4

Installing Oracle SOA Suite 12*c*

Extending the Domain with Oracle SOA Suite

ORACLE

Objectives

After completing this lesson, you should be able to:

- Manage web tier installation and configuration tasks
- Install Oracle SOA Suite 12*c*
- Extend the Infrastructure WebLogic Domain with Oracle SOA Suite 12*c* components

Agenda

- Web tier installation and configuration tasks: Overview
- Installing Oracle SOA Suite 12*c* products
- Extending the domain with Oracle SOA Suite 12*c*
- Post-installation configuration tasks: Overview

Installing a Web Tier: Overview

Based on the Enterprise Deployment Guide documentation:

- Web tier and load balancer are installed and configured:
  - After installing and configuring the Fusion Middleware Infrastructure in the application tier
  - Before installing Oracle SOA Suite (or additional products)
- The web tier installation and configuration steps include:
  - Installing the Oracle HTTP Server binaries (on more than one host to provide high availability)
  - Extending the WebLogic domain with the “Oracle HTTP Server (colocated)” option
  - Packing domain configuration updates into a template JAR file
  - Unpacking the template JAR file on a web host in the web tier
  - Restarting the servers in the WebLogic domain
- The load balancer is configured to direct requests to the web tier.

Configuring the Web Tier: Overview

After installing the web tier software and extending the domain, the configuration tasks include:

- Modifying the `httpd.conf` file with virtual host directives to:
  - Separate administration from SOA server application requests
  - Load balance requests to the application tier
- Updating the OPSS JPS configuration on the web tier hosts
- Installing the load balancer (if it is not already present)
- Configuring the load balancer to balance traffic between Oracle HTTP Server instances
- Configuring SSL between the load balancer and Oracle HTTP Server instances

Configuring Web Tier Virtual Hosts in httpd.conf

- On WEBHOST1:
  - Create the `admin_vh.conf` file:

```
<VirtualHost WEBHOST1:7777>
  ServerName admin.example.com:80[80]
  ServerAdmin admin@email.address
  RewriteEngine On
  RewriteOptions inherit
</VirtualHost>
```

  - Create the `soainternal_vh.conf` file:

```
<VirtualHost WEBHOST1:7777>
  ServerName soainternal.example.com:80[80]
  ServerAdmin admin@email.address
  RewriteEngine On
  RewriteOptions inherit
</VirtualHost>
```

- Copy these files to the WEBHOST2, and update the files to replace WEBHOST1 ServerName with WEBHOST2.

Routing to the AdminServer and Oracle Web Services Manager

- In admin_vh.conf <VirtualHost>, add <Location> directives:

```
<Location /console> # Add inside <VirtualHost> for: Admin Server and EM
    SetHandler weblogic-handler
    WebLogicHost adminvh.example.com
    WeblogicPort 7001
</Location>
<Location /consolehelp>
    SetHandler weblogic-handler
    WebLogicHost adminvh.example.com
    WeblogicPort 7001
</Location>
<Location /em>
    SetHandler weblogic-handler
    WebLogicHost adminvh.example.com
    WeblogicPort 7001
</Location>
```

- In soainternal_vh.conf, add <Location> with WebLogicCluster:

```
<Location /wsm-pm> # Add inside <VirtualHost> for: WSM-PM
    SetHandler weblogic-handler
    WebLogicCluster soa01.example.com:8001, soa02.example.com:8001
</Location>
```

At least one of these servers should be running at web tier startup.

Updating the Web Tier OPSS Java Platform Security (JPS) Configuration

After propagating the domain configuration to the web tier hosts, update the OPSS configuration on web hosts, on each web host.

