# Oracle® Retail Integration Cloud Service

Java Messaging Service Console Guide

Release 19.0.000

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ORACLE®

Oracle Retail Integration Cloud Service Java Messaging Service Console Guide, Release 19.0.000

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Oracle Retail Integration Cloud Service Java Messaging Service Console Guide, Release 19.0.000

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# Preface

The *Oracle Retail Integration Bus Java Messaging Service Console Guide* provides detailed information that is important when implementing RIB.

## Audience

This guide is intended for the Oracle Retail Integration Bus application integrators and implementation staff, as well as the retailer's IT personnel.

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## Related Documents

For more information, see the following documents in the Oracle Retail documentation set:

- *Oracle Retail Integration Cloud Service Release Notes*
- *Oracle Retail Integration Cloud Service Action List*
- *Oracle Retail Integration Cloud Services Administration Guide*
- *Oracle Retail Integration Bus Implementation Guide*
- *Oracle Retail Integration Bus Installation Guide*
- *Oracle Retail Integration Bus Operations Guide*
- *Oracle Retail Integration Bus Hospital Administration Guide*
- *Oracle Retail Integration Bus Support Tools Guide*
- *Oracle Retail Functional Artifacts Guide*
- *Oracle Retail Functional Artifact Generator Guide*

- *Oracle Retail Service-Oriented Architecture Enabler Tool Guide*
- *Oracle Retail Service Backbone Developers Guide*
- *Oracle Retail Service Backbone Oracle Retail Service Backbone Implementation Guide*
- *Oracle Retail Integration Console (RIC) User Guide*
- *Oracle Retail Service Backbone Security Guide*
- *Oracle Retail Bulk Data Integration Implementation Guide*
- *Oracle Retail Bulk Data Integration Installation Guide*
- *Oracle Retail Financial Integration for Oracle Retail Merchandise Operations Management and Oracle Financials Implementation Guide*
- *Oracle Retail Financial Integration for Oracle Retail Merchandise Operations Management and Oracle Financials Installation Guide*
- *Oracle Retail Job Orchestration and Scheduler Implementation Guide*

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- Functional and technical description of the problem (include business impact)
- Detailed step-by-step instructions to re-create
- Exact error message received
- Screen shots of each step you take

## Review Patch Documentation

When you install the application for the first time, you install either a base release (for example, 19.0.000 or 19.0.0) or a later patch release (for example, 19.0.010 or 19.0.1). If you are installing the base release and additional patch releases, read the documentation for all releases that have occurred since the base release before you begin installation. Documentation for patch releases can contain critical information related to the base release, as well as information about code changes since the base release.

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The following text conventions are used in this document:

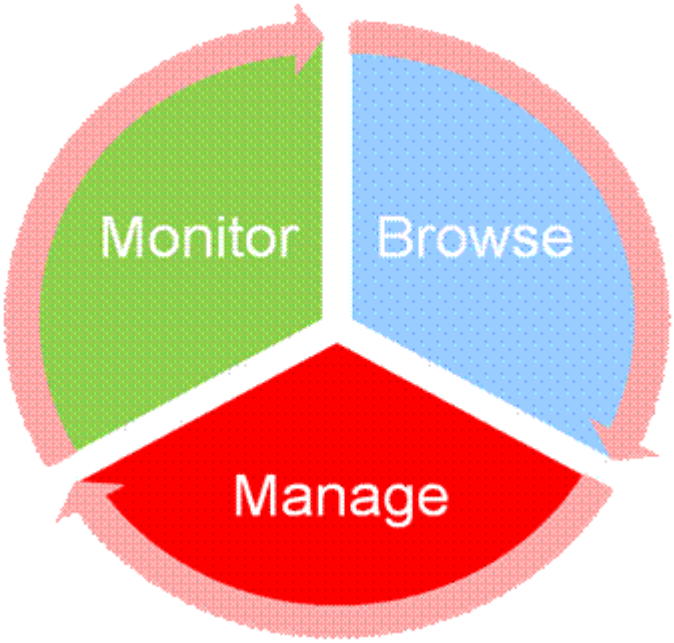
| Convention | Meaning |
|---|---|
| **boldface** | Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary. |
| *italic* | Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.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

# 1

# Introduction

The Oracle Retail Java Messaging Service (JMS) Console is a Web application for monitoring, browsing, and managing the messages that flow through a JMS system. This application is designed for the Oracle Streams Advanced Queuing (AQ) JMS provider.

## 360º View of AQ JMS




- **Monitor** - provide an unattended view of JMS server.
- **Browse** - discover and drill down into the various aspects of JMS server.
- **Manage** - operate JMS server functionality.

JMS Console is intended for JMS administrators who want to monitor the health of the application and troubleshoot issues related to JMS system. Administrators can monitor the overall health of the system, browse and manage messages of a specific topic/subscriber as well as publish messages for a specific topic.

JMS Console is a very useful application to monitor and manage the AQ JMS regularly. It can troubleshoot critical issues related to any message blockages on the AQ JMS

system as well as the Retail Integration Bus (RIB) messaging system which uses AQ as JMS provider.

Install JMS Console application only after the core RIB components have been installed and verified. Oracle recommends that you use JMS Console to monitor, manage, and troubleshoot the RIB AQ system.

# Need for a JMS Administration Application

Currently, there are no lightweight JMS administration tools available for the Oracle AQ. Generic JMS tools offer limited functionalities for the AQ JMS. JMS Console intends to fill this gap. Following are some key problem statements that JMS Console is expected to solve:

- JMS servers do not provide visibility into their internal working and state.
- Messages from JMS servers are not visible to the RIB system administrators until business is adversely impacted.
- Third party systems are not able to publish messages to JMS, and in turn are not visible to the RIB, until it is too late.
- Errors in JMS topics are not identified easily.
- You cannot view incorrect messages that exist inside JMS servers.
- Missing current or historical metrics data in messages.
- Expose valuable business data from inside JMS server as services.

# Concepts

Following are JMS concepts:

- Oracle Streams AQ JMS
- RIB on AQ JMS

## Oracle Streams AQ JMS

Oracle Streams Advanced Queuing (AQ) provides database-integrated message queuing functionality. It is built on Oracle Streams and leverages the functions of the Oracle database so that messages can be stored persistently, propagated between queues on different computers and databases, and transmitted using Oracle Net Services and HTTP(s).

Because Oracle Streams Advanced Queuing is implemented in database tables, all operational benefits of high availability, scalability, and reliability are also applicable to queue data. Standard database features such as recovery, restart, and security are supported by Oracle Streams AQ.

Oracle Streams AQ provides the PL/SQL APIs to interact with the native AQ server inside the Oracle database. The native AQ stream is not the same as the AQ behaving as a JMS server.

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**Note:** For more information, see the Oracle® Database Administrator Guide 12c Release and the Oracle® Streams Advance Queuing User Guide.

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## RIB on AQ JMS

The RIB is a messaging application that uses Oracle AQ as the messaging infrastructure. RIB configures the native AQ server to behave as a JMS specification compliant JMS server. Therefore, it is strictly prohibited to manipulate RIB's JMS topics and RIB's AQ configurations directly with the AQ PL/SQL or Java API.

**Note:** For more information, see Chapter 6, JMS Provider Management, in the *Oracle Retail Integration Bus Operations Guide*.

# JMS Console Design Principles

JMS Console is built on the following design principles:

- Minimize impact to existing RIB systems
- Work asynchronously wherever possible
- Cache data to improve performance and reduce JMS resource usage
- Collect data without increasing data size on the disk
- Minimize configurations
- Auto discover JMS server internals from existing metadata to avoid human error during configurations
- Expose reusable Service APIs
- Aware of customizing JMS topics
- Simple to install and use

## Technical Design

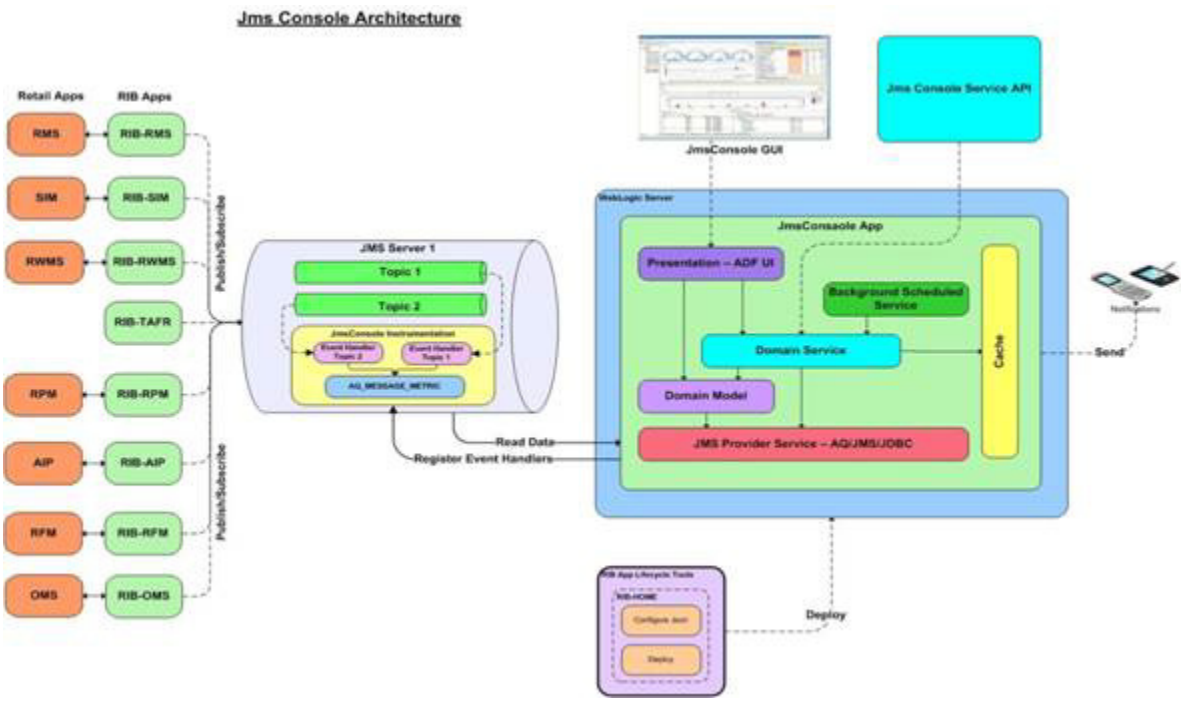
The architecture of JMS Console employs a modular design using separate layers for domain, service, and presentation. The service layers are implemented using stateless session beans using standard JavaEE 7 specifications. The presentation layer uses Oracle Application Development Framework (ADF).

### Technical Specifications

JMS Console requires the following technical specifications:

- Oracle WebLogic Server 12c.
- Oracle Database which is compatible with RIB AQ version
- Oracle Java 8 and JavaEE 7

The following diagram describes the console architecture.




The AQ JMS that the application is monitoring is configured as a JDBC data source in the application server. The application dynamically discovers the topics and subscribers configured in the AQ. The application interfaces with the AQ JMS using PL/SQL API's provided by the AQ and uses instrumentation techniques to collect statistics using PL/SQL procedures.

Monitoring data is stored in the same AQ schema that the application is configured to monitor and manage. The PL/SQL package JMS_MONITORING_AGENT is responsible for providing instrumentation hooks and data sourcing capabilities. Monitoring data is stored in the AQ_MESSAGE_METRIC table. The following the table structure definition of the AQ_MESSAGE_METRIC table:

| Column Name | Data Type | Nullable? | Description |
|---|---|---|---|
| TOPIC_NAME | VARCHAR2 (32 BYTE) | No | Name of the Topic |
| MONITORING_ START_TIME | DATE | Yes | The time since JMS started to be monitored |
| TOTAL_MESSAGE_ PROCESSED_ COUNT | NUMBER | Yes | Total messages processed by this Topic |
| MOST_RECENT_ ACTIVITY_TIME | DATE | Yes | Last en-queue/de-queue time on this Topic |
| DAILY_MSG_ PROCESSED_ COUNT | NUMBER | Yes | Total messages processed by this Topic since midnight |

| Column Name | Data Type | Nullable? | Description |
|---|---|---|---|
| LAST_COUNT_ RESET_TIME DATE | DATE | Yes | Time since the DAILY_MSG_ PROCESSED_ COUNT was last reset |

## Security

JMS Console uses the authentication mechanism configured in the application server. The application, by itself, does not authenticate the user nor stores user credentials. Authentication is delegated to the WebLogic server. Any authentication provider configured in the WebLogic server can be used for authenticating the users. Valid users belonging to JMSConsoleAdminGroup user group can access the system after successful authentication.

JMS Console allows you to access all integration messages. Some of these messages may contain financial or business critical information. For more information on which types of messages carry specific types of data, see the Integration Guide. Make sure to allow only trusted employees to access any data your organization classifies as sensitive.

Due to known vulnerabilities, Secure Sockets Layer (SSL) version 3.0 is not considered secure and should be disabled in WebLogic Server (WLS). For secured installations the latest Transport Layer Security (TLS) version is recommended.

## Availability and Support Information

JMS Console is available for all RIB AQ customers, independent of RIB version (customers with older versions of RIB can also utilize JMS Console). However JMS Console will not be back ported to 19.x.x RIB but customers should be able to use 19.x.x JMS Console in a 19.x.x AQ JMS environment.

**Note:** JMS Console is an add-on component and is delivered under RIB's product license. Standard product GA support is available from Oracle Support.

## Accessibility

Accessibility involves making your application usable for differently abled persons such as low vision or blindness, deafness, or other physical limitations. This means creating applications that can be used without a mouse (keyboard only), used with a screen reader for blind or low-vision users, and used without reliance on sound, color, or animation and timing.

JMS Console provides the ability to support the above accessibility in the applications.

Users should be able to navigate to all parts and functions of the application using the Tab and arrow keys, without using any keyboard shortcuts. In addition to that, keyboard shortcuts merely provide an additional way to access a function quickly.

Keyboard shortcuts provide an alternative to pointing devices for navigating the page. There are five types of keyboard shortcuts that can be provided in ADF Faces applications:

- Tab traversal, using Tab and Shift+Tab keys: Moves the focus through UI elements on a screen.
- Accelerator keys (hot keys): bypasses menu and page navigation, and performs an action directly, for example, Ctrl+C for Copy.
- Access keys: Moves the focus to a specific UI element, for example, Alt+F for the File menu.
- Default cursor/focus placement: Puts the initial focus on a component so that keyboard users can start interacting with the page without excessive navigation.
- Enter key: Triggers an action when the cursor is in certain fields or when the focus is on a link or button.

# 2

# Understanding the Installation Pre-requisites

This chapter describes the procedure you must use to install the ADF 12c runtime and deploy the tool's EAR file. For more information about domain creation and other server related information, see the WebLogic application server documents.

## Installation and Setup Instructions

This section describes the installation and setup instructions including the installation pre-requisites, preparing the WebLogic server, creating a WebLogic domain, verifying installation of ADF runtime libraries, extending an existing domain to add ADF runtime libraries, and deploying the EAR file. It also describes guidelines to set up security.

> **Note:** The windows included in the following procedures are for example purposes only. Because these procedures must be followed for each application, valid values vary. Therefore, consider the illustrations as guides only; the values shown may not always apply.

### Pre-requisites

JMS Console application requires Oracle WebLogic Server 12c (12.2.1.3.0), built with Java 8 (JDK 1.8 64 bit with the latest security updates).

## Installing WebLogic with ADF Runtime

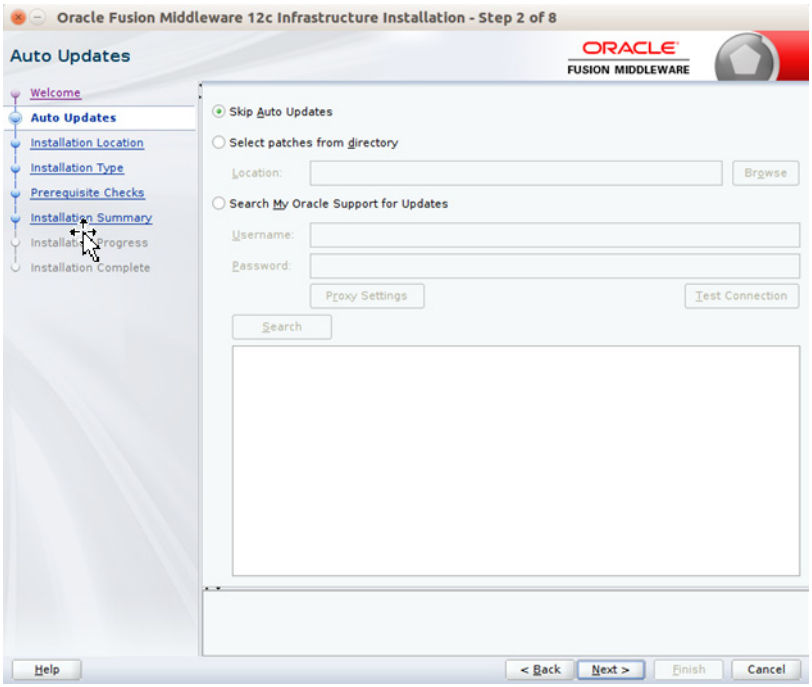
To get the ADF runtime option while creating the domain, install the Application Development Runtime. To obtain Application Development Runtime, go to the Oracle Technology Network and take the following steps:

1. Find `fmw_12.2.1.3.0_infrastructure_Disk1_1of1.zip` and download this file to your system.
2. Extract the contents of this zip file to your system. You will use the `fmw_12.2.1.3.0_infrastructure.jar` file to run the installer.
3. Run the installer by executing the jar file:

   ```
   java -jar fmw_12.2.1.3.0_infrastructure.jar
   ```

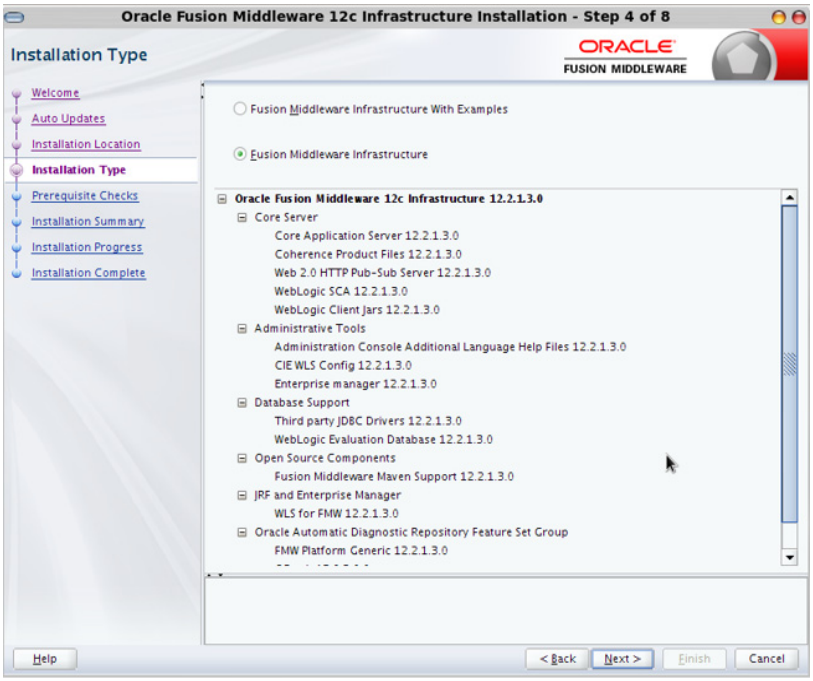
   The Welcome window displays.

4. Click **Next**. The Auto Updates window displays. Select the appropriate option.

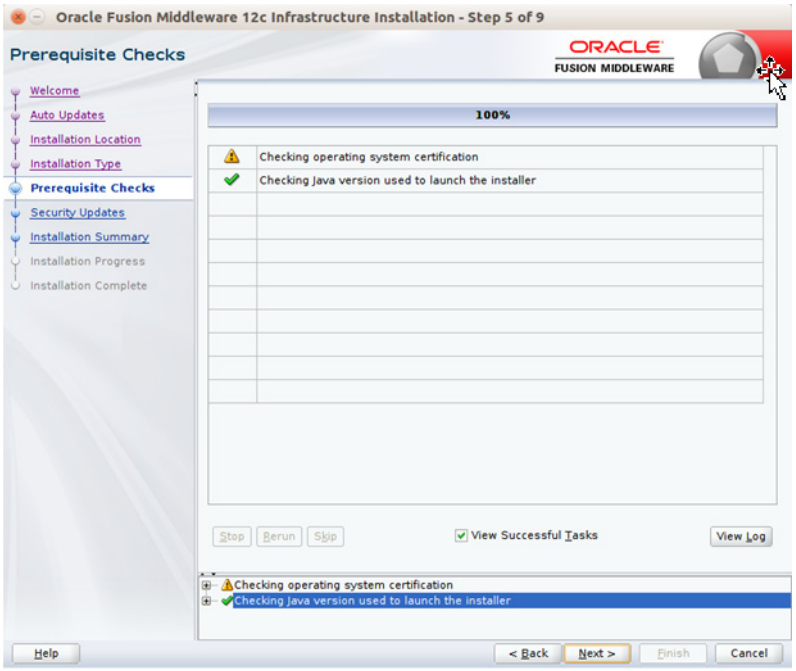



5. Click **Next**. The Installation Location window displays. Click **Browse** to select the Oracle Home location where the WebLogic Server is to be installed.

