager and Notification Server system components on *`FINHOST1`* and *`FINHOST2`*.
7. Test the Essbase validation URL:

   ```
   http://biinternal.mycompany.com:7777/aps/Essbase?Clustername=Essbase_FA_Cluster
   ```

   The output that displays should be "Hyperion Provider Services: Hello!".

15.6.2 Validating Essbase Clustering

Do the following to validate Essbase clustering:

1. Check the APS (Hyperion Provider Services) test URL:

   ```
   http://biinternal.mycompany.com:7777/aps/Essbase?Clustername=Essbase_FA_Cluster
   ```

2. Run the following command on *`FINHOST1`*:

   ```
   /u02/local/oracle/config/BIInstance/bin/opmnctl stopproc
   ias-component=essbasecluster1
   ```

3. Ensure that Essbase starts on *`FINHOST2`*:

   ```
   /u02/local/oracle/config/BIInstance1/bin/opmnctl status
   ```

   The status should be `init` then `Alive`.

4. Check the APS test URL again:

   ```
   http://biinternal.mycompany.com:7777/aps/Essbase?Clustername=Essbase_FA_Cluster
   ```

15.7 Validating the System

You should verify URLs to ensure that the appropriate routing and failover is working from Oracle HTTP Server to `bi_cluster`. Perform these steps to verify the URLs:

1. While `bi_server2` is running, stop `bi_server1` using the Oracle WebLogic Server Administration Console.
2. Access the following URLs to verify that routing and failover is functioning properly:

- `http://WEBHOST1:10621/analytics`
- `http://WEBHOST1:10621/xmlpserver`
- `http://WEBHOST1:10621/ui` (access only available on Microsoft Internet Explorer 7 or 8)
- `http://WEBHOST1:10621/hr`
- `http://WEBHOST1:10621/workspace`
- `http://WEBHOST1:10621/calcmgr/index.htm`
- `http://WEBHOST1:10621/aps/Test`

3. Start `bi_server1` from the Oracle WebLogic Server Administration Console.
4. Stop `bi_server2` from the Oracle WebLogic Server Administration Console.
5. Access the following URLs to verify that routing and failover is functioning properly:
   - `http://WEBHOST1:10621/analytics`
   - `http://WEBHOST1:10621/xmlpserver` (access only available on Microsoft Internet Explorer 7 or 8)
   - `http://WEBHOST1:10621/ui`
   - `http://WEBHOST1:10621/hr`
   - `http://WEBHOST1:10621/workspace`
   - `http://WEBHOST1:10621/calcmgr/index.htm`
   - `http://WEBHOST1:10621/aps/Test`
6. Start `bi_server1` from the Oracle WebLogic ServerAdministration Console.

16

Additional Configuration Procedures for Scaling Out Oracle SOA Suite Server

This chapter describes the additional scaleout steps required for the `soa_server1` and `soa_server2` server on *`FINHOST1`* and *`FINHOST2`*.

Note: The Oracle SOA Suite server uses the Java Message Service (JMS) server. JMS requires a shared file system for its file store and transactional log. Each Oracle SOA Suite Managed Server in a cluster uses a separate local file system on the shared disk. During a node failure, the Oracle SOA Suite server must be moved to a targeted node in order to run the same server using the exact JMS file store and transaction log. To enable this server migration, each Oracle SOA Suite server must be configured with its own virtual IP, which can be floated on any server where the Oracle SOA Suite server is migrated.

The procedures in this chapter use the Oracle SOA Suite server in the Oracle Fusion Financials domain as an example. You must perform the same procedures for the Oracle SOA Suite servers in all other domains.

Note: For Oracle Fusion Financials, the Oracle SOA Suite virtual IPs for *`FINHOST1`* and *`FINHOST2`* are called *`FINSOAVH1`* and *`FINSOAVH2`*. For all other domains, replace the first three characters with domain-specific syntax. For *`HCMSOAVH1`*, *`SCMSOAVH1`*, and so on.

This chapter includes the following topics:

- Section 16.10, "Starting and Validating soa_server1 on FINHOST1"
- Section 16.11, "Restarting Node Manager on FINHOST2"
- Section 16.12, "Starting and Validating soa_server2 on FINHOST2"

> **Note:** Before performing any of the procedures in this chapter, ensure that soa_server1 is running on *FINHOST1* and soa_server2 is running on *FINHOST2*.

16.1 Enabling Virtual IPs on FINHOST1 and FINHOST2

To enable the virtual IP on Linux:

> **Note:** In this example, ethX is the ethernet interface (eth0 or eth1) and Y is the index (0, 1, 2, and so on). In addition, the *FINSOAVH1* and *FINSOAVH2* VIPs will be used.

1. On *FINHOST1*:

   a. Run the ifconfig command as root:

   ```
   /sbin/ifconfig interface:index IPAddress netmask netmask
   ```

   For example:

   ```
   /sbin/ifconfig ethX:Y 100.200.140.206 netmask 255.255.255.0
   ```

   b. Enable your network to register the new location of the virtual IP:

   ```
   /sbin/arping -q -U -c 3 -I interface IPAddress
   ```

   For example:

   ```
   /sbin/arping -q -U -c 3 -I ethX 100.200.140.206
   ```

   c. Validate that the address is available by pinging it from another node.

   For example:

   ```
   /bin/ping 100.200.140.206
   ```

2. Repeat Steps a through c on *FINHOST2*.

16.2 Setting the Listen Address for soa_server1

Ensure that you have performed the steps described in Section 16.1, and the scale-out steps described in Section 8.3, Section 8.4, and Section 8.5 before setting the soa_server1 listen address.

To set the listen address for the Managed Server:

1. Log in to the Administration Console.
2. In the Change Center, click **Lock & Edit**.
3. Expand the **Environment** node in the Domain Structure window.
4. Click **Servers**. The Summary of Servers page is displayed.
5. Select **soa_server1** in the table. The Setting page for soa_server1 is displayed.

6. Set the **Listen Address** to *FINSOAVH1*.
7. Click **Save**.
8. Click **Activate Changes**.
9. The changes will not take effect until the soa_server1 Managed Server is restarted (ensure that Node Manager is up and running):
   a. On the Summary of Servers page, select the **Control** tab.
   b. Select **soa_server1** in the table and then click **Shutdown**.
   c. After the server has shut down, select **soa_server1** in the table and then click **Start**.

16.3 Setting the Listen Address for soa_server2

Ensure that you have performed the steps described in Section 16.1 before setting the soa_server2 listen address.

Perform these steps to set the listen address for the Managed Server:

1. Log in to the Administration Console.
2. In the Change Center, click **Lock & Edit**.
3. Expand the **Environment** node in the Domain Structure window.
4. Click **Servers**. The Summary of Servers page is displayed.
5. Select **soa_server2** in the column of the table. The Settings page for soa_server2 is displayed.
6. Set the **Listen Address** to *FINSOAVH2*.
7. Click **Save**.
8. Click **Activate Changes**.
9. The changes will not take effect until the soa_server2 Managed Server is restarted (ensure that Node Manager is up and running):
   a. On the Summary of Servers page, select the **Control** tab.
   b. Select **soa_server2** in the table and then click **Shutdown**.
   c. After the server has shut down, select **soa_server2** in the table and then click **Start**.

16.4 Updating the FusionVirtualHost_fin.conf Configuration File

To enable Oracle HTTP Server to route to soa_cluster, which contains the soa_server*n* Managed Servers, you must set the WebLogicCluster parameter to the list of nodes in the cluster.

To set the parameter:

1. On *WEBHOST1* and *WEBHOST2*, update the WebLogicCluster parameter in the *ORACLE_BASE* /config/CommonDomain_webtier/config/OHS/ohs1/moduleconf/FusionVirtualHost_fin.conf file to contain a cluster list of virtual *host*:*port* entries. For example:

```
<Location /soa-infra>
 SetHandler weblogic-handler
 WebLogicCluster FINSOAVH1:7416,FINSOAVH2:7416
```

```
</Location>
```

2. Restart Oracle HTTP Server on both *WEBHOST1* and *WEBHOST2*:

   ```
   WEBHOST1> ORACLE_BASE/config/CommonDomain_webtier/bin/opmnctl restartproc
   ias-component=ohs1

   WEBHOST2> ORACLE_BASE/config/CommonDomain_webtier1/bin/opmnctl restartproc
   ias-component=ohs1
   ```

The servers specified in the WebLogicCluster parameters are only important at startup time for the plug-in. The list must provide at least one running cluster member for the plug-in to discover other members in the cluster. The listed cluster member must be running when Oracle HTTP Server is started. Oracle WebLogic Server and the plug-in work together to update the server list automatically with new, failed, and recovered cluster members.

Sample scenarios include the following:

- **Example 1:** If you have a two-node cluster and then add a third member, you do not need to update the configuration to add the third member. The third member will be discovered dynamically at runtime.
- **Example 2:** You have a three-node cluster, but only two nodes are listed in the configuration. However, if both listed nodes are down when you start Oracle HTTP Server, then the plug-in would fail to route to the cluster. You must ensure that at least one of the listed nodes is running when you start Oracle HTTP Server.

If you list all the members of the cluster, then you guarantee you can route to the cluster, assuming at least one member is running when Oracle HTTP Server is started. For more information on configuring the Oracle WebLogic Server plug-in, see *Oracle Fusion Middleware Using Web Server 1.1 Plug-Ins with Oracle WebLogic Server*.

16.5 Configuring JMS for the Oracle SOA Suite Server

After *FINHOST1* has been provisioned, the JMS server and file store are set up and configured for *FINHOST1*. You now must configure the file store for *FINHOST2*. Configure the location for all persistence stores to a directory visible from both nodes.

To configure the file store for *FINHOST2*:

1. Log in to the Oracle WebLogic Server Administration Console.
2. In the Domain Structure window, expand the **Services** node and then click the **Persistence Stores** node.

   The Summary of Persistence Stores page appears.
3. Click **Lock & Edit**.
4. Click **New**, and then **Create File Store**.
5. In the Directory field, enter the following:
   - Name: for example, `SOAJMSFileStore_auto_2`
   - Target: `soa_server2`
   - Directory:

     ```
     ORACLE_BASE/config/domains/FINHOST1/FinancialDomain
     ```
6. Click **OK** and **Activate Changes**.

7. In the Domain Structure window, expand the **Services** node and then click the **Messaging > JMS Servers** node.

   The Summary of JMS Servers page appears.

8. Click **Lock & Edit**.
9. Click **New**.
10. Enter a name (for example, `SOAJMSServer_2`), then select **SOAJMSFileStore_auto_2** in the Persistence Store dropdown list.
11. Click **Next**.
12. Select **soa_server2** as the target.
13. Click **Finish** and **Activate Changes**.
14. In the Domain Structure window, expand the **Services** node and then click the **Messaging > JMS Modules** node.

    The JMS Modules page appears.

15. In the Change Center, click **Lock & Edit**.
16. Click **SOAJMSModule** and then click the **Subdeployments** tab.
17. Click **SOAJMSServer*xxxxx*** under **Subdeployments**.
18. Add the new `SOAJMSServer_2` as additional targets for the subdeployment.
19. Click **Save** and **Activate Changes**.

Note: The information in this section is also required for Oracle User Messaging Service and Oracle Business Process Management.

16.6 Configuring Oracle Coherence for Deploying Composites

Although deploying composites uses multicast communication by default, Oracle recommends using unicast communication instead in SOA enterprise deployments. Use unicast if you disable multicast communication for security reasons.

Note: An incorrect configuration of the Oracle Coherence framework that is used for deployment may prevent the SOA system from starting. The deployment framework must be properly customized for the network environment on which the SOA system runs. Oracle recommends the configuration described in this section.

Multicast communication enables Oracle Fusion Middleware SOA to discover all of the members of a cluster to which it deploys composites dynamically. However, unicast communication does not enable nodes to discover other cluster members in this way. Consequently, you must specify the nodes that belong to the cluster. You do not need to specify all of the nodes of a cluster, however. You need only specify enough nodes so that a new node added to the cluster can discover one of the existing nodes. As a result, when a new node has joined the cluster, it is able to discover all of the other nodes in the cluster. Additionally, in configurations such as SOA enterprise deployments, where multiple IPs are available in the same box, you must configure Oracle Coherence to use a specific host name to create the Oracle Coherence cluster.

> **Tip:** To guarantee high availability during deployments of SOA composites, specify enough nodes so that at least one of them is running at any given time.

Specify the nodes using the `tangosol.coherence.wka` *`n`* system property, where *`n`* is the number for each Oracle HTTP Server. The numbering starts at 1. This numbering must be sequential and must not contain gaps. In addition, specify the host name used by Oracle Coherence to create a cluster through the `tangosol.coherence.localhost` system property. This local host name should be the virtual host name used by the SOA server as the listener addresses (*`FINSOAVH1`* and *`FINSOAVH2`*). Set this property by adding the `-Dtangosol.coherence.localhost` parameters to the Arguments field of the Oracle WebLogic Server Administration Console's Server Start tab.

> **Note:** *`FINSOAVH1`* is the virtual host name that maps to the virtual IP where `soa_server1` is listening (in *`FINHOST1`*). *`FINSOAVH2`* is the virtual host name that maps to the virtual IP where `soa_server2` is listening (in *`FINHOST2`*).

To add the host name used by Oracle Coherence:

1. Log in to the Oracle WebLogic Server Administration Console.
2. In the Domain Structure window, expand the **Environment** node.
3. Click **Servers**.

   The Summary of Servers page appears.
4. Select **soa_server1** (represented as a hyperlink) from the column of the table.

   The Settings page appears.
5. Click **Lock & Edit**.
6. Click the **Server Start** tab.
7. Enter the following for `soa_server1` and `soa_server2` into the **Arguments** field.

   For `soa_server1`, enter the following:

   ```
   -Dtangosol.coherence.wka1=FINSOAVH1
   -Dtangosol.coherence.wka2=FINSOAVH2
   -Dtangosol.coherence.localhost=FINSOAVH1
   -Dtangosol.coherence.localport=8089
   -Dtangosol.coherence.wka1.port=8089
   -Dtangosol.coherence.wka2.port=8089
   ```

   For `soa_server2`, enter the following:

   ```
   -Dtangosol.coherence.wka1=FINSOAVH2
   -Dtangosol.coherence.wka2=FINSOAVH1
   -Dtangosol.coherence.localhost=FINSOAVH2
   -Dtangosol.coherence.localport=8089
   -Dtangosol.coherence.wka1.port=8089
   -Dtangosol.coherence.wka2.port=8089
   ```

Note: There should be no breaks in lines between the different `-D` parameters. Do not copy or paste the code from above to your Administration Console's Arguments text field. This may result in HTML tags being inserted in the Java arguments. The code should not contain other characters than those included in the example above.

8. Click **Save** and **Activate Changes**.

Note: You must ensure that these variables are passed to the Managed Server correctly. (They should be reflected in the server's output log.) Failure of the Oracle Coherence framework can prevent the soa-infra application from starting.

Note: The multicast and unicast addresses are different from the ones used by the Oracle WebLogic Server cluster for cluster communication. Oracle SOA Suite guarantees that composites are deployed to members of a single Oracle WebLogic Server cluster even though the communication protocol for the two entities (the Oracle WebLogic Server cluster and the groups to which composites are deployed) are different.

Note: The Oracle Coherence cluster used for deployment uses port 8088 by default. This port can be changed by specifying the `-Dtangosol.coherence.wkaX.port` startup parameter.

16.7 Configuring a Default Persistence Store for Transaction Recovery

Each server has a transaction log that stores information about committed transactions that are coordinated by the server that may not have been completed. The WebLogic Server uses this transaction log for recovery from system crashes or network failures. To leverage the migration capability of the Transaction Recovery Service for the servers within a cluster, store the transaction log in a location accessible to a server and its backup servers.

Note: Preferably, this location should be a dual-ported SCSI disk or on a Storage Area Network (SAN).

To set the location for the default persistence store:

1. Log in to the Oracle WebLogic Server Administration Console (`http://fininternal.mycompany.com:7777/console`).
2. In the Change Center, click **Lock & Edit**.
3. In the Domain Structure window, expand the **Environment** node and then click the **Servers** node. The Summary of Servers page is displayed.
4. Click the server name **soa_server1** (represented as a hyperlink) in the table. The Settings page for the selected server is displayed, and defaults to the Configuration tab.

5. Click the **Configuration** tab and then the **Services** tab.
6. Create the `tlogs` directory at *`ORACLE_BASE`*`/config/domains/`*`FINHOST1`*`/CRMDomain/tlogs`.
7. In the Default Store Directory section of the page, enter the path to the folder where the default persistent stores will store its data files. The directory structure of the path for *`FINHOST1`* is the following:

```
FINHOST1> ORACLE_BASE/config/domains/FINHOST1/FinancialDomain/tlogs
```

8. Repeat Steps 4 through 7 for **soa_server2**.
9. Click **Save** and **Activate Changes**.
10. Restart the Managed Servers to activate the changes (ensure that Node Manager is up and running):
    a. Log in to the Oracle WebLogic Server Administration Console (`http://fininternal.mycompany.com:7777/console`).
    b. In the Summary of Servers screen, select the **Control** tab.
    c. Select **soa_server1** and **soa_server2** in the table and then click **Shutdown**.
    d. Start the `soa_server1` and `soa_server2` servers.

Note: To enable migration of the Transaction Recovery service, specify a location on a persistent storage solution that is available to other servers in the cluster. Both `soa_server1` and `soa_server2` must be able to access this directory.

16.8 Disabling Host Name Verification for the soa_server*n* Managed Servers

This step is required if you have not set up the appropriate certificates to authenticate the different nodes with the Administration Server. By default, Host Name Verification should be set to *None*. If it is not, follow the steps below.

If you have not configured the server certificates, you will receive errors when managing the different WebLogic servers. To avoid these errors, disable host name verification while setting up and validating the topology, and enable it again once the enterprise deployment topology configuration is complete.

To disable Host Name Verification:

1. Log in to Oracle WebLogic Server Administration Console. For example, `http://fininternal.mycompany.com:7777/console`.
2. Click **Lock & Edit**.
3. Expand the **Environment** node in the Domain Structure window.
4. Click **Servers**.

   The Summary of Servers page appears.
5. Select **soa_server1** (represented as a hyperlink) in the table.

   The Settings page appears.
6. Select the **SSL** tab.
7. Expand the **Advanced** section of the page.

8. Set **Hostname Verification** to **None**.
9. Click **Save**.
10. Repeat Steps 1 through 9 for the soa_server2 Managed Server.
11. Save and activate the changes.

16.9 Restarting Node Manager on FINHOST1

To restart Node Manager on *FINHOST1*:

1. Stop Node Manager by stopping the process associated with it:
   a. If it is running in the foreground in a shell, simply use CTRL+C.
   b. If it is running in the background in the shell, find the associated process and use the kill command to stop it. For example:

   ```
   FINHOST1> ps -ef | grep NodeManager
   orcl 9139 9120 0 Mar03 pts/6 00:00:00/bin/sh ./startNodeManager.sh
   ```

   c. Run the following command:

   ```
   FINHOST1>kill -9 9139
   ```

2. Start Node Manager:

   ```
   FINHOST1> ORACLE_BASE/config/nodemanager/FINHOST1/startNodeManagerWrapper.sh
   ```

16.10 Starting and Validating soa_server1 on FINHOST1

To start the soa_server1 Managed Server on *FINHOST1*:

1. Access the Administration Console. For example, http://fininternal.mycompany.com:7777/console.
2. Click **Servers**.
3. Open the **Control** tab.
4. Select **soa_server1**.
5. Click **Start**.

To validate the soa_server1 Managed Server on *FINHOST1*:

1. Verify that the server status is reported as "Running" in the Administration Console. If the server is shown as "Starting" or "Resuming," wait for the server status to change to "Started." If another status is reported (such as "Admin" or "Failed"), check the server output log files for errors.
2. Access http://*FINSOAVH1*:7416/soa-infra and http://*fininternal*.mycompany.com:7777/soa-infra to verify status of soa_server1.

Note: Although the soa_server1 server may be up, some applications may be in a failed state. Therefore, Oracle recommends verifying the above URLs and watching for errors pertaining each individual application in the server's output file.

16.11 Restarting Node Manager on FINHOST2

To restart Node Manager on *FINHOST2*, follow the steps in Section 16.9, "Restarting Node Manager on FINHOST1."

16.12 Starting and Validating soa_server2 on FINHOST2

To start the `soa_server2` Managed Server on *FINHOST2* and ensure that it is configured correctly:

1. From the Administration Console, start the `soa_server2` Managed Server.
2. Verify that the server status is reported as "Running" in the Administration Console. If the server is shown as "Starting" or "Resuming," wait for the server status to change to "Started." If another status is reported (such as "Admin" or "Failed"), check the server output log files for errors.
3. Access `http://`*`FINSOAVH2`*`:7416/soa-infra` and `http://`*`fininternal`*`.mycompany.com:7777/soa-infra`.

> **Note:** Although `soa_server2` server may be up, some applications may be in a failed state. Therefore, Oracle recommends verifying the above URLs and watching for errors pertaining each individual application in the server's output file.

17

Configuring Administration Server High Availability

This chapter describes how to configure and validate the Oracle WebLogic Server Administration Server for high availability.

This chapter includes the following topics:

17.1 Enabling Administration Server High Availability

The Administration Server is a singleton application, so it cannot be deployed in an active-active configuration. By default, the Administration Server is only available on the first installed node. If this node becomes unavailable, then the Administration Console and Fusion Middleware Control also become unavailable. To avoid this scenario, the Administration Server and the applications deployed to it must be enabled for failover. The enterprise deployment architecture in this guide calls for the deploying the Administration Server on a disk shared between the primary node and the secondary node.

The following domains are deployed as part of the Oracle Fusion Financials enterprise deployment implementation:

- Oracle Fusion Customer Relationship Management Domain
- Oracle Fusion Common Domain
- Oracle Fusion Financials Domain
- Oracle Fusion Human Capital Management Domain
- Oracle Fusion Supply Chain Management Domain
- Oracle Fusion Projects Domain
- Oracle Fusion Procurement Domain
- Oracle Business Intelligence Domain

The process described in this guide initially deploys each domain-specific Administration Server in shared storage (`/u01/oracle`) mounted on *FINHOST1*, and Managed Servers in the local disk (`/u02/local/oracle`).

This section contains the following topics:

- Section 17.1.1, "Enabling Administrative Virtual Host on FINHOST1"
- Section 17.1.2, "Adding a New Machine in the Oracle WebLogic Server Console"
- Section 17.1.3, "Enabling the Administration Server to Listen on the Virtual IP Address"

17.1.1 Enabling Administrative Virtual Host on FINHOST1

> **Note:** *FINADMINVH* is used as a generic name in this chapter. For domain-specific administrative virtual host names, see Table 3–1 in Section 3.6, "IPs and Virtual IPs."