- Open the *MSERVER_HOME*/config/fmwconfig/jps-config-jse.xml configuration file in an editor.
- Edit the jps-config-jse.xml configuration file, replacing:

```
<jpsContexts default="default">
```

With the following update:

```
<jpsContexts default="bootstrap_credstore_context">
```

Enabling SSL Between the Load Balancer and the Web Tier

The tasks that are required to enable SSL between the load balancer and the web tier include:

- Generating self-signed certificates by using the `utils.CertGen` utility
- Creating an Identity keystore by using the `utils.ImportPrivateKey` utility
- Creating a Trust keystore by using the `Keytool` utility
- Importing the load balancer's certificate into the Trust store
- Adding the updated Trust store to the Oracle WebLogic Server startup scripts
- Configuring Node Manager to use the custom keystores
- Configuring WebLogic Servers to use the custom keystores
- Testing composites by using SSL endpoints

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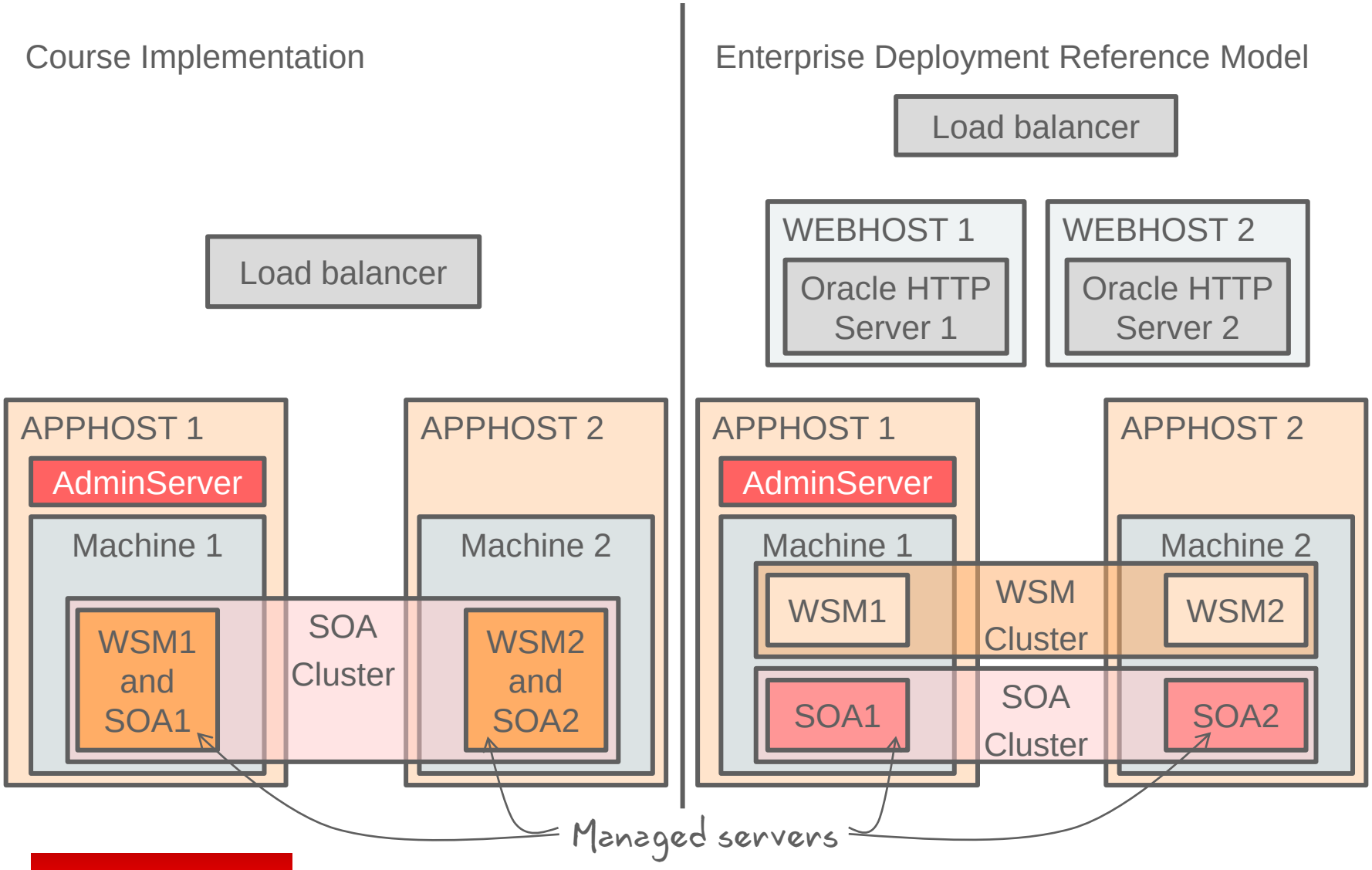
Course Enterprise Deployment Topology: Review