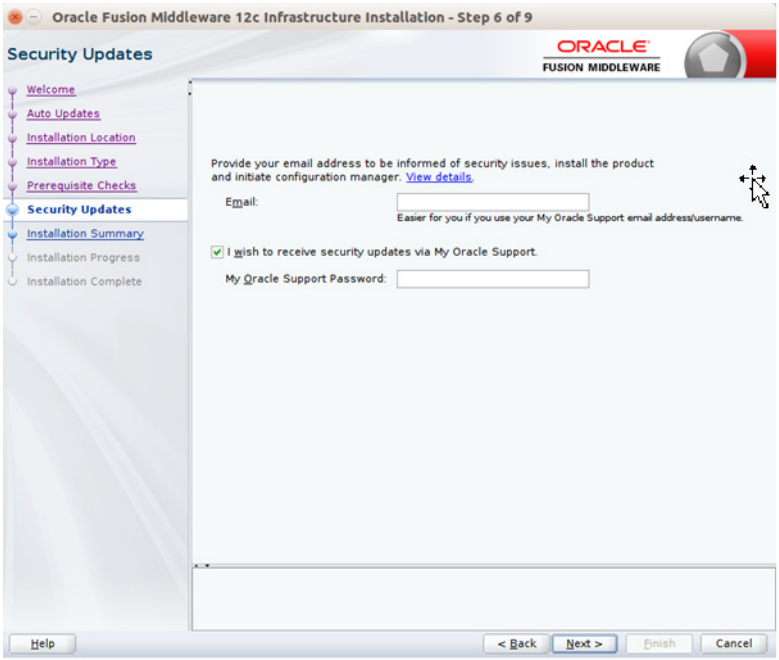
6. Click **Next**. The Installation Type window displays. Select the type of installation.



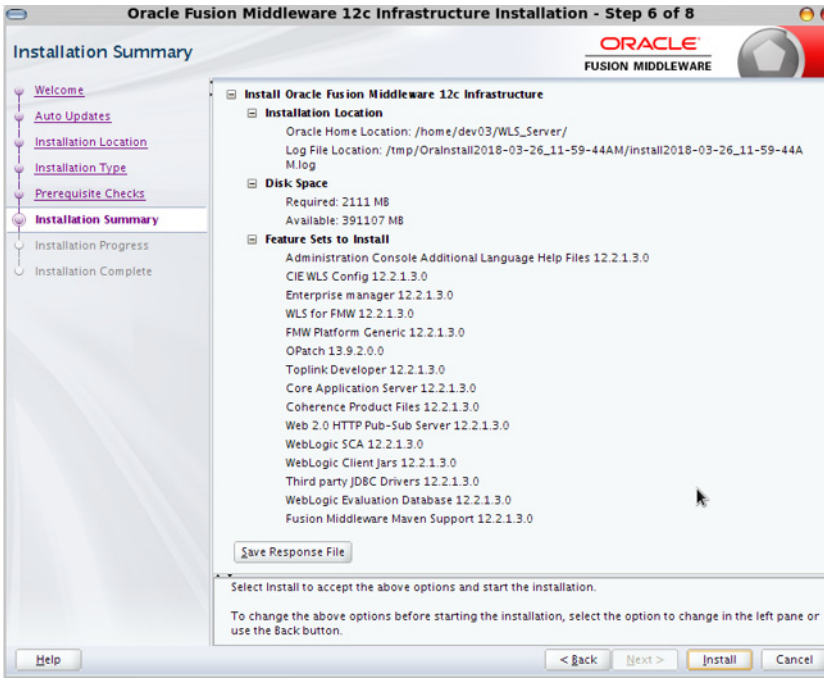

7. Click **Next**. The installer performs the pre-requisite checks and ensures all required conditions are satisfied.



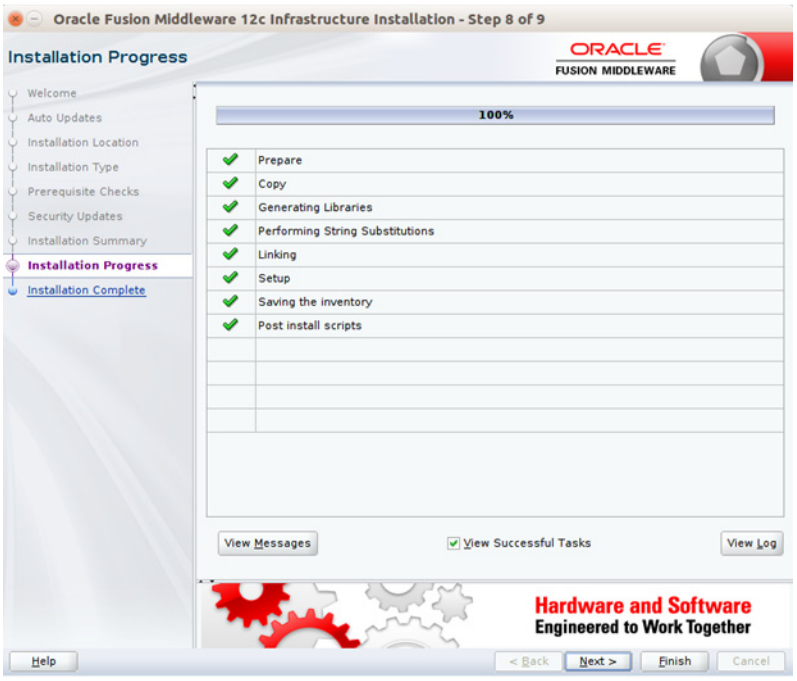

8. When the pre-requisite check completes successfully, click **Next**. The Security Updates window will display. Enter the information as required.



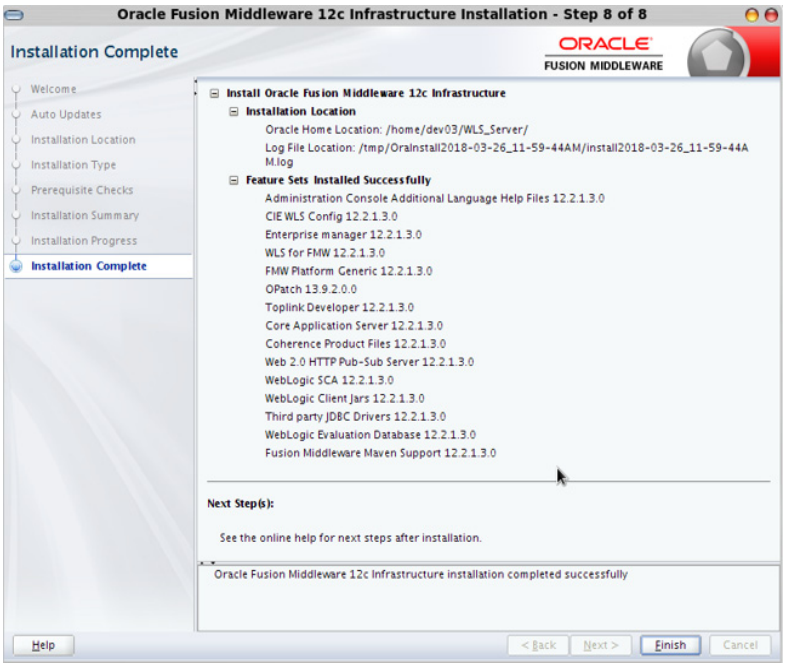

9. Click **Next**. The Installation Summary window displays.




**10.** Click **Install**. The Installation Progress window displays.




**11.** Click **Next** when the installation completes. The Installation Complete window displays.



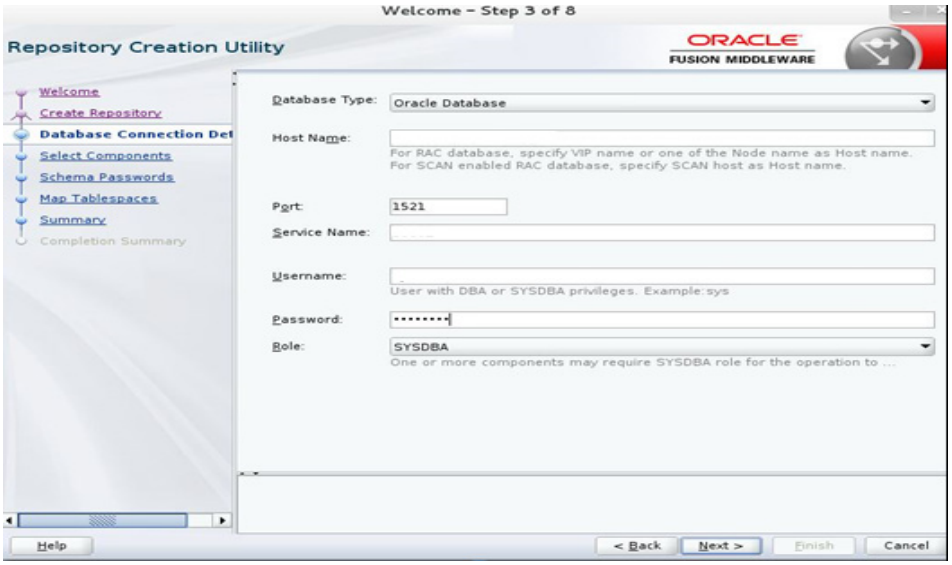

# Creating the Required Schema Using Repository Creation Utility

To create a schema user for the jms-console domain, take the following steps:

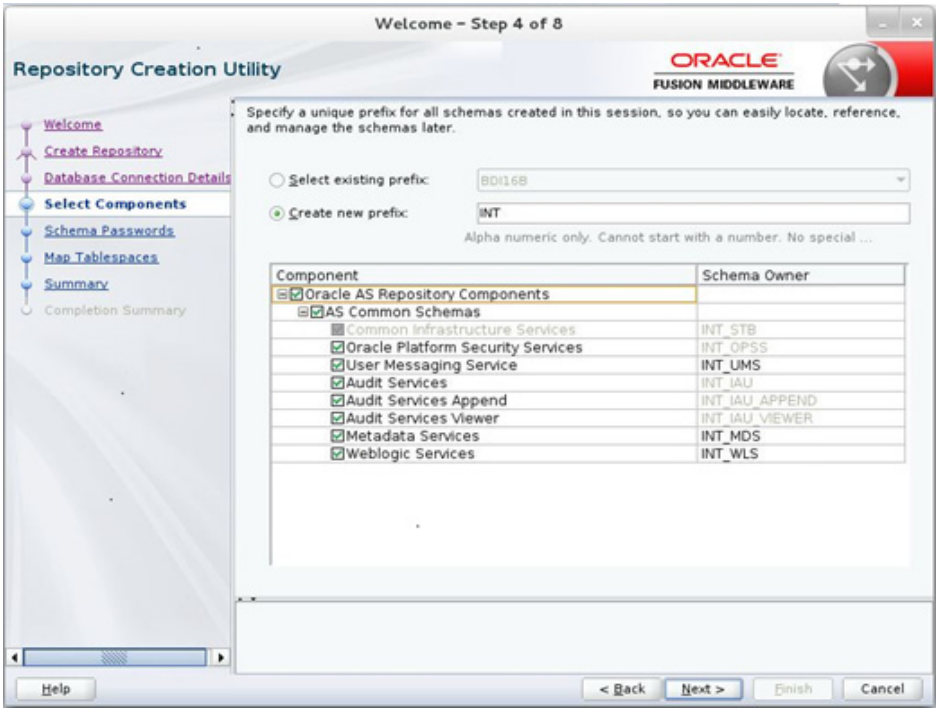
1. Run the RCU from the `<MW_HOME>/oracle_common/bin` folder. The Welcome window displays.

2. Click **Next** and select the **Create Repository** option.

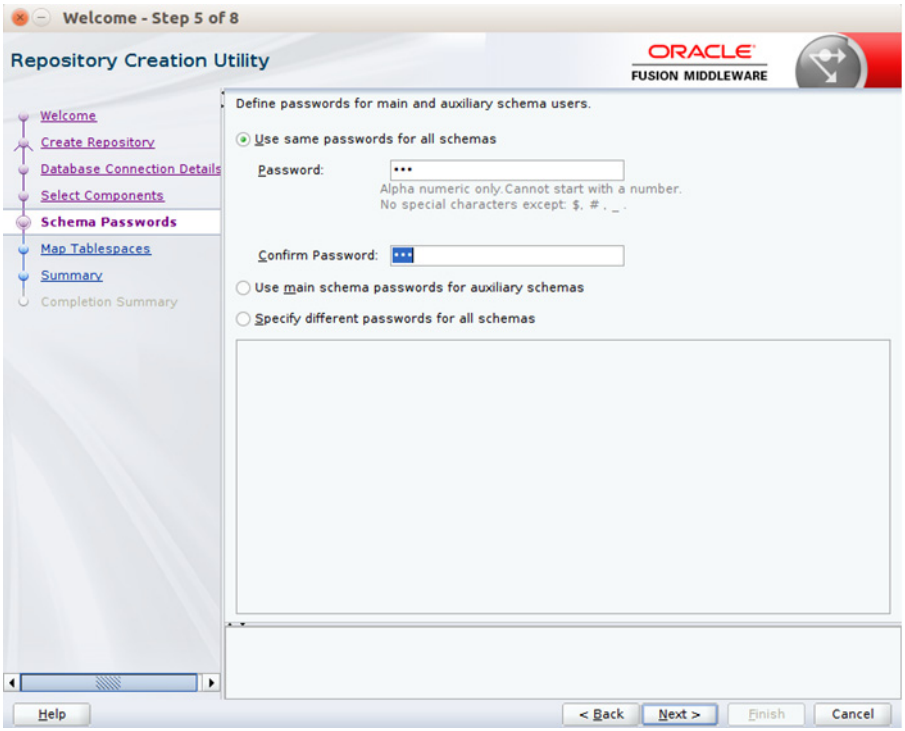
3. Click **Next**. Enter the database credentials where the schema user has to be created.



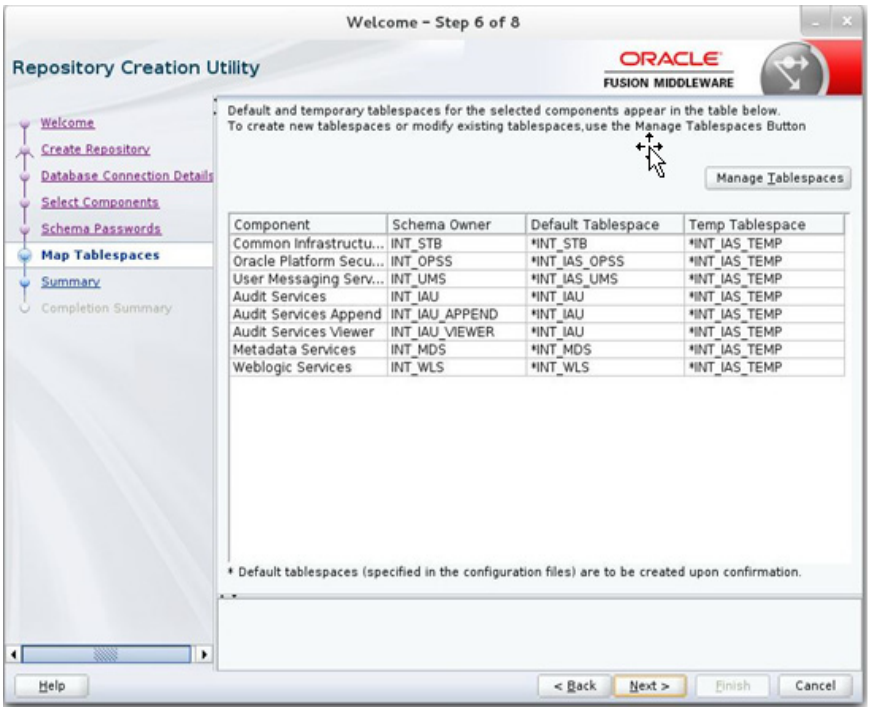

4. Click **Next**. Specify the prefix to be used for the schema user creation. For example, INT. Select Metadata Services, Weblogic Services, and Oracle Platform Security Services.




5. Click **Next**. Specify the password.

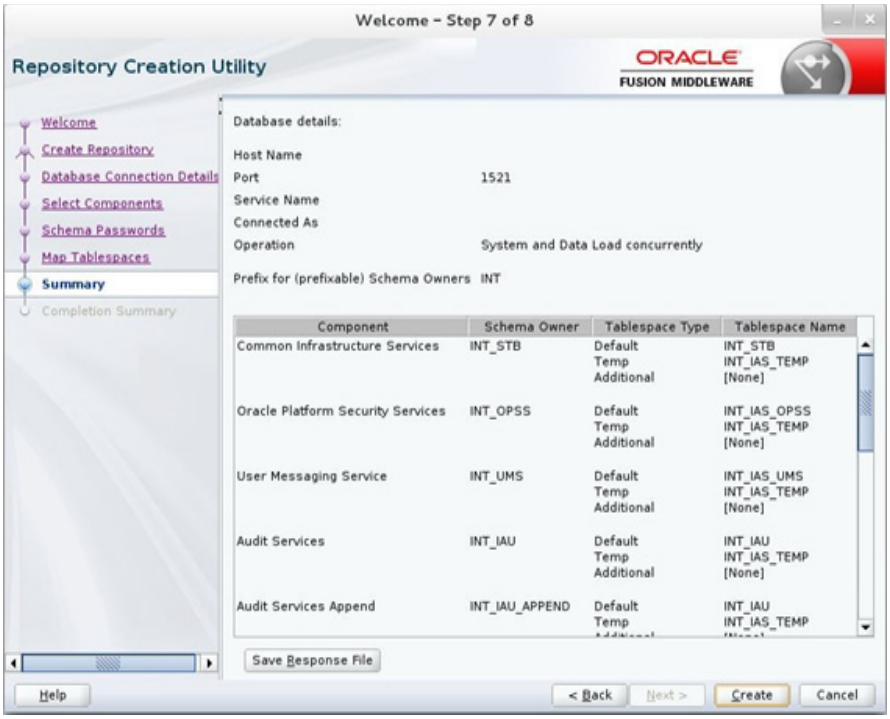



6. Click **Next**. The window provides the details of tablespaces created as part of schema creation.




7. Click **Next**. The Confirmation window displays.

8. Click **OK**. The Summary window displays.

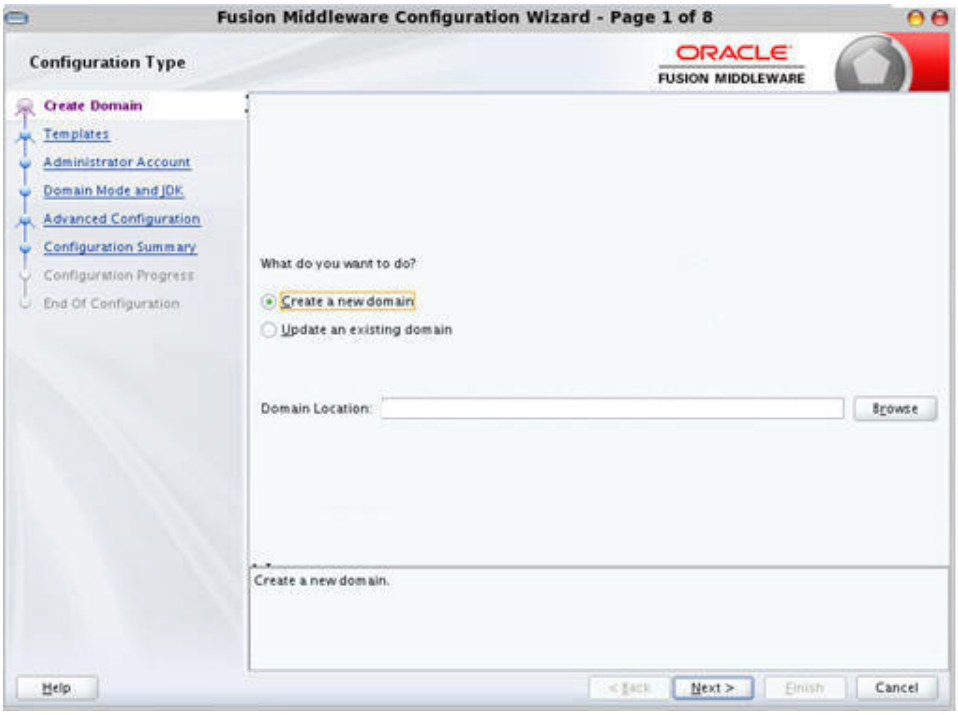



9. Click **Create** and proceed to create the schema. This could take a while to complete. The Summary window displays.

# Creating a WebLogic Domain with ADF Runtime Libraries

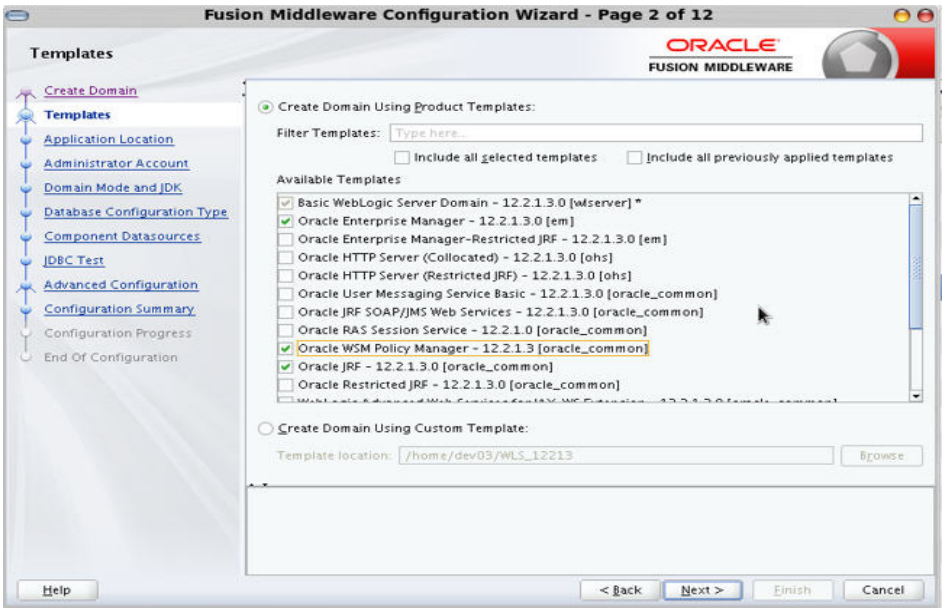
To create a new WebLogic domain with ADF runtime libraries, take the following steps:

1. Run the `config.sh` from the `<ORACLE_HOME>/oracle_common/common/`bin folder. The Configuration Type window displays.

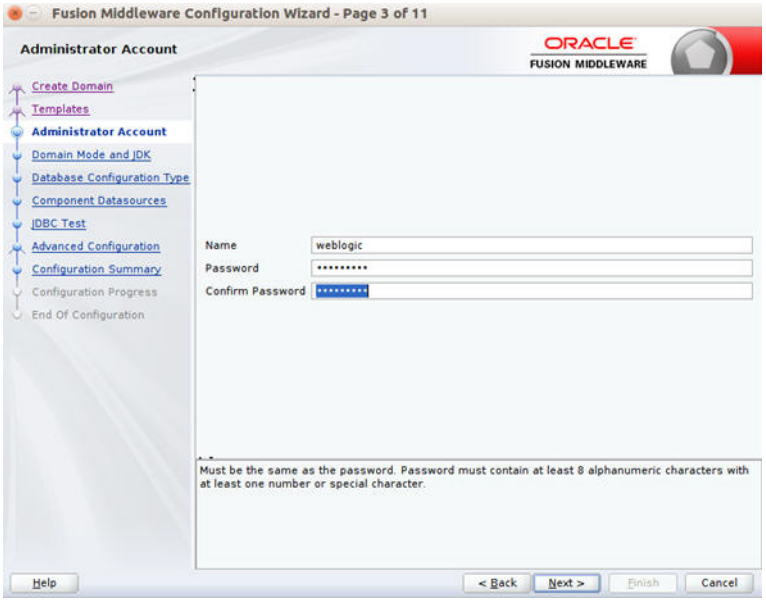



2. Select **Create a new domain**, provide domain location, and click **Next**. The Templates window displays. By default, the **Basic WebLogic Server Domain - 12.2.1.3 [wlserver]** check box is selected.