The Administration Server must be configured to listen on a virtual IP Address to enable it to seamlessly failover from one host to another. In case of a failure, the Administration Server, along with the virtual IP Address, can be migrated from one host to another.

However, before the Administration Server can be configured to listen on a virtual IP Address, one of the network interface cards on the host running the Administration Server must be configured to listen on this virtual IP Address. The steps to enable a virtual IP Address are completely dependent on the operating system.

To enable a virtual IP Address on *FINHOST1*:

> **Note:** In a UNIX environment, the command must be run as the root user.

1. On *FINHOST1*, run the `ifconfig` command to get the value of the netmask. In a UNIX environment, run this command as the root user. For example:

```
[root@FINHOST1 ~] # /sbin/ifconfig
eth0     Link encap:Ethernet  HWaddr 00:11:43:D7:5B:06
     inet addr:139.185.140.51  Bcast:139.185.140.255  Mask:255.255.255.0
     inet6 addr: fe80::211:43ff:fed7:5b06/64 Scope:Link
     UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
     RX packets:10626133 errors:0 dropped:0 overruns:0 frame:0
     TX packets:10951629 errors:0 dropped:0 overruns:0 carrier:0
     collisions:0 txqueuelen:1000
     RX bytes:4036851474 (3.7 GiB)  TX bytes:2770209798 (2.5 GiB)
     Base address:0xecc0 Memory:dfae0000-dfb00000
```

2. On *FINHOST1*, bind the virtual IP Address to the network interface card using `ifconfig`. In a UNIX environment, run this command as the root user. Use a netmask value that was obtained in Step 1.

   The syntax and usage for the `ifconfig` command is as follows:

```
/sbin/ifconfig networkCardInterface Virtual_IP_Address netmask netMask
```

   For example:

```
/sbin/ifconfig eth0:1 100.200.140.206 netmask 255.255.255.0
```

3. Update the routing table using `arping`. In a UNIX environment, run this command as the root user.

   ```
   /sbin/arping -q -U -c 3 -I networkCardInterface Virtual_IP_Address
   ```

   For example:

   ```
   /sbin/arping -q -U -c 3 -I eth0 100.200.140.206
   ```

4. Validate that the address is available by pinging it from another node. For example:

   ```
   /bin/ping 100.200.140.206
   ```

17.1.2 Adding a New Machine in the Oracle WebLogic Server Console

Create a new machine and assign the Administration Server to the new machine using the Administration Console:

1. Log in to the Administration Console.
2. In the Change Center, click **Lock & Edit**.
3. In the Environment section of the Home page, click **Machines**.
4. On the Summary of Machines page, select the machine that is associated with the Administration Server from under the **Machines** table and click **Clone**. For example: `FINHOST1.MYCOMPANY.COM`.
5. On the Clone a Machine page, enter the name of the machine under the Machine Identity section and click **OK**. For example, enter `ADMINHOST` as the machine name.
6. On the Summary of Machines page, click the newly created machine link.
7. On the Settings page for the `ADMINHOST` machine, select the **Servers** tab.
8. Click **Add** under the **Servers** table.
9. On the Add a Server to Machine page, select **Select an existing server**, and associate it with this machine option.
10. Choose the AdminServer from the dropdown list.
11. Click **Finish** to associate the Administration Server with the machine.
12. In the Change Center, click **Activate Changes**.

17.1.3 Enabling the Administration Server to Listen on the Virtual IP Address

Ensure that you have performed the steps described in Section 17.1.1, "Enabling Administrative Virtual Host on FINHOST1"before setting the Administration Server listen address.

To set the Administration Server listen address:

1. Log in to the Administration Console.
2. In the Change Center, click **Lock & Edit**.
3. Expand the **Environment** node in the Domain Structure window.
4. Click **Servers**. The Summary of Servers page is displayed.
5. Select **AdminServer(admin)** in the table. The Settings page for AdminServer(admin) is displayed.

6. Set the **Listen Address** to *FINADMINVH* (domain-specific administrative virtual host).
7. Click **Save**.
8. Click **Activate Changes**.
9. The changes will not take effect until the Administration Server is restarted. Follow these steps to restart the Administration Server:
   a. In the Summary of Servers page, select the **Control** tab.
   b. Select **AdminServer(admin)** in the table and then click **Shutdown**.
10. Set the following environment variable:

```
WLST_PROPERTIES="-Dweblogic.security.SSL.trustedCAKeyStore=ORACLE_
BASE/config/keystores/fusion_trust.jks"
```

11. Start the Administration Server again from the command line. Use the `nmconnect` username and password you specified in the Installation Location Screen in Chapter 5.

```
FINHOST1> ORACLE_BASE/products/fusionapps/wlserver_10.3/common/bin/wlst.sh

FINHOST1> nmConnect(username='username', password='password',
domainName='domain_name', host='FINADMINVH',port='5556', nmType='ssl',
domainDir='ORACLE_BASE/config/domains/FINHOST1/domain_name')

FINHOST1> nmStart('AdminServer')
```

17.2 Oracle HTTP Server Configuration

To configure Oracle HTTP Server:

1. On *WEBHOST1*:
   a. `cd ORACLE_BASE/config/CommonDomain_webtier/config/OHS/ohs1/moduleconf`.
   b. Edit the domain-specific virtual host `config` file. For example:

```
cp FusionVirtualHost_fin.conf FusionVirtualHost_fin.conf.org
```

2. Edit the `FusionVirtualHost_fin.conf` file, adding the Administrative virtual host and port. Example 17–1 shows sample code.

> **Note:** Replace *FINADMINVH* and port with domain-specific Administrative virtual host and port number.

Example 17–1 Add AdministrativeVirtual Host and Port

```
## Context roots for application em
    <Location /em>
        SetHandler weblogic-handler
        WebLogicCluster FINADMINVH:port
    </Location>

## Context roots for application console
    <Location /console >
        SetHandler weblogic-handler
        WebLogicCluster FINADMINVH:port
```

```
</Location>
```

3. Restart Oracle HTTP Server: `cd` to *`ORACLE_BASE`*`/config/CommonDomain_webtier/bin` and enter the following:

```
WEBHOST1> ./opmnctl stopall
WEBHOST1> ./opmnctl startall
```

4. Repeat Steps 1 through 3 on *`WEBHOST2`*.

17.3 Validating the Administration Server

Perform these steps to ensure that the Administration Server and Oracle Enterprise Manager Fusion Middleware Control are properly configured:

1. Ensure that you can access the domain-specific Oracle WebLogic Server Administration Console and Oracle Enterprise Manager Fusion Middleware Control. For example, for the Oracle Fusion Financials domain:

```
http://fininternal.mycompany.com:7777/console
```

```
http://fininternal.mycompany.com:7777/em
```

2. After completing the steps in Section 17.1 and Section 17.2 for other domains, repeat Step 1 for other domains by replacing the domain-specific URL.
3. Do the following:
   a. Log into Oracle Fusion Functional Setup Manager as a super user. The user should have the Oracle WebLogic Server Administrator role, for example, "FAadmin". You can access Functional Setup Manager here:

   ```
   https://commonexternal.mycompany.com/homePage/faces/AtkHomePageWelcome
   ```

   b. Select **Register Domains** in the left-hand task pane.
   c. On the Register Domains page, select the domain to be updated and click **Edit**.
   d. Do the following:

   – Replace `ADMIN_HOST` (the default value) with *`FINADMINVH`* wherever it appears.

   – Change the **Enterprise Manager Protocol** label to **Node Manager Protocol**, and ensure that its value is `https`.

   – Change the **Enterprise Manager Port** label to **Node Manager Port**.

   e. Click **Save and Close**.
   f. Repeat Step a through Step e for all domains.
4. Replace the value of `TAXONOMY_URL` in the `fusion_env.properties` and `fusion_prov.properties` files located in *`ORACLE_BASE`*`/config/fapatch` with *`FINADMINVH`* if the Administration Server's listen address is updated with the virtual IP (VIP) for CommonDomain.

17.4 Manually Failing Over the Administration Server to FINHOST2

In case a node fails, you can fail over the Administration Server to another node. This section describes how to fail over the Administration Server from *FINHOST1* to *FINHOST2*.

17.4.1 Prerequisites

Ensure the following:

- The Administration Server is configured to listen on a domain-specific administrative virtual host, and not on **any** address
- When failover happens, the Administration Server is failed over from *FINHOST1* to *FINHOST2* and the two nodes have the following IPs:
  - *FINHOST1* to : 100.200.140.165
  - *FINHOST2*: 100.200.140.205
  - *FINADMINVH*: 100.200.140.206. This is the VIP where the domain-specific Administration Server is running, assigned to `ethX:Y`, available in *FINHOST1* to and *FINHOST2*.
  - The domain directory where the Administration Server is running on *FINHOST1* to is on shared storage and is mounted from *FINHOST2*

17.4.2 Performing the Failover

The following procedure explains how to fail over the Administration Server to a different node (*FINHOST2*) with the Administration Server still using the same Oracle WebLogic Server machine. (This machine is a logical machine, not a physical one.)

To fail over the Administration Server:

1. Stop the Administration Server.
2. Migrate the IP to the second node:

   a. Run the following command as root on *FINHOST1* to (where `X:Y` is the current interface used by *FINADMINVH*):

   ```
   FINHOST1> /sbin/ifconfig ethX:Y down
   ```

   b. Run the following command as root on *FINHOST2*:

   ```
   FINHOST2> /sbin/ifconfig interface:index IP_Address netmask netmask
   ```

   For example:

   ```
   /sbin/ifconfig eth0:1 100.200.140.206 netmask 255.255.255.0
   ```

   > **Note:** Ensure that the netmask and interface to be used to match the available network configuration in *FINHOST2*.

3. Update the routing tables with arping. For example, run the following command as root:

   ```
   FINHOST2> /sbin/arping -q -U -c 3 -I eth0 100.200.140.206
   ```

4. Validate that the address is available by pinging it from another node. For example:

   ```
   /bin/ping 100.200.140.206
   ```

5. Start the Administration Server on *FINHOST2* using the procedure in Section 17.1.3.

6. Test access to the Administration Server on *FINHOST2*:

   a. Ensure that you can access the domain-specific Oracle WebLogic Server Administration Console and Oracle Enterprise Manager Fusion Middleware Control. For example, for the Oracle Fusion Financials domain, use these URLs:

      – `http://fininternal.mycompany.com:7777/console`

      – `http://fininternal.mycompany.com:7777/em`

   b. Repeat Step a for other domain by replacing the domain-specific URL.

   > **Note:** The Administration Server does not use Node Manager for failing over. After a manual failover, the machine name that appears in the Current Machine field in the Administration Console for the server is *FINHOST1*, and not the failover machine, *FINHOST2*. Since Node Manager does not monitor the Administration Server, the machine name that appears in the Current Machine field, is not relevant and you can ignore it.

17.5 Failing the Administration Server Back to FINHOST1

You also must ensure that you can fail back the Oracle WebLogic Server Administration Server, that is, stop it on *FINHOST2* and run it on *FINHOST1*. To do this, migrate *FINADMINVH* back to *FINHOST1* node.

To migrate *FINADMINVH*:

1. Stop the Administration Server on *FINHOST2*.

2. Run the following command as root from *FINHOST2* to shut down the network stack virtual interface:

   ```
   FINHOST2> /sbin/ifconfig ethX:Y down
   ```

3. Run the following command as root from *FINHOST1* to restart the virtual interface:

   ```
   FINHOST1> /sbin/ifconfig ethX:Y 100.200.140.206 netmask 255.255.255.0
   ```

   > **Note:** Ensure that the netmask and interface to be used match the available network configuration in *FINHOST1*.

4. Run the following command from *FINHOST1* to update the routing tables through arping:

   ```
   FINHOST1> /sbin/arping -q -U -c 3 -I eth0 100.200.140.206
   ```

5. Validate that the address is available by pinging it from another node. For example:

```
/bin/ping 100.200.140.206
```

6. Start the Administration Server again on *FINHOST1* using the procedure in Step 3 in Section 17.1.3.

7. Test access to the Administration Server on *FINHOST1*:

   a. Ensure that you can access the domain-specific Oracle WebLogic Server Administration Console and Oracle Enterprise Manager Fusion Middleware Control. For example, for the Oracle Fusion Financials domain, use these URLs:

      – `http:/fininternal.mycompany.com:7777/console`

      – `http:/fininternal.mycompany.com:7777/em`

   b. Repeat Step a for other domain by replacing the domain-specific URL.

18

Setting Up Server Migration for an Enterprise Deployment

This chapter describes how to configure server migration according to enterprise deployment recommendations.

This chapter includes the following topic:

- Section 18.1, "Prerequisite"
- Section 18.2, "Migrating Oracle Fusion Applications Domains"

18.1 Prerequisite

Before migrating Oracle Fusion Applications domains, ensure you have completed the steps in Section 16.1, "Enabling Virtual IPs on FINHOST1 and FINHOST2," Section 16.2, "Setting the Listen Address for soa_server1," and Section 16.3, "Setting the Listen Address for soa_server2" for all Managed Servers needing to be migrated.

Note: This prerequisite does not apply to the Oracle Business Intelligence domain.

18.2 Migrating Oracle Fusion Applications Domains

The procedures in this section apply to these domains and applications:

- Oracle SOA Suite in the Oracle Fusion Financials domain
- Oracle SOA Suite and Oracle WebCenter Content: Imaging in the Oracle Fusion Common domain
- Oracle SOA Suite in the Oracle Business Intelligence domain
- Oracle SOA Suite in the Oracle Fusion Human Capital Management domain
- Oracle SOA Suite in the Oracle Fusion Supply Chain Management domain
- Oracle SOA Suite in the Oracle Fusion Projects domain
- Oracle SOA Suite in the Oracle Fusion Procurement domain

18.2.1 About Configuring Server Migration

The procedures described in this chapter must be performed for various components of the enterprise deployment topology outlined in Variables are used in this chapter to distinguish between component-specific items:

The procedures described in this chapter must be performed for various components of the enterprise deployment topology outlined in Section 2.1, "Overview of Reference Enterprise Deployment Topologies." Variables are used in this chapter to distinguish between component-specific items:

- *WLS_SERVER1* and *WLS_SERVER2* refer to the managed WebLogic servers for the enterprise deployment component
- *FINHOST1* and *FINHOST2* refer to the host machines for the enterprise deployment component
- *CLUSTER* refers to the cluster associated with the enterprise deployment component.

The values to be used to these variables are provided in the component-specific chapters in this guide.

In this enterprise topology, you must configure server migration for the *WLS_SERVER1* and *WLS_SERVER2* Managed Servers. The *WLS_SERVER1* Managed Server is configured to restart on *FINHOST2* should a failure occur. The *WLS_SERVER2* Managed Server is configured to restart on *FINHOST1* should a failure occur. For this configuration, the *WLS_SERVER1* and *WLS_SERVER2* servers listen on specific floating IP addresses that are failed over by WebLogic Server migration. Configuring server migration for the WLS Managed Servers consists of the following steps:

- Step 1: Setting Up a User and Tablespace for the Server Migration Leasing Table
- Step 2: Creating a Multi-Data Source Using the Oracle WebLogic Server Administration Console
- Step 3: Editing Node Manager's Properties File
- Step 4: Setting Environment and Superuser Privileges for the wlsifconfig.sh Script
- Step 5: Configuring Server Migration Targets
- Step 6: Testing the Server Migration

18.2.2 Setting Up a User and Tablespace for the Server Migration Leasing Table

The first step is to set up a user and tablespace for the server migration leasing table.

> **Note:** If other servers in the same domain have already been configured with server migration, the same tablespace and data sources can be used. In that case, the data sources and multi-data source for database leasing do not need to be re-created, but they will have to be retargeted to the cluster being configured with server migration.

To set up a user and tablespace:

1. Create a tablespace called 'leasing'. For example, log on to SQL*Plus as the sysdba user and run the following command:

   ```
   SQL> create tablespace leasing logging datafile
   'DB_HOME/oradata/orcl/leasing.dbf'
   size 32m autoextend on next 32m maxsize 2048m extent management local;
   ```

2. Create a user named 'leasing' and assign to it the leasing tablespace:

   ```
   SQL> create user leasing identified by welcome1;
   ```

```
SQL> grant create table to leasing;
SQL> grant create session to leasing;
SQL> alter user leasing default tablespace leasing;
SQL> alter user leasing quota unlimited on LEASING;
```

3. Create the leasing table using the leasing.ddl script:

   a. Copy the leasing.ddl file located in either the `ORACLE_BASE/products/fusionapps/wlserver_10.3/server/db/oracle/817` or the `ORACLE_BASE/products/fusionapps/wlserver_10.3/server/db/oracle/920` directory to your database node.

   b. Connect to the database as the leasing user.

   c. Run the leasing.ddl script in SQL*Plus:

   ```
   SQL> @Copy_Location/leasing.ddl;
   ```

18.2.3 Creating a Multi-Data Source Using the Oracle WebLogic Server Administration Console

The second step is to create a multi-data source for the leasing table from the Oracle WebLogic Server Administration Console. You create a data source to each of the Oracle RAC database instances during the process of setting up the multi-data source, both for these data sources and the global leasing multi-data source.

Please note the following considerations when creating a data source:

- Make sure that this is a non-XA data source.
- The names of the multi-data sources are in the format of *<MultiDS>-rac0*, *<MultiDS>-rac1*, and so on.
- Use Oracle's Driver (Thin) Version 9.0.1, 9.2.0, 10, 11.
- Use Supports Global Transactions, One-Phase Commit, and specify a service name for your database.
- Target these data sources to the cluster assigned to the enterprise deployment component (*CLUSTER*; see the component-specific chapters in this guide).

Creating a Multi-Data Source

To create a multi-data source:

1. In the Domain Structure window in the Oracle WebLogic Server Administration Console, click the **Data Sources** link.
2. Click **Lock & Edit**.
3. Select **Multi Data Source** from the **New** dropdown menu.

   The Create a New JDBC Multi Data Source page is displayed.
4. Enter `leasing` as the name.
5. Enter `jdbc/leasing` as the JNDI name.
6. Select **Failover** as algorithm (default).
7. Click **Next.**
8. Select the cluster that needs to be migrated. In this case, SOA cluster.
9. Click **Next**.
10. Select **non-XA driver** (the default).

11. Click **Next**.
12. Click **Create a New Data Source**.
13. Enter `leasing-rac0` as the name. Enter `jdbc/leasing-rac0` as the JNDI name. Enter `oracle` as the database type. For the driver type, select Oracle Driver (Thin) for Oracle RAC Service-Instance connections, Versions 10 and later.

   > **Note:** When creating the multi-data sources for the leasing table, enter names in the format of <*MultiDS*>-rac0, <*MultiDS*>-rac1, and so on.

14. Click **Next**.
15. Deselect **Supports Global Transactions**.
16. Click **Next**.
17. Enter the following for your leasing schema:
    - **Service Name:** The service name of the database.
    - **Database Name:** The Instance Name for the first instance of the Oracle RAC database.
    - **Host Name:** The name of the node that is running the database. For the Oracle RAC database, specify the first instance's VIP name or the node name as the host name.
    - **Port:** The port number for the database (1521).
    - **Database User Name:** Enter `leasing`.
    - **Password:** The leasing password.
18. Click **Next**.
19. Click **Test Configuration** and verify that the connection works.
20. Click **Next**.
21. Target the data source to the cluster assigned to the enterprise deployment component (*CLUSTER*).
22. Click **Finish**.
23. Click **Create a New Data Source** for the second instance of your Oracle RAC database, target it to the cluster assigned to the enterprise deployment component (*CLUSTER*), repeating the steps for the second instance of your Oracle RAC database.
24. Add `leasing -rac0` and `leasing -rac1` to your multi-data source.
25. Make sure the initial connection pool capacity of the data sources is set to 0 (zero). In the Datasources screen do the following:
    a. Select **Services**, then select **Datasources**.
    b. Click **Datasource Name**, then click the **Connection Pool** tab.
    c. Enter `0` (zero) in the **Initial Capacity** field.
26. Click **Save**, then click **Activate Changes**.

18.2.4 Editing Node Manager's Properties File

The third step is to edit Node Manager's properties file, which is located at:

```
ORACLE_BASE/config/nodemanager/FINHOST1

ORACLE_BASE/config/nodemanager/FINHOST2
```

This needs to be done for the node managers in both nodes where server migration is being configured. For example:

```
Interface=eth0
NetMask=255.255.255.0
UseMACBroadcast=true
```

- **Interface:** This property specifies the interface name for the floating IP (for example, `eth0`).

  Do not specify the sub-interface, such as `eth0:1` or `eth0:2`. This interface is to be used without `:0` or `:1`. Node Manager's scripts traverse the different :*X*-enabled IPs to determine which to add or remove. For example, the valid values in Linux environments are `eth0`, `eth1`, `eth2`, `eth3`, `eth`*n*, depending on the number of interfaces configured.

- **NetMask:** This property specifies the net mask for the interface for the floating IP. The net mask should the same as the net mask on the interface; 255.255.255.0 is used as an example in this document.

- **UseMACBroadcast:** This property specifies whether or not to use a node's MAC address when sending ARP packets, that is, whether or not to use the -`b` flag in the `arping` command.

Verify in Node Manager's output (shell where Node Manager is started) that these properties are being used, or problems may arise during migration. You should see something like this in Node Manager's output:

```
...
StateCheckInterval=500
Interface=eth0
NetMask=255.255.255.0
...
```

> **Note:** The steps below are not required if the server properties (start properties) have been properly set and Node Manager can start the servers remotely.

1. Set the following property in the `nodemanager.properties` file:

   - **StartScriptEnabled:** Set this property to 'true'. This is required for Node Manager to start the Managed Servers using start scripts.

2. Restart Node Manager on *FINHOST1* and *FINHOST2* by running the `startNodeManagerWrapper.sh` script, which is located in the *`ORACLE_BASE`*`/config/nodemanager/`*`FINHOST1`* and *`ORACLE_BASE`*`/config/nodemanager/`*`FINHOST2`* directories.