SOA Suite Installation Roadmap

- Shut down the Infrastructure domain servers.
- Install the SOA binaries.
- Run RCU to create the Oracle SOA Suite database schemas, and set the Profile Custom Variable to specify the database size (SMALL, MEDIUM, or LARGE).
- Extend the Infrastructure domain with SOA components.
- Restart the domain and verify the SOA Suite installation.

Installing the Oracle SOA Suite Software (Product-Specific)

Installing the Oracle SOA Suite 12*c* software

```
$ export JAVA_HOME=/usr/java/jdk1.7.0_55
$ export PATH=$JAVA_HOME/bin:$PATH
$ java –d64 -jar fmw_12.1.3.0.0_soa.jar
```

- The post-installation tasks include:
  - Verifying the installation logs: Ensure that there are no errors.
  - Checking the directory structure
  - Checking the Oracle home contents
- Repeat this for each host in the cluster.

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Configuring the Oracle SOA Suite Schemas (with RCU)

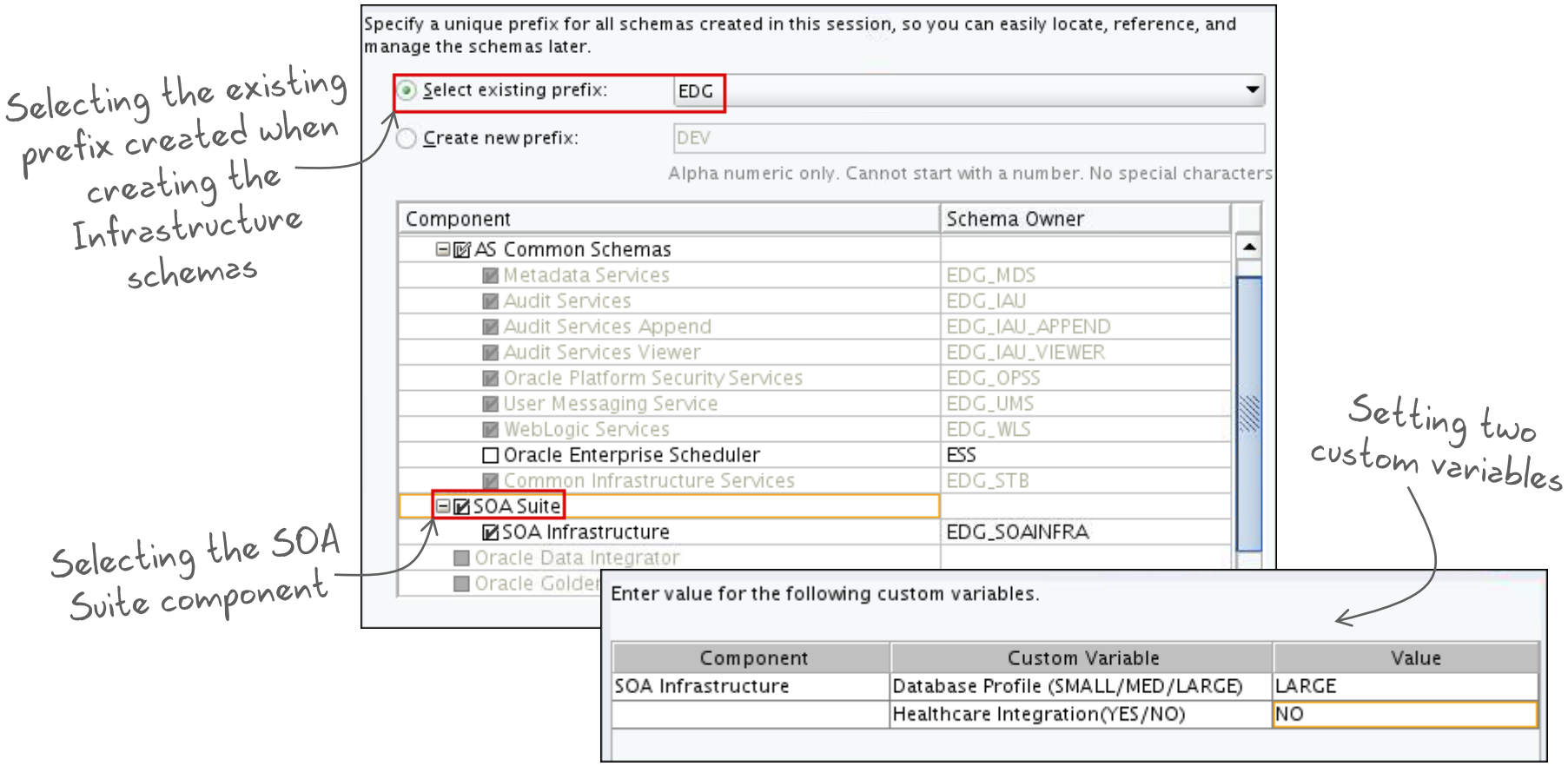
To create the Oracle SOA Suite 12*c* database schemas with the Oracle Repository Configuration Utility (RCU) assistant:

```
$ export ORACLE_HOME=/u01/oracle/product/fmw
$ cd $ORACLE_HOME/oracle_common/bin
$ ./rcu
```