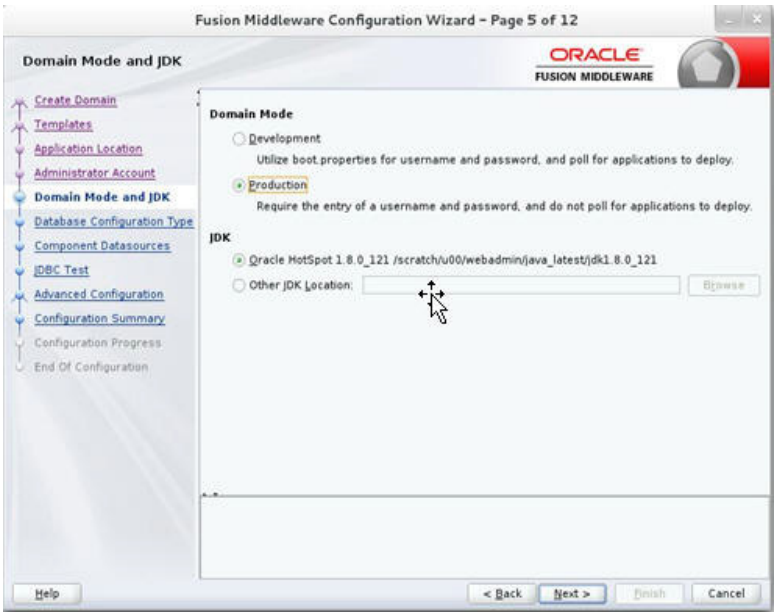
   Select the **Oracle JRF - 12.2.1.3 [oracle_common], Oracle Enterprise Manager - 12.2.1.3 [em], Oracle WSM Policy Manager - 12.2.1.3 [oracle_common],** and **WebLogic Coherence Cluster Extension - 12.2.1.3[wlserver]** check boxes.




3. Click **Next**. The Administrator Account window displays. Enter the user credentials you want to use to log in to the WebLogic Administration Console.

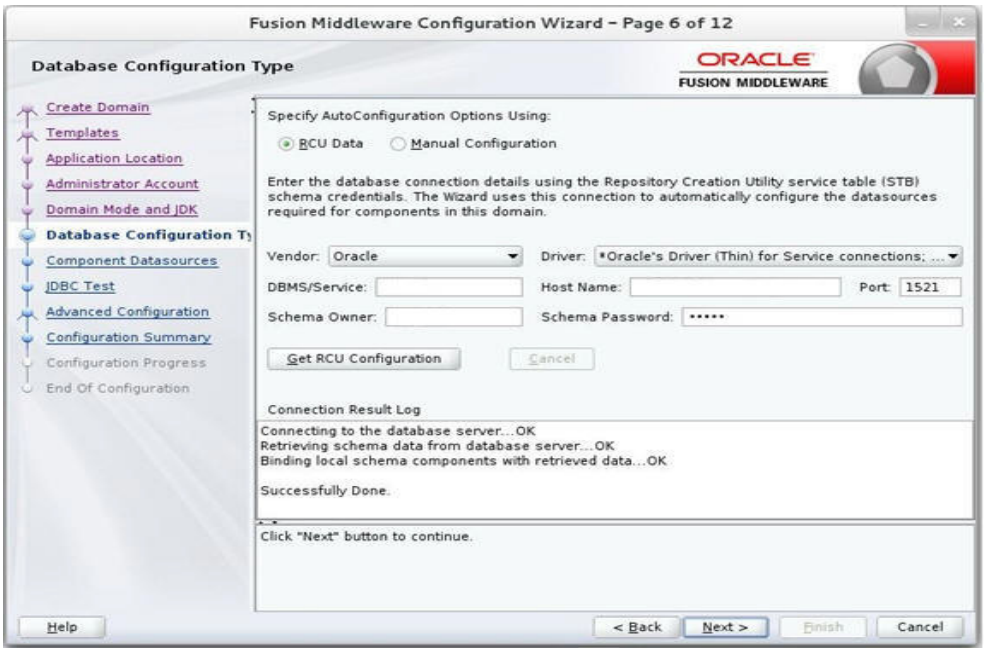



4. Click **Next**. The Domain Mode and JDK window displays. Set the **Domain Mode** as **Production** and select the **JDK** version (JDK 1.8 with the latest security updates) you want to use.

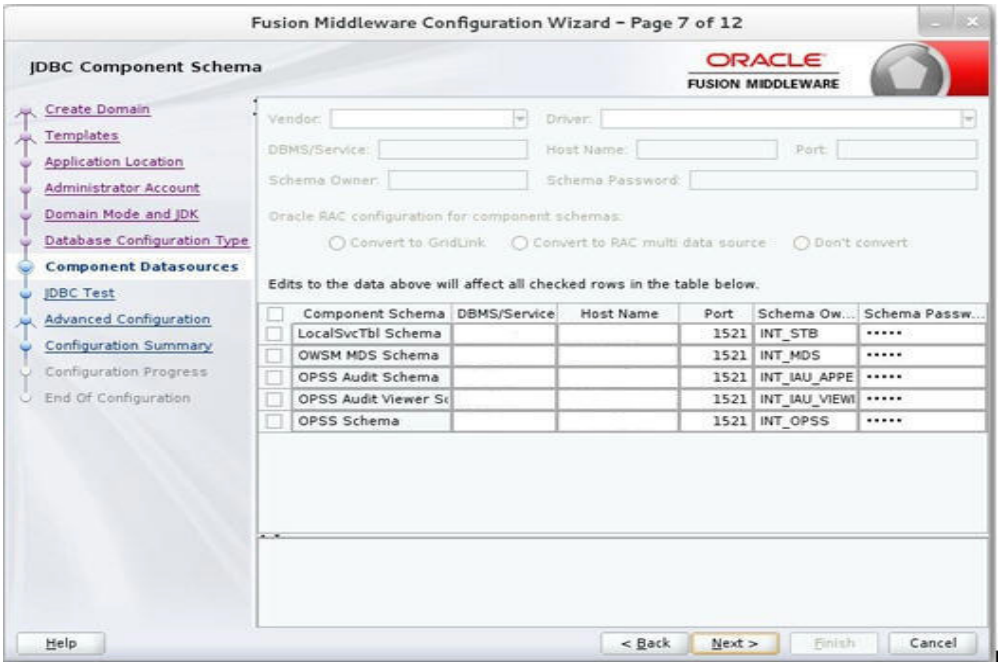



5. Click **Next**. The Database Configuration Type window displays.
   a. Select the **RCU Data** radio button.
   b. Select **Oracle** as the **Vendor**.
   c. Select **Oracle's Driver (Thin) for Service connections; Version 9.0.1 and later** as the **Driver**.
   d. Enter the **Service**, **Host Name**, **Port**, **Schema Owner**, and **Schema Password** for the *_STB schema created using the RCU.
   e. Click **Get RCU Configuration**.

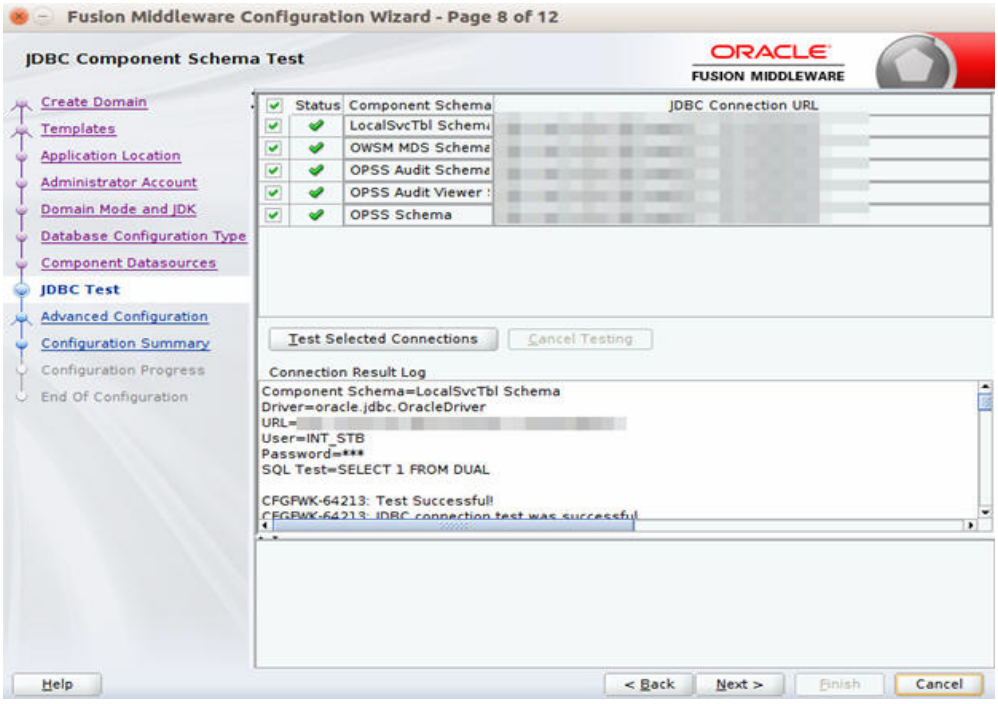
      The **Connection Result Log** displays the connection status.



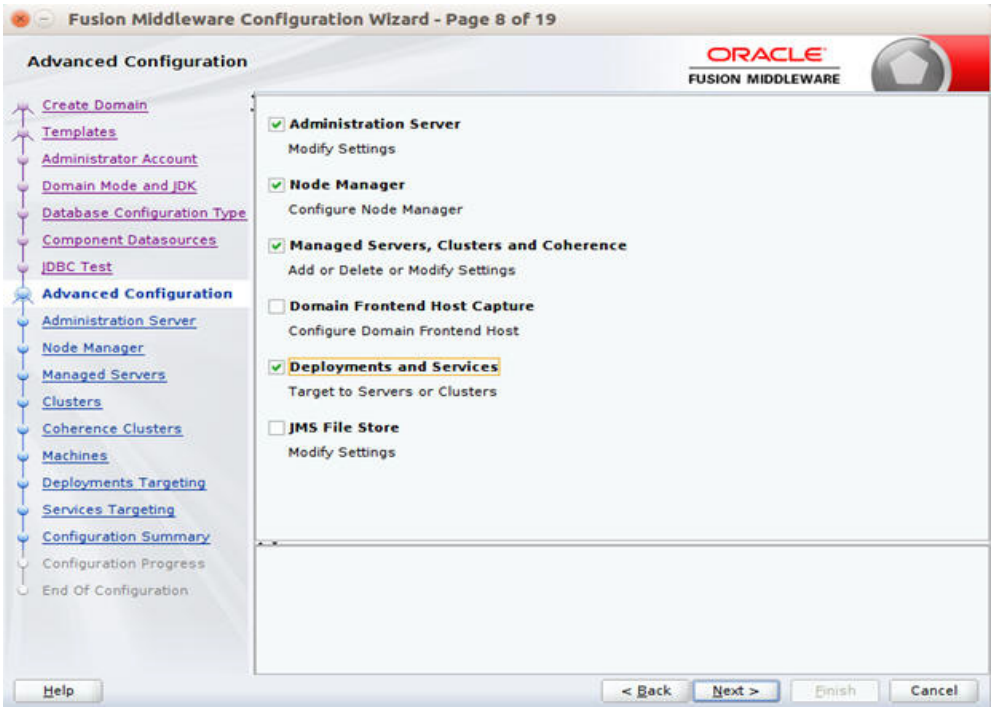

6. Click **Next**. The JDBC Component Schema window displays.



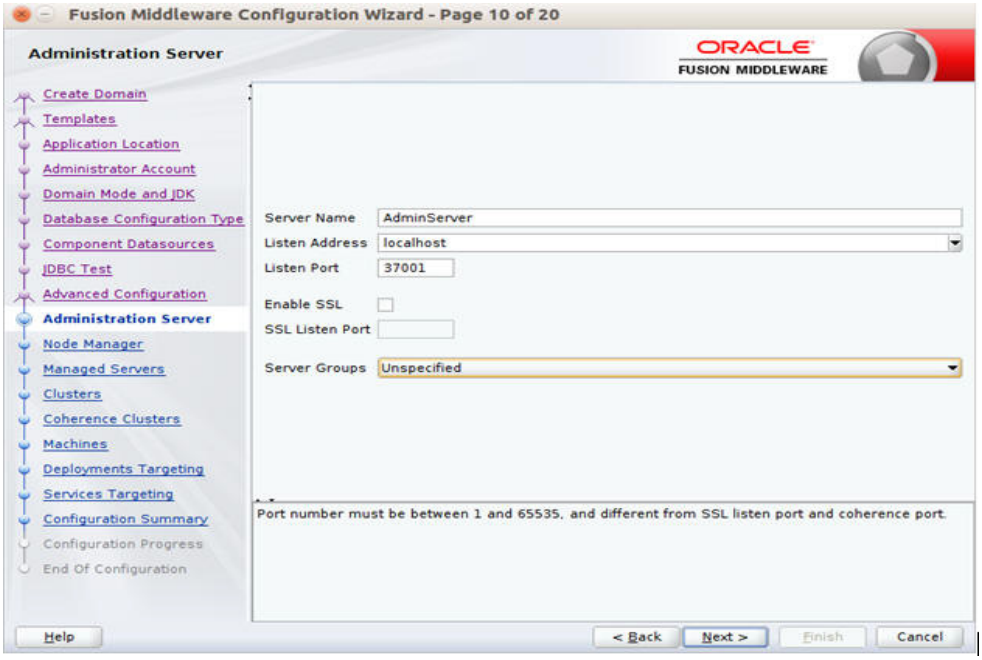

7. Click **Next**. The JDBC Component Schema Test window displays status on whether the JDBC tests on the schemas were successful.



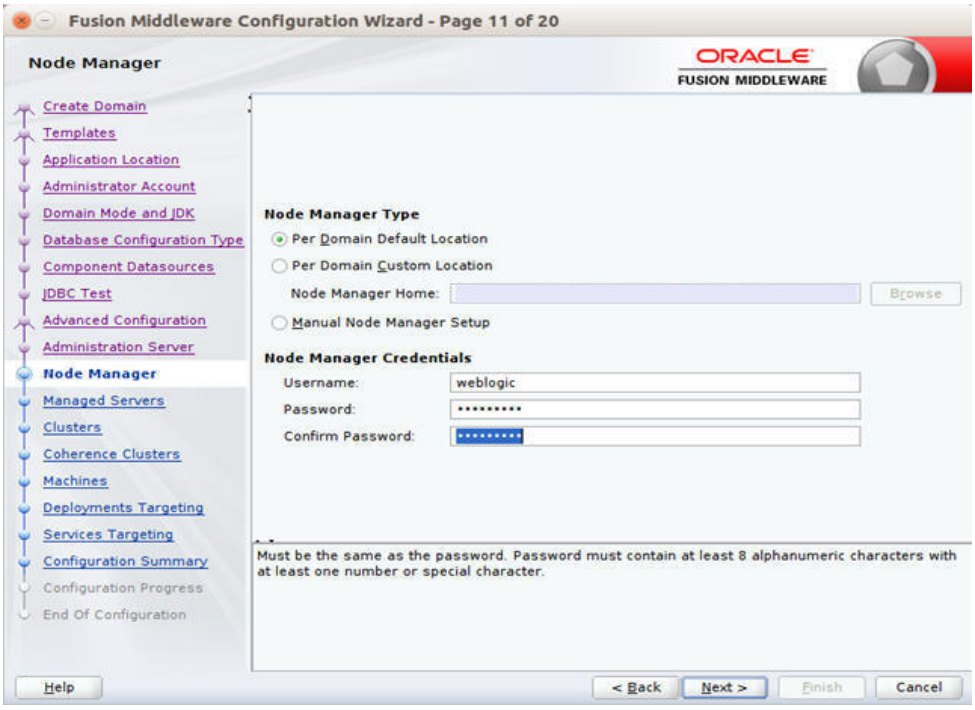

8. Click **Next**. The Advanced Configuration window displays. Select all the checkboxes, except Domain Frontend Host Capture and JMS File Store options, in this window.



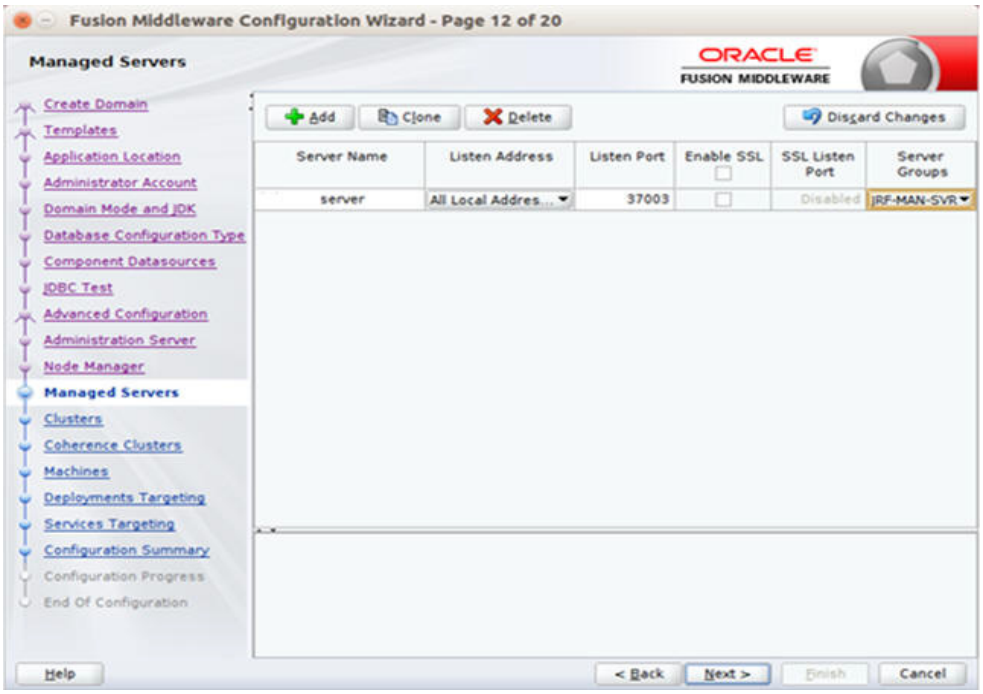

9. Click **Next**. The Administration Server window displays. Enter the **Listen Address** and the **Listen Port** details.




10. Click **Next**. The Node Manager window displays. Select the **Node Manager Type** and enter the **Node Manager Credentials**.

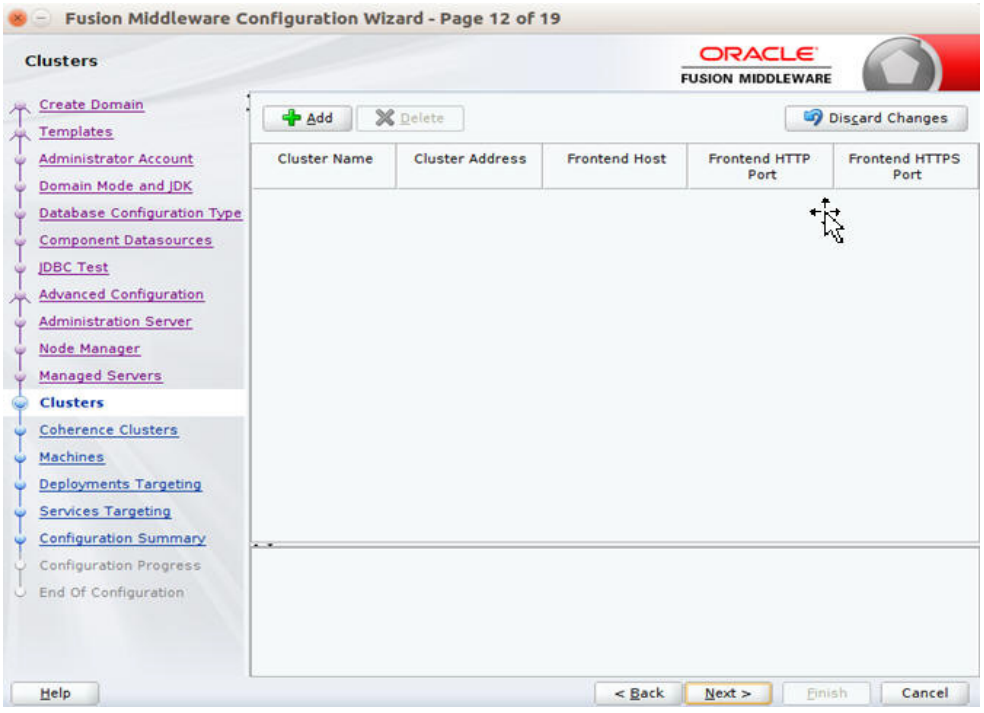



11. Click **Next**. The Managed Servers window displays.
    a. Click **Add** to add a managed server on which you will deploy JMS Console.
    b. Enter the **Server Name**, **Listen Address**, and **Listen Port** for the managed server.
    c. Set the Server Groups to JRF_MAN_SRV.