18.2.5 Setting Environment and Superuser Privileges for the wlsifconfig.sh Script

The fourth step is to set environment and superuser privileges for the `wlsifconfig.sh` script:

1. Ensure that your PATH is set with the environment variables in the terminal from where Node Manager is started, and that it includes these files:

Table 18–1 Files Required for the PATH Environment Variable

File	Located in this directory
wlsifconfig.sh	`/u02/local/oracle/config/domains/`*`FINHOSTn`*`/`*`ManagedServer_Domain`*`/bin/server_migration`
wlscontrol.sh	*`ORACLE_BASE`*`/products/fusionapps/wlserver_10.3/common/bin`
nodemanager.domains	*`ORACLE_BASE`*`/config/nodemanager/`*`FINHOSTn`*

2. Grant sudo configuration for the wlsifconfig.sh script.

   - Configure `sudo` to work without a password prompt.
   - For security reasons, sudo should be restricted to the subset of commands required to run the `wlsifconfig.sh` script. For example, perform these steps to set the environment and superuser privileges for the `wlsifconfig.sh` script:

     a. Grant `sudo` privilege to the WebLogic user ('oracle') with no password restriction, and grant execute privilege on the /sbin/ifconfig and /sbin/arping binaries.

     b. Make sure the script is executable by the WebLogic user ('oracle'). The following is an example of an entry inside `/etc/sudoers` granting sudo execution privilege for `oracle` and also over `ifconfig` and `arping`:

     ```
     oracle ALL=NOPASSWD: /sbin/ifconfig,/sbin/arping
     ```

Note: Ask the system administrator for the `sudo` and system rights as appropriate to this step.

18.2.6 Configuring Server Migration Targets

The fifth step is to configure server migration targets. You first assign all the available nodes for the cluster's members and then specify candidate machines (in order of preference) for each server that is configured with server migration. Follow these steps to configure cluster migration in a migration in a cluster:

1. Log in to the Oracle WebLogic Server Administration Console. For example, For example, `http://fininternal.mycompany.com:7777/console`.
2. In the Domain Structure window, expand **Environment** and select **Clusters**. The Summary of Clusters page is displayed.
3. Click the cluster for which you want to configure migration (***CLUSTER***) in the Name column of the table.
4. Click the **Migration** tab.
5. Click **Lock & Edit**.
6. In the **Available** field, select the machine to which to allow migration and click the right arrow. In this case, select ***FINHOST1*** and ***FINHOST2***.

Note: When there are three (3) hosts, for example *FINHOST1*, *FINHOST2*, and *FINHOST3*, select all three hosts.

7. Select the data source to be used for automatic migration. In this case, select the leasing data source.
8. Click **Save**.
9. Click **Activate Changes**.
10. Set the candidate machines for server migration. You must perform this task for all of the Managed Servers as follows:

    a. In the Domain Structure window of the Oracle WebLogic Server Administration Console, expand **Environment** and select **Servers**.

    Tip: Click **Customize this table** in the Summary of Servers page and move Current Machine from the Available window to the Chosen window to view the machine on which the server is running. This will be different from the configuration if the server gets migrated automatically.

    b. Select the server for which you want to configure migration.

    c. Click the **Migration** tab, and then click **Lock & Edit**.

    d. In the **Available** field, located in the Migration Configuration section, select the machines to which to allow migration and click the right arrow. For ***WLS_SERVER1***, select ***FINHOST2***. For ***WLS_SERVER2***, select ***FINHOST1***.

    Note: If there are three (3) hosts (*FINHOST1*, *FINHOST2*, and *FINHOST3*) and three (3) servers (*WLS_SERVER1*, *WLS_SERVER2*, and *WLS_SERVER3*), do the following:

    In the **Configuration** section, select the machines to which you want to allow migration and click the right arrow. For *WLS_SERVER1*, select *FINHOST2*; for *WLS_SERVER2*, select *FINHOST3*; and for *WLS_SERVER3*, select *FINHOST1*.

    e. Select **Automatic Server Migration Enabled**. This enables Node Manager to start a failed server on the target node automatically.

    f. Click **Save**.

    g. Click **Activate Changes**.

    h. Restart the administration server, node managers, and the servers for which server migration has been configured.

18.2.7 Testing the Server Migration

The sixth and final step is to test the server migration. Perform these steps to verify that server migration is working properly:

From FINHOST1:

1. Stop the *WLS_SERVER1* Managed Server. To do this, run this command:

```
FINHOST1> kill -9 pid
```

where *pid* specifies the process ID of the Managed Server. You can identify the pid in the node by running this command:

```
FINHOST1> ps -ef | grep WLS_SERVER1 | grep DomainName_SOACluster
```

2. Watch the Node Manager console. You should see a message indicating that *WLS_SERVER1*'s floating IP has been disabled.
3. Wait for Node Manager to try a second restart of *WLS_SERVER1*. It waits for a fence period of 10 seconds before trying this restart.
4. Once Node Manager restarts the server, stop it few times. Node Manager should now log a message indicating that the server will not be restarted again locally.

From FINHOST2:

1. Watch the local Node Manager console. Ten (10) seconds after the last try to restart *WLS_SERVER1* on `FINHOST1>`, Node Manager on `FINHOST2>` should prompt that the floating IP for *WLS_SERVER1* is being brought up and that the server is being restarted in this node.
2. As an example, for Oracle SOA Suite Managed Servers, access the soa-infra console in the same IP.

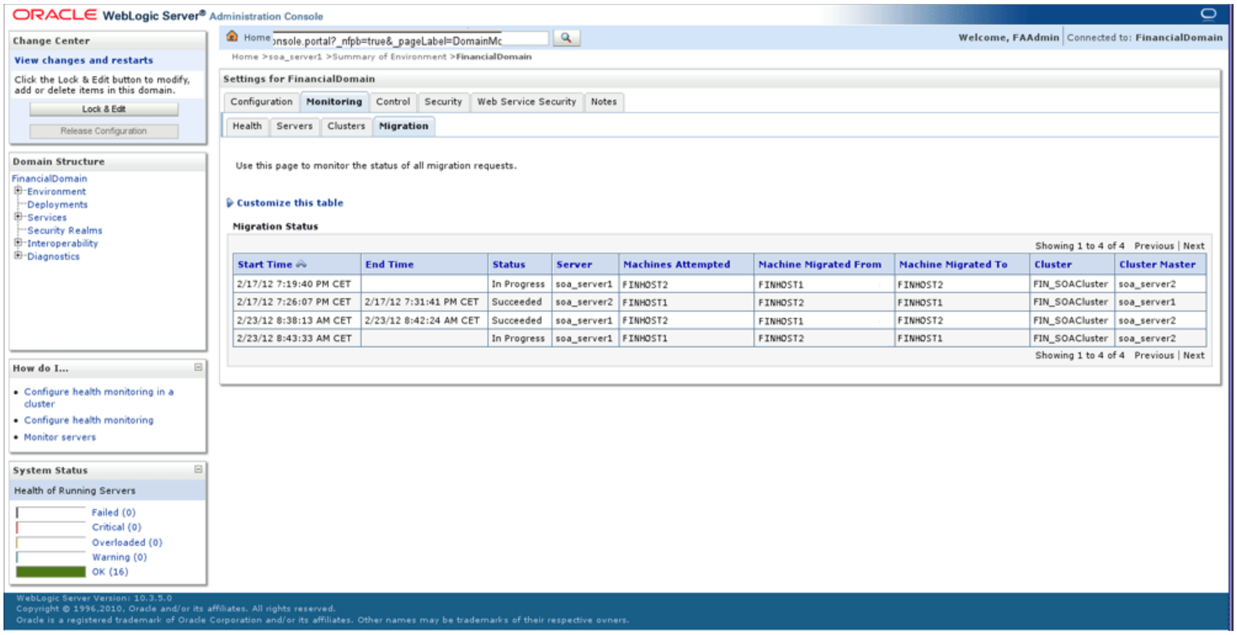
Verification from the Administration Console

Migration can also be verified in the Administration Console:

1. Log in to the Administration Console.
2. Click **Domain** on the left console.
3. Click the **Monitoring** tab and then the **Migration** subtab.

   The Migration Status table, shown in Figure 18–1, provides information on the status of the migration.

Figure 18–1 Migration Status Screen in the Administration Console



Click the Lock & Edit button to modify, add or delete items in this domain.

Home: onsole.portal?_nfpb=true&_pageLabel=DomainMc

Welcome, FAAdmin | Connected to: FinancialDomain

Home >soa_server1 >Summary of Environment >FinancialDomain

Settings for FinancialDomain

Use this page to monitor the status of all migration requests.

Migration Status

Showing 1 to 4 of 4

Start Time	End Time	Status	Server	Machines Attempted	Machine Migrated From	Machine Migrated To	Cluster	Cluster Master
2/17/12 7:19:40 PM CET		In Progress	soa_server1	FINHOST2	FINHOST1	FINHOST2	FIN_SOACluster	soa_server2
2/17/12 7:26:07 PM CET	2/17/12 7:31:41 PM CET	Succeeded	soa_server2	FINHOST1	FINHOST2	FINHOST1	FIN_SOACluster	soa_server1
2/23/12 8:38:13 AM CET	2/23/12 8:42:24 AM CET	Succeeded	soa_server1	FINHOST2	FINHOST1	FINHOST2	FIN_SOACluster	soa_server2
2/23/12 8:43:33 AM CET		In Progress	soa_server1	FINHOST1	FINHOST2	FINHOST1	FIN_SOACluster	soa_server2

Showing 1 to 4 of 4

Failed (0)
Critical (0)
Overloaded (0)
Warning (0)
OK (16)

WebLogic Server Version: 10.3.5.0
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Note: To complete server migration in a cluster, perform the same steps on the second, third, and so on, managed servers.

19 Configuring Oracle Business Intelligence Applications

Configuration of Oracle Business Intelligence Applications is an extension of the existing Oracle Business Intelligence domain. This chapter describes how the different components of Oracle BI Applications can be installed and configured for high availability.

This chapter includes the following topics:

19.1 Introduction to Oracle BI Applications for Oracle Fusion Financials

Oracle Fusion Financials is seamlessly integrated with Oracle Business Intelligence Suite to address the full range of analytical requirements. The suite consists of two products, Oracle Transactional Business Intelligence and Oracle Business Intelligence Applications (Oracle BI Applications).

Oracle Transactional Business Intelligence delivers up-to-the minute analysis of a wide range of Oracle Fusion Financials subject areas, whereas Oracle BI Applications provides a more comprehensive historical perspective for Oracle Fusion Financials that is suited to deeper analytical assessments. The product suite is meant to work together to provide customers with the ability to adapt to the rapidly changing and diverse analytical needs required by the business. For example, a customer could use the Transactional Business Intelligence FIN Sales analysis area to view up to the minute pipeline analysis near key forecasting time periods; the projected forecast could then be further validated leveraging the FIN analysis area in Oracle BI

Applications to see how this compares vs. previous time periods, sales people, customers, industries, etc. enabling sales management to make adjustments that deliver a more accurate overall forecast.

Oracle Transactional Business Intelligence is an integrated product of Oracle Fusion Applications. Oracle BI Applications is an optional product that you may choose to deploy. The ETL tier of Oracle BI Applications consists of the following components:

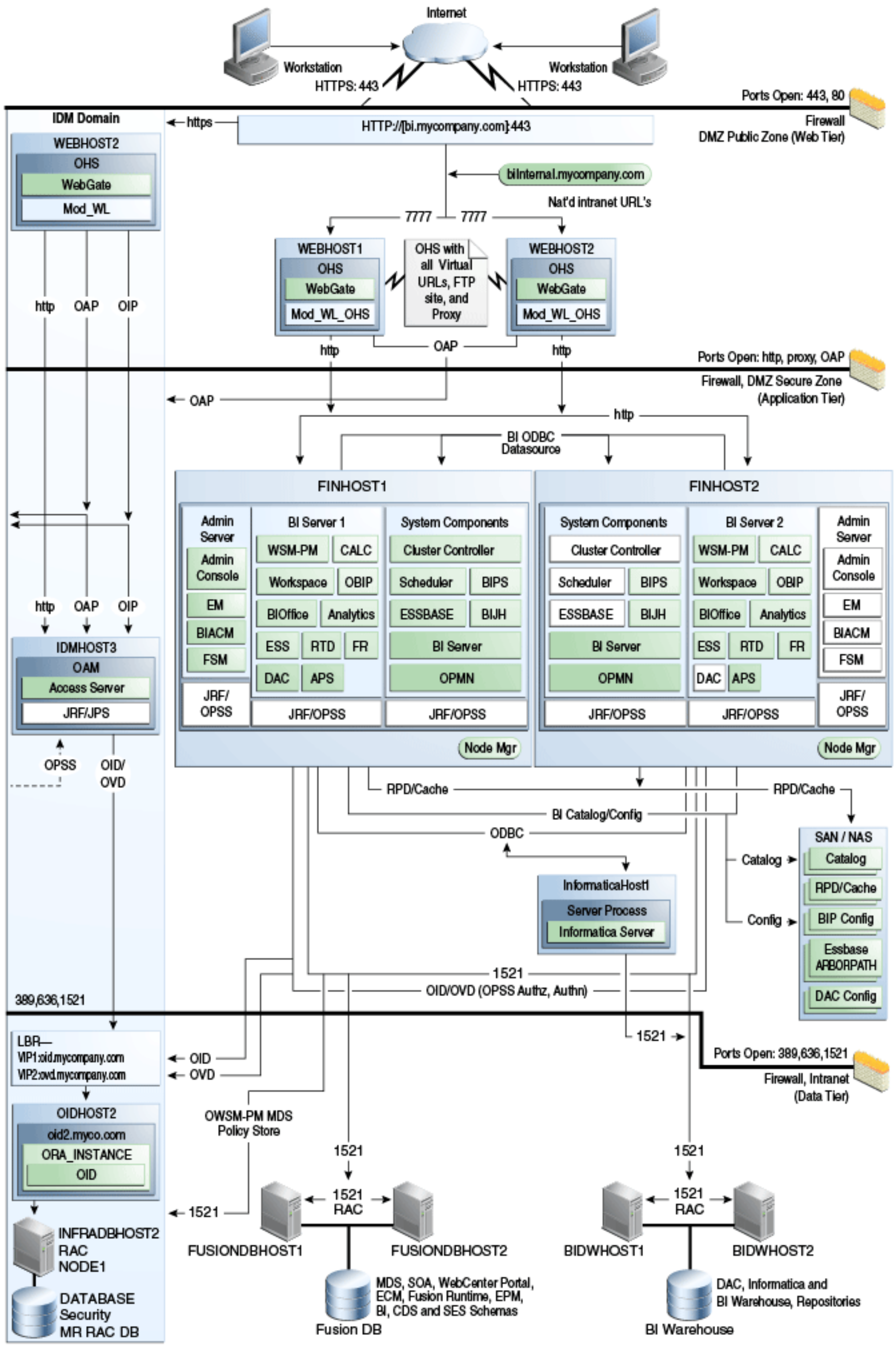
- a Data Warehouse database
- Informatica ETL suite
- Data Warehouse Administration Console (DAC)

The following sections provide more details about implementing these components of Oracle BI Applications for Oracle Fusion Applications.

19.1.1 Topology

Figure 19–1 shows the topology that represents Oracle BI Applications implementation in the Oracle Fusion Applications environment.

Figure 19–1 Data Warehouse for Oracle BI Applications



19.2 Roadmap for Installing Oracle BI Applications

This section describes the high-level tasks that are required to install Oracle BI Applications.

Some of these tasks are specific to an enterprise deployment, while others are more generalized Oracle BI Applications installation procedures. You will find detailed information about the enterprise-deployment tasks in this chapter. For those tasks that are related to an Oracle BI Applications installation, you will be directed to view the appropriate information in another book, *Oracle Fusion Middleware Installation and Configuration Guide for Oracle Business Intelligence Applications*.

1. Create the Oracle Business Analytics, DAC Repository, Informatica Domain, and Informatica Repository databases. See Section 19.3, "Creating Databases for Oracle Business Intelligence Applications Components."
2. Run the Repository Creation Utility (RCU) to create the Oracle BI Applications schemas for the Data Warehouse. See Section 19.4, "Running Oracle BI Applications RCU to Create the Oracle BI Applications Schemas for the Data Warehouse."
3. Apply all required Oracle BI Applications patches. See "Setup Step: Apply Patches" in *Oracle Fusion Middleware Installation and Configuration Guide for Oracle Business Intelligence Applications*.
4. Install the Oracle BI Administration Tool. See "Setup Step: Install Oracle BI Administration Tool" in *Oracle Fusion Middleware Installation and Configuration Guide for Oracle Business Intelligence Applications*.
5. Install and configure the database connectivity software. See "Setup Step: Install and Configure Database Connectivity Software" in *Oracle Fusion Middleware Installation and Configuration Guide for Oracle Business Intelligence Applications*.
6. Grant user access to Oracle BI Applications components. See "Setup Step: Grant User Access to Oracle BI Applications Components" in *Oracle Fusion Middleware Installation and Configuration Guide for Oracle Business Intelligence Applications*.
7. Create a user for running ETL (extract, transform, load). See "Setup Step: Create a User for ETL" in *Oracle Fusion Middleware Installation and Configuration Guide for Oracle Business Intelligence Applications*.
8. Install and configure Informatica PowerCenter Services. Perform all steps in the following sections, including their subsections, in *Oracle Fusion Middleware Installation and Configuration Guide for Oracle Business Intelligence Applications*:
   - "Install and Set Up Informatica PowerCenter Services Manually"
   - "Setup Step: Creating the Informatica Repository Service"
   - "Setup Step: Creating the Informatica Integration Service"
   - "Setup Step: Load the Prebuilt Informatica Repository"
   - "Setup Step: Copying Source Files to the Informatica PowerCenter Services Machine"
   - "Setup Step: Setting PowerCenter Integration Services Relaxed Code Page Validation"
   - "Setup Step: Setting PowerCenter Integration Services Custom Properties"
9. Extend the Oracle Business Intelligence domain. See Section 19.5, "Extending the Oracle Business Intelligence Domain by Deploying Oracle BI Applications Configuration Manager, Functional Setup Manager, and DAC."
10. Configure Oracle HTTP Server. See Section 19.6, "Configuring Oracle HTTP Server for the Managed Server."
11. Perform additional Data Warehouse Administration Console tasks. See Section 19.7, "Performing Additional Data Warehouse Administration Console Tasks."
12. Validate the Oracle BI Applications components URLs. See Section 19.8, "Validating Oracle BI Applications Components URLs."
13. Perform all the steps listed in the sections "Setup Step: Configure SSO and Portlet Provider for Oracle BI Applications Configuration Manager and Functional Setup

Manager" through "Next Steps" in *Oracle Fusion Middleware Installation and Configuration Guide for Oracle Business Intelligence Applications*.

19.3 Creating Databases for Oracle Business Intelligence Applications Components

Before you install Oracle BI Applications, the Data Warehouse Administration Console (DAC), and Informatica PowerCenter, create an Oracle RAC database on *`BIDWHOST1`* and *`BIDWHOST2`* to hold the following:

- DAC Repository
- Informatica Domain Configuration Database
- Informatica Repository
- Oracle Business Analytics Warehouse

For information, see the following:

- Section 4.2, "Setting Up the Database" in Chapter 4, "Preparing the Database for an Enterprise Deployment."
- "Pre-installation and Pre-deployment Requirements for Oracle BI Applications" in *Oracle Fusion Middleware Installation and Configuration Guide for Oracle Business Intelligence Applications*.

19.4 Running Oracle BI Applications RCU to Create the Oracle BI Applications Schemas for the Data Warehouse

You must run the Oracle BI Applications Repository Creation Utility (RCU) to create the following Oracle BI Applications schemas:

- Oracle Data Warehouse Administration Console
- Oracle Business Analytics Warehouse

> **Note:** Before running Oracle BI Applications RCU, you must copy the export dump files from the *`RCU_HOME`*`/rcu/integration/biapps/schema` directory to the *`BIDWHOST1`* and *`BIDWHOST2`* Oracle RAC database nodes. These dump files will be required when entering values in the Custom Variables screen (Figure 19–5). The directory should have read/write access since logs are written to it during the import.

For more information, see "Create the Oracle BI Applications Schemas Using RCU" in *Oracle Fusion Middleware Installation and Configuration Guide for Oracle Business Intelligence Applications*.

To run the Oracle BI Applications RCU:

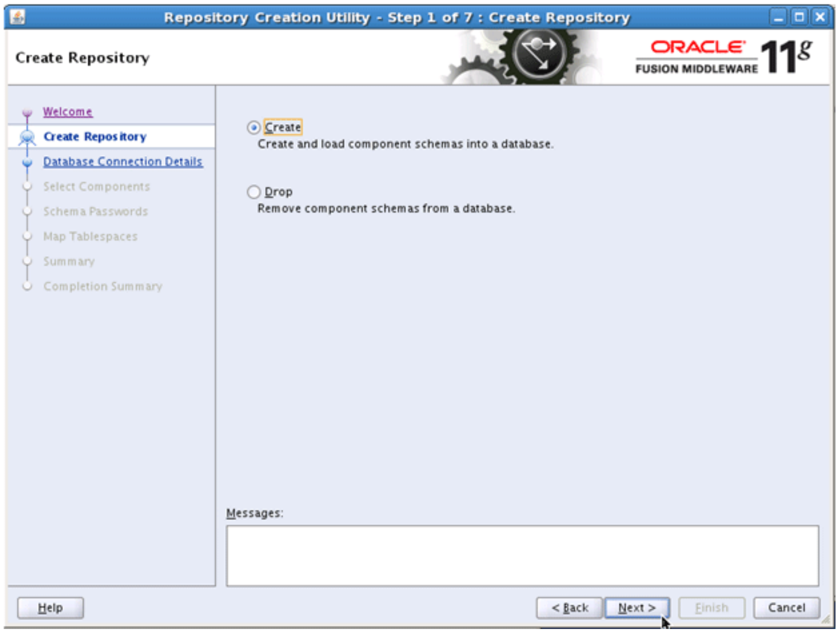
1. Unzip the *`ORACLE_BASE`*`/repository/installers/biapps_rcu/linux/rcuHomeBIApps.zip` file in the RCU home directory, and then start RCU from the bin directory in the RCU home directory:

   ```
   cd RCU_HOME/bin
   ./rcu
   ```

2. In the Welcome screen (if displayed), click **Next**.

3. In the Create Repository screen, shown in Figure 19–2, select **Create** to load component schemas into a database. Click **Next**.

Figure 19–2 Create Repository Screen



Create Repository

● Create
Create and load component schemas into a database.

○ Drop
Remove component schemas from a database.