- Use the System Load and Product Load Concurrently method of schema creation
- Provide the database credentials (SYS, host name, port, and SID)

Creating the SOA Database Schemas (with RCU)

The Enterprise Deployment installation of Oracle SOA Suite schemas with RCU requires:



Sizing Guidelines (Approximations)

The Database Profile that is selected (Small, Medium, Large) is based on two metrics:

- The composite space persisted daily
- The minimum retention space

Database Profile	Composite Space Persisted Daily	Minimum Retention Space
Small	< 10 GB	< 100 GB
Medium	10-30 GB	100-300GB
Large	> 30 GB	> 300 GB

Note: The two metrics are related. For example, the retention policy may hold several days of data, with high instance inflow.

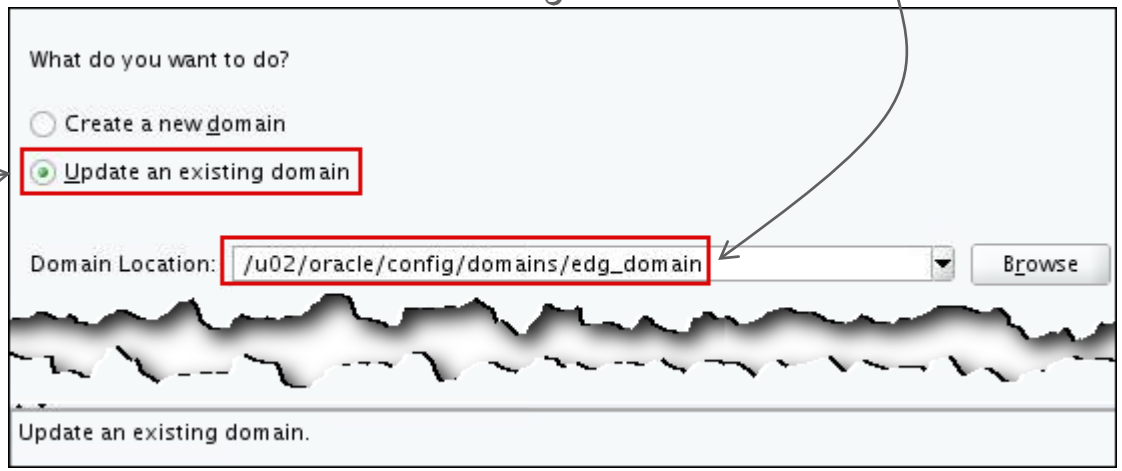
Extending the Domain with Oracle SOA Suite 12*c*