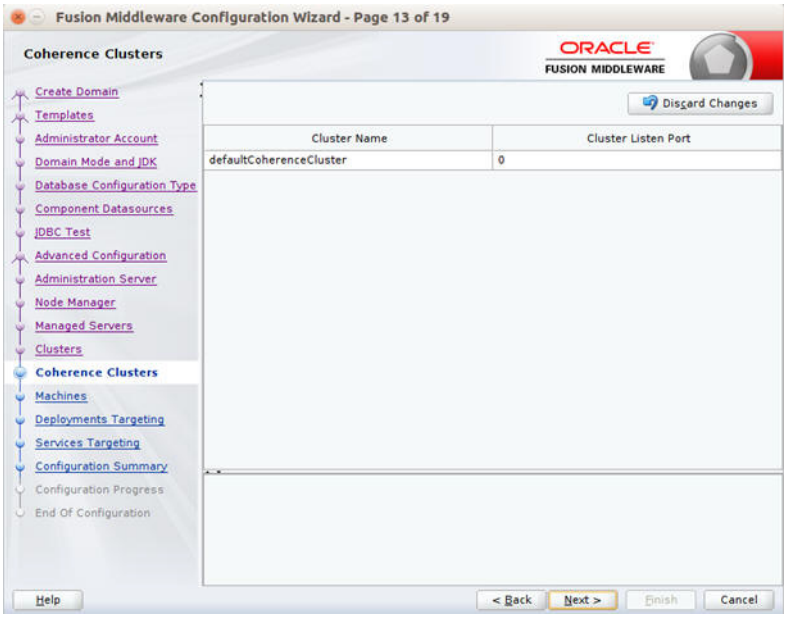

12. Click **Next**. The Clusters window displays.

    a. Click **Add** to add a cluster. This is an optional step in the procedure.




13. Click **Next**. The **Coherence Clusters** window displays.

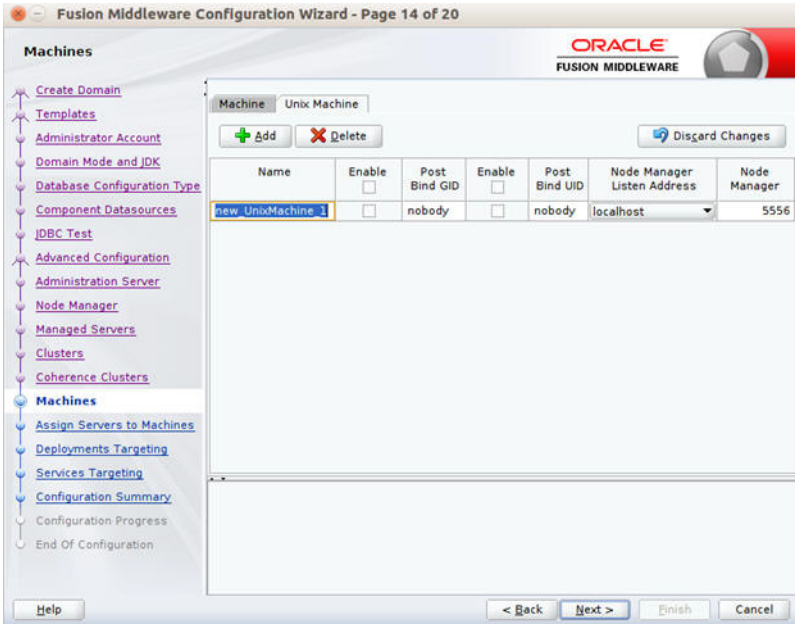
    a. Add a coherence cluster. This is an optional step in the procedure.



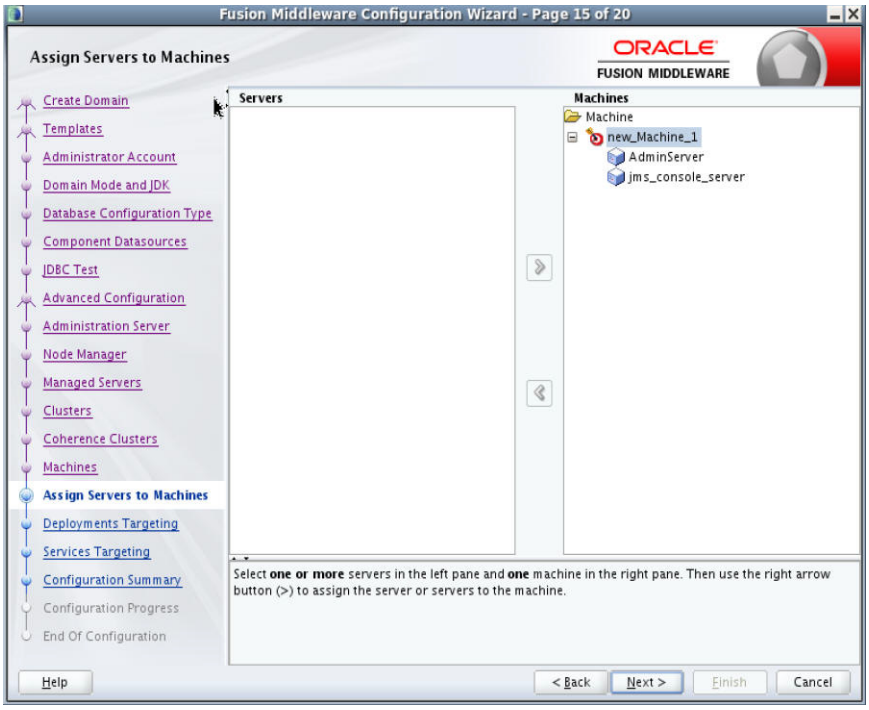

14. Click **Next**. The Machines window displays.

    a. Click **Add**.

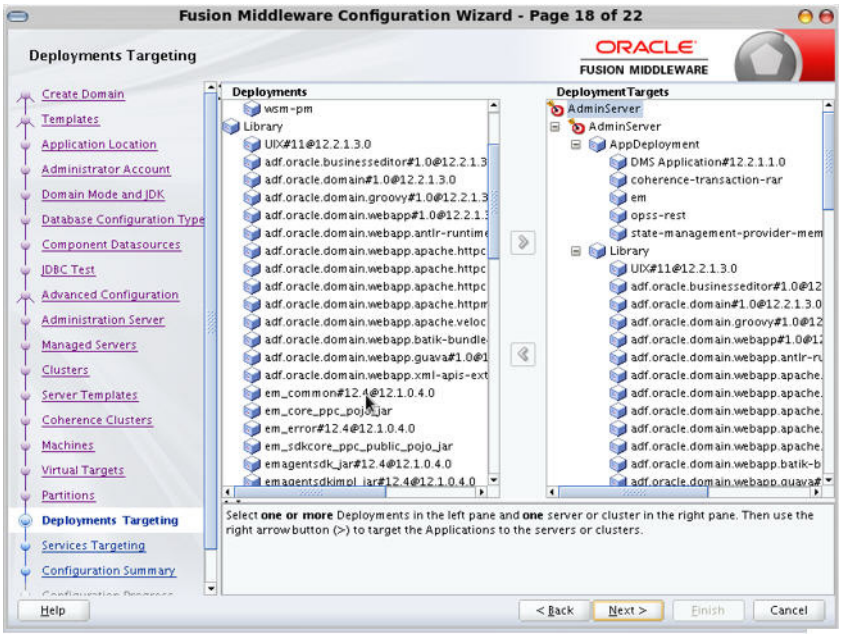
    b. Enter the **Name** and the **Node Manager Listen Address** for the managed server.



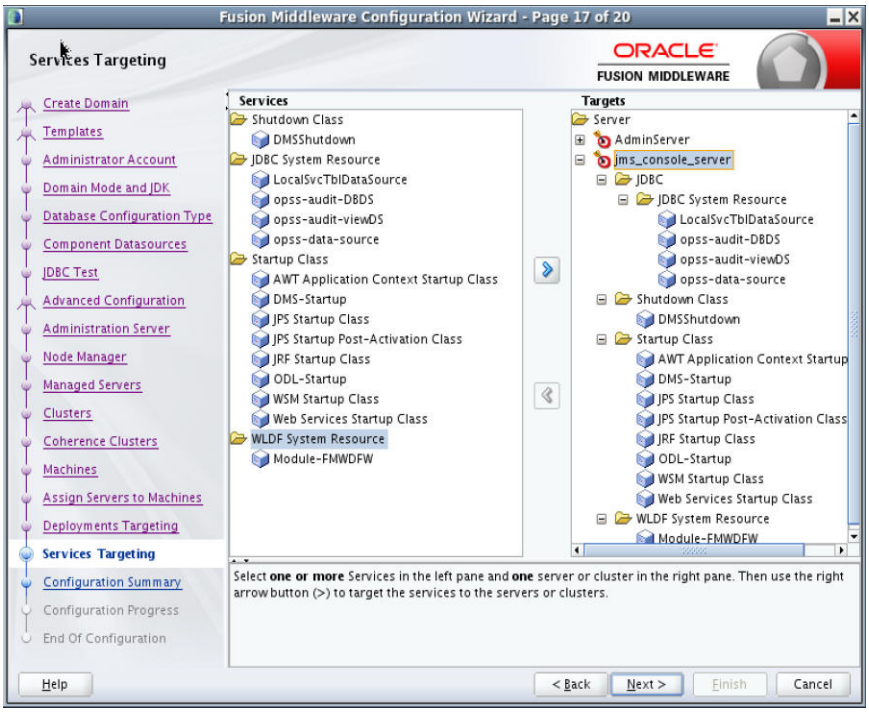

15. Click **Next**. The Assign Servers to Machines window displays. Add the Admin Server and the managed server to the computer.



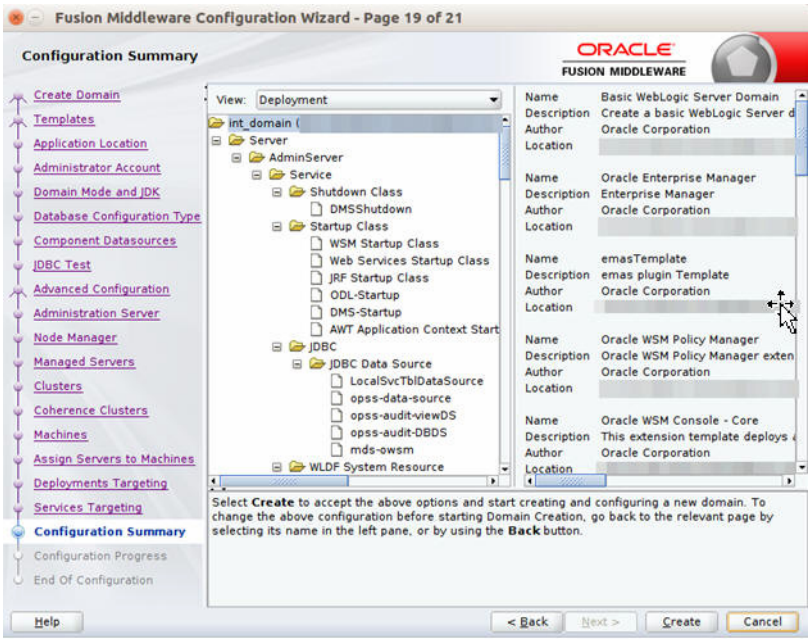

16. Click **Next**. The Deployments Targeting window displays. Select wsm-pm from Deployments and add it to AdminServer in Targets.




17. Click **Next**. The Services Targeting window displays.

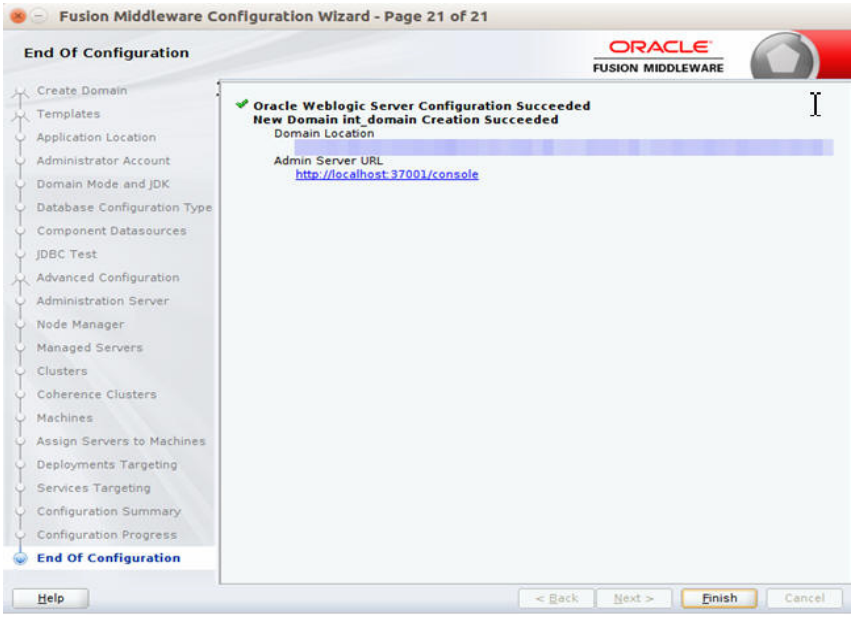



**18.** Click **Next**. The Configuration Summary window displays. Verify that all information described in this window is accurate.




**19.** Click **Create**. The Configuration Progress window displays a message when the domain is created successfully.

20. Click **Next**. The Configuration Success window displays that describes the **Domain Location** and **Admin Server URL** once the configuration is complete.

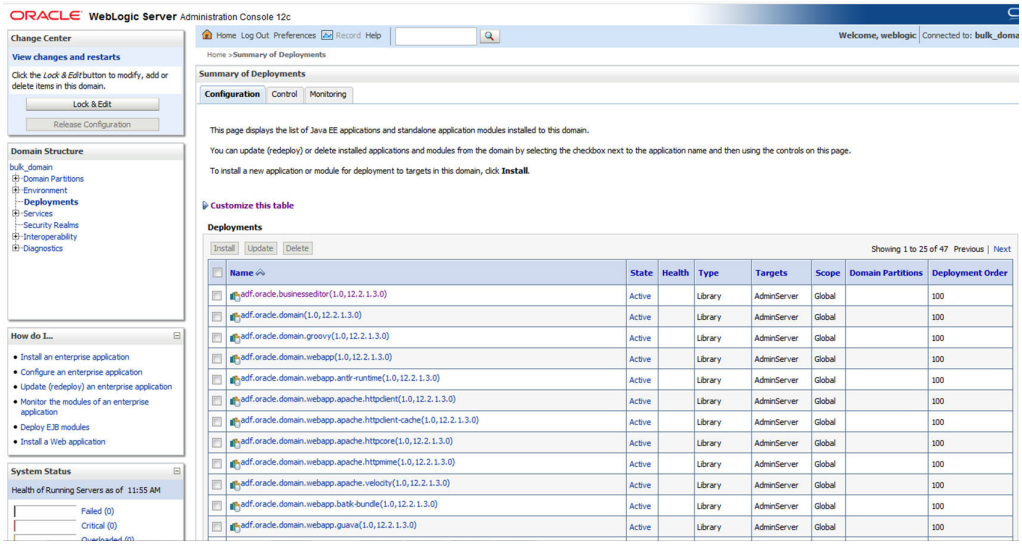



21. Click **Finish** to complete creating the WebLogic domain and managed servers with ADF runtime.

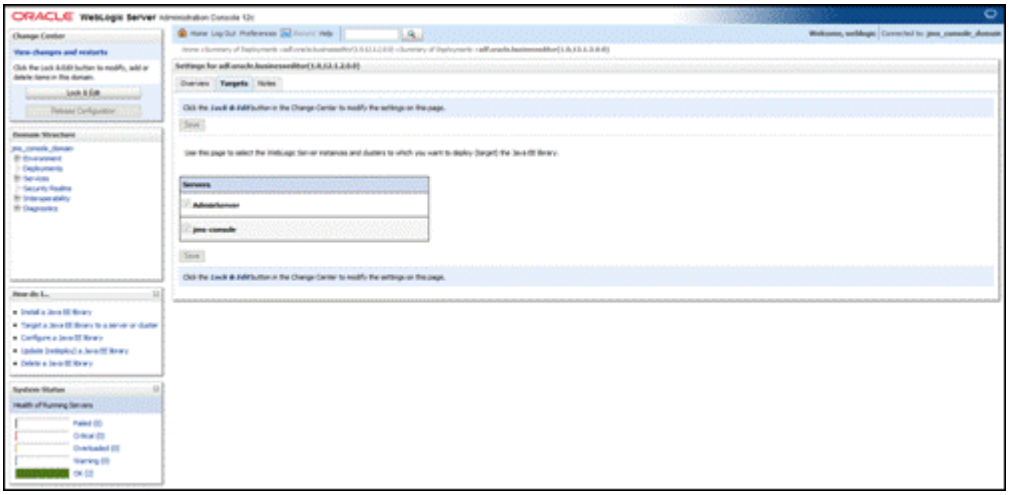
# Verifying the Installation of the ADF Runtime Libraries

To verify the installation of the ADF runtime libraries, take the following steps:

1. Start the Admin Server in the WebLogic domain and log on to the WebLogic Server Administration console with the admin credentials.
2. In the **Domain Structure** section, click **Deployments**. The deployed libraries are listed.



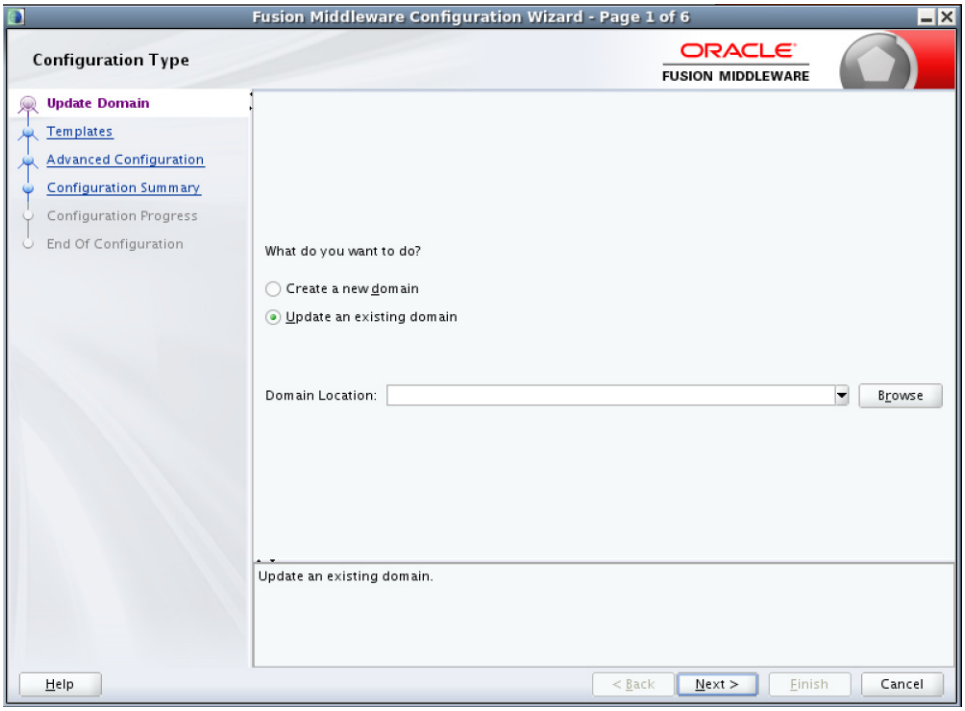

3. Click on an ADF library and go to the **Targets** tab. Verify that the library is targeted to both the Admin Server and the managed server. Verify these details for all the ADF libraries.