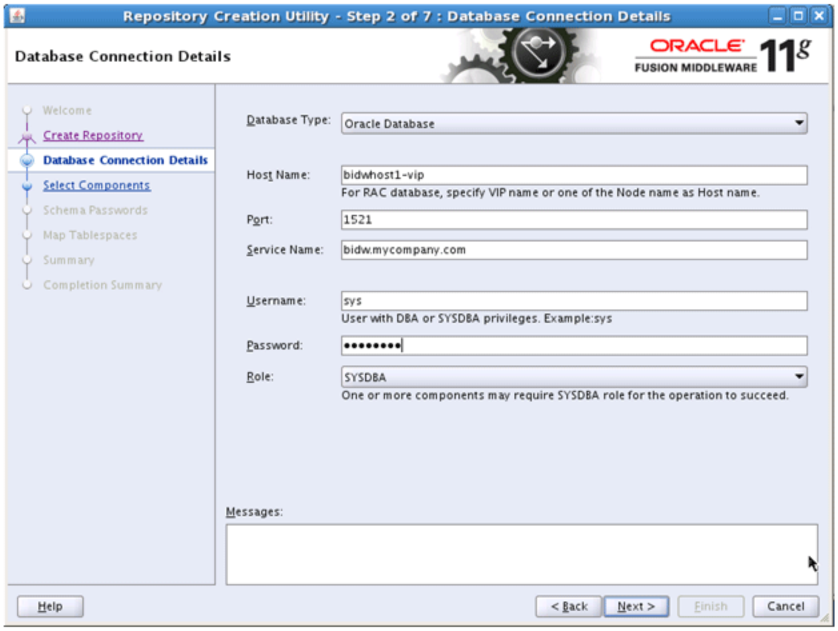
Messages:

4. In the Database Connection Details screen, shown in Figure 19–3, enter connect information for your database:

   - **Database Type**: Select **Oracle Database** from the dropdown list
   - **Host Name**: Specify the name of the node on which the database resides. For the Oracle RAC database, specify the VIP name or one of the node names as the host name: `BIDWHOST1-VIP`
   - **Port**: Specify the listen port number for the database
   - **Service Name**: Specify the service name of the database (`bidw.mycompany.com`).
   - **Username**: Specify the name of the user with DBA or SYSDBA privileges: `SYS`.
   - **Password**: Enter the password for the SYS user.
   - **Role**: Select the database user's role from the dropdown list: `SYSDBA` (required by the SYS user).

   Click **Next**.

Figure 19–3 Database Connection Details Screen



Repository Creation Utility - Step 2 of 7 : Database Connection Details

Database Connection Details

Database Type: Oracle Database

Host Name: bidwhost1-vip

For RAC database, specify VIP name or one of the Node name as Host name.

Port: 1521

Service Name: bidw.mycompany.com

Username: sys

User with DBA or SYSDBA privileges. Example:sys

Password: ••••••••

Role: SYSDBA

One or more components may require SYSDBA role for the operation to succeed.

Messages:

5. In the Select Components screen, shown in Figure 19–4, do the following:

   a. Select **Create a new Prefix**, and enter a prefix to use for the database schemas, for example `DEV` or `PROD`. You can specify up to six characters as a prefix. Prefixes are used to create logical groupings of multiple repositories in a database. For more information, see *Oracle Fusion Middleware Repository Creation Utility User's Guide*.

      Tip: Note the name of the schema because the upcoming steps require this information.

   b. First select **Oracle Application Components** and then select the following:

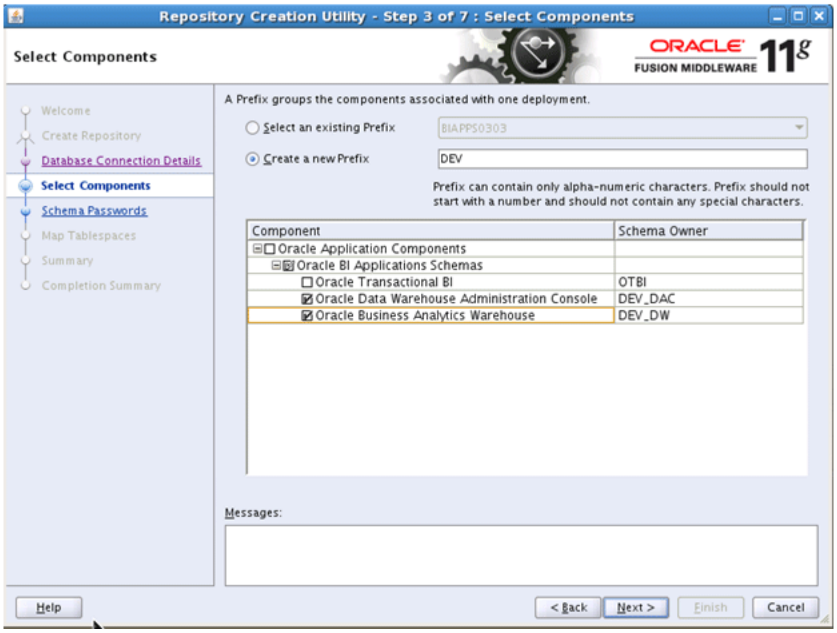
      - **Oracle BI Applications Schemas**

        - **Oracle Data Warehouse Administration Console**

        - **Oracle Business Analytics Warehouse**

   Click **Next**.

Figure 19–4 Select Components Screen



A Prefix groups the components associated with one deployment.

○ Select an existing Prefix BIAPPS0303

● Create a new Prefix DEV

Prefix can contain only alpha-numeric characters. Prefix should not start with a number and should not contain any special characters.

Component	Schema Owner
⊟☐ Oracle Application Components	
⊟☒ Oracle BI Applications Schemas	
☐ Oracle Transactional BI	OTBI
☑ Oracle Data Warehouse Administration Console	DEV_DAC
☑ Oracle Business Analytics Warehouse	DEV_DW

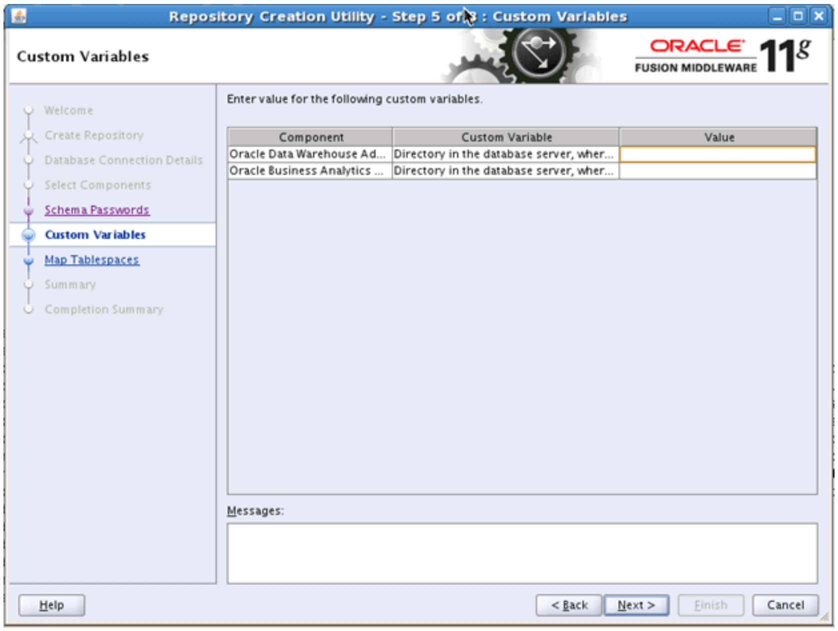
Messages:

6. In the Schema Passwords screen, enter passwords for the main and additional (auxiliary) schema users, and click **Next**.

   > **Tip:** Note the name of the schema because the upcoming steps require this information.

7. In the Custom Variables screen, shown in Figure 19–5, enter the required values.

Figure 19–5 Custom Variables Screen



Enter value for the following custom variables.

Component	Custom Variable	Value
Oracle Data Warehouse Ad...	Directory in the database server, wher...	
Oracle Business Analytics ...	Directory in the database server, wher...	

Messages:

8. In the Map Tablespaces screen, choose the tablespaces for the selected components, and click **Next**.

9. In the Summary screen, click **Create**.
10. In the Completion Summary screen, click **Close**.

19.5 Extending the Oracle Business Intelligence Domain by Deploying Oracle BI Applications Configuration Manager, Functional Setup Manager, and DAC

This section includes the following topics:

- How to Configure DAC, Oracle BI Applications Configuration Manager, and Functional Setup Manager
- Configuring Data Warehouse Administration Console for High Availability

> **Note:** The DAC, Oracle BI Applications Configuration Manager, and Oracle Fusion Functional Setup Manager, configurations are an extension of the existing Oracle Business Intelligence domain. These procedures assume that Oracle Business Intelligence has been installed and configured during the Oracle Fusion Applications Provisioning process.

19.5.1 How to Configure DAC, Oracle BI Applications Configuration Manager, and Functional Setup Manager

The DAC, Oracle BI Applications Configuration Manager, and Functional Setup Manager configuration is an extension of the existing Oracle Business Intelligence domain. In this extension, the Oracle BI Applications Configuration Manager, and Functional Setup Manager components are administration components and are targeted to the Administration Server. DAC will be targeted to the Oracle Business Intelligence Managed Server.

To extend the domain:

1. Run the WebLogic Scripting Tool (WLST) script, `*ORACLE_BASE*/products/fusionapps/bi/dwtools/scripts/install_dwtools.py` from *`FINHOST1`*. A sample script is shown in Example 19–1.

Example 19–1 Running the WLST Script

```
ORACLE_BASE/products/fusionapps/bi/common/bin/wlst.sh install_dwtools.py
'DOMAIN_HOME'
'INFORMATICA_SERVER_HOME'
'INFORMATICA_DOMAIN_FILE'
'DW_DB_URL' 'DW_DB_SCHEMA'
'MDS_DB_URL' 'MDS_DB_SCHEMA'
'DAC_DB_URL' 'DAC_SCHEMA'
'DAC_TARGET'
```

where:

- *`DOMAIN_HOME`* is the path to the Administration Server Domain Home
- *`INFORMATICA_SERVER_HOME`* is the path to the Informatica Server Home
- *`INFORMATICA DOMAIN FILE`* is the path to the Informatica `domains.infa` file location
- *`DW_DB_URL`* is the string; for example,

```
jdbc:oracle:thin:@(DESCRIPTION=
(ADDRESS_LIST=(LOAD_BALANCE=on)
(ADDRESS=(PROTOCOL=TCP)
(HOST=BIDWHOST1)(PORT=1521))(ADDRESS=
(PROTOCOL=TCP)(HOST=BIDWHOST2)
(PORT=1521)))(CONNECT_DATA=
(SERVICE_NAME=bidw.mycompany.com)))
```

- *DW_DB_SCHEMA* is the Data Warehouse schema; for example, *prefix*_DW
- *MDS_DB_URL* is the string; for example,

```
jdbc:oracle:thin:@(DESCRIPTION=
(ADDRESS_LIST=(LOAD_BALANCE=on)
(ADDRESS=(PROTOCOL=TCP)
(HOST=FUSIONDBHOST1)(PORT=1521))
(ADDRESS=(PROTOCOL=TCP)
(HOST=FUSIONDBHOST2)(PORT=1521)))
(CONNECT_DATA=
(SERVICE_NAME=fin.mycompany.com)))
```

- *MDS_DB_SCHEMA* is the MDS schema; for example, *prefix*_MDS
- *DAC_DB_URL* is the string; for example,

```
jdbc:oracle:thin:@(DESCRIPTION=
(ADDRESS_LIST=(LOAD_BALANCE=on)
(ADDRESS=(PROTOCOL=TCP)
(HOST=BIDWHOST1)(PORT=1521))(ADDRESS=
(PROTOCOL=TCP)(HOST=BIDWHOST2)
(PORT=1521)))(CONNECT_DATA=
(SERVICE_NAME=bidw.mycompany.com)))
```

- *DAC_SCHEMA* is the DAC schema; for example, *prefix*_DAC

Note: When prompted, enter the password for each of the following schemas:

- *prefix*_DW
- *prefix*_MDS
- *prefix*_DAC

- *DAC_TARGET* should be set to the Managed Server name (bi_server1) for an enterprise deployment.

Note: You must restart the Administration Server for this configuration to take effect.

2. Run the following Oracle WebLogic Scripting Tool (WLST) script from *FINHOST1*:

```
ORACLE_BASE/products/fusionapps/bi/dac/scripts/copyDACDomainFiles.py
```

For example:

```
ORACLE_BASE/products/fusionapps/bi/common/bin/wlst.sh copyDACDomainFiles.py
'ORACLE_HOME' 'DOMAIN_HOME'
```

where

- *ORACLE_HOME* is the path to Oracle home. For example, *ORACLE_BASE*/products/fusionapps/bi.
- *DOMAIN_HOME* is the path to the Managed Server domain home. For example, /u02/local/oracle/config/domains/*FINHOST1*/BIDomain.

3. Restart the Administration Server and all Managed Servers.
4. Run the following WLST script on *FINHOST1*:

```
ORACLE_BASE/products/fusionapps/bi/dwtools/scripts/configure_dwtools.py
```

For example:

```
ORACLE_BASE/products/fusionapps/bi/common/bin/wlst.sh configure_dwtools.py
'WEBLOGIC_ADMINISTRATOR'
'WEBLOGIC_ADMIN_SERVER_HOST'
'WEBLOGIC_ADMIN_SERVER_PORT'
```

You will be prompted for the WebLogic Administrator password.

5. Run the following WLST script on *FINHOST1*:

```
ORACLE_BASE/products/fusionapps/bi/dwtools/scripts/configure_rpd.py
```

For example:

```
$ cd ORACLE_BASE/products/fusionapps/bi/dwtools/scripts/
$ ORACLE_BASE/products/fusionapps/bi/common/bin/wlst.sh configure_rpd.py
'DOMAIN_HOME'
'DW_DB_URL'
'DW_DB_SCHEMA'
'MASTER_BI_INSTANCE_HOME'
'WEBLOGIC_ADMIN_SERVER_HOST'
'WEBLOGIC_ADMIN_SERVER_PORT'
'WEBLOGIC_ADMINISTRATOR'
```

where

- *DOMAIN_HOME* is the path to the Managed Server domain home. For example, /u02/local/oracle/config/domains/*FINHOST1*/BIDomain.
- *DW_DB_URL* is the string. For example,

```
jdbc:oracle:thin:@(DESCRIPTION=
(ADDRESS_LIST=(LOAD_BALANCE=on)
(ADDRESS=(PROTOCOL=TCP)
(HOST=BIDWHOST1)(PORT=1521))(ADDRESS=
(PROTOCOL=TCP)(HOST=BIDWHOST2)
(PORT=1521)))(CONNECT_DATA=
(SERVICE_NAME=bidw.mycompany.com)))
```

- *DW_DB_SCHEMA* is the Data Warehouse schema. For example, prefix_DW.
- *MASTER_BI_INSTANCE_HOME* is the path to the Master BI Server Instance home. For example, /u02/local/oracle/config/BIInstance.
- *WEBLOGIC_ADMIN_SERVER_HOST* is the Oracle WebLogic Server Administration host. For example, *FINHOST1*.
- WEBLOGIC_ADMIN_SERVER_PORT is the Oracle WebLogic Server Administration Console Port. For example, 10201.
- *WEBLOGIC_ADMINISTRATOR* is the Oracle WebLogic Server Administrator.

6. On all nodes where DAC Server can run, back up and update the `/u02/local/oracle/config/domains/FINHOST1/BIDomain/bin/setDomainEnv.sh` script.

   a. Back up the script:

   ```
   $ cd /u02/local/oracle/config/domains/FINHOST1/BIDOmain/bin
   $ cp setDomainEnv.sh setDomainEnv.sh.sav
   ```

   b. Update the script to include the following:

   ```
   # Set Informatica Environment for DAC Server
   . ${DOMAIN_HOME}/config/dac/dac_env.sh
   ```

7. For the changes to take effect, restart the Managed Servers and the System Components:

   a. On the Summary of Servers page, select the **Control** tab.

   b. Select **bi_server1** and **bi_server2** in the table and then click **Shutdown**.

   c. After the servers have shut down, select **bi_server1** and **bi_server2** in the table and then click **Start**.

   d. Run the following commands to restart the Oracle Business Intelligence system components:

   ```
   $ cd /u02/local/oracle/config/BIInstancen/bin
   $ ./opmnctl stopall
   $ ./opmnctl startall
   ```

8. Validate the Oracle BI Applications components:

   a. Log in to the Administration Server console (`http://biinternal.mycompany.com:7777/console`) and check the health and status of the Data Warehouse Administration Console Server (DACServer).

   b. Validate the following DAC URL: `http://BIVH1:10217/DACServer`.

   c. Check to ensure that the following files have been created:

   ```
   ORACLE_BASE/config/domains/FINHOST1/BIDomain/dac/conf-shared/
   server.properties

   ORACLE_BASE/config/domains/FINHOST1/BIDomain/dac/
   conf-shared/security/repository/cwallet.sso
   ```

   d. Log in to the database with the DAC schema user name and password and type the following SQL query:

   ```
   SELECT * FROM 'prefix_mds''..W_ETL_REPOS WHERE ROW_WID='DACServerURL';"
   ```

   e. Check the `VALUE` column of the result.

   The default value before configuration is `http://FINHOST1:10217/DACServer`. The hostname and port will be updated in Step 1 in Section 19.5.2.

19.5.2 Configuring Data Warehouse Administration Console for High Availability

The Data Warehouse Administration Console (DAC) Server is a singleton: only one active Oracle DAC Server is used at any given time. The Oracle WebLogic Server Migration feature is used to protect Oracle DAC server from failures. The Oracle WebLogic Managed Server in which Oracle DAC server runs is listening on a virtual IP that gets migrated to another node when the failure occurs.

For more information on server-migration features, see Chapter 18, "Setting Up Server Migration for an Enterprise Deployment."

1. Run the following WLST script to move the DAC configuration files to a new shared location:

   ```
   ORACLE_BASE/products/fusionapps/bi/dac/scripts/moveDACConfigLocation.py
   ```

   For example:

   ```
   ORACLE_BASE/products/fusionapps/bi/common/bin/wlst.sh
   moveDACConfigLocation.py 'DOMAIN_HOME' 'DAC_SHARED_LOCATION'
   ```

   where

   - *DOMAIN_HOME* is the path to the Administration Server domain home.
   - *DAC_SHARED_LOCATION* is the DAC shared location. For example, *ORACLE_BASE*/config/BIShared/dac.

2. Restart the Administration Server and Managed Servers (ensure that Node Manager is up and running):

   a. Log in to the Oracle WebLogic Server Administration Console (http://biinternal.mycompany.com:7777/console).

   b. In the Summary of Servers screen, select the **Control** tab.

   c. Select **AdminServer, bi_server1** and **bi_server2** in the table and then click **Shutdown**.

   d. Restart the AdminServer, bi_server1, and bi_server2 Managed Servers.

   e. Restart the Oracle Business Intelligence system components:

   ```
   $ cd /u02/local/oracle/config/BIInstancen/bin
   $ ./opmnctl stopall
   $ ./opmnctl startall
   ```

19.6 Configuring Oracle HTTP Server for the Managed Server

To enable Oracle HTTP Server to route to the Data Warehouse Component Managed Server, you must set the WebLogicHost parameter.

To set the WebLogicHost parameter:

1. Add the following line to the Oracle HTTP Server's /u01/oracle/config/CommonDomain_webtier*n*/config/OHS/ohs1/moduleconf/FusionVirtualHost_bi.conf file on *WEBHOST1* and *WEBHOST2*:

   ```
   RedirectMatch 301 ^/DACServer$ /DACServer/

   RedirectMatch 301 ^/biacm$ /biacm/

   # DAC Server
   <LocationMatch ^/DACServer/>
    SetHandler weblogic-handler
    WebLogicHost BIVH1
    WebLogicPort 10217
   </LocationMatch>

   ## Context roots for application biacm
   <LocationMatch ^/biacm/>
   ```

```
 SetHandler weblogic-handler
 WebLogicCluster BIADMINVH:10201
</LocationMatch>

## Context roots for application fsm
<LocationMatch /setup >
 SetHandler weblogic-handler
 WebLogicCluster BIADMINVH:10201
</LocationMatch>
```

2. Restart Oracle HTTP Server on both `WEBHOST1` and `WEBHOST2`:

```
WEBHOST1> ORACLE_BASE/config/CommonDomain_webtier/bin/opmnctl restartproc
ias-component=ohs1
WEBHOST2> ORACLE_BASE/config/CommonDomain_webtier1/bin/opmnctl restartproc
ias-component=ohs1
```

19.7 Performing Additional Data Warehouse Administration Console Tasks

Perform the following additional tasks:

1. Set the correct DACServer URL in DAC Repository using the SQL statement shown in Example 19–2.

   The DACServerURL should be set to point to the load balancer virtual server.

Example 19–2 Set the DACServer URL

```
SQL>
UPDATE "prefix_DAC"."W_ETL_REPOS" SET VALUE =
'http://biinternal.mycompany.com:7777/DACServer'
WHERE ROW_WID = 'DACServerURL';
SQL>
commit;
```

2. From the `ORACLE_BASE/config/domains/FINHOST1/BIDomain/dac` directory, start the DAC Client using `startclient.sh` and try to configure a new connection to validate the DAC Server setup. For more information, see "Logging into DAC for the First Time as an Administrator" in *Oracle Fusion Middleware User's Guide for Oracle Business Intelligence Data Warehouse Administration Console*.

> **Note:** Specify the `cwallet.sso` file in `DAC_SHARED_LOCATION`. For example, `ORACLE_BASE/config/BIShared/dac`.

19.8 Validating Oracle BI Applications Components URLs

To validate, access the following URLs:

- `http://biinternal.mycompany.com:7777/biacm` to verify the status BI Applications Configuration Manager
- `http://biinternal.mycompany.com:7777/setup/faces/TaskListManagerTop` to verify the status of Oracle Fusion Functional Setup Manager

  Also, ensure that clicking on the "Perform Functional Configurations" link from Oracle BI Applications Configuration Manager launches Functional Setup Manager.

- `http://biinternal.mycompany.com:7777/DACServer` to verify the status of the DAC Server

Verify URLs to ensure that appropriate routing is working from the HTTP Server to the DAC Server.

To verify, access `http://WEBHOST1:10621/DACServer` and verify the appropriate functionality.

20

Managing the Topology

This chapter describes some operations that you can perform after you have set up the topology. These operations include monitoring, scaling, and backing up.

This chapter includes the following topics:

- Section 20.1, "Scaling the Topology for Additional Nodes"
- Section 20.2, "Performing Backups and Recoveries"
- Section 20.3, "Monitoring the Topology"
- Section 20.4, "Migrating from a Test Environment to a Production Environment"
- Section 20.5, "Configuring Log File Rotation"
- Section 20.6, "Patching the Topology"
- Section 20.7, "Auditing"
- Section 20.8, "Troubleshooting"

> **Note:** For Oracle WebCenter Content scale out only, use the procedure described in Section 10.4, "Creating a Common Location for the Oracle WebCenter Content Managed Servers."