To extend an existing domain, use the WebLogic Domain Configuration Wizard:

```
$ export ORACLE_HOME=/u01/oracle/product/fmw
$ cd $ORACLE_HOME/oracle_common/common/bin
$ ./config.sh
```

Ensure that you select the correct configuration folder tree (for AdminServer)

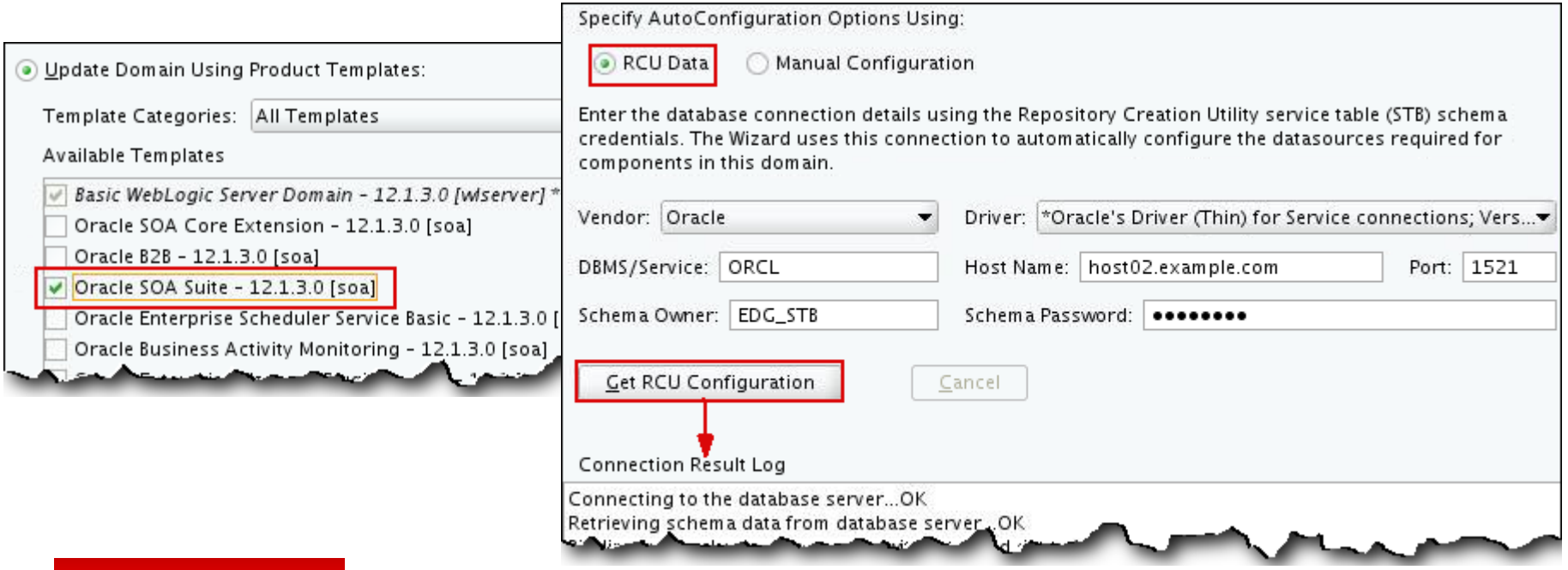
Select the "Update an existing domain" option