# Extending an Existing Domain to Add ADF Runtime Libraries

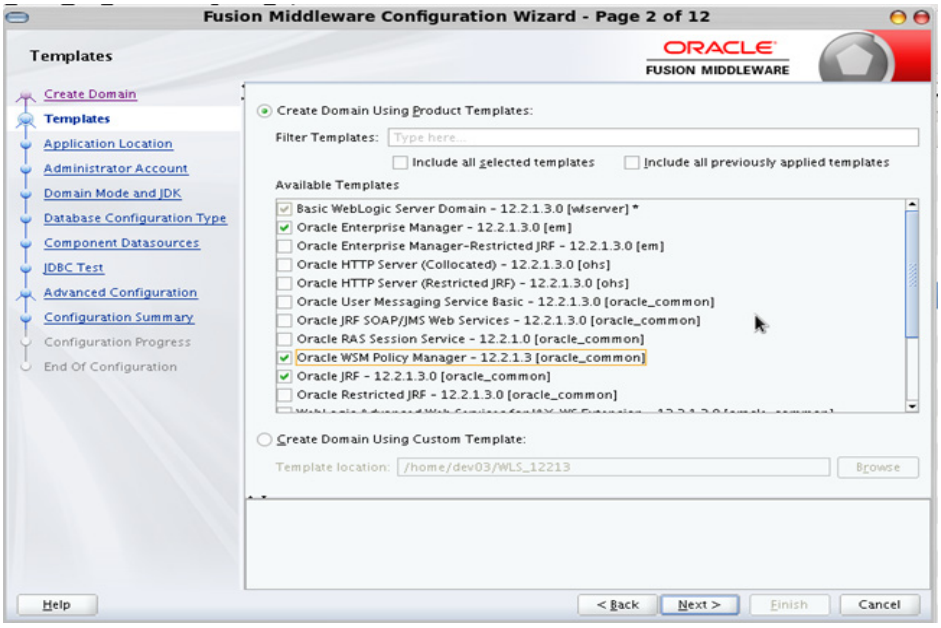
To extend an existing domain to add ADF runtime libraries, take the following steps:

1. Run `config.sh` from the `<ORACLE_HOME>/oracle_common/common/bin` folder. The Configuration Type window displays.




2. Select the **Update an existing domain** option. Click **Browse** and choose the location of the domain to be updated with the ADF libraries.

3. Click **Next**. The Templates window displays. Select the **Oracle JRF - 12.2.1.3.0 [oracle_common]**, Oracle Enterprise Manager - 12.2.1.3.0 [em], Oracle WSM Policy Manager - 12.2.1.3.0 [oracle_common], and **WebLogic Coherence Cluster Extension - 12.2.1.3.0 [wlserver]** checkboxes.



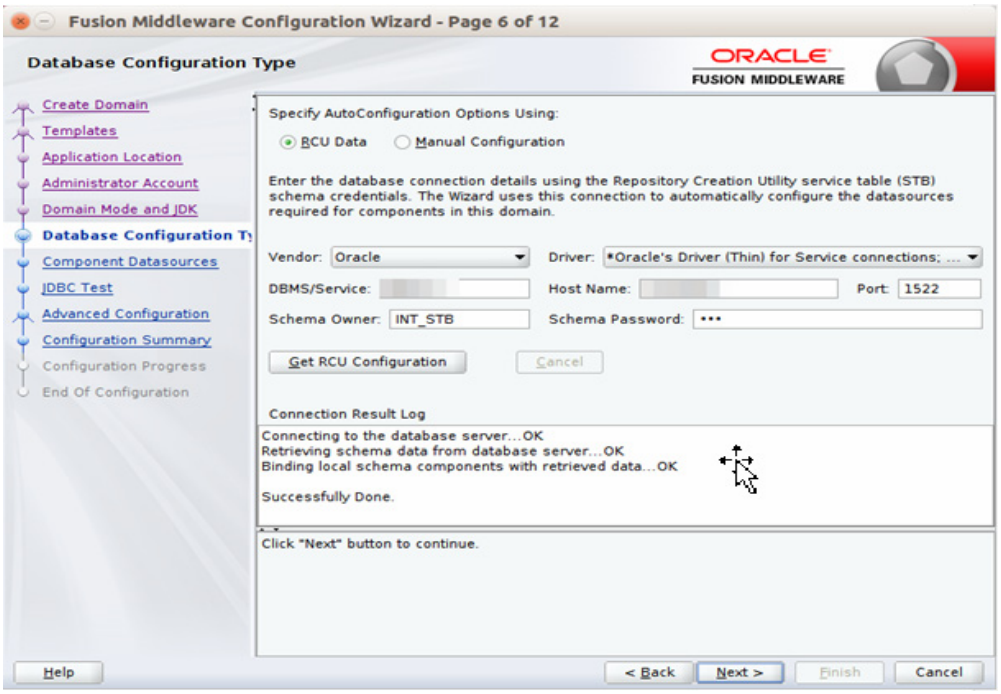

4. Click **Next**. The Database Configuration Type window displays.
   a. Select the **RCU Data** radio button.
   b. Select **Oracle** as the Vendor.

c. Select **Oracle's Driver (Thin) for Service connections; Version 9.0.1 and later** as the **Driver**.

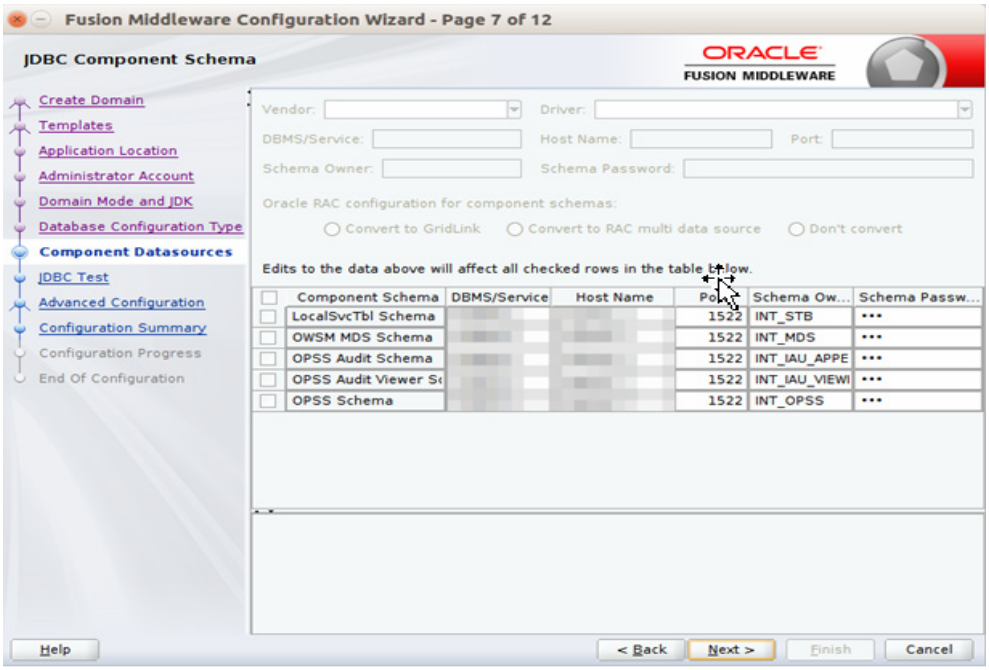
d. Enter the **Service**, **Host Name**, **Port, Schema Owner**, and **Schema Password** for the *_STB schema created using the RCU.

e. Click **Get RCU Configuration**.

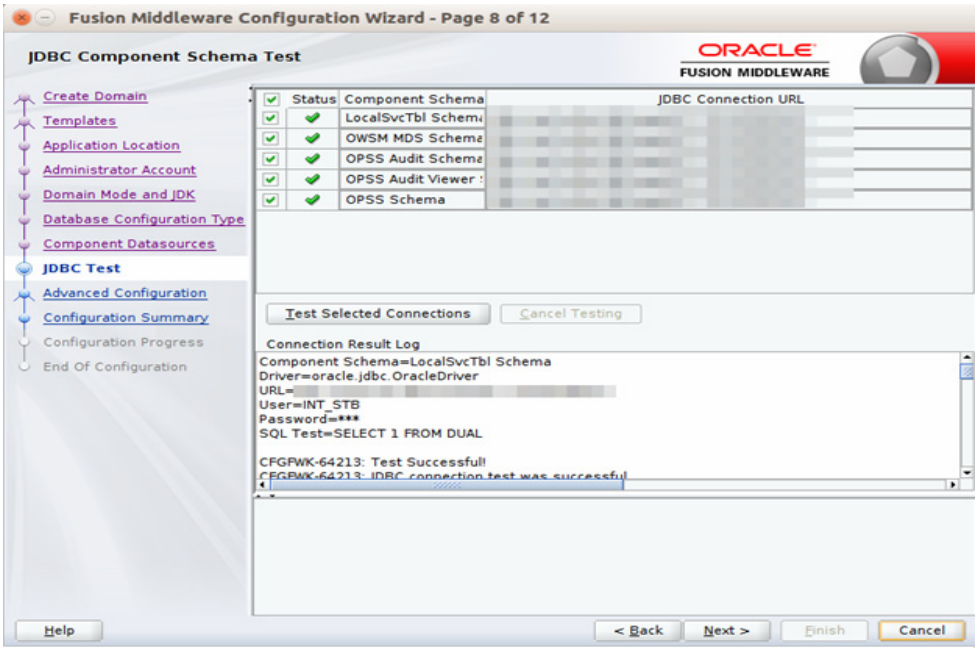
The **Connection Result Log** displays the connection status.



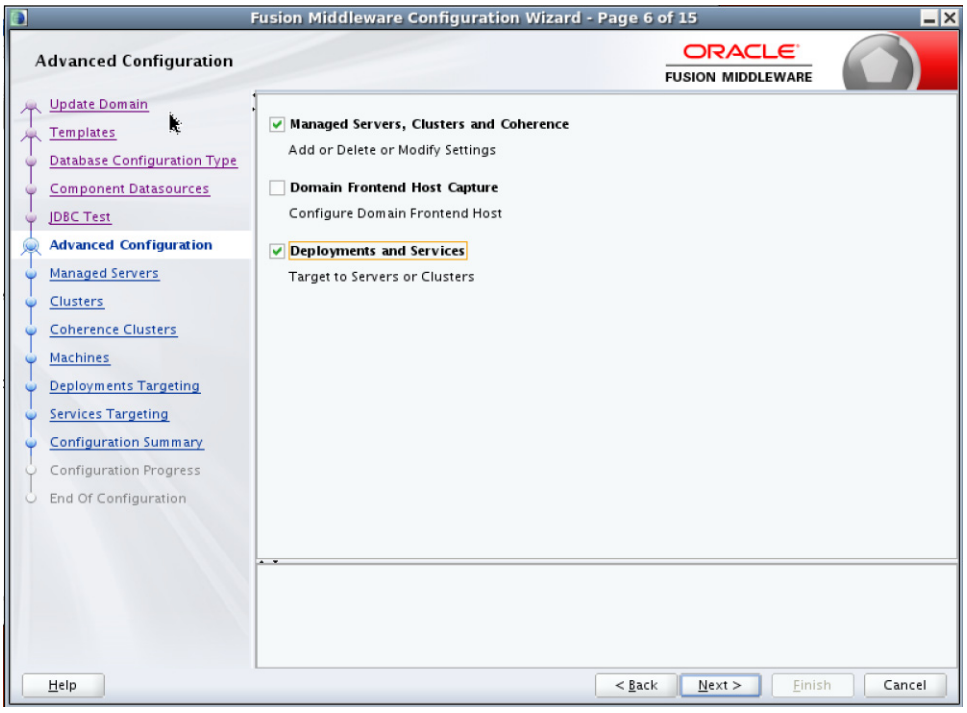

5. Click **Next**. The JDBC Component Schema window displays.



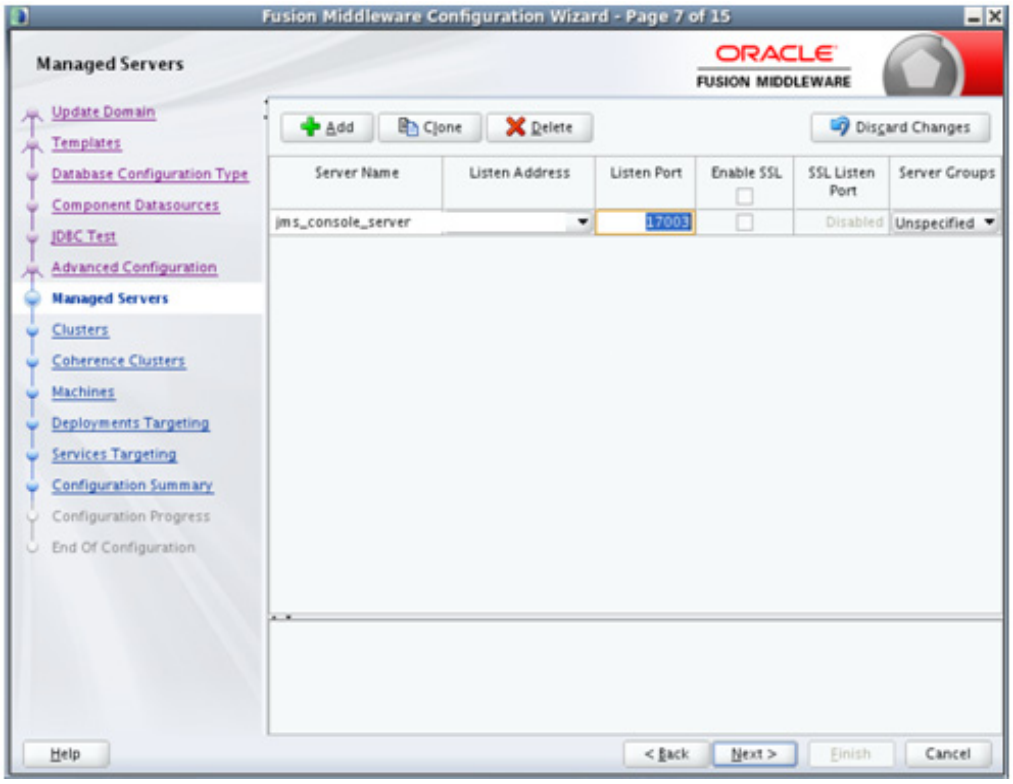
6. Click **Next**. The JDBC Component Schema Test window displays which indicates the status of the schema tests.



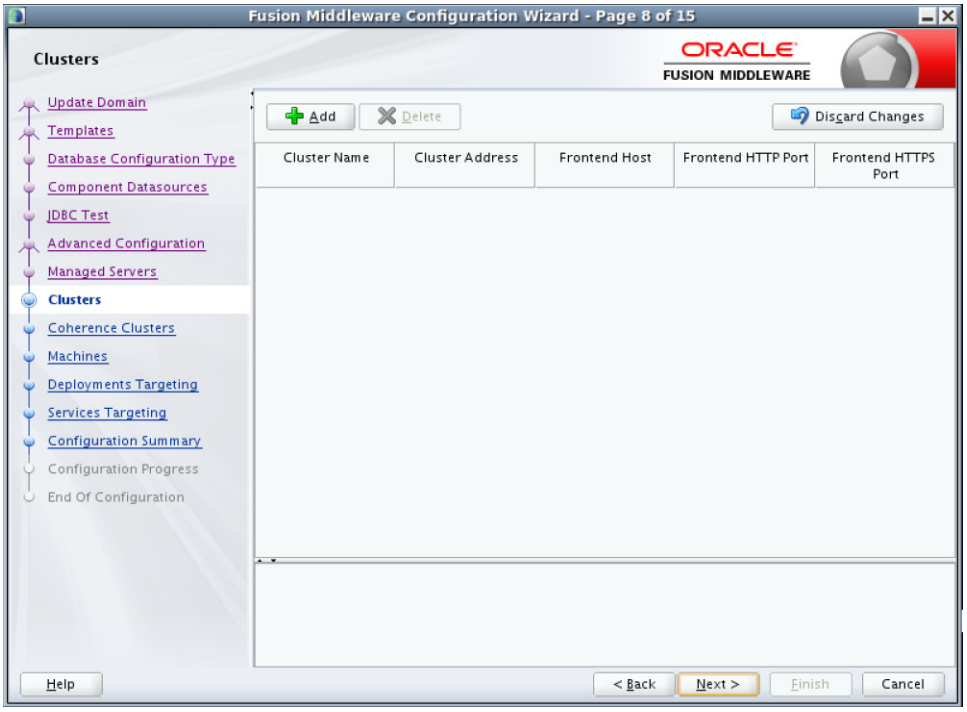

7. Click **Next**. The Advanced Configuration window displays. Select the **Managed Servers, Clusters and Coherence** and the **Deployments and Services** checkboxes.



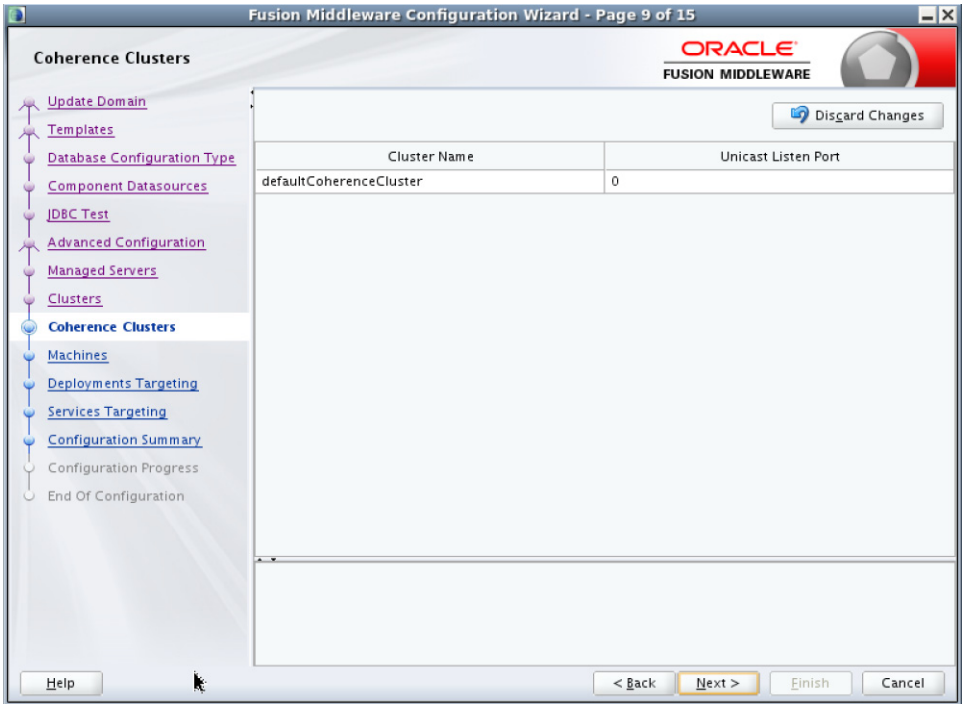

8. Click **Next**. The Managed Servers window displays.
   a. Click **Add** to add a managed server.
   b. Enter the **Server Name**, **Listen Address**, and the **Listen Port** for the managed server.




9. Click **Next**. The Clusters window displays. Click **Add** to add a cluster. This is an optional step in the procedure.



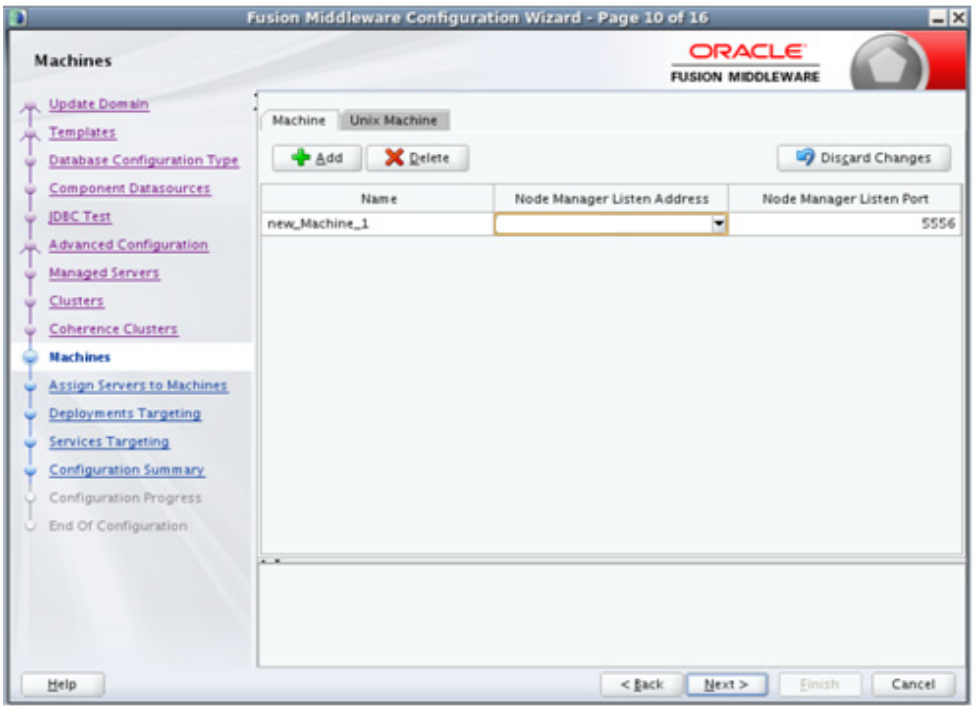

10. Click **Next**. The Coherence Clusters window displays. Add a coherence cluster. This is an optional step in the procedure.



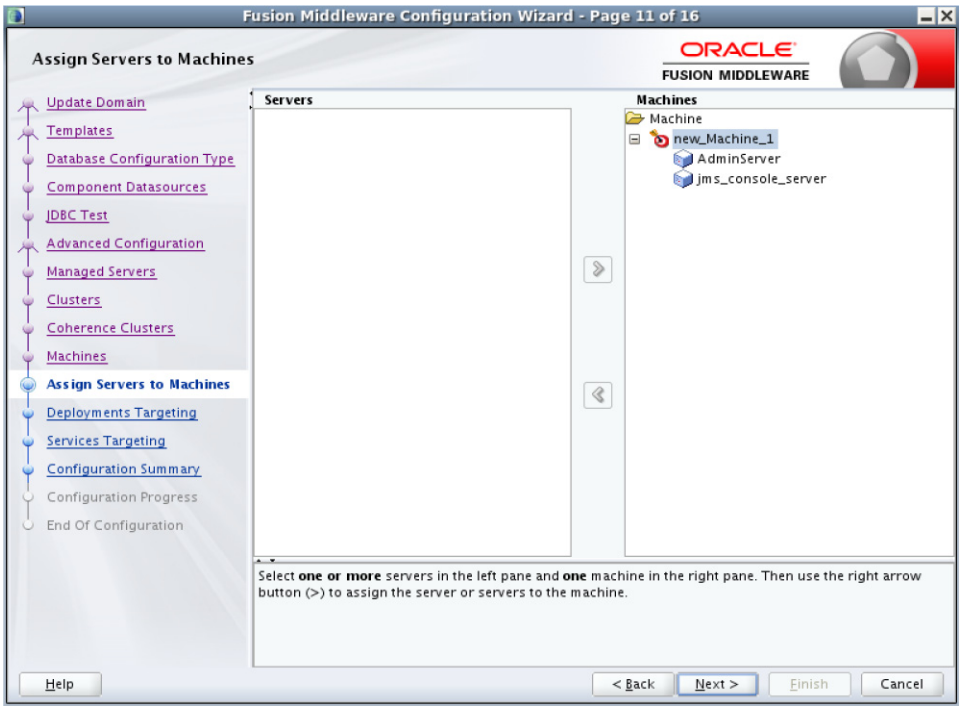

11. Click **Next**. The Machines window displays.

    a. Click **Add** to add a computer.

    b. Enter the **Name** and the **Node Manager Listen Address**.