20.1 Scaling the Topology for Additional Nodes

You can scale out and or scale up the enterprise topology. When you scale up the topology, you add new Managed Servers to nodes that are already running on one or more Managed Servers. When you scale out the topology, you add new Managed Servers to new nodes.

This section includes the topics:

- Section 20.1.1, "Scaling Out the Topology (Adding Managed Servers to a New Node) for Oracle ADF Server"
- Section 20.1.2, "Scaling Up the Topology (Adding Managed Servers to an Existing Node) for Oracle ADF Server"
- Section 20.1.3, "Scaling Out the Topology (Adding Managed Servers to a New Node) for Oracle SOA Suite Server"
- Section 20.1.4, "Scaling Up the Topology (Adding Managed Servers to an Existing Node) for Oracle SOA Suite Server"
- Section 20.1.5, "Scaling Out the Topology (Adding Managed Servers to a New Node) for Oracle Business Intelligence"

- Section 20.1.6, "Scaling Up the Topology for Oracle Business Intelligence"

20.1.1 Scaling Out the Topology (Adding Managed Servers to a New Node) for Oracle ADF Server

When scaling out the topology, you add new Managed Servers configured to new nodes.

> **Note:** The steps provided in this section also can be used to scale out additional hosts, such as *FINHOST4*, *FINHOST5*, and so on.

20.1.1.1 Prerequisites for Scaling Out the Topology for Oracle ADF Server

Before you begin, ensure the following:

- Node Manager has been started in the Secure Sockets Layer (SSL) mode by following the instructions in Chapter 7, "Setting Up Node Manager for an Enterprise Deployment"
- You are starting with a clean machine if it is the first time it is being used for a scale out
- The `/etc/hosts` file has proper entries. To verify, ping this machine with the fully qualified name of the machine
- The user created on *FINHOST3* should the same as the user on *FINHOST1*
- The directory structure `/u01/oracle` is mounted to same shared file system as *FINHOST1*
- The directory structure `/u02/local/oracle/config` on *FINHOST3* has been created
- The initial Oracle Fusion Financials deployment on *FINHOST1* has already been done and verified by provisioning

20.1.1.2 Adding a New Machine in the Oracle WebLogic Server Console

To add a new machine:

1. Log in to the Administration Server: `http://`*`commoninternal`*`.mycompany.com:7777/console`.
2. Navigate to **CommonDomain > Environment > Machines**.

   LocalMachine is located in the right-hand pane.
3. In the left-hand pane, click **Lock & Edit**.
4. In the right-hand pane, first click **New** to add the remote machine, and then specify the following:
   - Name - enter *FINHOST3*
   - Machine operating system - Unix
5. Click **Next**.
6. In the window that opens, set the following attributes:
   - Type - SSL
   - Listen Address - <*FINHOST3*>

> **Note:** The "localhost" default value here is wrong.

- Listen port - 5556

7. Click **Finish** and activate the changes.

> **Note:** If you get an error when activating the changes, see Section 20.8.18, "Administration Console Redirects from Internal URL to Container URL after Activation" for the temporary solution.

20.1.1.3 Packing and Unpacking the Managed Server Domain Home

Since the *FINHOST1* domain directory file system is also available from *FINHOST3*, both the pack and unpack commands can be executed from the *FINHOST3*.

To pack and unpack the Managed Server domain home:

1. Change directory to *ORACLE_BASE*/products/fusionapps/oracle_common/common/bin.

2. Run the pack command. For CommonDomain, for example:

```
FINHOST3> ./pack.sh -managed=true -domain=ORACLE_BASE/config/domains/
FINHOST1/CommonDomain -template=ORACLE_BASE/user_templates/
CommonDomain_managed.jar -template_name="Common_Managed_Server_Domain"
```

3. Ensure that /u02/local/oracle/config/domains/*FINHOST3*/*CommonDomain* is empty, and then run the unpack command:

```
FINHOST3> ./unpack.sh -domain=/u02/local/oracle/config/domains/
FINHOST3/CommonDomain -template=ORACLE_BASE/user_templates/
CommonDomain_managed.jar
```

   Here, *ORACLE_BASE* is shared, and /u02/local is local to *FINHOST3*.

20.1.1.4 Cloning Managed Servers and Assigning Them to FINHOST3

To add a Managed Server and assign it to *FINHOST3*:

1. Log in to the Administration Server: http://*commoninternal*.mycompany.com:7777/console.

2. Navigate to **CommonDomain > Environment > Servers**.

3. Switch to **Lock & Edit** mode.

4. Select the ***Managed_Server*** checkbox (for example, **HomePageServer_1**) and then click **Clone**.

5. Specify the following Server Identity attributes:

   - Server Name - HomePageServer_3

> **Note:** To ensure consistency in naming, copy the name of the server shown in **Server Identity** and paste it into the **Server Name** field. Then change the number to "_3"

- Server Listen Address - <*FINHOST3*>
- Server Listen Port - leave "as is"

> **Note:** For Oracle SOA Suite server, add a port value that is different than the `soa_server1` server value. This will help in server migration.

6. Click **OK**.

   You now should see the newly cloned server, `HomePageServer_3`.

7. Click **HomePageServer_3** and change the following attributes:

   - Machine - <*FINHOST3*>
   - Cluster Name - accept the default, HomePageCluster

   > **Note:** Ensure that this cluster name is the same as the cluster name of the original Managed Server.

8. Click **Save** and then **Activate Changes**.
9. From the **Name** column, click the **HomePageServer_3** scaled-out server link.
10. Click **Lock & Edit**, and then select the **Configuration** tab.
11. Select the **Keystores** tab, and then ensure that the keystores value is **Custom Identity and Custom Trust**.
12. Do the following:

    a. Change the Custom Identity Keystore path to point to the *`ORACLE_BASE`*`/products/fusionapps/wlserver_10.3/server/lib/`*`FINHOST3`*`_fusion_identity.jks` file.

    b. Leave the Custom Identity Keystore type blank.

    c. Change the Custom Identity Keystore Passphrase entry. This should be the same as the *keystorepassword* field described in the first bullet in Step 4 in Section 7.2, "Creating the Identity Keystore on FINHOST2."

    d. Re-enter the Confirm Custom Identity Keystore Passphrase.

    e. Ensure that the Confirm Custom Trust Keystore path is pointing to the *`ORACLE_BASE`*`/products/fusionapps/wlserver_10.3/server/lib/fusion_trust.jks` file.

    f. Leave the Custom Trust Keystore type blank.

    g. Change the Custom Trust Keystore Passphrase entry. This should be the same as the *keystorepassword* field described in the first bullet in Step 4 in Section 7.2, "Creating the Identity Keystore on FINHOST2."

    h. Re-enter the Custom Trust Keystore Passphrase.

    i. Click **Save**.

13. Select the **SSL** tab.

    a. Make sure that Identity and Trust Locations is set to **Keystores**.

    b. Change the Private Key Alias to *`FINHOST3`*`_fusion`.

   c. Change the Private Key Passphrase to the *keypassword*, as described in the second bullet in Step 4 in Section 7.2, "Creating the Identity Keystore on FINHOST2."

   d. Re-enter the *keypassword* from Step c for the Confirm Private Key Passphrase.

   e. Click **Save**.

14. Select the **Server Start** tab.

    Change the Arguments to reflect the name of your cloned Managed Server and make sure the server group is the correct cluster name. For example, you should see the following:

    ```
    -DJDBCProgramName\=DS/CommonDmain/HomePageServer_3
    -Dserver.group\=HomePageCluster
    ```

    Click **Save**.

15. Select the **Logging** tab, and then select the **HTTP** tab.

16. Do the following:

    a. Change the Log file name to `logs/access.log.%yyyyMMdd%`.

    b. Change the rotation type to **By Time**.

    c. Leave the **Limit number of retained files** option unchecked.

    d. Leave the **Rotate log file on startup** option unchecked.

    e. Click **Save**.

    f. Expand **Advanced**.

    g. Change the format to **Extended**.

    h. Change the extended logging format fields to the following:

    ```
    date time time-taken cs-method cs-uri
    sc-status sc(X-ORACLE-DMS-ECID)
    cs(ECID-Context) cs(Proxy-Remote-User)
    cs(Proxy-Client-IP)
    ```

    i. Click **Save**.

17. Click **Activate Changes**.

18. Repeat Steps 2 to 17 for all the newly cloned Managed Servers on this domain.

19. Set the following environment variable on *FINHOST3*:

    ```
    WLST_PROPERTIES="-Dweblogic.security.SSL.trustedCAKeyStore=ORACLE_BASE/
    products/fusionapps/wlserver_10.3/server/lib/fusion_trust.jks"
    ```

20. Restart the domain's Administration Server on *FINHOST3*:

    ```
    FINHOST3> ORACLE_BASE/products/fusionapps/wlserver_10.3/common/bin/wlst.sh

    FINHOST3> nmConnect(username='<username>', password='<password>',
    domainName='CommonDomain', host='FINHOST1',port='5556',
    nmType='ssl', domainDir='ORACLE_BASE/config/domains/FINHOST1/CommonDomain')

    FINHOST3> nmStart('AdminServer')
    ```

> **Note:** The *username* and *password* used in the nmConnect are the Node Manager credentials (username and password) specified when creating the provisioning response file. This is shown in Figure 5–3 in "Using the Provisioning Process to Install Components for an Enterprise Deployment".

21. Run the newly created Managed Servers:

    a. Log in to the Administration Server: http://*commoninternal*.mycompany.com:7777/console.

    b. Navigate to **CommonDomain** > **Environment** > **Servers** > **Control**.

    c. Check the newly created Managed Servers and click **Start**.

    d. Navigate to **CommonDomain** > **Environment** > **Servers** and check the **State** to verify that the newly created Managed Servers are running.

20.1.1.5 Validating the System

You should verify URLs to ensure that the appropriate routing and failover are working.

To verify the URLs:

1. Log in to the CommonDomain Oracle WebLogic Server Administration Console and stop all the Managed Servers on the *FINHOST1* while the Managed Servers on *FINHOST3* while the are running.
2. Access the following URL to verify that routing and failover are functioning properly. (Ensure the log in prompt is visible.)

   ```
   https://commonexternal.mycompany.com/homePage/faces/AtkHomePageWelcome
   ```
3. Log in to the CommonDomain Oracle WebLogic Server Administration Console and stop all the Managed Servers on *FINHOST3*.
4. Start the Managed Servers on *FINHOST1*.
5. Repeat Step 2. (Ensure the log in prompt is visible.)
6. Start all the Managed Servers on *FINHOST3* and verify that they are running on *FINHOST1* and *FINHOST3*.

20.1.2 Scaling Up the Topology (Adding Managed Servers to an Existing Node) for Oracle ADF Server

Before performing the procedures in this section, ensure that CommonDomain and its Managed Servers are running.

20.1.2.1 Cloning Managed Servers and Assigning Them to FINHOST3

To add a Managed Server and assign it to *FINHOST3*:

1. Log in to the Administration Server: http://*commoninternal*.mycompany.com:7777/console.
2. Navigate to **CommonDomain** > **Environment** > **Servers**.
3. Switch to **Lock & Edit** mode.

4. Select the ***Managed_Server*** checkbox (for example, **HomePageServer_1**) and then click **Clone**.
5. Specify the following Server Identity attributes:
   - Server Name - `HomePageServer_4`

     Note: To ensure consistency in naming, copy the name of the server shown in **Server Identity** and paste it into the **Server Name** field. Then change the number to "_4".

   - Server Listen Address - <*FINHOST3*>
   - Server Listen Port - leave "Give an unused port on the machine *FINHOST3*"
6. Click **OK**.
7. Navigate back to **CommonDomain > Environment > Servers**. You now should see the newly cloned server, `HomePageServer_4`.
8. Click **HomePageServer_4** and change the following attributes:
   - Machine - <*FINHOST3*>
   - Cluster Name - accept the default, HomePageCluster

     Note: Ensure that this cluster name is the same as the cluster name of the original Managed Server.

9. From **HomePageServer_4**, click **Advanced** and then select the **WebLogic Plug-In Enabled** checkbox.
10. Click **Save**.
11. Run the newly created Managed Server:
    a. Navigate to **CommonDomain > Environment**.
    b. From the **Navigation** pane on the Oracle WebLogic Server console, select **Activate Changes**.
    c. Navigate to **CommonDomain > Environment > Servers > Control**.
    d. Check the newly created Managed Server and click **Start**.
    e. Navigate to **CommonDomain > Environment > Servers** and check the **State** to verify that the newly created Managed Servers are running.
12. Log in to the Administration Server once again (`http://`*`commoninternal`*`.mycompany.com:7777/console`) and verify that all the Managed Servers, including scaled-up servers, are running.
13. Select the **Server Start** tab.

    Change the Arguments to reflect the name of your cloned Managed Server and make sure the server group is the correct cluster name. For example, you should see the following:

    ```
    -DJDBCProgramName\=DS/CommonDmain/HomePageServer_4
    -Dserver.group\=HomePageCluster
    ```

    Click **Save**.

14. Select the **Logging** tab, and then select the **HTTP** tab.
15. Do the following:
    a. Change the Log file name to `logs/access.log.%yyyyMMdd%`.
    b. Change the rotation type to **By Time**.
    c. Leave the **Limit number of retained files** option unchecked.
    d. Leave the **Rotate log file on startup** option unchecked.
    e. Click **Save**.
    f. Expand **Advanced**.
    g. Change the format to **Extended**.
    h. Change the extended logging format fields to the following:

    ```
    date time time-taken cs-method cs-uri
    sc-status sc(X-ORACLE-DMS-ECID)
    cs(ECID-Context) cs(Proxy-Remote-User)
    cs(Proxy-Client-IP)
    ```

    i. Click **Save**.
16. Click **Activate Changes**.
17. Restart the Managed Server for the changes to take affect.

20.1.2.2 Validating the System

You should verify URLs to ensure that the appropriate routing and failover are working.

To verify the URLs:

1. Log in to the `CommonDomain` Oracle WebLogic Server Administration Console and stop the `HomePageServer_1`, `HomePageServer_2`, and `HomePageServer_3` Managed Servers on *`FINHOST1`*, *`FINHOST2`*, and *`FINHOST3`*.
2. Perform Step 2 in Section 9.6, "Oracle HTTP Server Configuration," for the scaled-up server.
3. Access the following URL to verify that routing and failover are functioning properly. (Ensure the log in prompt is visible.)

   ```
   https://commonexternal.mycompany.com/homePage/faces/AtkHomePageWelcome
   ```

4. Log in to the `CommonDomain` Oracle WebLogic Server Administration Console and stop the `HomePageServer_4` Managed Server on *`FINHOST3`*.
5. Start the `HomePageServer_1` Managed Server on *`FINHOST1`*.
6. Repeat Step 3. (Ensure the log in prompt is visible.)
7. Start all the Managed Servers on *`FINHOST3`* and verify that they are running on *`FINHOST1`* and *`FINHOST3`*.

20.1.3 Scaling Out the Topology (Adding Managed Servers to a New Node) for Oracle SOA Suite Server

When scaling out the topology, you add new Managed Servers configured to new nodes.

20.1.3.1 Prerequisites for Scaling Out the Topology for Oracle SOA Suite Server

Before you begin, ensure the following:

- Node Manager has been started in the Secure Sockets Layer (SSL) mode by following the instructions in Chapter 7, "Setting Up Node Manager for an Enterprise Deployment"
- You are starting with a clean machine if it is the first time it is being used for a scale out
- The `/etc/hosts` file has proper entries. To verify, ping this machine with the fully qualified name of the machine
- The user created on *`FINHOST3`* should the same as the user on *`FINHOST1`*
- The directory structure `/u01/oracle` is mounted to same shared file system as *`FINHOST1`*
- The directory structure `/u02/local/oracle/config` on *`FINHOST3`* has been created
- The initial Oracle Fusion Financials deployment on *`FINHOST1`* has already been done and verified by provisioning

20.1.3.2 Adding a New Machine in the Oracle WebLogic Server Console

If you have not already added*`FINHOST3`*, follow these steps:

1. Log in to the Administration Server:
   `http://`*`fininternal`*`.mycompany.com:7777/console`.
2. Navigate to **FinancialDomain > Environment > Machines**.

   LocalMachine is located in the right-hand pane.
3. In the left-hand pane, click **Lock & Edit**.
4. In the right-hand pane, first click **New** to add the remote machine, and then specify the following:
   - Name - enter *`FINHOST3`*
   - Machine operating system - Unix
5. Click **Next**.
6. In the window that opens, set the following attributes:
   - Type - SSL
   - Listen Address - <*`FINHOST3`*>

   Note: The "localhost" default value here is wrong.

   - Listen port - 5556
7. Click **Finish** and activate the changes.

   Note: If you get an error when activating the changes, see Section 20.8.18, "Administration Console Redirects from Internal URL to Container URL after Activation" for the temporary solution.

20.1.3.3 Packing and Unpacking the Managed Server Domain Home

Since the *FINHOST1* domain directory file system is also available from *FINHOST3*, both the pack and unpack commands can be executed from the *FINHOST3*.

To pack and unpack the Managed Server domain home:

1. Change directory to *ORACLE_BASE*/products/fusionapps/oracle_common/common/bin.
2. Run the pack command. For example, for FinancialDomain:

   ```
   FINHOST3> ./pack.sh -managed=true -domain=ORACLE_BASE/config/domains/
   FINHOST1/FinancialDomain -template=ORACLE_BASE/user_templates/
   FinancialDomain_managed.jar -template_name="Financial_Managed_Server_Domain"
   ```

3. Run the unpack command:

   ```
   FINHOST3> ./unpack.sh -domain=/u02/local/oracle/config/domains/
   FINHOST3/FinancialDomain -template=ORACLE_BASE/user_templates/FinancialDomain_
   managed.jar
   ```

   Here, *ORACLE_BASE* is shared, and /u02/local is local to *FINHOST3*.

20.1.3.4 Cloning Managed Servers and Assigning Them to FINHOST3

To add a Managed Server and assign it to *FINHOST3*:

1. Log in to the Administration Server: http://*fininternal*.mycompany.com:7777/console.
2. Navigate to **FinancialDomain > Environment > Servers**.
3. Switch to **Lock & Edit** mode.
4. Select the ***Managed_Server*** checkbox (for example, **soa_server1**) and then click **Clone**.
5. Specify the following Server Identity attributes:
   - Server Name - soa_server3

     Note: To ensure consistency in naming, copy the name of the server shown in **Server Identity** and paste it into the **Server Name** field. Then change the number to "_3".

   - Server Listen Address - <*FINHOST3*>
   - Server Listen Port - leave "as is"

     Note: For Oracle SOA Suite server, add a port value that is different than the soa_server1 server value. This will help in server migration.

6. Click **OK**.
7. Navigate back to **FinancialDomain > Environment > Servers**. You now should see the newly cloned sales server, soa_server3.
8. Click **soa_server3** and change the following attributes:

- Machine - <*FINHOST3*>
- Cluster Name - accept the default, SOACluster

> **Note:** Ensure that this cluster name is the same as the cluster name of the original Managed Server.

9. From **soa_server3**, click **Advanced** and then select the **WebLogic Plug-In Enabled** checkbox.
10. Run the newly created Managed Server:
    a. Navigate to **FinancialDomain > Environment**.
    b. From the **Navigation** pane on the Oracle WebLogic Server console, select **Activate Changes**.
    c. Navigate to **FinancialDomain > Environment > Servers > Control**.
    d. Check the newly created Managed Server and click **Start**.
    e. Navigate to **FinancialDomain > Environment > Servers** and check the **State** to verify that the newly created Managed Servers are running.
11. From the **Name** column, select the scaled-out server, `soa_server3`.
12. Click **Lock & Edit**, and then select the **Configuration** tab.
13. Select the **Keystores** tab, and then ensure that the keystores value is **Custom Identity and Custom Trust**.
14. Do the following:
    a. Change the Custom Identity Keystore path to point to the `*ORACLE_BASE*/products/fusionapps/wlserver_10.3/server/lib/*FINHOST3*_fusion_identity.jks` file.
    b. Leave the Custom Identity Keystore type blank.
    c. Change the Custom Identity Keystore Passphrase entry. This should be the same as the *keystorepassword* field described in the first bullet in Step 4 in Section 7.2, "Creating the Identity Keystore on FINHOST2."
    d. Re-enter the Confirm Custom Identity Keystore Passphrase.
    e. Ensure that the Confirm Custom Trust Keystore path is pointing to the `*ORACLE_BASE*/products/fusionapps/wlserver_10.3/server/lib/fusion_trust.jks` file.
    f. Leave the Custom Trust Keystore type blank.
    g. Change the Custom Trust Keystore Passphrase entry. This should be the same as the *keystorepassword* field described in the first bullet in Step 4 in Section 7.2, "Creating the Identity Keystore on FINHOST2."
    h. Re-enter the Custom Trust Keystore Passphrase.
    i. Click **Save**.
15. Select the **SSL** tab.
    a. Make sure that Identity and Trust Locations is set to **Keystores**.
    b. Change the Private Key Alias to `*FINHOST3*_fusion`.

   c. Change the Private Key Passphrase to the *keypassword*, as described in the second bullet in Step 4 in Section 7.2, "Creating the Identity Keystore on FINHOST2."

   d. Re-enter the *keypassword* from Step c for the Confirm Private Key Passphrase.

   e. Click **Save**.

16. Select the **Server Start** tab.

    Change the Arguments to reflect the name of your cloned Managed Server and make sure the server group is the correct cluster name. For example, you should see the following:

    ```
    -DJDBCProgramName\=DS/FinancialDomain/soa_server3
    -Dserver.group\=SOACluster
    ```

    Click **Save**.

17. Select the **Logging** tab, and then select the **HTTP** tab.

18. Do the following:

    a. Change the Log file name to `logs/access.log.%yyyyMMdd%`.

    b. Change the rotation type to **By Time**.

    c. Leave the **Limit number of retained files** option unchecked.

    d. Leave the **Rotate log file on startup** option unchecked.

    e. Click **Save**.

    f. Expand **Advanced**.

    g. Change the format to **Extended**.

    h. Change the extended logging format fields to the following:

    ```
    date time time-taken cs-method cs-uri
    sc-status sc(X-ORACLE-DMS-ECID)
    cs(ECID-Context) cs(Proxy-Remote-User)
    cs(Proxy-Client-IP)
    ```

    i. Click **Save**.