Domain Configuration and Database Schemas

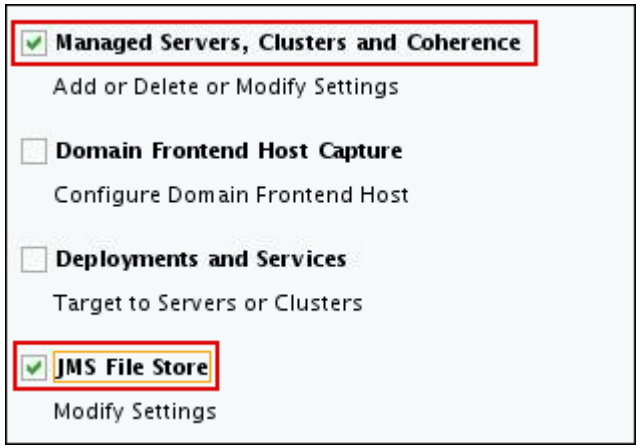
During domain configuration:

- Select the Oracle SOA Suite – 12.1.3.0 [soa] template
- Use the RCU Data option and click Get RCU Configuration to obtain values for component schemas
- Ensure that connections are successful for all new schemas

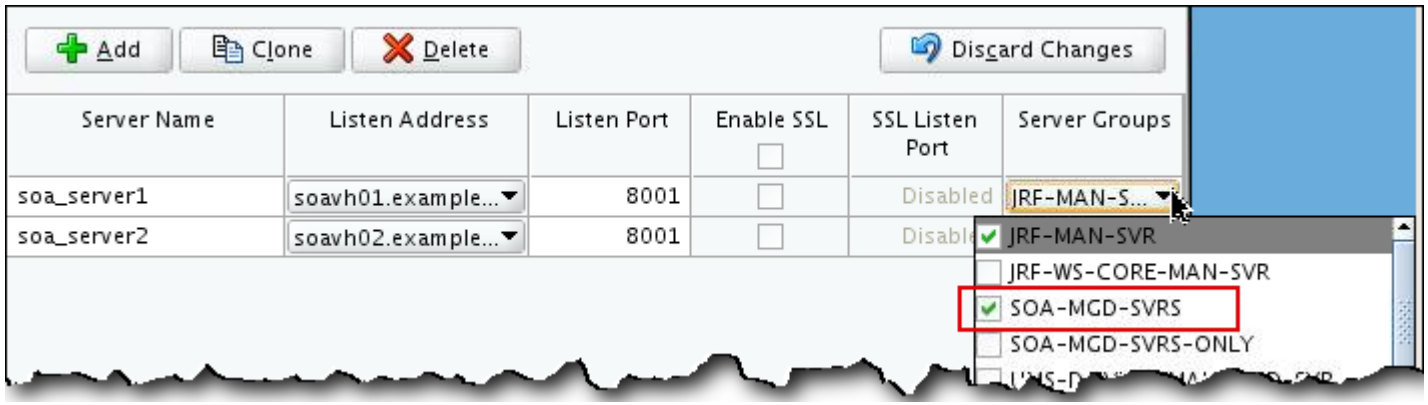


Configuring SOA Suite Components in the Domain

- On the Advanced Configuration page, select the following:
  - Managed Servers, Clusters and Coherence
  - JMS File Store
- On the Managed Servers page, in the Server Groups column, ensure that the SOA-MGD-SVRS check box for each SOA server is selected.