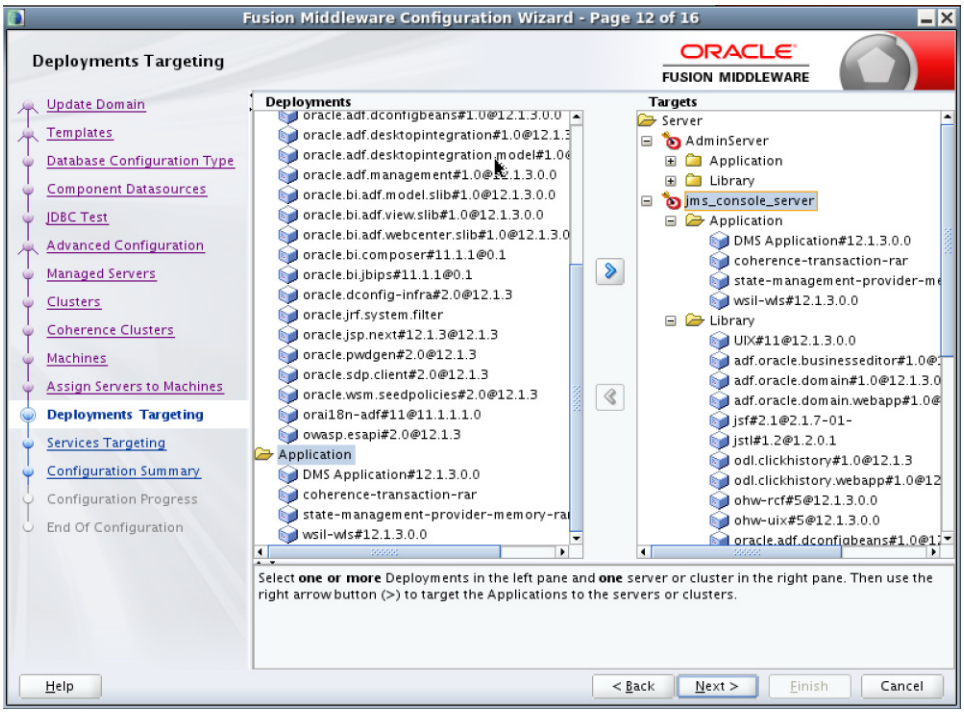

12. Click **Next**. The Assign Servers to Machines window displays. Add both the Admin Server and the managed server to the computer.




13. Click **Next**. The Deployments Targeting window displays.

    a. By default, all libraries and applications are only targeted to the Admin Server. Ensure wsm-pm is targeted to AdminServer.

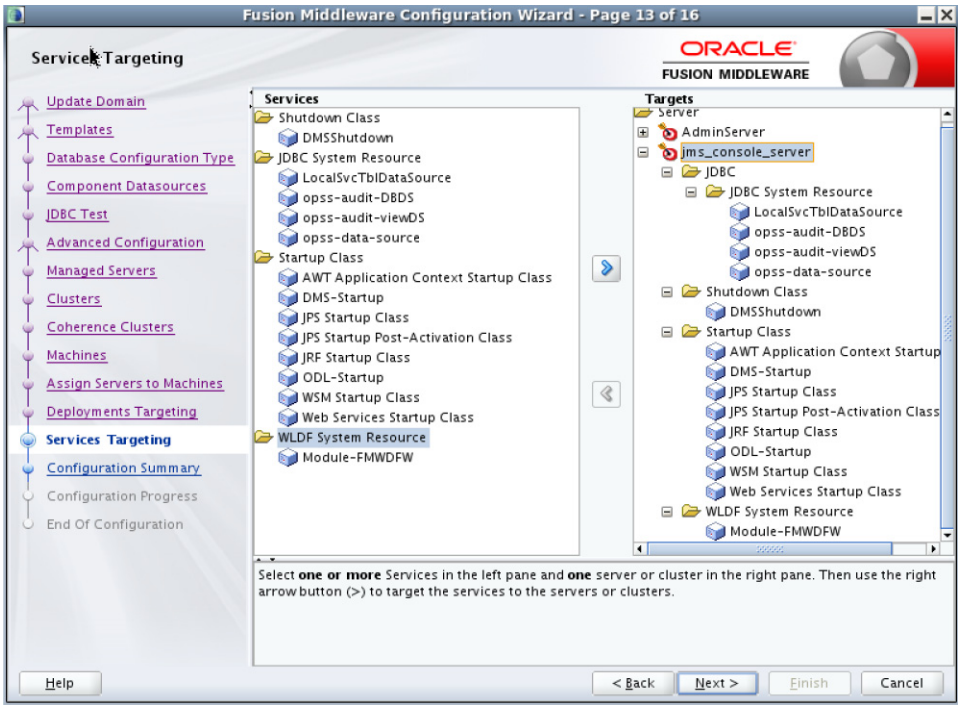
    b. Target all the libraries and applications to the managed server.



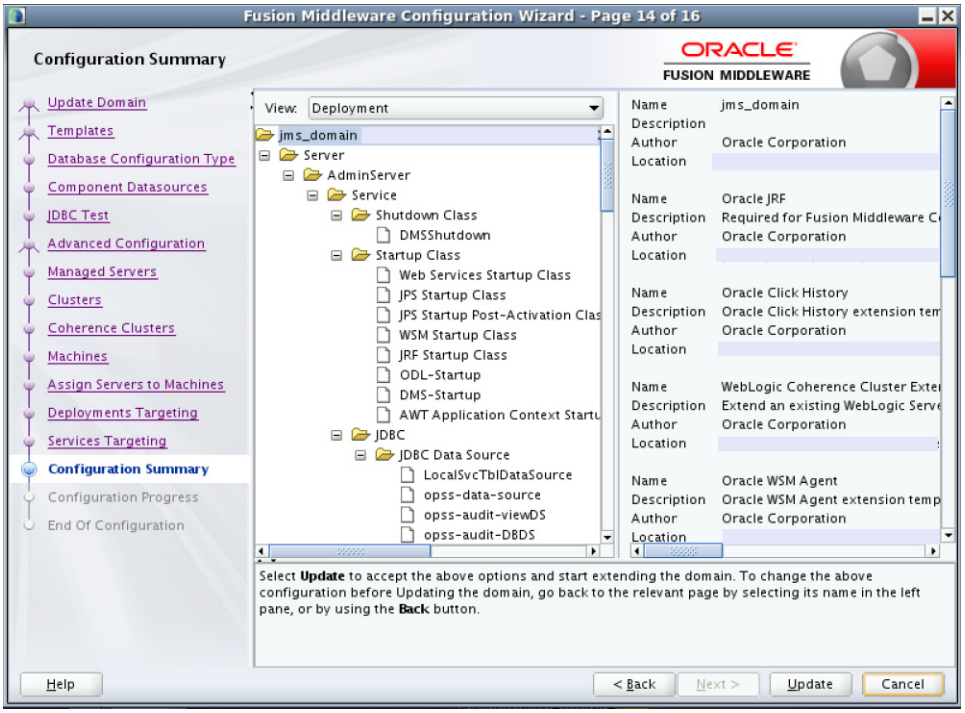

14. Click **Next**. The Services Targeting window displays.

    a. By default, all services are only targeted to the Admin Server.

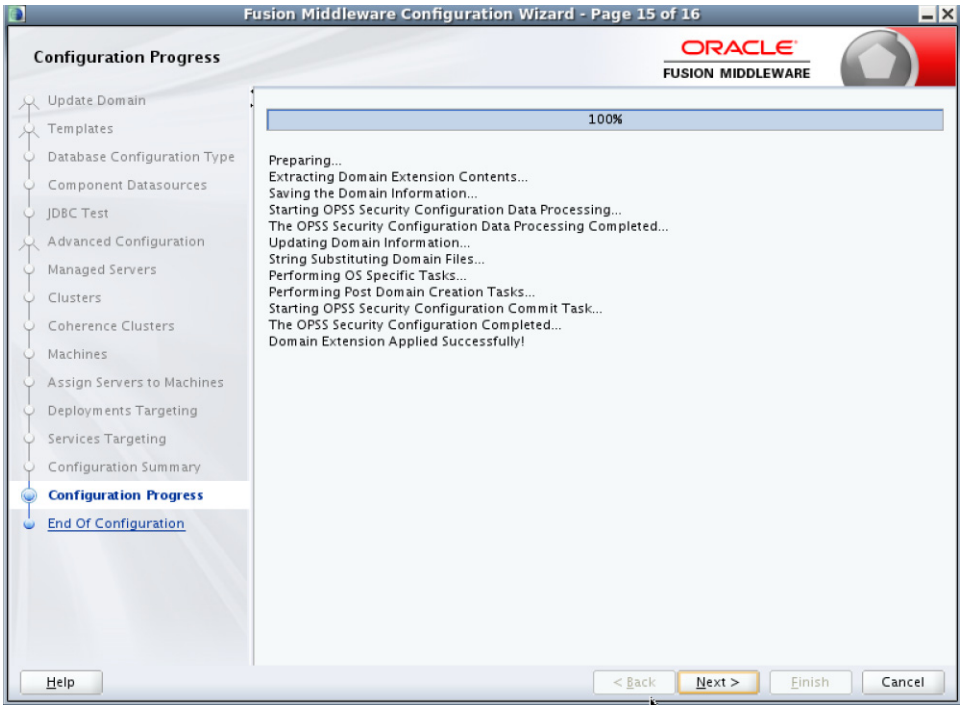
    b. Target all services to the managed server.



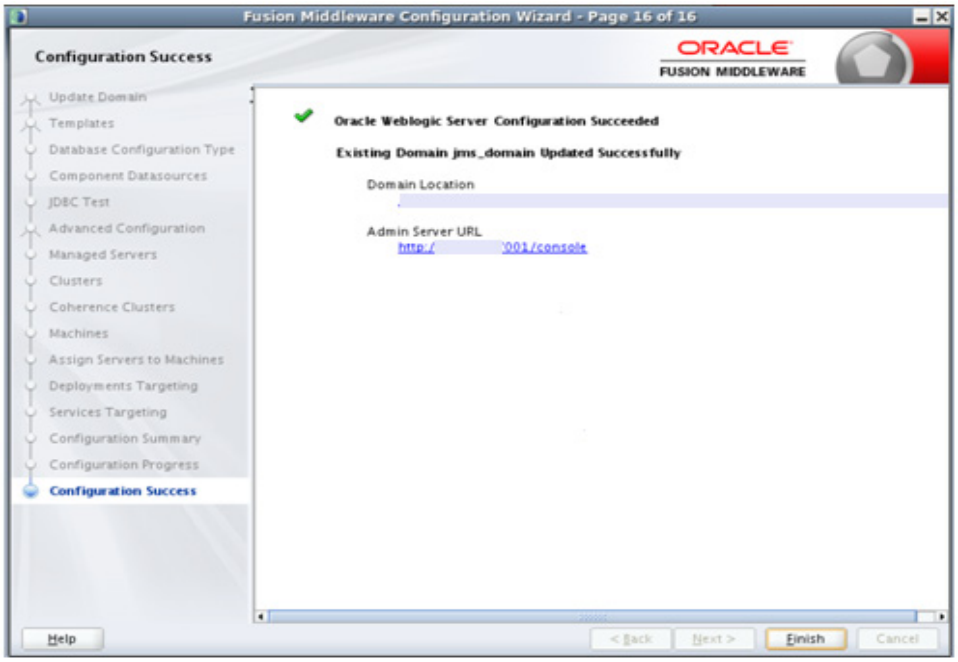

**15.** Click **Next**. The Configuration Summary window displays. Verify that all information described in this window is accurate.




**16.** Click **Update**. The Configuration Progress window displays. The window displays a status message when the domain is updated successfully.




17. Click **Next**. The Configuration Success window displays that describes the **Domain Location** and **Admin Server URL** once the configuration is complete.




18. Click **Finish** to complete updating the existing domain with the ADF runtime.
19. Start the Weblogic Admin and Manage Server.
20. Set JTA timeout to 43200:
    1. Log in to the Admin console.
    2. Clock on the domain name.

3. Select the **JTA** tab and change the timeout value to 43200.

# 3

# Deploying JMS Console Application

This chapter describes the steps you should take to deploy JMS Console.

## Preparing the Database for JMS Console Installation

Before you begin installing JMS Console, make sure you have a valid AQ JMS. JMS Console assumes that the AQ JMS configured is valid and tested for messaging. To use JMS Console with the RIB messaging system, you need a valid and a working RIB AQ system.

---

**Note:** For more information on RIB AQ database configuration, see Chapter 3, Database Installation Tasks, in the *Oracle Retail Integration Bus Installation Guide*.

---

## Supporting Multiple JMS Servers

JMS Console supports multiple AQ JMS servers. During the installation, if multiple JMS servers are specified in the configuration file, JMS Console creates the required data sources on the WebLogic server. JMS Console provides you the ability to log in to different AQ servers and monitor them.

## Deploying JMS Console Application on the WebLogic Servers

To deploy the JMS Console ear, take the following steps:

1. Download JmsConsole19.0.000ForAll19.x.xApps_eng_ga.zip to $RIB_HOME/tools-home/.
2. Go to $RIB-HOME/tools-home/ and extract the contents of the zip file (JmsConsole19.0.000ForAll19.x.xApps_eng_ga.zip).
3. Edit jms-console-deployment-env-info.json as follows:

   cd jmsconsole/conf/

   vi jms-console-deployment-env-info.json

---

**Note:** For more information on configuring jms-console-deployment-env-info.json correctly, see Appendix: JMS Console Installation Checklist.

---

4. Modify the DataSourceDef and MiddlewareServerDef information with information that is specific to your environment.

   By default, the JSON files have placeholders for three AQ connections, namely AqDataSource1, AqDataSource2, and AqDataSource. If you plan to install a single AQ, delete the other AQ instances. Alternatively, if you plan to install more than three AQs, add more instances as appropriate.

   The following is an example configuration:

```
{
    "JmsConsoleDeploymentEnvInfo":{
        "DataSourceDef":{
            "AqDataSource":[
            {
                "dataSourceName":"AqDataSource1",
                "dataSourceClass":"oracle.jdbc.pool.OracleDataSource",
                "dataSourceJndiName":"jdbc/AqDataSource1",
                "jdbcUrl":"jdbc:oracle:thin:@//host.example.com:1521/pdborcl",
                "jdbcUserAlias":"aqDataSourceUserAlias1",
                "jdbcUser":"GET_FROM_WALLET",
                "jdbcPassword":"GET_FROM_WALLET"
            },
            {
                "dataSourceName":"AqDataSource2",
                "dataSourceClass":"oracle.jdbc.pool.OracleDataSource",
                "dataSourceJndiName":"jdbc/AqDataSource2",
                "jdbcUrl":"jdbc:oracle:thin:@//host.example.com:1521/pdborcl",
                "jdbcUserAlias":"aqDataSourceUserAlias2",
                "jdbcUser":"GET_FROM_WALLET",
                "jdbcPassword":"GET_FROM_WALLET"
            },
            {
                "dataSourceName":"AqDataSource3",
                "dataSourceClass":"oracle.jdbc.pool.OracleDataSource",
                "dataSourceJndiName":"jdbc/AqDataSource3",
                "jdbcUrl":"jdbc:oracle:thin:@//host.example.com:1521/pdborcl",
                "jdbcUserAlias":"aqDataSourceUserAlias3",
                "jdbcUser":"GET_FROM_WALLET",
                "jdbcPassword":"GET_FROM_WALLET"
            }
            ]
        },
        "MiddlewareServerDef":{
            "JmsConsoleAppServer":{
                "weblogicDomainName":"jmsconole3_domain",
                "weblogicDomainHome":"/home/weblogic/oracle/middleware_
121200/user_projects/domains/jmsconole_domain",

"weblogicDomainAdminServerUrl":"t3://jmsconsolehost.example.com:7001",
                "weblogicDomainAdminServerProtocol":"t3",
                "weblogicDomainAdminServerHost":"jmsconsolehost.example.com",
                "weblogicDomainAdminServerPort":"7001",

"weblogicDomainAdminServerUserAlias":"jmsConsoleAppServerAdminServerUserAlias",
                "weblogicDomainTargetManagedServerName":"jms-console-server",


"jmsConsoleAdminUiUrl":"http://jmsconsolehost.example.com:7001/jms-console",
                "jmsConsoleAdminUiUserGroup":"JmsConsoleAdminGroup",
                "jmsConsoleAdminUiUserAlias":"jmsConsoleAdminUiUserAlias",
```

```
                "jmsConsoleAdminUiUser":"GET_FROM_WALLET",
                "jmsConsoleAdminUiPassword":"GET_FROM_WALLET",
            }
        },
        "JmsConsoleApplication":{
            "jmsConsoleAppUses":[
                "AqDataSource",
                "JmsConsoleAppServer"
            ]
        }
    }
}
```

5. Export the following WL_HOME variable:

```
$export WL_HOME=<WLS HOME>/wlserver/
```

6. Run the deployer script to create the datasource and deploy JMSconsole.

```
$ cd jmsconsole/bin/
$ sh jms-console-deployer.sh -setup-credentials -deploy-jms-console-app
```

```
gjoshi@gjoshi-lnx bin]$ ./jms-console-deployer.sh
bad level value for property: .level


USAGE: JmsConsoleDeployer SECURITY_OPTION  TASK_ACTION

    : JmsConsoleDeployer {-setup-credentials|-use-existing-credentials} -deploy-jms-console-app


  SECURITY_OPTION                : One of the following SECURITY options must be used.

      -setup-credentials         : Setup AppServer and DB user/password and save to wallet.
                                 : Edit the jms-console-deployment-env-info.json config file before setting up credentials.

      -use-existing-credentials  : Use previously setup AppServer and DB user/passwords from wallet.


  TASK_ACTION                    : The following TASK_ACTION option must be used.

      -deploy-jms-console-app    : Configures WebLogic Server and deploy the jms-console application.

gjoshi@gjoshi-lnx bin]$ ./jms-console-deployer.sh -setup-credentials -deploy-jms-console-app
```

7. Enter the parameter value prompted by the script.
8. Bounce the WebLogic server hosting JMS Console application.
9. Restrict access to the jms-console folder:

   cd $RIB-HOME/tools-home/jms-console

   chmod -R 700 .

## Testing the Deployment

After you deploy the server successfully, JMS Console can be accessed using the following URL:

http://<server>:<port>/jms-console

# 4

# Navigation and Help

This chapter describes the navigation and steps to use JMS Console application.

## Introducing the User Interface

JMS Console is a lightweight Web application based on ADF and presents information it sources from AQ JMS in a user friendly manner. The **Live Monitor** tab describes all JMS activity in real time, thereby giving you a summary of the overall health of JMS system in one view. The **Browse** tab allows you to browse topics and is a view-only feature. The **Manage** tab gives you access to the administrator management tools that are critical for troubleshooting.

### Log in to JMS Console

To log in to the JMS Console, take the following steps:

1. Enter the application URL http://<host>:<port>/jms-console in the address bar of the browser.

---

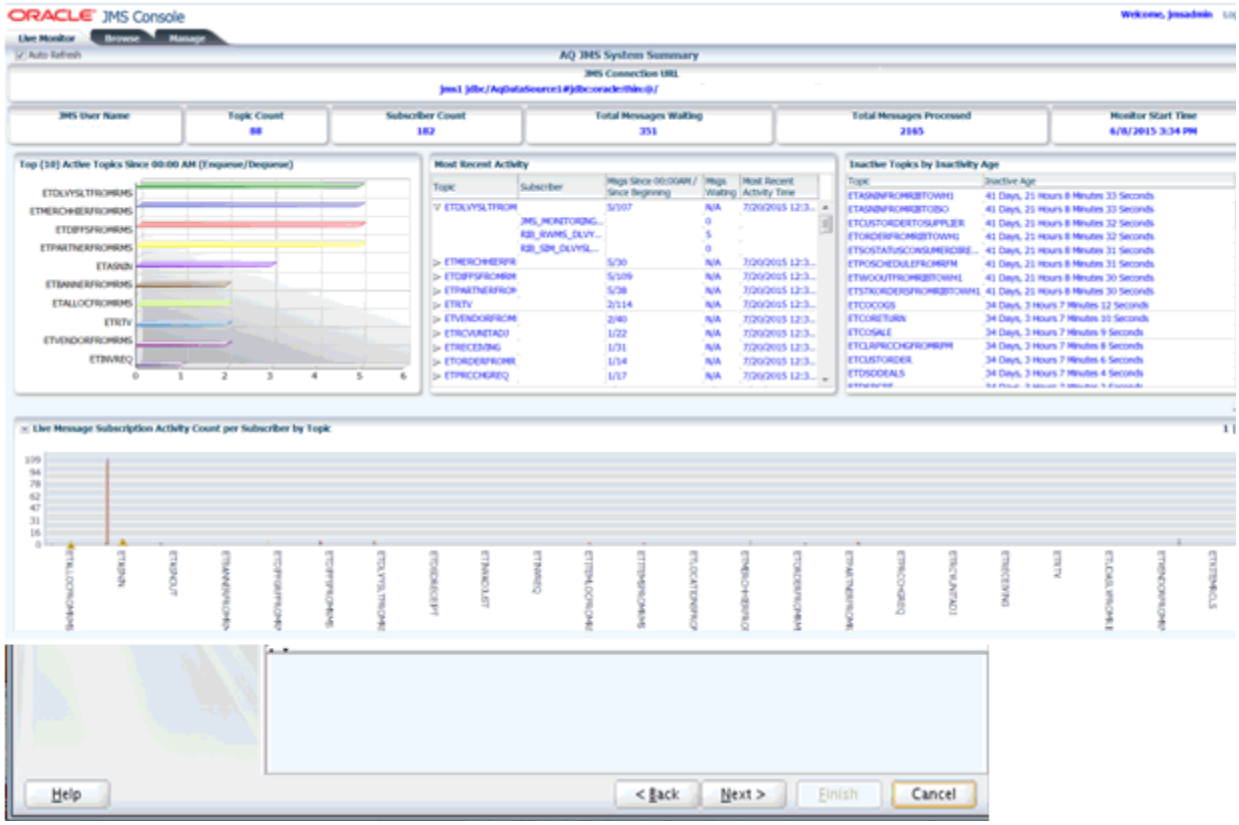
**Note:** Oracle recommends that you use the Mozilla Firefox Web browser to access the URL.