19. Click **Activate Changes**.

20. Set the following variable:

    ```
    WLST_PROPERTIES="-Dweblogic.security.SSL.trustedCAKeyStore=ORACLE_BASE/
    products/fusionapps/wlserver_10.3/server/lib/fusion_trust.jks"
    ```

21. Restart the domain's Administration Server on *FINHOST3*:

    ```
    FINHOST3> ORACLE_BASE/products/fusionapps/wlserver_10.3/common/bin/wlst.sh

    FINHOST3> nmConnect(username='username', password='password',
    domainName='FinancialDomain', host='FINHOST1',port='5556',
    nmType='ssl', domainDir='/u01/oracle/config/domains/FINHOST1/FinancialDomain')

    FINHOST3> nmStart('AdminServer')
    ```

Note: The *username* and *password* used in the `nmConnect` are the Node Manager credentials (username and password) specified when creating the provisioning response file. This is shown in Figure 5–3 in "Using the Provisioning Process to Install Components for an Enterprise Deployment".

20.1.3.5 Validating the System

You should verify URLs to ensure that the appropriate routing and failover is working from Oracle HTTP Server to the SalesCluster.

To verify the URLs:

1. Log in to the `FinancialDomain` Oracle WebLogic Server Administration Console and stop all the Managed Servers on the *`FINHOST1`* while the Managed Servers on *`FINHOST3`* are running.
2. Access the following URLs to verify that routing and failover are functioning properly. (Ensure the log in prompt is visible.)
   - `http://fininternal.mycompany.com:7777/soa-infra`
3. Log in to the `FinancialDomain` Oracle WebLogic Server Administration Console and stop all the Managed Servers on *`FINHOST3`*.
4. Start the Managed Servers on *`FINHOST1`*.
5. Repeat Step 2. (Ensure the log in prompt is visible.)
6. Start all the Managed Servers on *`FINHOST3`* and verify that they are running on *`FINHOST1`* and *`FINHOST3`*.

20.1.3.6 Additional Configuration Procedures for Scaling Out Oracle SOA Suite Server

At this point, `soa_server1` and `soa_server3` are running on *`FINHOST1`* and *`FINHOST3`*.

Note: For Oracle Fusion Customer Relationship Management, the Oracle SOA Suite virtual IPs for *`FINHOST1`* and *`FINHOST3`* are called *`FINSOAVH1`* and *`FINSOAVH3`*.

This section includes the following topics:

- Enabling Virtual IPs on FINHOST3
- Setting the Listen Address for soa_server3
- Configuring JMS for the Oracle SOA Suite Server
- Configuring Oracle Coherence for Deploying Composites
- Disabling Host Name Verification for the soa_servern Managed Servers
- Restarting Node Manager on FINHOST3

- Starting and Validating soa_server3 on FINHOST3

20.1.3.6.1 Enabling Virtual IPs on FINHOST3 To enable the virtual IPs on Linux:

> **Note:** In this example ethX is the ethernet interface (eth0 or eth1) and Y is the index (0, 1, 2, and so on).

1. Run the ifconfig command as root:

   ```
   /sbin/ifconfig interface:index IPAddress netmask netmask
   ```

   For example:

   ```
   /sbin/ifconfig ethX:Y 100.200.140.206 netmask 255.255.255.0
   ```

2. Enable your network to register the new location of the virtual IP:

   ```
   /sbin/arping -q -U -c 3 -I interface IPAddress
   ```

   For example:

   ```
   /sbin/arping -q -U -c 3 -I ethX 100.200.140.206
   ```

3. Validate that the address is available by pinging it from another node.

   For example:

   ```
   /bin/ping 100.200.140.206
   ```

20.1.3.6.2 Setting the Listen Address for soa_server3 Ensure that you have performed the steps described in Section 16.1 before setting the soa_server3 listen address.

To set the listen address for the Managed Server:

1. Log in to the Administration Console.
2. In the Change Center, click **Lock & Edit**.
3. Expand the **Environment** node in the Domain Structure window.
4. Click **Servers**. The Summary of Servers page is displayed.
5. Select **soa_server3** in the table. The Settings page for soa_server3 is displayed.
6. Set the **Listen Address** to *FINSOAVH3*.
7. Click **Save**.
8. Click **Activate Changes**.
9. The changes will not take effect until the soa_server3 Managed Server is restarted (ensure that Node Manager is up and running):
   a. On the Summary of Servers page, select the **Control** tab.
   b. Select **soa_server3** in the table and then click **Shutdown**.
   c. After the server has shut down, select **soa_server3** in the table and then click **Start**.

20.1.3.6.3 Updating the FusionVirtualHost_fin.conf Configuration File For information, see Section 16.4, "Updating the FusionVirtualHost_fin.conf Configuration File."

20.1.3.6.4 Configuring JMS for the Oracle SOA Suite Server After *FINHOST1*has been provisioned, the JMS server and file store are set up and configured for *FINHOST1*. You now must configure the file store for *FINHOST3*. Configure the location for all persistence stores to a directory visible from both nodes.

To configure the file store for *FINHOST3*:

1. Log in to the Oracle WebLogic ServerAdministration Console.
2. In the Domain Structure window, expand the **Services** node and then click the **Persistence Stores** node.

   The Summary of Persistence Stores page appears.
3. Click **Lock & Edit**.
4. Click **New**, and then **Create File Store**.
5. Enter a name (for example, `SOAJMSFileStore_auto_3`), and a target, `soa_server3`:

   ```
   ORACLE_BASE/config/domains/FINHOST1/FinancialDomain
   ```
6. Click **OK** and activate the changes.
7. In the Domain Structure window, expand the **Services** node and then click the **Messaging > JMS Servers** node.

   The Summary of JMS Servers page appears.
8. Click **Lock & Edit**.
9. Click **New**.
10. Enter a name (for example, `SOAJMSServer_3`), then select **SOAJMSFileStore_auto_3** in the Persistence Store dropdown list.
11. Click **Next**.
12. Select **soa_server3** as the target.
13. Click **Finish** and **Activate Changes**.
14. In the Domain Structure window, expand the **Services** node and then click the **Messaging > JMS Modules** node.

    The JMS Modules page appears.
15. In the Change Center, click **Lock & Edit**.
16. Click **SOAJMSModule** and then click the **Subdeployments** tab.
17. Select **SOAJMSServer** under **Subdeployments**.
18. Add the new `SOAJMSServer_3` as additional targets for the subdeployment.
19. Click **Save** and **Activate Changes**.

20.1.3.6.5 Configuring Oracle Coherence for Deploying Composites Although deploying composites uses multicast communication by default, Oracle recommends using unicast communication instead in SOA enterprise deployments. Use unicast if you disable multicast communication for security reasons.

> **Note:** An incorrect configuration of the Oracle Coherence framework that is used for deployment may prevent the SOA system from starting. The deployment framework must be properly customized for the network environment on which the SOA system runs. Oracle recommends the configuration described in this section.

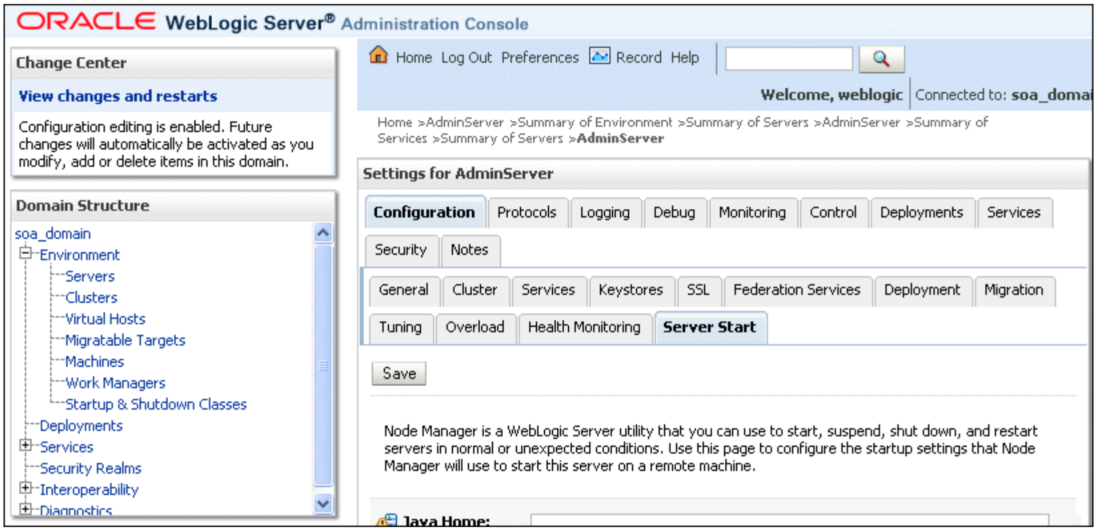
Multicast communication enables Oracle Fusion Middleware SOA to discover all of the members of a cluster to which it deploys composites dynamically. However, unicast communication does not enable nodes to discover other cluster members in this way. Consequently, you must specify the nodes that belong to the cluster. You do not need to specify all of the nodes of a cluster, however. You need only specify enough nodes so that a new node added to the cluster can discover one of the existing nodes. As a result, when a new node has joined the cluster, it is able to discover all of the other nodes in the cluster. Additionally, in configurations such as SOA enterprise deployments, where multiple IPs are available in the same box, you must configure Oracle Coherence to use a specific host name to create the Oracle Coherence cluster.

> **Tip:** To guarantee high availability during deployments of SOA composites, specify enough nodes so that at least one of them is running at any given time.

Specify the nodes using the `tangosol.coherence.wka` *`n`* system property, where *`n`* is the number for each Oracle HTTP Server. The numbering starts at 1. This numbering must be sequential and must not contain gaps. In addition, specify the host name used by Oracle Coherence to create a cluster through the `tangosol.coherence.localhost` system property. This local host name should be the virtual host name used by the SOA server as the listener addresses. Set this property by adding the `-Dtangosol.coherence.localhost` parameters to the Arguments field of the Oracle WebLogic Server Administration Console's Server Start tab, shown in Figure 20–1.

> **Note:** *`FINSOAVH1`* is the virtual host name that maps to the virtual IP where `soa_server1` is listening (in *`FINHOST1`*). *`FINSOAVH3`* is the virtual host name that maps to the virtual IP where `soa_server3` is listening (in *`FINHOST3`*).

Figure 20–1 Setting the Host Name



ORACLE WebLogic Server® Administration Console
Change Center
View changes and restarts
Domain Structure
soa_domain
Environment
Servers
Clusters
Virtual Hosts
Migratable Targets
Machines
Work Managers
Startup & Shutdown Classes
Deployments
Services
Security Realms
Interoperability
Diagnostics
Home Log Out Preferences Record Help
Welcome, weblogic
Connected to: soa_domai
Home >AdminServer >Summary of Environment >Summary of Servers >AdminServer >Summary of Services >Summary of Servers >AdminServer
Settings for AdminServer
Configuration Protocols Logging Debug Monitoring Control Deployments Services
Security Notes
General Cluster Services Keystores SSL Federation Services Deployment Migration
Tuning Overload Health Monitoring Server Start
Save
Java Home:

Configuration editing is enabled. Future changes will automatically be activated as you modify, add or delete items in this domain.

Node Manager is a WebLogic Server utility that you can use to start, suspend, shut down, and restart servers in normal or unexpected conditions. Use this page to configure the startup settings that Node Manager will use to start this server on a remote machine.

To add the host name used by Oracle Coherence:

1. Log in to the Oracle WebLogic Server Administration Console.
2. In the Domain Structure window, expand the **Environment** node.
3. Click **Servers**.

   The Summary of Servers page appears.

4. Select **soa_server1** (represented as a hyperlink) in the table.

   The Settings page appears.

5. Click **Lock & Edit**.

6. Click the **Server Start** tab (shown in Figure 20–1).

7. Enter the following for `soa_server1` and `soa_server3` into the **Arguments** field.

   For `soa_server1`, enter the following:

   ```
   -Dtangosol.coherence.wka1=FINSOAVH1
   -Dtangosol.coherence.wka2=FINSOAVH3
   -Dtangosol.coherence.localhost=FINSOAVH1
   -Dtangosol.coherence.localport=8089
   -Dtangosol.coherence.wka1.port=8089
   -Dtangosol.coherence.wka2.port=8089
   ```

   For `soa_server3`, enter the following:

   ```
   -Dtangosol.coherence.wka1=FINSOAVH3
   -Dtangosol.coherence.wka2=FINSOAVH1
   -Dtangosol.coherence.localhost=FINSOAVH3
   -Dtangosol.coherence.localport=8089
   -Dtangosol.coherence.wka1.port=8089
   -Dtangosol.coherence.wka2.port=8089
   ```

   > **Note:** There should be no breaks in lines between the different `-D` parameters. Do not copy or paste the code from above to your Administration Console's Arguments text field. This may result in HTML tags being inserted in the Java arguments. The code should not contain other characters than those included in the example above.

8. Click **Save** and **Activate Changes**.

   > **Note:** You must ensure that these variables are passed to the Managed Server correctly. (They should be reflected in the server's output log.) Failure of the Oracle Coherence framework can prevent the soa-infra application from starting.

   > **Note:** The multicast and unicast addresses are different from the ones used by the Oracle WebLogic Server cluster for cluster communication. Oracle SOA Suite guarantees that composites are deployed to members of a single Oracle WebLogic Server cluster even though the communication protocol for the two entities (the Oracle WebLogic Server cluster and the groups to which composites are deployed) are different.

   > **Note:** The Oracle Coherence cluster used for deployment uses port 8088 by default. This port can be changed by specifying the `-Dtangosol.coherence.wkaX.port` startup parameter.

20.1.3.6.6 Disabling Host Name Verification for the soa_server*n* Managed Servers This step is required if you have not set up the appropriate certificates to authenticate the different nodes with the Administration Server. By default, Host Name Verification should be set to `None`. If it is not, follow the steps below.

If you have not configured the server certificates, you will receive errors when managing the different WebLogic servers. To avoid these errors, disable host name verification while setting up and validating the topology, and enable it again once the enterprise deployment topology configuration is complete.

To disable Host Name Verification:

1. Log in to Oracle WebLogic Server Administration Console. For example, `http:/fininternal.mycompany.com:777/console`.
2. Click **Lock & Edit**.
3. Expand the **Environment** node in the Domain Structure window.
4. Click **Servers**.

   The Summary of Servers page appears.
5. Select **soa_server3** (represented as a hyperlink) in the table.

   The Settings page appears.
6. Select the **SSL** tab.
7. Expand the **Advanced** section of the page.
8. Set **Hostname Verification** to **None**.
9. Click **Save** and activate the changes.

20.1.3.6.7 Restarting Node Manager on FINHOST3 To restart Node Manager on *`FINHOST3`*, follow the steps in Section 16.9, "Restarting Node Manager on FINHOST1."

20.1.3.6.8 Starting and Validating soa_server3 on FINHOST3 To start the `soa_server3` Managed Server on *`FINHOST3`* and ensure that it is configured correctly:

1. From the Administration Console, start the `soa_server3` Managed Server.
2. Verify that the server status is reported as "Running" in the Administration Console. If the server is shown as "Starting" or "Resuming," wait for the server status to change to "Started." If another status is reported (such as "Admin" or "Failed"), check the server output log files for errors.
3. Access `http://`*`FINSOAVH3`*`:9024/soa-infra` and `http://`*`fininternal`*`.mycompany.com:7777/soa-infra`.

20.1.4 Scaling Up the Topology (Adding Managed Servers to an Existing Node) for Oracle SOA Suite Server

Before performing the procedures in this section, ensure that `CommonDomain` and its Managed Servers are running.

20.1.4.1 Cloning Managed Servers and Assigning Them to FINHOST3

To add a Managed Server and assign it to *`FINHOST3`*:

1. Log in to the Administration Server: `http://`*`fininternal`*`.mycompany.com:7777/console`.

2. Navigate to **FinancialDomain > Environment > Servers**.
3. Switch to **Lock & Edit** mode.
4. Select the ***Managed_Servers*** checkbox (for example, **soa_server3**) and then click **Clone**.
5. Specify the following Server Identity attributes:
   - Server Name - `soa_server4`

     > **Note:** To ensure consistency in naming, copy the name of the server shown in **Server Identity** and paste it into the **Server Name** field. Then change the number to "_4".

   - Server Listen Address - <*FINHOST3*>
   - Server Listen Port - leave "Give an unused port on the machine *FINHOST3*"
6. Click **OK**.
7. Navigate back to **FinancialDomain > Environment > Servers**. You now should see the newly cloned SOA server, `soa_server4`.
8. Click **soa_server4** and change the following attributes:
   - Machine - <*FINHOST3*>
   - Cluster Name - Default, FIN_SOACluster
9. From **soa_server4**, click **Advanced** and then select the **WebLogic Plug-In Enabled** checkbox.
10. Click **Save**.
11. Run the newly created Managed Servers:
    a. Navigate to **FinancialDomain > Environment**.
    b. From the **Navigation** pane on the Oracle WebLogic Server console, select **Activate Changes**.
    c. Navigate to **FinancialDomain > Environment > Servers > Control**.
    d. Check the newly created Managed Servers and click **Start**.
    e. Navigate to **FinancialDomain > Environment > Servers** and check the **State** to verify that the newly created Managed Servers are running.
12. Log in to the Administration Server once again (`http://`*`fininternal`*`.mycompany.com:7777/console`) and verify that all the Managed Servers, including scaled-up servers, are running.

20.1.4.2 Validating the System

You should verify URLs to ensure that the appropriate routing and failover is working from Oracle HTTP Server to the SalesCluster.

To verify the URLs:

1. Log in to the `FinancialDomain` Oracle WebLogic Server Administration Console and stop the `soa_server1`, `soa_server2`, and `soa_server3` Managed Servers on *FINHOST1*, *FINHOST2*, and *FINHOST3*.

2. Perform Step 2 in Section 9.6, "Oracle HTTP Server Configuration," for the scaled-up server.
3. Access the following URLs to verify that routing and failover are functioning properly. (Ensure the log in prompt is visible.)
   - `http://fininternal.mycompany.com:7777/soa-infra`
4. Log in to the `FinancialDomain` Oracle WebLogic Server Administration Console and stop the `soa_server4` Managed Server on *`FINHOST3`*.
5. Start the Managed Servers on *`FINHOST1`*.
6. Repeat Step 2. (Ensure the log in prompt is visible.)
7. Start all the Managed Servers on *`FINHOST2`* and verify that they are running on *`FINHOST1`*.

20.1.5 Scaling Out the Topology (Adding Managed Servers to a New Node) for Oracle Business Intelligence

When scaling out the topology, you add a new Managed Server and set of system components to a new node in your topology (*`FINHOST3`*). This procedure assumes that you already have an enterprise topology that includes two nodes, with a Managed Server and a full set of system components on each node.

20.1.5.1 Prerequisites for Scaling Out the Topology for Oracle Business Intelligence

Before performing the steps in this section, ensure that you meet these requirements:

- There must be existing nodes running Oracle Business Intelligence Managed Servers within the topology.
- The new node (*`FINHOST3`*) can access the existing home directories for Oracle WebLogic Server and Oracle Business Intelligence.
- When an *`FA_MW_HOME`* or *`WL_HOME`* is shared by multiple servers in different nodes, it is recommended that you keep the Oracle Inventory and Middleware home list in those nodes updated for consistency in the installations and application of patches. To update the `oraInventory` in a node and "attach" an installation in a shared storage to it, use *`ORACLE_BASE`*`/products/fusionapps/bi/oui/bin/attachHome.sh`. To update the Middleware home list to add or remove a *`WL_HOME`*, edit the *`ORACLE_BASE`*`/products/fusionapps/.home file`. See the steps below.
- You must ensure that all shared storage directories are available on the new node. Ensure that all shared directories are available on all nodes, except for the *`ORACLE_INSTANCE`* directory and the domain directory for the scaled-out Managed Server.

  Also, if you are using shared storage for the identity keystore and trust keystore that hold your host name verification certificates, make sure that the shared storage directory is accessible from the scaled-out node (*`FINHOST3`*). If you are using local directories for your keystores, follow the steps in Section 7.2, "Creating the Identity Keystore on FINHOST2." to create and configure a local identity keystore for the scaled-out node.

  For example, mount the following directories:

  – Transaction Log directory

  – JMS Persistence Store

- Global Cache
- BI Presentation Catalog
- BI Repository Publishing directory
- BI Publisher Catalog
- BI Publisher Configuration Keystore (certs)
- *MW_HOME*

20.1.5.2 Scale-Out Procedure for Oracle Business Intelligence

To scale out Oracle Business Intelligence on *FINHOST3*:

1. On *FINHOST3*, mount the existing Middleware home, which should include the Oracle Business Intelligence installation and (optionally, if the domain directory for Managed Servers in other nodes resides on shared storage) the domain directory, and ensure that the new node has access to this directory, just like the rest of the nodes in the domain.

2. Run the following command to attach *ORACLE_BASE*/products/fusionapps/oracle_common in shared storage to the local Oracle Inventory:

   ```
   FINHOST3> cd ORACLE_BASE/products/fusionapps/oracle_common/oui/bin/
   FINHOST3> ./attachHome.sh -jreLoc ORACLE_BASE/products/fusionapps/jdk6
   ```

   To update the Middleware home list, create (or edit, if another WebLogic installation exists in the node) the *ORACLE_BASE*/products/fusionapps/.home file and add *ORACLE_BASE*/products/fusionapps to it.

3. Start Node Manager:

   a. Stop any Node Manager running on *FINHOST3*.

   b. Change directory to *ORACLE_BASE*/products/fusionapps/wlserver_10.3/common/nodemanager and edit the nodemanager.properties file with the following:

      ```
      SecureListener=false
      ```

   c. Change directory to *ORACLE_BASE*/products/fusionapps/oracle_common/common/bin and run the following script:

      ```
      ./setNMProps.sh
      ```

   d. Change directory to *ORACLE_BASE*/products/fusionapps/wlserver_10.3/server/bin and run the following script:

      ```
      ./startNodeManager.sh
      ```

      Node Manager starts on *FINHOST3*.

   > **Note:** Steps b through d will enable Node Manager on *FINHOST3* and the Administrator Console to communicate on Plain Socket.

4. Run the Configuration Assistant from one of the shared Oracle homes, using the steps in Section 15.5.1, "Scaling Out the Oracle Business Intelligence System on FINHOST2"as a guide.