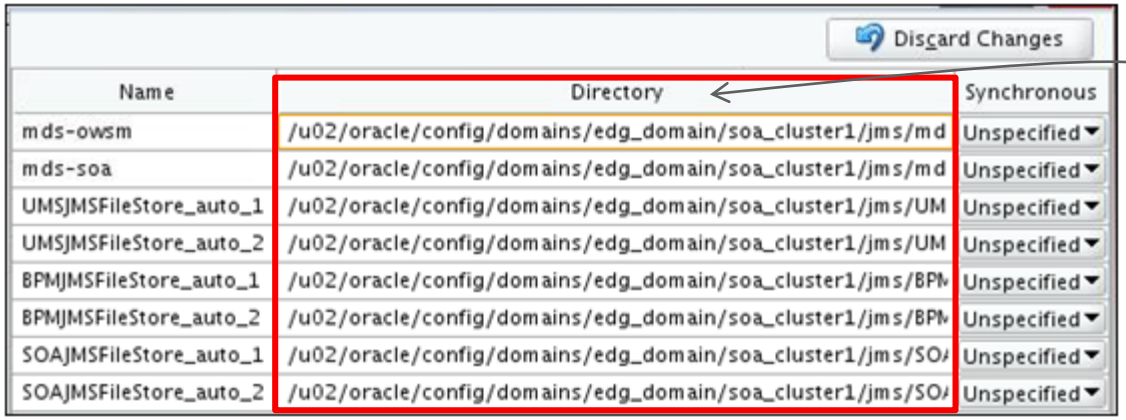


Managed Servers page



Configuring JMS File Store Settings

- Oracle SOA Suite makes use of JMS services between components.
- Each service that uses JMS needs a directory to store JMS message data if the file system (the default) is used.
- For example: The JMS File Stores page contains several entries whose Directory column should be modified.



JMS file store directories should reside on shared folders.

Note: For folder path names, use a naming pattern, such as `DOMAIN_HOME/ClusterName/jms/componentName`.

Propagating the Extended Domain Configuration

For Enterprise Deployment, the updated (extended) domain configuration must be copied to each Managed Server in the cluster. Propagating the configuration is done by:

- Running `pack.sh` to create the template JAR:

```
$ cd $ORACLE_HOME/oracle_common/common/bin
$ ./pack.sh -managed=true –domain=$ADMIN_DOMAIN_HOME
    -template=edgsoa_template.jar
    -template_name=edgsoa
```

- Running `unpack.sh` to create the domain configuration on each Managed Server:

```
$ cd $ORACLE_HOME/oracle_common/common/bin
$ ./unpack.sh –domain=$MANAGED_DOMAIN_HOME
    -overwrite_domain=true
    -template=edgsoa_template.jar
    -log_priority=DEBUG -log=unpack_edgsoa.log
```

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Application Roles and Permissions

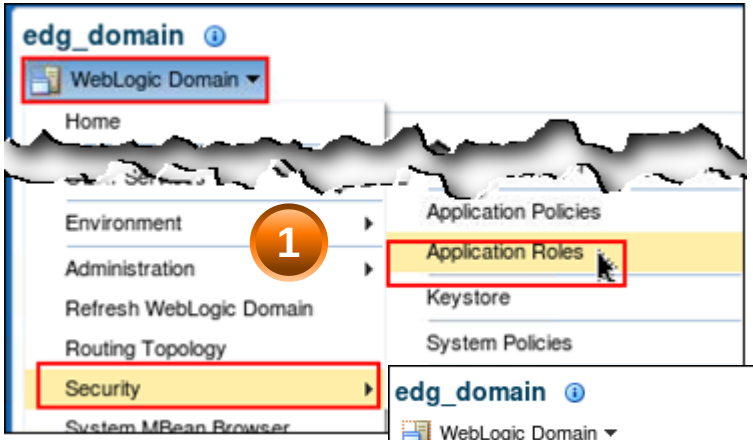
- SOA Infrastructure supports logical partitioning of SOA applications for runtime management and control.
- Partitions are automatically secured with application roles and partition roles.

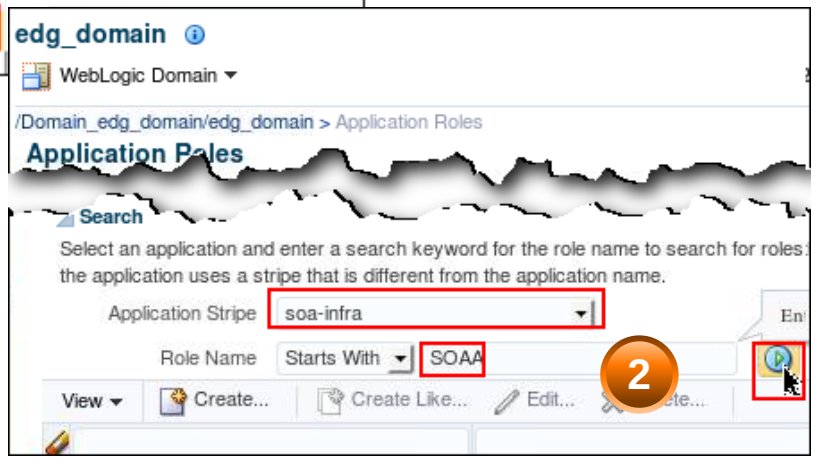
Note: All roles are based on Java permissions.