---

2. In the **Username** field, enter the user name you provided during the installation of the application.
3. In the **Password** field, enter the password.
4. Select the JMS server from the drop down list to work with a specific JMS server. By default, **jms1** is selected. The drop down list provides flexibility to switch between JMS servers when multiple AQ JMS's are configured for a single installation.
5. Click **Login**. The application home page displays.

# Live Monitor

The **Live Monitor** tab is the landing page of JMS Console. It provides an unattended high level view of the AQ JMS server. The dashboard displays the activity on the AQ JMS in question in real time. The dashboard automatically refreshes its content and pulls the latest data from the server every ten seconds.




The Live Monitor tab displays the data collected at different levels and visually groups related data into graphs and tables. There are three main groups are as follows:

1. **Server Level Metrics** - The top panel displays a few key metrics for the configured JMS and provides a short summary of them.
   a. JMS Connection URL - Provides the full JDBC URL for AQ data source, where jms1 stands for JMS Server 1.
   b. JMS User Name - Provides the database user name for the configured AQ.

c. Topic Count - Denotes the total number of Topics present on the configured AQ.

d. Subscriber Count - Denotes the total number of subscribers found on the configured AQ.

e. Total Messages Waiting - Denotes the total number of messages waiting on the configured AQ since the JMS Console was installed.

f. Total Messages Processed - Denotes the total number of messages processed on the configured AQ since the JMS Console was installed.

g. Monitor Start Time - Denotes the time passed since monitoring started, that is since the time the JMS Console was installed.

2. **Topic/Subscriber Level Metrics -** This panel displays the current activity and inactivity details for the AQ JMS system.

   a. Top (10) Active Topics Since 00:00 AM (En-queue/De-queue) - This graph lists the Top Active Topic names and the volume of messages en-queued and de-queued since midnight (00 AM). The data is sorted by volume so that the topics with the highest volume appear first in the bar graph.

      Usage Tip - Use this graph to know the list of Topics that have processed most volume since midnight.

   b. Most Recent Activity - This is a tree table that lists all the Topics on the AQ system with the subscribers for each topic. For each topic, the Total Messages processed are listed at two different time intervals, one since midnight and second one since the JMS Console was installed. Values are delimited by a '/'. For each subscriber, the Total Messages Waiting is listed. This table is significant because it displays the current activity on JMS system by indicating the most recent activity at the top of the table. In other words, this table is sorted by Most Recent Activity Time.

      Usage Tip - Use this table to review the most recent activities in JMS system.

   c. Inactive Topics by Inactivity Age - This table reports all Topics based on how long the Topic has been 'inactive'. In other words, Topics with no message traffic since the monitoring started. This table is sorted by the Inactivity age and displays the most inactive Topic first. In custom installations, there are chances that certain topic(s) is intentionally not being used. In such cases, you can configure the topic(s) to not be shown in this table. For more information, see the Edit Properties under Manage JMS.

      Usage Tip - This report would be useful while troubleshooting potential problems when messages are being en-queued to a Topic, This will help isolating the integration problems, specifically when the publishing application is not even hitting JMS Topic.

      **Note:** The timezone is not taken into account when calculating Inactive Time. For example, if the database is in a timezone one hour ahead of the application server, any activity in the AQ will immediately be recorded in JMS console as 1 hour ago.

3. **Live Message Subscription Activity Count per Subscriber by Topic** - This graph reports the live message activity on the AQ JMS grouped by Topics and subscribers. This graph is presented in four quadrants stacked as four panels. The number of panels is based on the number of Topics available on JMS. The graph

mainly presents the key metrics for each Topic, Total Messages processed, and the Messages Waiting on a Topic for a specific subscriber. The graph also serves as an alert notification monitor. When the threshold for Max Messages Waiting on Topic set for Messages waiting is breached, a warning sign appears on the Topic that has reached the set threshold. This indicates that the messages are blocked and that the administrator needs to take action to normalize the condition.

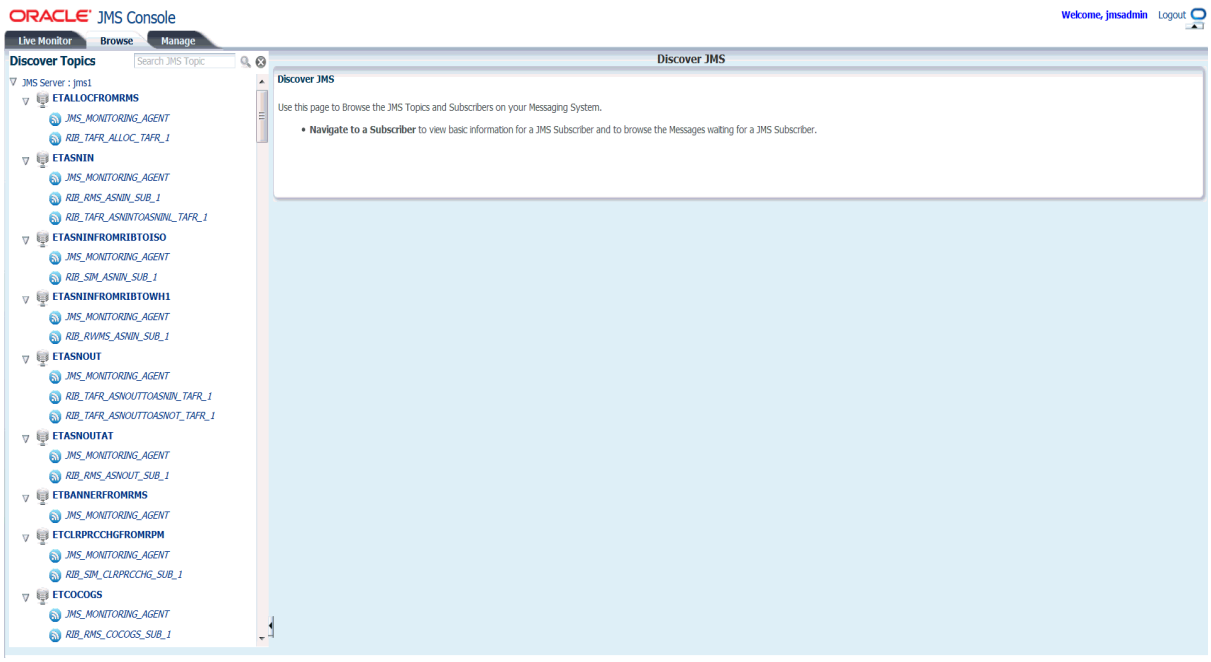
---

**Note:** The Live Monitor window automatically refreshes every ten seconds but the backend services are designed to collect data from JMS on a longer interval for performance reasons. Hence, all the reports (including graphs) in the Live Monitor window may experience a slight delay (~1 minute) in loading the latest data. For more information, see Edit Properties.

---

# Browse JMS

The **Browse** tab provides browsing capabilities and allows you to discover and drill into the key components of AQ JMS namely Topics, Subscribers, and the Messages. By clicking on a Topic listed in the navigation menu, you can see all the subscribers registered with the Topic. When you click on the Subscriber, you can view the message count and the message content.



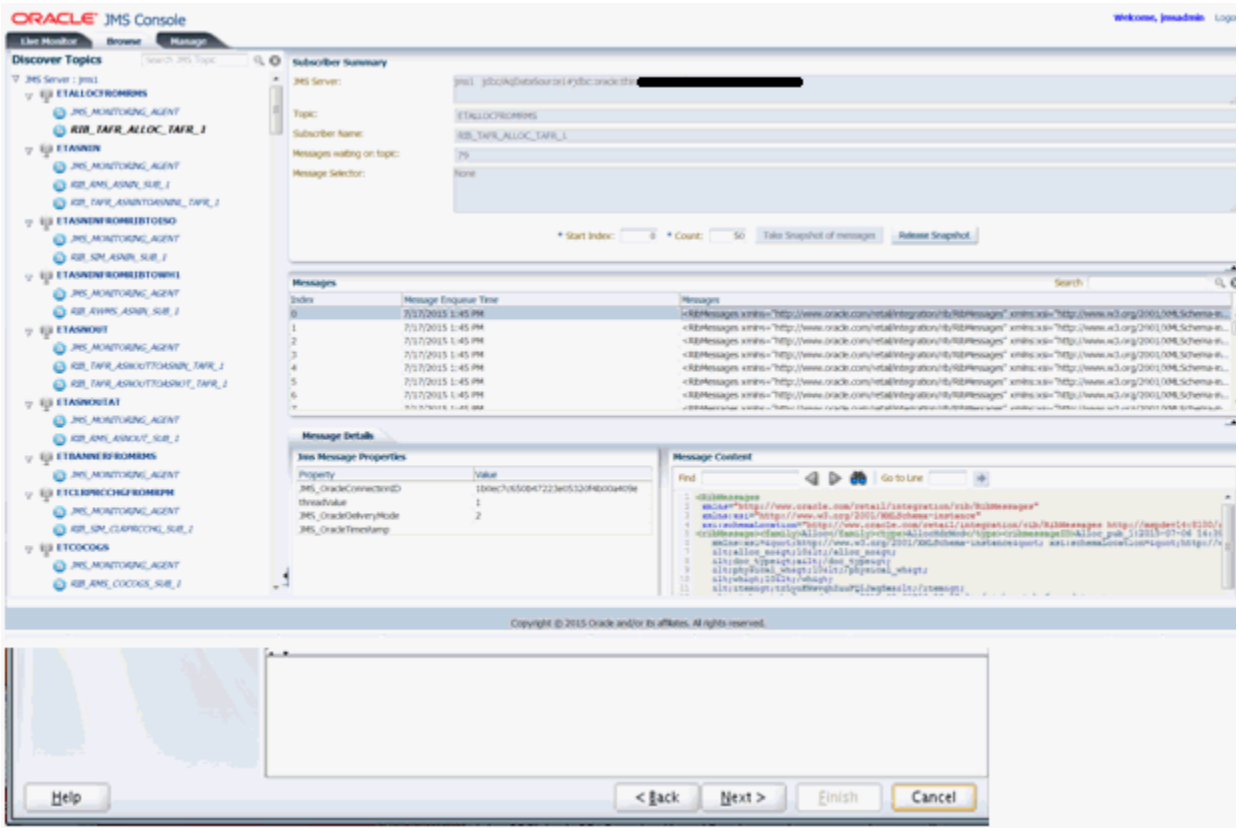

1. **Discover Topics Navigation Menu** - The navigation system lists all the Topics found on the AQ JMS. It allows you to review (view-only access) the Topics and explore the AQ JMS without altering the state of JMS. The menu system lets you drill into the Topics and the Subscribers by clicking on them.

   The Navigation menu uses icons to visually differentiate Topics. For example:

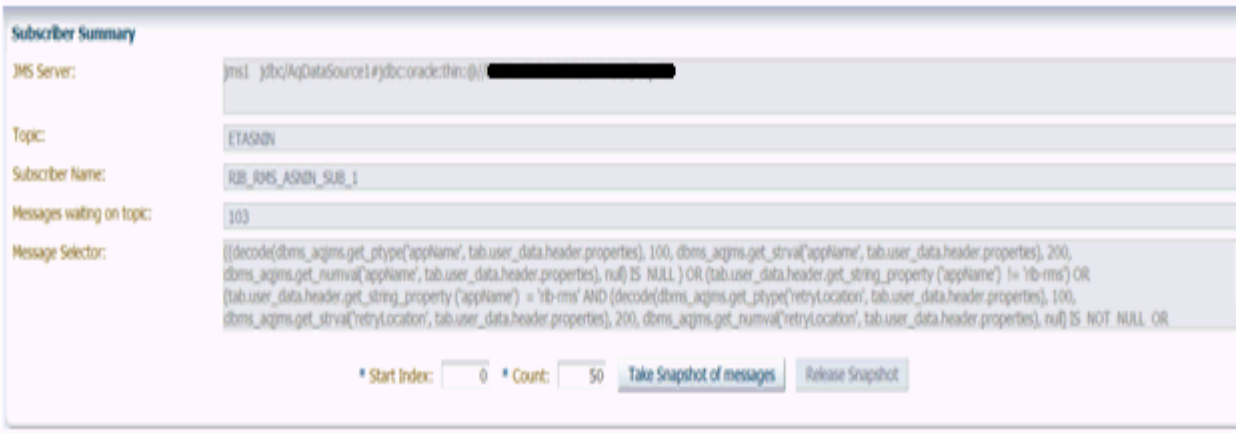
   

A Subscribers example is as follows:

2. **JMS_MONITORING_AGENT** - This is a special light weight subscriber created by JMS Console during application installation. It is designed to collect data from the AQ and provides statistics to JMS Console.




To browse a specific Topic/Subscriber, click the Subscriber listed on the Navigation menu. This displays the Subscriber Summary panel on the right hand side pane. The Subscriber Summary panel provides information on the selected subscriber and contains the **Take Snapshot of messages** button.

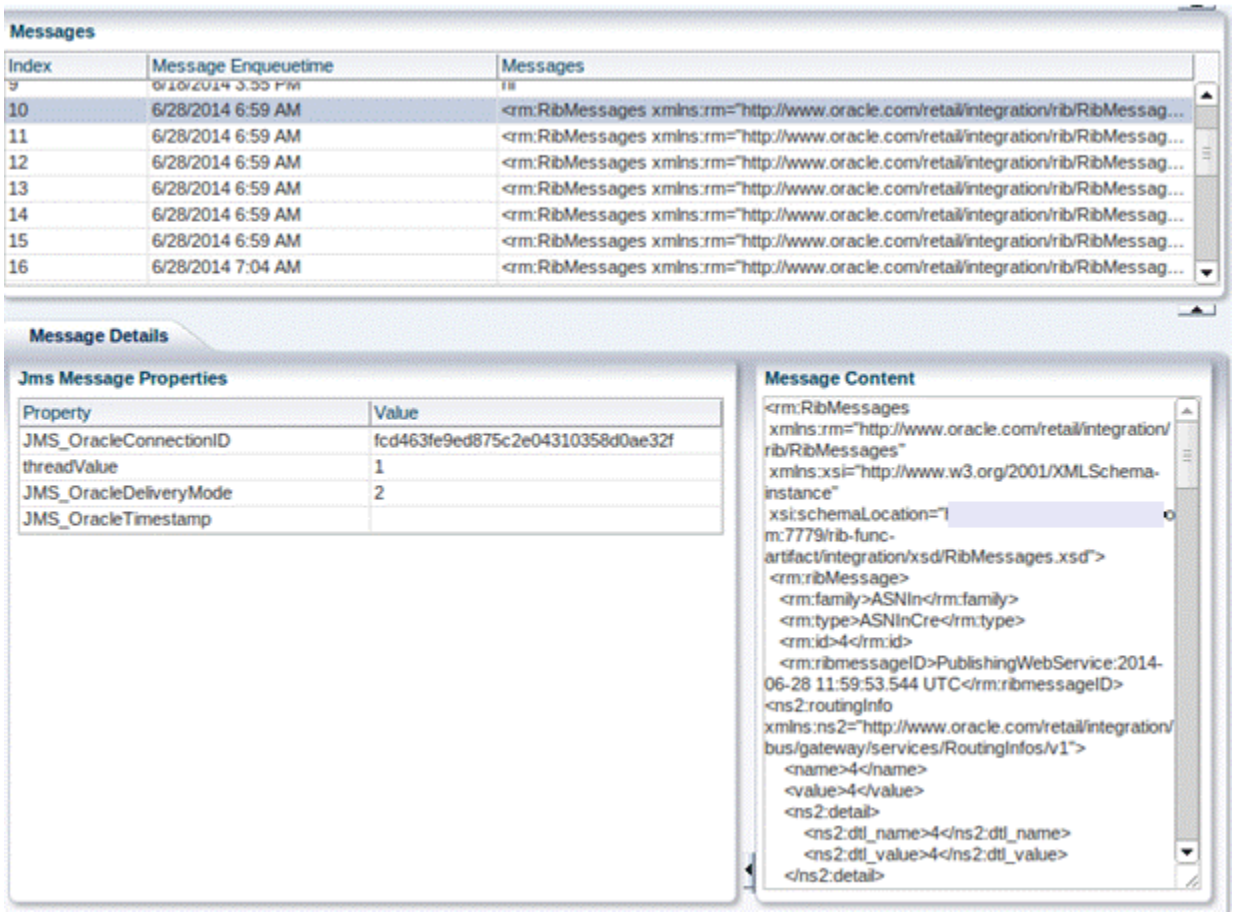


3. **JMS Server -** The complete connection URL for JMS Server.
    a. **Topic** - The name of the Topic the selected subscriber is listening to.
    b. **Subscriber Name** - The name of the selected subscriber.
    c. **Message Waiting on Topic** - The number of messages waiting for the selected subscriber.
    d. **Message Selector** - A messaging application can filter the messages it receives using a message selector. The message subscriber then receives only messages whose headers and properties match the selector. This field displays the Message Selector for the selected subscriber.
    e. **Take Snapshot of the message**s - In a healthy messaging system, messages are typically en-queued/de-queued continuously and removed from the Topic as soon as the de-queue transaction is committed. In such a situation, viewing a live message is practically impossible. The Take Snapshot tool resolves this issue. This tool lets you get a snapshot of a specific message you want to analyze even after the message has been consumed by the subscribing application. The messages in the snapshot are stored in memory thereby giving you access to view or analyze the message payload.

       The tool requires two inputs as follows:

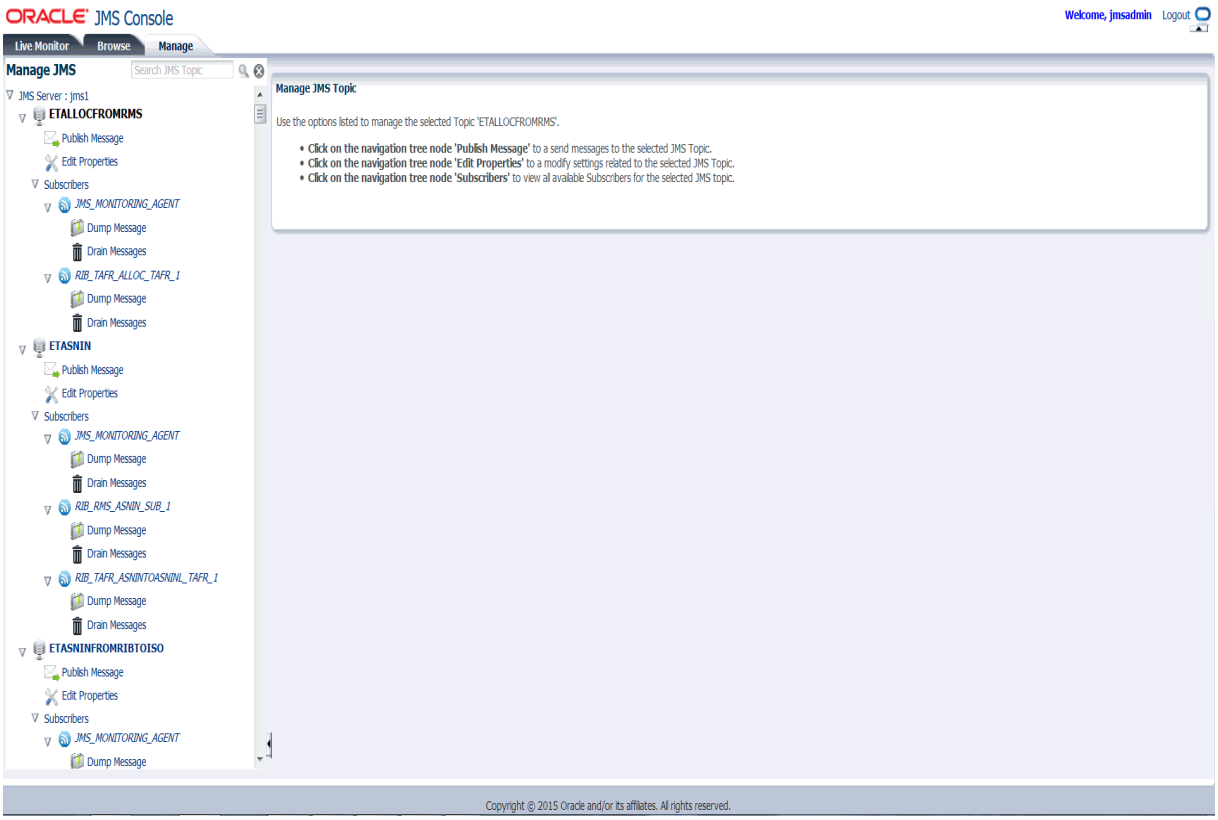
       **Start Index** - It specifies the starting point of the snapshot.