5. Scale out the system components on *FINHOST3*, using the steps in Section 15.5.3, "Scaling Out the System Components" as a guide.
6. Configure the `bi_server3` Managed Server by setting the Listen Address and disabling host name verification, using the steps in Section 15.5.5, "Configuring the bi_server2 Managed Server" as a guide.
7. Configure JMS for Oracle BI Publisher, as described in Section 15.5.6.3.3, "Configuring JMS for BI Publisher."
8. Configure Oracle BI for Microsoft Office on *FINHOST3*, as described in Section 15.5.6.4, "Additional Configuration Tasks for Oracle BI for Microsoft Office."
9. Set the location of the default persistence store for `bi_server3`, as described in Section 15.5.7, "Configuring a Default Persistence Store for Transaction Recovery."
10. Configure Oracle HTTP Server for *BIVH3* using the steps in Section 15.4.3, "Updating the FusionVirtualHost_bi.conf Configuration File"as a guide.
11. Start the `bi_server3` Managed Server and the system components running on *FINHOST3*. See Section 15.5.8, "Starting and Validating Oracle Business Intelligence on FINHOST2"for details.
12. Set up server migration for the new node, as described in the following sections:
    - Section 7.2, "Creating the Identity Keystore on FINHOST2"
    - Section 18.2.4, "Editing Node Manager's Properties File"
    - Section 18.2.5, "Setting Environment and Superuser Privileges for the wlsifconfig.sh Script"
    - Section 18.2.6, "Configuring Server Migration Targets"
    - Section 18.2.7, "Testing the Server Migration"
13. Access the following URLS to validate the configuration:
    - `http://BIVH3:10217/analytics` to verify the status of `bi_server3`.
    - `http://BIVH3:10217/wsm-pm` to verify the status of Web Services Manager. Click **Validate Policy Manager**. A list of policies and assertion templates available in the data is displayed.

      Note: The configuration is incorrect if no policies or assertion templates appear.

    - `http://BIVH3:10217/xmlpserver` to verify the status of the Oracle BI Publisher application.
    - `http://BIVH3:10217/ui` to verify the status of the Oracle Real-Time Decisions application.
    - `http://BIVH3:10217:/mapviewer` to verify the status of the map view functionality in Oracle BI EE.
    - `http://BIVH3:10217/hr` to verify Financial Reporting.
    - `http://BIVH3:10217/calcmgr/index.htm` to verify Calculation Manager.
    - `http://BIVH3:10217/aps/Test` to verify APS.
    - `http://BIVH3:10217/workspace` to verify workspace

Oracle recommends using host name verification for the communication between Node Manager and the servers in the domain. This requires the use of certificates for the different addresses communicating with the Administration Server and other servers. See Chapter 7, "Setting Up Node Manager for an Enterprise Deployment" for further details.

20.1.6 Scaling Up the Topology for Oracle Business Intelligence

This procedure assumes that you already have an enterprise topology that includes two nodes, with a Managed Server and a full set of system components on each node. To scale up the topology, you increase the number of system components running on one of your existing nodes.

Note that it is not necessary to run multiple Managed Servers on a given node.

20.1.6.1 Scale-Up Procedure for Oracle Business Intelligence

To scale up Oracle Business Intelligence on *FINHOST3*:

1. Log in to Fusion Middleware Control.
2. Expand the **Business Intelligence** node in the Farm_BIDomain window.
3. Click **coreapplication**.
4. Click **Capacity Management**, then click **Scalability**.
5. Click **Lock & Edit** and then change the number of BI Servers, Presentation Servers, or Java Hosts using the arrow keys.

> **Note:** To avoid port conflicts for the system components being scaled within the given Oracle WebLogic Server instance, enter a different range of available ports in the **Port Range From** and **Port Range To** fields. For example, change **Port Range From** to `10221` and **Port Range To** to `10300`.

6. Click **Apply**, then click **Activate Changes**.
7. Click **Restart** to apply recent changes.
8. Click **Restart** under **Manage System**.
9. Click **Yes** in the confirmation dialog.

20.2 Performing Backups and Recoveries

Table 20–1 lists the static artifacts to back up in the 11*g* Oracle Fusion Financials enterprise deployment.

Table 20–1 Static Artifacts to Back Up in the 11g CRM Enterprise Deployment

Type	Host	Location	Tier
ORACLE HOME (DB)	*FUSIONDBHOST1* and *FUSIONDBHOST2*	The location is user-defined. Generally, `/u01/oracle`.	Data tier
MW HOME (Oracle HTTP Server)	*WEBHOST1* and *WEBHOST2*	*ORACLE_BASE*/products *ORACLE_BASE*/config	Web tier

Table 20–1 (Cont.) Static Artifacts to Back Up in the 11g CRM Enterprise Deployment

Type	Host	Location	Tier
MW HOME (/APPS_HOME)	*FINHOST1* and *FINHOST2*	*ORACLE_BASE*/products *ORACLE_BASE*/config	Application tier
Installation-related files		/u01/oracle/repository, OraInventory, .home, oraInst.loc, oratab	N/A

Table 20–2 lists the run-time artifacts to back up in the 11*g* Oracle Fusion Financials enterprise deployment.

Table 20–2 Run-Time Artifacts to Back Up in the 11g CRM Enterprise Deployment

Type	Host	Location	Tier
DOMAIN HOME	*FINHOST1* and *FINHOST2*	/u02/local/oracle/config/domains/HOSTNAME/domain_name	Application tier
Application artifacts (EAR and WAR files)	*FINHOST1* and *FINHOST2*	Find the application artifacts by viewing all of the deployments through the administration console.	Application tier
Oracle HTTP Server instance home	*WEBHOST1* and *WEBHOST2*	*ORACLE_BASE*/config/CommonDomain_webtier	Web tier
Oracle RAC databases	*FUSIONDBHOST1* and *FUSIONDBHOST2*	The location is user-defined.	Data tier

For more information on backup and recovery of Oracle Fusion Middleware components, see *Oracle Fusion Middleware Administrator's Guide*.

20.3 Monitoring the Topology

For information on monitoring the Oracle Fusion Customer Relationship Management topology, see the following documents:

- *Oracle Fusion Middleware System Administrator's Guide for Oracle Content Server*
- *Oracle WebCenter Content Application Administrator's Guide for Content Server*
- *Oracle Fusion Middleware Administrator's Guide for Oracle Imaging and Process Management*

20.4 Migrating from a Test Environment to a Production Environment

For information, see "Moving Components for Oracle Fusion Applications Across Environments" in the *Oracle Fusion Applications Administrator's Guide*.

20.5 Configuring Log File Rotation

An **ODL log** is a set of log files that includes the current ODL log file and zero or more **ODL Archives (segment files)** that contain older messages. As the log file grows, new information is added to the end of the log file, *server_name*-diagnostic.log. When the log file reaches the rotation point, it is renamed and a new log file, *server_name*-diagnostic.log is created. You specify the rotation point, by specifying the maximum ODL segment size, or, for the log files of some components, the rotation time and rotation frequency.

Segment files are created when the ODL log file *server_name*-diagnostic.log reaches the rotation point. That is, the *server_name*-diagnostic.log is renamed to *server_name*-diagnostic-*n*.log, where *n* is an integer, and a new *server_name*-diagnostic.log file is created when the component generates new diagnostic messages.

To limit the size of the ODL log, you can specify:

- The maximum size of the logging directory. Whenever the sum of the sizes of all of the files in the directory reaches the maximum, the oldest archive is deleted to keep the total size under the specified limit.

  By default, the log files are rotated when they reach 10 MB. The maximum size of all log files for a particular component is 100 MB.

- The maximum size of the log file. You specify that a new log file be created when a specific time or frequency is reached.

> **Note:** After you change the log file rotation, the configuration is reloaded dynamically. It may take 1 or 2 seconds to reload the configuration.

The following topics describe how to change the rotation:

- Section 20.5.1, "Specifying Log File Rotation Using Oracle Enterprise Manager"
- Section 20.5.2, "Specifying Log File Rotation Using WLST"

20.5.1 Specifying Log File Rotation Using Oracle Enterprise Manager

To configure log file rotation using Oracle Enterprise Manager for a component:

1. Log in to the component (for example, `http://crminternal.mycompany.com/em`).
2. From the navigation pane, select the component (for example, navigate to **Farm_CommonDomain > WebLogic Domain >CommonDomain > ESSCluster > ess_server1**).
3. Select **ess_server1**.
4. From the WebLogic Server dropdown list, select **Logs > Log Configuration**, then select the **Log Files** tab.

   > **Note:** The WebLogic Server dropdown list is located at the top left corner of the right panel.

5. In the table, select the logger and click **Edit Configuration.**

   The Edit Log File dialog box is displayed.

6. In the Rotation Policy section, you can select one of the following:

   - **Size Based:** If you select this, enter the following:
     - For **Maximum Log File Size,** enter the size in MB, for example, 15.
     - For **Maximum Size of All Log Files,** enter the size in MB, for example, 150.
   - **Time Based:** If you select this, enter the following:

- For **Start Time,** enter the date when you want the rotation to start. For example, enter 10-SEP-2009.
- For **Frequency,** you can select **Minutes** and enter the number of minutes, or you can select **Hourly, Daily,** or **Weekly.**
- For **Retention Period,** you can specify how long the log files are kept. You can select **Minutes** and enter the number of minutes, or you can specify **Day, Week**, **Month,** or **Year.**

  Specifying a shorter period means that you use less disk space, but are not able to retrieve older information.

7. Click **OK.**
8. In the confirmation window, click **Close.**

20.5.2 Specifying Log File Rotation Using WLST

To specify log file rotation using WLST, use the `configureLogHandler` command. You can specify size-based rotation or time-based rotation.

For example, to specify that the log files rotate daily and that they are retained for a week, use the following command:

```
configureLogHandler(name='odl-handler', rotationFrequency='daily',
                    retentionPeriod='week')
```

To specify that the size of a log file does not exceed 5MB and rotates when it reaches that size, use the following command:

```
configureLogHandler(name='odl-handler', maxFileSize='5M')
```

20.6 Patching the Topology

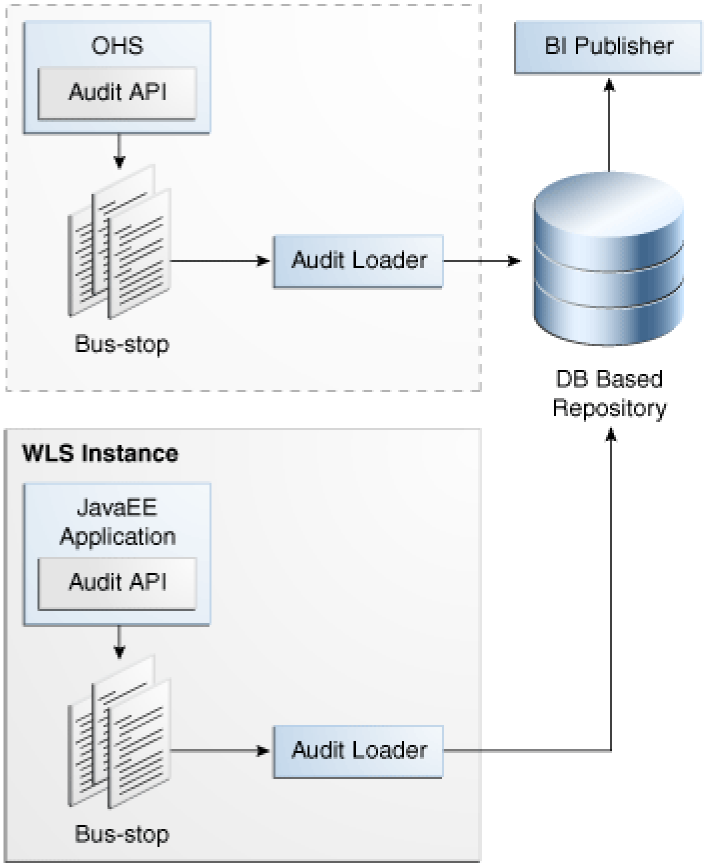
For information, see the *Oracle Fusion Applications Patching Guide*.

20.7 Auditing

Oracle Fusion Middleware Audit Framework is a new service in Oracle Fusion Middleware 11*g*, designed to provide a centralized audit framework for the middleware family of products. The framework provides audit service for platform components such as Oracle Platform Security Services (OPSS) and Oracle Web Services. It also provides a framework for JavaEE applications, starting with Oracle's own JavaEE components. JavaEE applications will be able to create application-specific audit events. For non-JavaEE Oracle components in the middleware, such as C or JavaSE components, the audit framework also provides an end-to-end structure similar to that for JavaEE applications.

Figure 20–2 is a high-level architectural diagram of the Oracle Fusion Middleware Audit Framework.

Figure 20–2 Audit Event Flow



The Oracle Fusion Middleware Audit Framework consists of the following key components:

- **Audit APIs:** These are APIs provided by the audit framework for any audit-aware components integrating with the Oracle Fusion Middleware Audit Framework. During run time, applications may call these APIs, where appropriate, to audit the necessary information about a particular event happening in the application code. The interface allows applications to specify event details such as user name and other attributes needed to provide the context of the event being audited.
- **Audit Events and Configuration:** The Oracle Fusion Middleware Audit Framework provides a set of generic events for convenient mapping to application audit events. Some of these include common events such as authentication. The framework also allows applications to define application-specific events.

  These event definitions and configurations are implemented as part of the audit service in Oracle Platform Security Services. Configurations can be updated through Enterprise Manager (UI) and WebLogic Scripting Tool (WLST) command-line tool.
- **Audit Bus-stop:** Bus-stops are local files containing audit data before they are pushed to the audit repository. In the event where no database repository is configured, these bus-stop files can be used as a file-based audit repository. The bus-stop files are simple text files that can be queried easily to look up specific audit events. When a DB-based repository is in place, the bus-stop acts as an intermediary between the component and the audit repository. The local files are

periodically uploaded to the audit repository based on a configurable time interval.

- **Audit Loader:** As the name implies, the audit loader loads the files from the audit bus-stop into the audit repository. In the case of platform and JavaEE application audit, the audit loader is started as part of the JavaEE container start-up. In the case of system components, the audit loader is a periodically spawned process.
- **Audit Repository:** The audit repository contains a predefined Oracle Fusion Middleware Audit Framework schema, created by Repository Creation Utility (RCU). Once configured, all the audit loaders are aware of the repository and upload data to it periodically. The audit data in the audit repository is expected to be cumulative and will grow over time. Ideally, this should not be an operational database used by any other applications; rather, it should be a standalone RDBMS used for audit purposes only. In a highly available configuration, Oracle recommends that you use an Oracle Real Application Clusters (RAC) database as the audit data store.
- **Oracle Business Intelligence Publisher:** The data in the audit repository is exposed through predefined reports in Oracle Business Intelligence Publisher. The reports allow users to drill down the audit data based on various criteria. For example:
  - User name
  - Time range
  - Application type
  - Execution context identifier (ECID)

For more introductory information for the Oracle Fusion Middleware Audit Framework, see the "Introduction to Oracle Fusion Middleware Audit Framework" chapter in the *Oracle Fusion Middleware Application Security Guide*.

For information on how to configure the repository for Oracle Fusion Middleware Audit Framework, see the "Configuring and Managing Auditing" chapter in the *Oracle Fusion Middleware Application Security Guide*.

The enterprise deployment topology does not include Oracle Fusion Middleware Audit Framework configuration. The ability to generate audit data to the bus-stop files and the configuration of the audit loader will be available once the products are installed. The main consideration is the audit database repository where the audit data is stored. Because of the volume and the historical nature of the audit data, it is strongly recommended that customers use a separate database from the operational store or stores being used for other middleware components.

20.8 Troubleshooting

This section covers the following topics:

- Section 20.8.1, "Page Not Found When Accessing soa-infra Application Through Load Balancer"
- Section 20.8.2, "soa-infra Application Fails to Start Due to Deployment Framework Issues (Coherence)"
- Section 20.8.3, "Incomplete Policy Migration After Failed Restart of SOA Server"
- Section 20.8.4, "Oracle SOA Suite Server Fails to Start Due to Maximum Number of Processes Available in Database"

- Section 20.8.5, "Administration Server Fails to Start After a Manual Failover"
- Section 20.8.6, "Error While Activating Changes in Administration Console"
- Section 20.8.7, "SOA Server Not Failed Over After Server Migration"
- Section 20.8.8, "SOA Server Not Reachable From Browser After Server Migration"
- Section 20.8.9, "Oracle Access Manager Configuration Tool Does Not Remove URLs"
- Section 20.8.10, "Redirecting of Users to Login Screen After Activating Changes in Administration Console"
- Section 20.8.11, "Redirecting of Users to Administration Console's Home Page After Activating Changes to OAM"
- Section 20.8.12, "Configured JOC Port Already in Use"
- Section 20.8.13, "Out-of-Memory Issues on Managed Servers"
- Section 20.8.14, "JDBC Connection Reset Appears When on OEL 5.4"
- Section 20.8.15, "Missing JMS Instances on Oracle BI Publisher Scheduler Diagnostics Page"
- Section 20.8.16, "Oracle BI Publisher Jobs in Inconsistent State After Managed Server Shutdown"
- Section 20.8.17, "JMS Instance Fails in an Oracle BI Publisher Cluster"
- Section 20.8.18, "Administration Console Redirects from Internal URL to Container URL after Activation"

20.8.1 Page Not Found When Accessing soa-infra Application Through Load Balancer

Problem: A 404 "page not found" message is displayed in the web browser when you try to access the soa-infra application using the load balancer address. The error is intermittent and Oracle SOA Suite servers appear as "Running" in the WLS Administration Console.

Solution: Even when the Oracle SOA Suite Managed Servers may be up and running, some of the applications contained in them may be in Admin, Prepared or other states different from Active. The soa-infra application may be unavailable while the Oracle SOA Suite server is running. Check the Deployments page in the Administration Console to verify the status of the soa-infra application. It should be in "Active" state. Check the Oracle SOA Suite server's output log for errors pertaining to the soa-infra application and try to start it from the Deployments page in the Administration Console.

20.8.2 soa-infra Application Fails to Start Due to Deployment Framework Issues (Coherence)

Problem: The soa-infra application fails to start after changes to the Coherence configuration for deployment have been applied. The Oracle SOA Suite server output log reports the following:

```
Cluster communication initialization failed. If you are using multicast, Please
make sure multicast is enabled on your network and that there is no interference
on the address in use. Please see the documentation for more details.
```

Solutions:

- When using multicast instead of unicast for cluster deployments of Oracle SOA Suite composites, a message similar to the above may appear if a multicast conflict arises when starting the soa-infra application (that is, starting the Managed Server on which Oracle SOA Suite runs). These messages, which occur when Oracle Coherence throws a run-time exception, also include the details of the exception itself. If such a message appears, check the multicast configuration in your network. Verify that you can ping multicast addresses. In addition, check for other clusters that may have the same multicast address but have a different cluster name in your network, as this may cause a conflict that prevents soa-infra from starting. If multicast is not enabled in your network, you can change the deployment framework to use unicast as described in *Oracle Coherence Developer's Guide*.
- When entering well-known address list for unicast (in server start parameters), make sure that the node's addresses entered for the localhost and clustered servers are correct. Error messages like the following are reported in the server's output log if any of the addresses is not resolved correctly:

```
oracle.integration.platform.blocks.deploy.CompositeDeploymentCoordinatorMessage
s errorUnableToStartCoherence
```

20.8.3 Incomplete Policy Migration After Failed Restart of SOA Server

Problem: The SOA server fails to start through the administration console *before* setting Node Manager property `startScriptEnabled=true`. The server does not come up after the property is set either. The SOA Server output log reports the following:

```
SEVERE: <.> Unable to Encrypt data
Unable to Encrypt data.
Check installation/post-installation steps for errors. Check for errors during SOA
server startup.

ORABPEL-35010
 .
Unable to Encrypt data.
Unable to Encrypt data.
Check installation/post-installation steps for errors. Check for errors
 during SOA server startup.
 .
 at
oracle.bpel.services.common.util.EncryptionService.encrypt(EncryptionService.java:
56)
...
```

Solution: Incomplete policy migration results from an unsuccessful start of the first SOA server in a cluster. To enable full migration, edit the `<jazn-policy>` element the system-jazn-data.xml file to grant permission to bpm-services.jar:

```
<grant>
  <grantee>
    <codesource>
<url>file:${oracle.home}/soa/modules/oracle.soa.workflow_11.1.1/bpm-services.jar
</url>
    </codesource>
  </grantee>
  <permissions>
    <permission>
      <class>java.security.AllPermission</class>
    </permission>
  </permissions>
</grant>
```

20.8.4 Oracle SOA Suite Server Fails to Start Due to Maximum Number of Processes Available in Database

Problem: A Oracle SOA Suite server fails to start. The domain has been extended for new types of Managed Server or the system has been scaled up (added new servers of the same type). The Oracle SOA Suite server output log reports the following:

```
<Warning> <JDBC> <BEA-001129> <Received exception while creating connection for
pool "SOADataSource-rac0": Listener refused the connection with the following
error:

ORA-12516, TNS:listener could not find available handler with matching protocol
stack >
```

Solution: Verify the number of processes in the database and adjust accordingly. As the SYS user, issue the `SHOW PARAMETER` command:

```
SQL> SHOW PARAMETER processes
```

Set the initialization parameter using the following command:

```
SQL> ALTER SYSTEM SET processes=greater than 2500 SCOPE=SPFILE
```

Restart the database.

> **Note:** The method that you use to change a parameter's value depends on whether the parameter is static or dynamic, and on whether your database uses a parameter file or a server parameter file. See the *Oracle Database Administrator's Guide* for details on parameter files, server parameter files, and how to change parameter values.

20.8.5 Administration Server Fails to Start After a Manual Failover

Problem: Administration Server fails to start after the Administration Server node failed and manual failover to another nodes is performed. The Administration Server output log reports the following:

```
<Feb 19, 2009 3:43:05 AM PST> <Warning> <EmbeddedLDAP> <BEA-171520> <Could not
obtain an exclusive lock for directory: ORACLE_BASE/admin/edg_domain/aserver/edg_
domain/servers/AdminServer/data/ldap/ldapfiles. Waiting for 10 seconds and then
retrying in case existing WebLogic Server is still shutting down.>
```

Solution: When restoring a node after a node crash and using shared storage for the domain directory, you may see this error in the log for the Administration Server due to unsuccessful lock cleanup. To resolve this error, remove the file *`ORACLE_HOME`*`/config/domains/FINHOST1/DomainName/servers/AdminServer/data/ldap/ldapfiles/EmbeddedLDAP.lok`.