Application Roles (soa-infra)	Description
MiddlewareOperator	Grants access to maintain operational continuity, manage deployed applications problems, and customize operational settings (audit levels, configuring alerts, monitoring, and sensor settings)
MiddlewareAdministrator	Grants superuser access to the SOA system for all administration tasks and acts as a backup to MiddlewareOperators
SOAAdmin	Is the legacy Oracle SOA Suite 11*g* role, with the same access as the MiddlewareAdministrator role

Authorizing Management of SOA Suite Components

To authorize the SOA Administrators group (and users) to manage Oracle SOA Suite 12*c* components, add the group to the appropriate roles, for example, the SOAAdmin (soa-infra) role.





Routing from the Web Tier to the Oracle SOA Servers

- Create a `soa_vh.conf` file (for each WEBHOST) with:

```
<VirtualHost WEBHOST1:7777>
  ServerName https://soa.example.com:443
  ServerAdmin you@your.address
  RewriteEngine On
  RewriteOptions inherit
</VirtualHost>
```

- Include these <Location>s with WebLogicCluster entries:

```
<Location /soa-infra>
  SetHandler weblogic-handler
  WebLogicCluster soavh01.example.com:8001, soavh02.example.com:8001
  WLProxySSL ON
  WLProxySSLPassThrough ON
</Location>
<Location /inspection.wsil># For SOA inspection.wsil ... </Location>
<Location /integration># Worklist ...</Location>
<Location /sdpmessaging/userprefs-ui># UMS prefs ...</Location>
<Location /DefaultToDoTaskFlow># Default to-do taskflow ... </Location>
<Location /workflow># Workflow (optional)... </Location>
<Location /ADFAttachmentHelper>#Required wkflow attachments..</Location>
<Location /soa/composer># SOA composer application ... </Location>
```

Configuring the WebLogic Proxy Plug-In

Enabling the WebLogic Plug-In parameter for the SOA cluster:

- Is required when using SSL between the web tier and the application tier to:
  - Propagate SSL flags
  - Ensure that SSL termination works when routing requests from Oracle HTTP Server (OHS) to WebLogic Server instances
- Is not required if you are not using OHS with SSL requests set to the application tier

Note: Configuration of OHS with SSL and the application tier is not done in the course environment. The configuration steps are listed on the notes page.

Backing Up the Configuration

- Static artifacts to be backed up

Type	Host	Tier
Database Oracle Home	DBHOST1 and DBHOST2	Data
Oracle Fusion Middleware Oracle Home	WEBHOST1 and WEBHOST2	Web
Oracle Fusion Middleware Oracle Home	SOAHOST1 and SOAHOST2	Application
Installation-related files	WEBHOST1, WEBHOST2, shared storage	N/A

- Runtime artifacts to be backed up

Type	Host	Tier
Administration Server domain home (ASERVER)	SOAHOST1 and SOAHOST2	Application
Application Home and Deployment Plan Home	SOAHOST1 and SOAHOST2	Application
Oracle RAC Databases	DBHOST1 and DBHOST2	Data
Scripts and customizations	SOAHOST1 and SOAHOST2	Application

Summary

In this lesson, you should have learned how to:

- Manage web tier installation and configuration tasks
- Install Oracle SOA Suite 12*c*
- Extend the Infrastructure WebLogic Domain with Oracle SOA Suite 12*c* components

Practice 4: Overview

This practice covers the following topics:

- 4-1: Installing Oracle SOA Suite 12*c*
- 4-2: Extending the SOA Domain with Oracle SOA Suite 12*c*
- 4-3: Starting and Verifying the SOA Domain