20.8.6 Error While Activating Changes in Administration Console

Problem: Activation of changes in Administration Console fails after changes to a server's start configuration have been performed. The Administration Console reports the following when clicking **Activate Changes**:

```
An error occurred during activation of changes, please see the log for details.
```

```
 [Management:141190]The commit phase of the configuration update failed with an
exception:
In production mode, it's not allowed to set a clear text value to the property:
PasswordEncrypted of ServerStartMBean
```

Solution: This may happen when start parameters are changed for a server in the Administration Console. In this case, provide user name/password information in the server start configuration in the Administration Console for the specific server whose configuration was being changed.

20.8.7 SOA Server Not Failed Over After Server Migration

Problem: After reaching the maximum restart attempts by local Node Manager, Node Manager in the failover node tries to restart it, but the server does not come up. The server seems to be failed over as reported by Node Manager's output information. The VIP used by the SOA server is not enabled in the failover node after Node Manager tries to migrate it (if config in the failover node does not report the VIP in any interface). Executing the command `sudo ifconfig $INTERFACE $ADDRESS $NETMASK` does not enable the IP in the failover node.

Solution: The rights and configuration for `sudo` execution should not prompt for a password. Verify the configuration of `sudo` with your system administrator so that `sudo` works without a password prompt.

20.8.8 SOA Server Not Reachable From Browser After Server Migration

Problem: Server migration is working (SOA server is restarted in the failed over node), but the `Virtual_Hostname:8001/soa-infra` URL cannot be accessed in the web browser. The server has been "killed" in its original host and Node Manager in the failover node reports that the VIP has been migrated and the server started. The VIP used by the SOA server cannot be pinged from the client's node (that is, the node where the browser is being used).

Solution: The `arping` command executed by Node Manager to update ARP caches did not broadcast the update properly. In this case, the node is not reachable to external nodes. Either update the nodemanager.properties file to include the MACBroadcast or execute a manual arping:

```
/sbin/arping -b -q -c 3 -A -I INTERFACE ADDRESS > $NullDevice 2>&1
```

Where *INTERFACE* is the network interface where the virtual IP is enabled and *ADDRESS* is the virtual IP address.

20.8.9 Oracle Access Manager Configuration Tool Does Not Remove URLs

Problem: The Oracle Access Manager Configuration Tool has been used and a set of URLs was added to the policies in Oracle Access Manager. One of multiple URLs had a typo. Executing the Oracle Access Manager Configuration Tool again with the correct URLs completes successfully; however, when accessing Policy Manager, the incorrect URL is still there.

Solution: The Oracle Access Manager Configuration Tool only adds new URLs to existing policies when executed with the same `app_domain` name. To remove a URL, use the Policy Manager Console in Oracle Access Manager. Log on to the Access Administration site for Oracle Access Manager, click on My Policy Domains, click on the created policy domain (SOA_EDG), then on the Resources tab, and remove the incorrect URLs.

20.8.10 Redirecting of Users to Login Screen After Activating Changes in Administration Console

Problem: After configuring Oracle HTTP Server and LBR to access the Oracle WebLogic Administration Console, some activation changes cause the redirection to the login screen for the Administration Console.

Solution: This is the result of the console attempting to follow changes to port, channel, and security settings as a user makes these changes. For certain changes, the console may redirect to the Administration Server's listen address. Activation is completed regardless of the redirection. It is not required to log in again; users can simply update the URL to `fin.mycompany.com/console/console.portal` and directly access the home page for the Administration Console.

> **Note:** This problem will not occur if you have disabled tracking of the changes described in this section.

20.8.11 Redirecting of Users to Administration Console's Home Page After Activating Changes to OAM

Problem: After configuring OAM, some activation changes cause the redirection to the Administration Console's home page (instead of the context menu where the activation was performed).

Solution: This is expected when OAM SSO is configured and the Administration Console is set to follow configuration changes (redirections are performed by the Administration Server when activating some changes). Activations should complete regardless of this redirection. For successive changes not to redirect, access the Administration Console, select Preferences, then Shared Preferences, and deselect the "Follow Configuration Changes" check box.

20.8.12 Configured JOC Port Already in Use

Problem: Attempts to start a Managed Server that uses the Java Object Cache (JOC), such as OWSM Managed Servers, fail. The following errors appear in the logs:

```
J2EE JOC-058 distributed cache initialization failure
J2EE JOC-043 base exception:
J2EE JOC-803 unexpected EOF during read.
```

Solution: Another process is using the same port that JOC is attempting to obtain. Either stop that process, or reconfigure JOC for this cluster to use another port in the recommended port range.

20.8.13 Out-of-Memory Issues on Managed Servers

Problem: You are experiencing out-of-memory issues on Managed Servers.

Solution: Increase the size of the memory heap allocated for the Java VM to at least one gigabyte:

1. Log in to the Oracle WebLogic Administration Console.
2. Click **Environment**, then **Servers**.

3. Click on a Managed Server name.
4. Open the **Configuration** tab.
5. Open the **Server Start** tab in the second row of tabs.
6. Include the memory parameters in the **Arguments** box, for example:

   ```
   -Xms3072m -Xmx1024m -XX:CompileThreshold=8000 -XX:PermSize=128m
   -XX:MaxPermSize=1024m
   ```

   > **Note:** Please note that the memory parameter requirements may differ between various Java Virtual Machines (Sun, JRockit, or others). See "Increasing the Java VM Heap Size for Managed Servers" in the *Oracle Fusion Middleware Installation Guide for Oracle Enterprise Content Management Suite* for further details.

7. Save the configuration changes.
8. Restart all running Managed Servers.

20.8.14 JDBC Connection Reset Appears When on OEL 5.4

Problem: When you are on Oracle Enterprise Linux (OEL) 5.4, a Java Database Connectivity (JBDC) connection reset appears.

Solutions:

- Upgrade to OEL 5.6.
- As root, do the following:
  1. Download and install the `rngd` tool.
  2. Execute the following commands (in order):

     ```
     rngd -r /dev/urandom -o /dev/random

     cat /proc/sys/kernel/random/entropy_avail
     ```

  3. Ensure that entropy returns a number greater than 1000.

20.8.15 Missing JMS Instances on Oracle BI Publisher Scheduler Diagnostics Page

In some cases, only one JMS instance is visible on the Oracle BI Publisher Scheduler diagnostics page, rather than all instances in the cluster. This issue is most likely caused by clocks being out of sync. For more information on the importance of synchronizing clocks on all nodes in the cluster, see "Clock Synchronization" in the chapter "Database and Environment Preconfiguration" in *Oracle Fusion Middleware Enterprise Deployment Guide for Oracle Business Intelligence*.

20.8.16 Oracle BI Publisher Jobs in Inconsistent State After Managed Server Shutdown

Before shutting down the Managed Server on which Oracle BI Publisher is running, it is a best practice (but not mandatory) to wait for all running Oracle BI Publisher jobs to complete, or to cancel any unfinished jobs using the Report Job History page. Otherwise, the shutdown might cause some jobs to incorrectly stay in a running state.

20.8.17 JMS Instance Fails in an Oracle BI Publisher Cluster

On rare occasions, a JMS instance is missing from an Oracle BI Publisher Scheduler cluster. To resolve this issue, restart the Oracle BI Publisher application from the Oracle WebLogic Server Administration Console.

To restart Oracle BI Publisher:

1. Log in to the Administration Console.
2. Click **Deployments** in the Domain Structure window.
3. Select **bipublisher(11.1.1)**.
4. Click **Stop**.
5. After the application stops, click **Start**.

20.8.18 Administration Console Redirects from Internal URL to Container URL after Activation

Log in to the Administration Console and do the following:

1. Click **Preferences** in the top navigation bar.
2. Select the **Shared Preferences** tab.
3. De-select **Follow Configuration Changes**.
4. Click **Save**.

A

Deploying Administrative Clients for Oracle Fusion Applications

In typical Oracle Fusion Applications deployment there are a number of administrative clients, or thick clients, from which end users (functional administrators) must have direct access to application servers or file systems via Hypertext Transfer Protocol (HTTP) or socket connections.

Some administrative-client applications are the following:

- FR (Financial Reporting) Studio
- Oracle BI Enterprise Edition Administrative client
- Oracle Business Intelligence Catalog Manager
- Oracle WebCenter Content: Imaging document-provider clients, such as
  - Oracle Forms Recognition (OFR Verifier, OFR Designer)
  - Oracle Document Capture
  - Mail Server for Oracle Document Capture
  - Inbound fax tools
- File Transfer Protocol (FTP) Server (and the ability for the end user to upload files)
- Oracle JDeveloper
- ODI (Oracle Data Integrator) Studio

Thick clients are usually installed on Windows servers, which sometimes sit unattended on end users' desktops at a customer location. Such open connections to sensitive data (such as that housed in a data center) are highly vulnerable to security breaches, and security best practices generally do not allow this kind of configuration.

This chapter describes how to address these security loopholes.

A.1 Recommended Solution

In order to close potential security loopholes, all administrative thick clients should be installed on host Windows servers that have secured HTTP remote desktop connections (RDCs). These servers should be located in each data center.

A separate administrative subnet, acting like an administrative demilitarized zone (DMZ) for thick clients, should be created in each data center to host the Windows servers.

End users (customers) will access the thick clients by logging in to the Windows servers through a virtual private network (VPN), and either a secured HTTP RDC or socket connection. Only the thick clients on the Windows servers in the administrative subnet will have access to application servers or file systems in a data center.

Note: Since some client components, such as Oracle WebCenter Content: Imaging and FTP, are only integrated with socket connections, enforcing VPN access is required.

Figure A–1 shows the overall topology of the administrative subnet and its client components. Figure A–2 shows the topology details.

Figure A–1 Administrative Subnet Topology

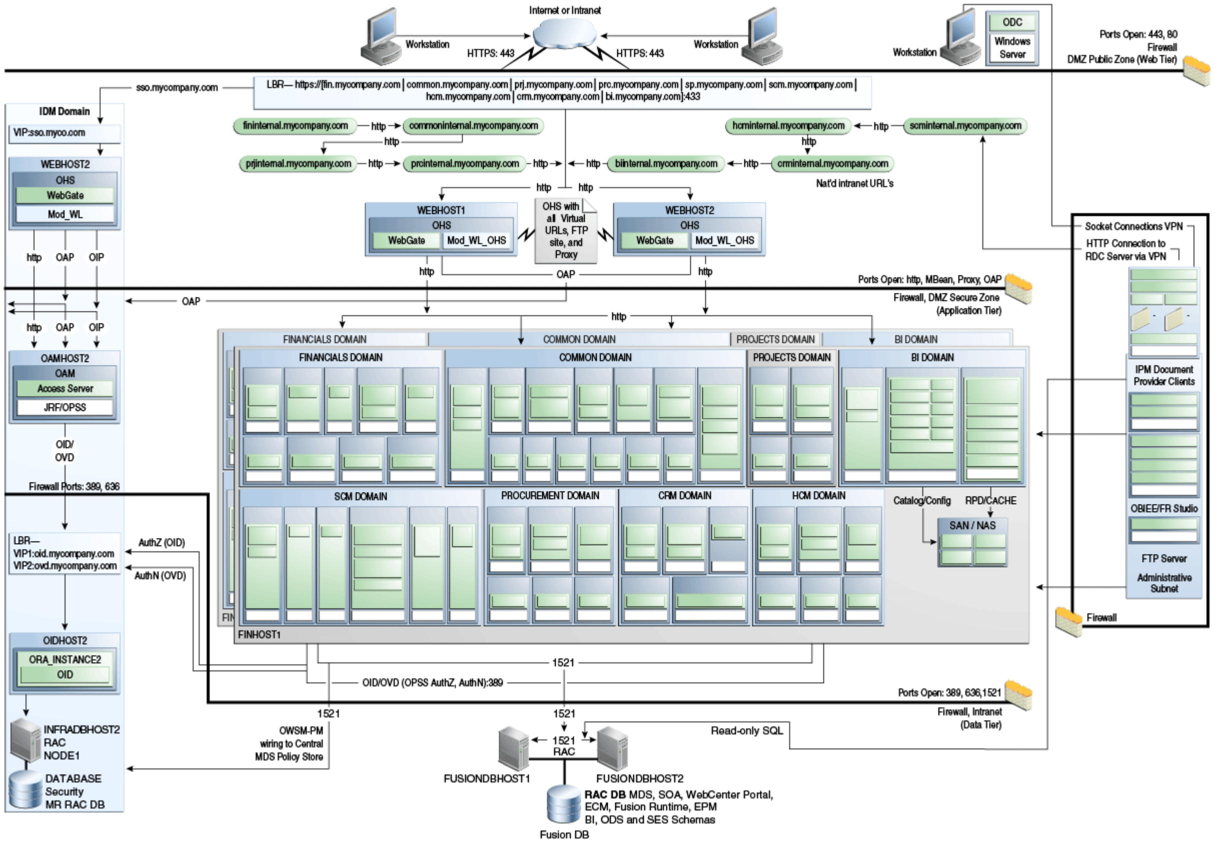
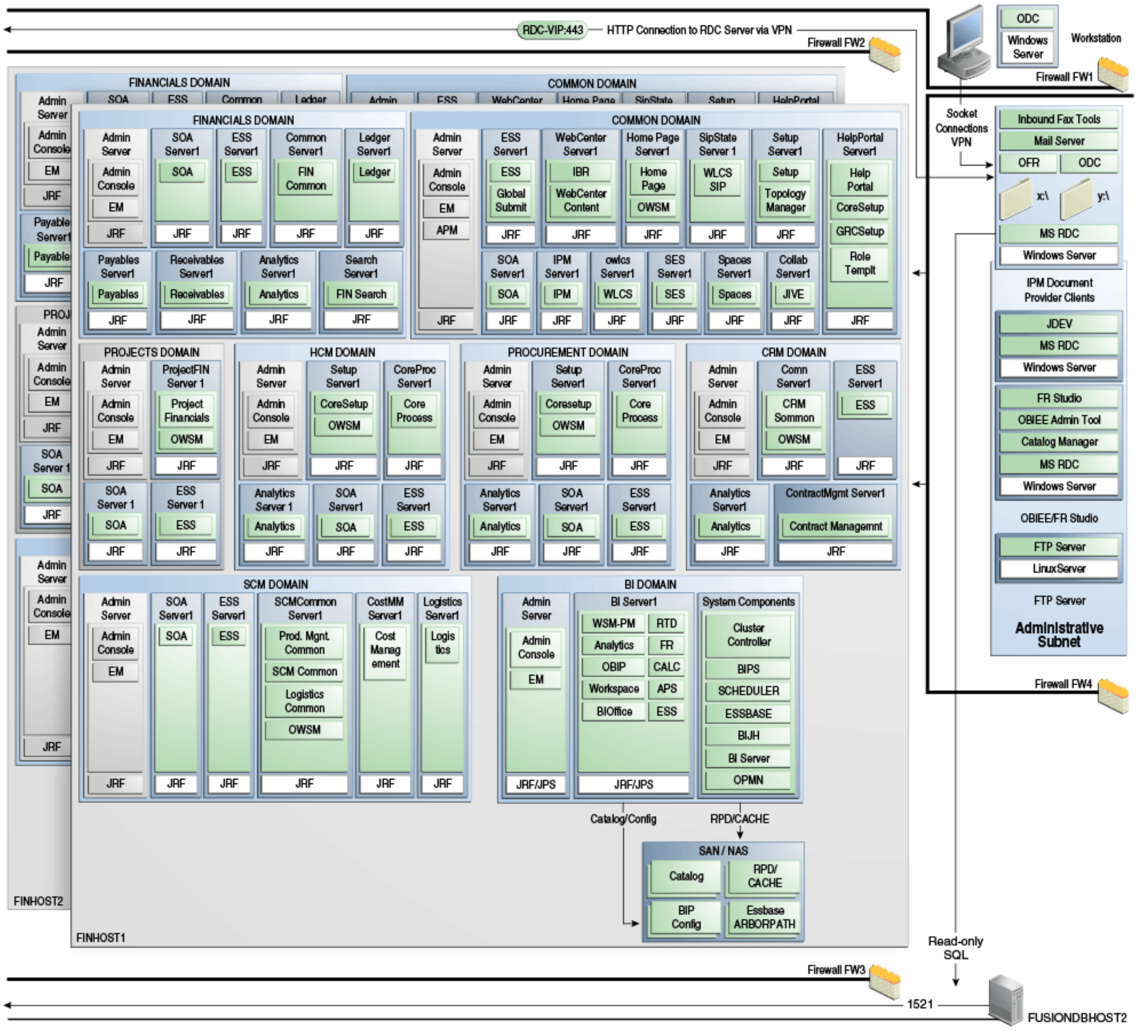

Internet or Intranet
Workstation
HTTPS: 443
Workstation
HTTPS: 443
Workstation
ODC
Windows Server
Ports Open: 443, 80
Firewall
DMZ Public Zone (Web Tier)
sso.mycompany.com
LBR— https://[fin.mycompany.com | common.mycompany.com | prj.mycompany.com | prc.mycompany.com | sp.mycompany.com | scm.mycompany.com | hcm.mycompany.com | crm.mycompany.com | bi.mycompany.com]:433
IDM Domain
VIP:sso.myco.com
WEBHOST2
OHS
WebGate
Mod_WL
fininternal.mycompany.com
http
commoninternal.mycompany.com
http
prjinternal.mycompany.com
http
prcinternal.mycompany.com
http
http
biinternal.mycompany.com
http
crminternal.mycompany.com
hcminternal.mycompany.com
http
scminternal.mycompany.com
http
Nat'd intranet URL's
http
http
WEBHOST1
OHS
WebGate
Mod_WL_OHS
OHS with all Virtual URLs, FTP site, and Proxy
WEBHOST2
OHS
WebGate
Mod_WL_OHS
http
OAP
http
http
OAP
OIP
Ports Open: http, MBean, Proxy, OAP
Firewall, DMZ Secure Zone (Application Tier)
OAP
http
OAP
OIP
http
Socket Connections VPN
HTTP Connection to RDC Server via VPN
FINANCIALS DOMAIN
COMMON DOMAIN
PROJECTS DOMAIN
BI DOMAIN
FINANCIALS DOMAIN
COMMON DOMAIN
PROJECTS DOMAIN
BI DOMAIN
OAMHOST2
OAM
Access Server
JRF/OPSS
IPM Document Provider Clients
OID/ OVD
Firewall Ports: 389, 636
SCM DOMAIN
PROCUREMENT DOMAIN
CRM DOMAIN
HCM DOMAIN
Catalog/Config
RPD/CACHE
SAN / NAS
OBIEE/FR Studio
FTP Server
Administrative Subnet
LBR— VIP1:oid.mycompany.com VIP2:ovd.mycompany.com
AuthZ (OID)
AuthN (OVD)
FIN
FINHOST1
Firewall
OIDHOST2
ORA_INSTANCE2
OID
1521
OID/OVD (OPSS AuthZ, AuthN):389
Ports Open: 389, 636,1521
Firewall, Intranet (Data Tier)
1521
1521
INFRADBHOST2 RAC NODE1
OWSM-PM wiring to Central MDS Policy Store
1521 RAC
Read-only SQL
DATABASE Security MR RAC DB
FUSIONDBHOST1
FUSIONDBHOST2
RAC DB MDS, SOA, WebCenter Portal, ECM, Fusion Runtime, EPM BI, ODS and SES Schemas
Fusion DB

Figure A–2 Administrative Subnet Topology Details



A.2 Implementation

Implementing the administrative subnet requires the following:

- An RDC service enabled over HTTP and wired with a load-balancing router (LBR) virtual IP (VIP) running over HTTP Secure (HTTPS).
  - The LBR VIP should only be internal facing and use Secure Network Address Translation (SNAT) to enforce tighter security.
  - VPN must be used for clients that require socket connections.
- Different file systems created/mounted on the Windows server(s) using a universal naming convention (UNC) path and running the Oracle Forms Recognition and Oracle Document Capture clients.
  - An `x:\` directory, for example, where the Oracle WebCenter Content: Imaging Linux input directory will be exposed over a Common Internet File System (CIFS) to the Windows server where Oracle Forms Recognition is running. (Oracle WebCenter Content: Imaging needs read/write access to this file system; Oracle Forms Recognition needs only write access.)

  - A `y:\` directory, for example, where Oracle Forms Recognition will write into the Oracle WebCenter Content: Imaging input `x:\` directory. This is also the file system where Oracle Document Capture will write files to the import directory and Oracle Forms Recognition Runtime Server will read them on the Windows server. (Oracle Document Capture needs only write access to this file system; Oracle Forms Recognition needs read/write access.)
  - An Oracle Forms Recognition batch directory, which needs to be exposed so that end users can correct data recognition problems using the OFR Verifier. This file system also needs to be exposed to OFR Designer.
    - Because only a limited number of end users need OFR Verifier, it can be exposed through the remote desktop service (RDS).
    - This file system is similar to the `y:\` file system topology.
  - An Oracle Forms Recognition project directory, which needs to be exposed so that end users can modify Oracle Forms Recognition project configurations using OFR Designer.
    - Because only a limited number of end users need OFR Designer, it can be exposed through the remote desktop service (RDS).
    - This file system is similar to the `y:\` file system topology.

Certain accounts payable and accounts receivable situations have the following implementation requirements:

- A non-SSL Oracle Document Capture email server hosted in the administrative subnet to support the Oracle Fusion Expenses Oracle Document Capture email provider. Users in a customer network sends receipts through email attachments, the Oracle Document Capture email client processes the email attachments and drop them into the Oracle WebCenter Content: Imaging input directory.
- The installation of a client-specific Oracle Document Capture at the customer location that will be integrated with their local scanners. There are two methods used to import scanned documents into the Oracle Forms Recognition import directory:
  - **Method 1:** By FTP. When receipts are scanned, Oracle Document Capture writes them locally. An automatic process will FTP the scanned documents into the Oracle Forms Recognition import directory.
  - **Method 2:** By file sharing. When receipts are scanned, Oracle Document Capture writes the scanned files into a remote input directory within the data center administrative subnet that is exposed to the customer network over VPN.

  Oracle Forms Recognition reads and deletes the files and writes them into the Oracle WebCenter Content: Imaging input directory, where they are read and further processed.

  Method 1 is preferred because it does not expose the file system to the customer network.
- Access to a read-only Fusion database to allow Oracle Forms Recognition to query results.

Application administrators at a customer location must deploy applications from Oracle JDeveloper to an application server. This requires that the *`APPLICATIONS_BASE`* file system be mounted to the customer network. To implement the solution:

- Host Oracle JDeveloper on one of the Windows virtual machines within the administrative subnet. These Windows systems will access the client application administrators over the RDC with a VPN connection.

  Mount the *`APPLICATIONS_BASE`* file system to this Windows virtual machine.

- Using the FTP server running in the administrative subnet, FTP application artifacts to the subnet and then deploy them through Oracle JDeveloper.