       **Count** - It specifies the number of messages to be included in the snapshot.
    f. **Messages** - Once the snapshot of the messages is available, the messages are listed in the Messages panel. Each record in the table corresponds to a message in the snapshot. The index in the table refers to the indexing of the list of messages starting with 0. Message columns display the first few characters of the actual message and are intended to serve as a clue. You can identify the message you want to review in detail and click on the row to view it.
    g. **Message Details** - When a row in the Messages panel is selected, details are loaded in the Message Details panel. This describes JMS Header properties associated with the message and the actual message contents.



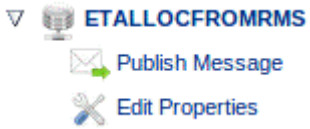

# Manage JMS

The **Manage** tab essentially bundles a few key tools that are required for managing a JMS server. Oracle recommends that only an administrator, who knows JMS system in depth and is aware of the potential outcome of the action performed by this toolset, be allowed to use the features provided in this tab. This window allows you to interact with JMS server using core messaging system features like publishing a message to a Topic and dumping and draining messages from a subscriber.




1. **Manage JMS Navigation Menu** - The navigation system in the **Manage** tab provides accessibility to information via two kinds of nodes; the Data Nodes and the Action Nodes. Topics and the Subscriber nodes are referred to as the Data Nodes since they have no action associated with them directly. Action nodes provide links that leads to any action. The Topic and Subscriber nodes have a separate set of relevant action nodes.

The Action nodes available for a Topic are Publish Message and Edit Properties.

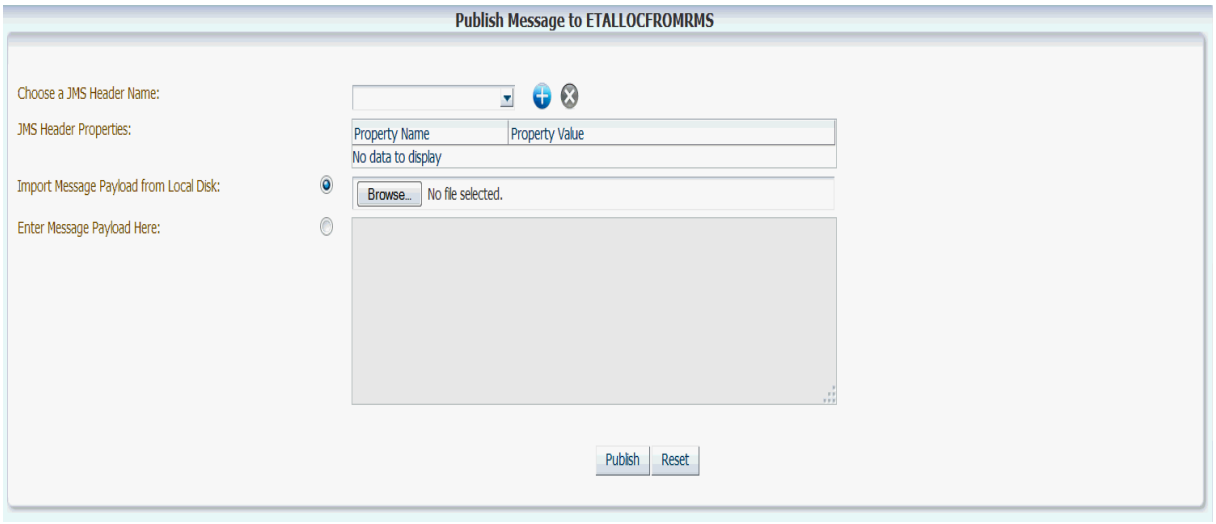



The Action nodes available for a Subscriber are Dump Message and Drain Messages.

## Publishing Messages to a JMS Topic

To publish messages to a JMS Topic, take the following steps:

1. In the **Manage** tab, select JMS Topic.
2. Click **Publish Message**. The Publish Message window for the Topic displays.




3. Enter the following:
   a. **Choose a JMS Header Name** - Add a JMS Header property name if one is not already available. Once added, the header name is available to all the users using the application. The header names are not persisted and are lost when the server is restarted.
   b. **JMS Header Properties** - Add JMS Header property name and value.
   c. **Import Message Payload from Local Disk** - Select the file from the local file system.
   d. **Enter Message Payload Here** - Enter the complete XML message payload.
4. Click **Publish**.

---

**Note:** A message that is published to a JMS system is consumed by the registered subscriber and may eventually flow to the downstream applications. Once initiated, this process cannot be undone.

Message family is a case-sensitive field and needs to be entered consistently while testing. Variations in message family capitalization will result in inconsistencies in RIC.

---

## Edit Properties

JMS Console application has a preference configuration that defines application level preferences. Based on the set preferences and business need, the application behavior can change. These preferences are persisted and are available even after a server bounce.

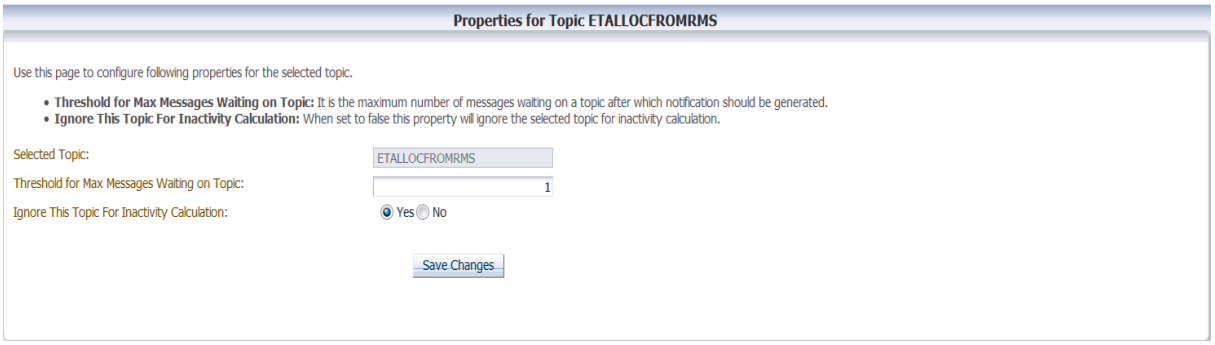
The following two preference settings are available:

1. **Threshold for Max Messages Waiting on Topic** - It is the maximum number of messages waiting on a Topic after which a notification is generated. The notification can be a graphical alert on the Live Monitor graph or an Email Notification that is enabled. By default, this preference is set to a 100 messages. Once the threshold is met, alerts are fired.
2. **Ignore This Topic For Inactivity Calculation** - When set to false, this property ignores the selected Topic for inactivity calculation. In other words, if this flag is

set to **Yes**, the selected Topic is not treated as inactive. The Topic will not be listed in the Live Monitor's *Inactive Topics by Inactivity Age* report even if no traffic exists. By default, this flag is set to **No** and the Topic is treated as inactive in the event when there is no message traffic.

To edit properties for a JMS Topic, take the following steps:

1. In the **Manage** tab, select JMS Topic.
2. Click **Edit Properties**. The Properties window for the Topic displays.
   a. **Threshold for Max Messages Waiting on Topic -** Provides the threshold for the selected Topic.
   b. **Ignore This Topic For Inactivity Calculation -** Select from a Yes/No preference.




3. Click **Save Changes**.

## Enabling Email Notification Alerts

Apart from monitoring alerts using the Live Monitor window when the system is offline, you can configure email notifications for an alert that requires an administrator's attention.

To enable email notifications, take the following steps:

1. On the WebLogic Administrator Console's left side menu, click **Services** > **Mail Sessions** and create a **New** mail session. For Mail Session Properties, enter the values and click **Next**. The following is an example of values:

   **Name**: JmsConsoleMailSession

   **JNDI Name**: mail/JmsConsoleMailSession

   **Session Username**: Administrator's email id (for example, admin@example.com)

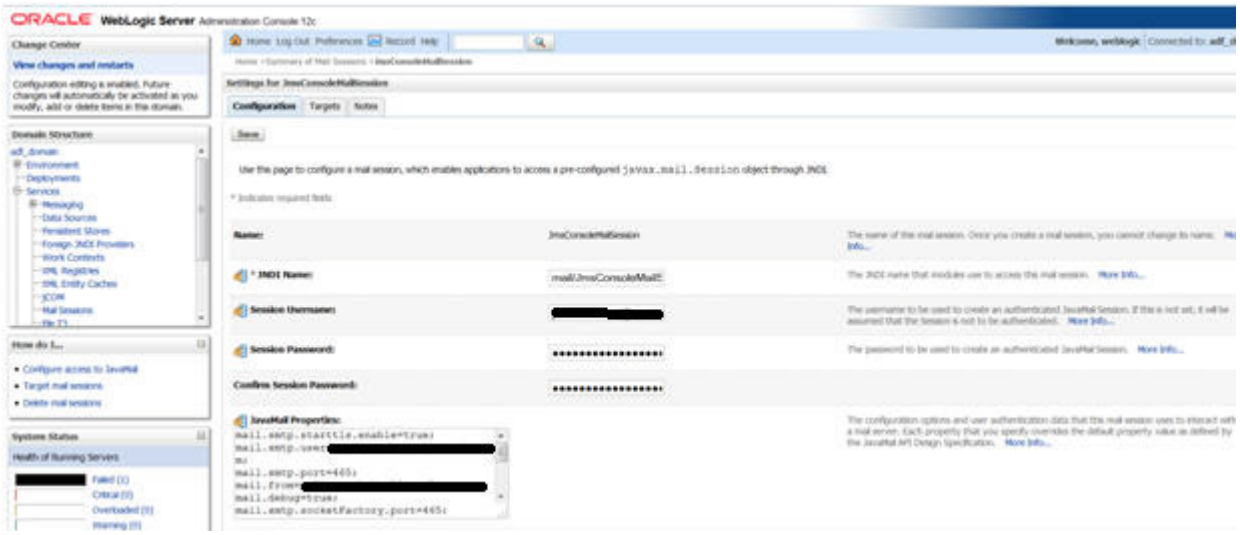
   **Session Password**: Email server authentication password

   **Confirm Same Password**: Enter same email server authentication password

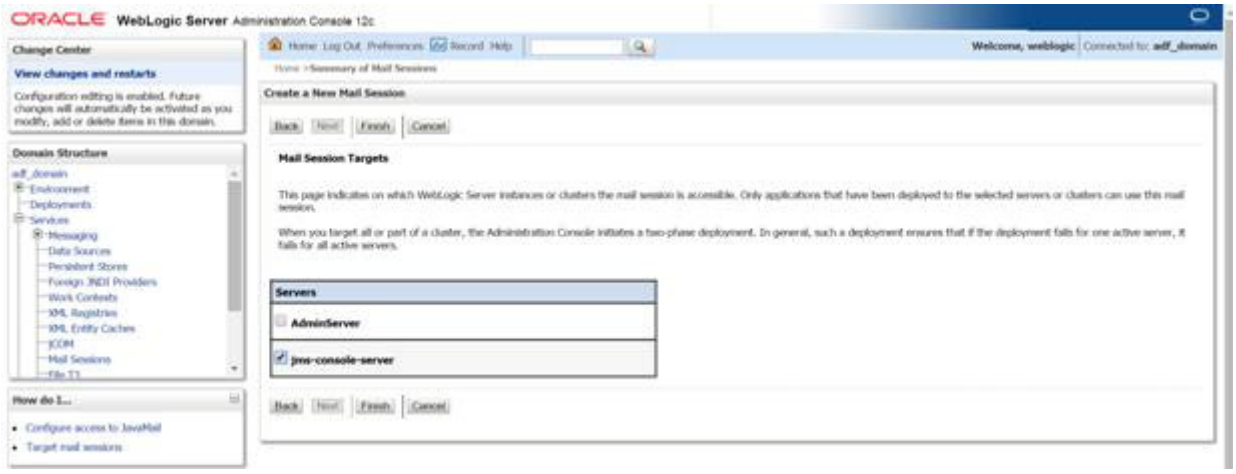
   **JavaMail Properties**:

```
mail.debug=true;
mail.smtp.user=exampleuser@sample.com;
mail.from=exampleuser@sample.com;
mail.smtp.host= sample.com;
mail.to=exampleuser@sample.com,exampleuser2@sample.com;
mail.smtp.auth=true;
mail.smtp.port=465;
mail.smtp.socketFactory.class=javax.net.ssl.SSLSocketFactory;
```

```
mail.smtp.socketFactory.port=465;
mail.transport.protocol=smtp
```



2. Select the Mail Session Target to be the managed server hosting JMS Console application. Click **Finish**. On completing these steps, alerts are generated by JMS Console which triggers email notifications to the configured email addresses.



**Note:** For more information on setting up the Mail sessions on WebLogic, see the Oracle® WebLogic Administrator's Guide 12c Release.

## Resetting Preferences to Default Factory Settings

To reset the set preferences across all the Topics to default setting, take the following steps:

1. Go to WebLogic domain home and locate and delete jms-console hidden folder.

   ```
   cd $MW_HOME/user_projects/JMS_CONSOLE_DOMAIN/rm -rf .jms-console
   ```

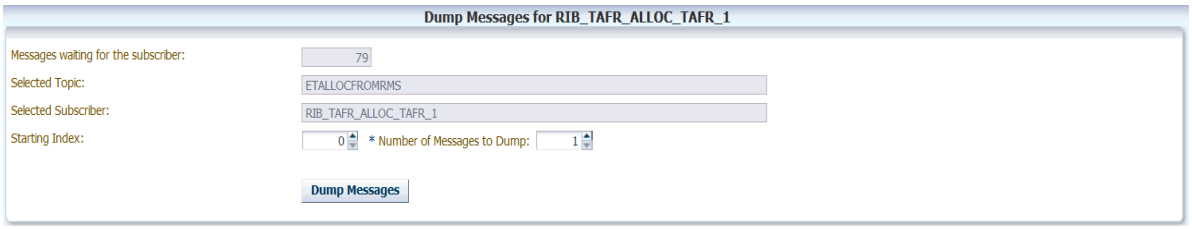
2. Restart the server hosting the application.

## Dump Message

A JMS administrator or a business user can use this feature to analyze payload data or the message content. This feature lets you dump, or download, the messages to the file system. While troubleshooting messaging or integration problems where messages are stuck on a Topic, you can dump messages to file system and replay them at a later date. You need expertise to execute this process. Make sure you consider message sequencing while replaying the messages.

To dump/download messages to a file system for a Subscriber, take the following steps:

1. In the **Manage** tab, select the Subscriber.
2. Click **Dump Message**. The Dump Messages window for the Subscriber displays.
   a. **Starting Index -** Specify the index to begin dumping the messages.




   b. **Number of Messages to Dump -** Specify the number of messages to dump.
3. Click **Dump Messages**. After a successful message dump, the location to the messages is displayed. The messages are downloaded from the AQ JMS server to the WebLogic server and not the client/local computer for security reasons.

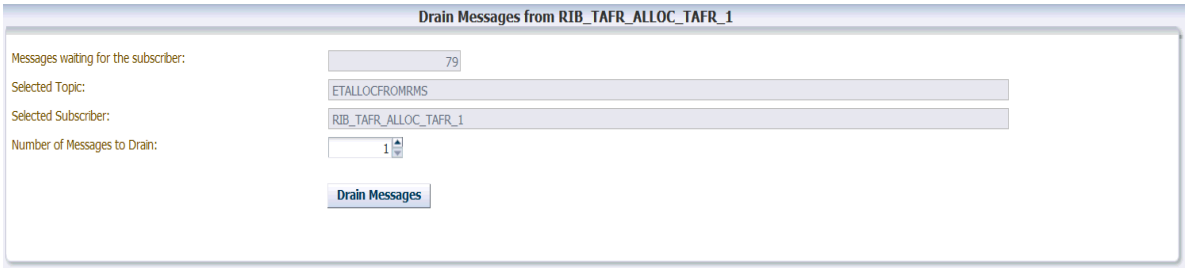
> **Note:** Dumping messages can be an expensive operation depending on the number of messages being dumped. It may have an impact on the Messaging application.

## Drain Messages

Use this feature to delete messages from JMS Topics permanently. An Administrator can use the Drain Messages feature to delete messages while troubleshooting messaging / integration problems where messages are stuck on a Topic. Use this feature only after analyzing the message using the Dump Message feature.

To drain messages for a Subscriber, take the following steps:

1. In the **Manage** tab, select the Subscriber.
2. Click **Drain Messages**. The Drain Messages window for the Subscriber displays.
   a. **Number of Messages to Drain -** Specify the number of messages to drain.



3. Click **Drain Messages**.

**Note:** Incorporate due diligence while using the Drain Messages feature since it deletes the messages permanently from JMS system. This process cannot be undone.

# A

# Appendix: JMS Console Installation Checklist

| Property Name in the JSON file | Description | Editable? | Sample Value (only for editable fields) |
|---|---|---|---|
| DataSourceDef.AqDataSource.dataSourceName | Name of the datasource, the installer will create to connect to the AQ database | No | N/A - DO NOT CHANGE THE DEFAULT VALUE |
| DataSourceDef.AqDataSource.dataSourceClass | DataSource class, the installer will use to configure the data source | No | N/A - DO NOT CHANGE THE DEFAULT VALUE |
| DataSourceDef.AqDataSource.dataJndiName | JNDI name used by JMS Console to connect to the AQ database | No | N/A - DO NOT CHANGE THE DEFAULT VALUE |
| DataSourceDef.AqDataSource.jdbcUrl | JDBC URL used by JMS Console to connect to the AQ database | Yes | jdbc:oracle:thin:@//example.com:1522/pdborcl |
| DataSourceDef.AqDataSource.jdbcuserAlias | JDBC User Alias used by JMS Console to connect to the AQ database | No | N/A - DO NOT CHANGE THE DEFAULT VALUE |
| DataSourceDef.AqDataSource.jdbcUser | JDBC User Name used by JMS Console to connect to the AQ database | No | N/A - DO NOT CHANGE THE DEFAULT VALUE |
| DataSourceDef.AqDataSource.jdbcPassword | JDBC Password used by JMS Console to connect to the AQ database | No | N/A - DO NOT CHANGE THE DEFAULT VALUE |
| MiddlewareServerDef.JmsConsoleAppServer.weblogicDomainName | Name of the Weblogic domain on which JMS Console will be deployed | Yes | jmsconsole_domain |
| MiddlewareServerDef.JmsConsoleAppServer.weblogicDomainHome | Absolute path to the Weblogic domain | Yes | /usr/local/Oracle/Middleware/user_projects/domains/jmsconsole_domain |
| MiddlewareServerDef.JmsConsoleAppServer.weblogicDomainAdminServerUrl | Weblogic Admin Server URL of the domain being used for deployment of the app. | Yes | t3://example.com:7001 |

| Property Name in the JSON file | Description | Editable ? | Sample Value (only for editable fields) |
|---|---|---|---|
| MiddlewareServerDef.JmsConsoleAppServer.weblogicDomainAdminServerProtocol | Weblogic Domain Admin Server Protocol, the protocols used for the deployment of the app. | Yes | t3/ t3s |
| MiddlewareServerDef.JmsConsoleAppServer.weblogicDomainServerHost | Name of the host machine where Weblogic server is installed. | Yes | example.com |
| MiddlewareServerDef.JmsConsoleAppServer.weblogicDomainServerPort | Weblogic Domain Server Port, the port number of the managed server on which the app will be deployed. | Yes | 7002 |
| MiddlewareServerDef.JmsConsoleAppServer.weblogicDomainUserAlias | Weblogic Domain User Alias, installer will use to bind the user to the Weblogic server admin user | No | N/A - DO NOT CHANGE THE DEFAULT VALUE |
| MiddlewareServerDef.JmsConsoleAppServer.weblogicDomainTargetManagedServerName | Weblogic Domain Managed Server Name, the name of the managed server on which JMS Console will be deployed | Yes | jmsconsole_server |
| MiddlewareServerDef.JmsConsoleAppServer.jmsConsoleAdminUiUrl | JMS Console Admin UI URL, URL to access jms-console application GUI. | Yes | t3://example.com:7002/jms-console |
| MiddlewareServerDef.JmsConsoleAppServer.jmsConsoleAdminUiUserGroup | JMS Console Admin UI User Group, the name of the User Group which is authorized to access JMS Console | No | N/A - DO NOT CHANGE THE DEFAULT VALUE |
| MiddlewareServerDef.JmsConsoleAppServer.jmsConsoleAdminUiUserAlias | JMS Console Admin UI User Alias, installer will use the alias to bind the user with the application | No | N/A - DO NOT CHANGE THE DEFAULT VALUE |
| MiddlewareServerDef.JmsConsoleAppServer.jmsConsoleAdminUiUser | JMS Console Admin UI User, installer will retrieve the username from wallet and create the user on Weblogic. This user name should be used to login to the app. | No | N/A - DO NOT CHANGE THE DEFAULT VALUE |
| MiddlewareServerDef.JmsConsoleAppServer.jmsConsoleAdminUiPassword | JMS Console Admin UI Password, installer will retrieve the password from wallet and create the user on Weblogic. This password should be used to login to the app. | No | N/A - DO NOT CHANGE THE DEFAULT VALUE |

# Glossary

### Family

The valid message family to which the message belongs. Each message family contains information specific to a related set of operations on a business entity or related business entities.

### Message Type

Each message family contains a set of sub-formats specific to the business event triggering message publication. The term message type embodies this specific sub-format. For example, a Purchase Order message family can contain message types such as Create PO Header, Create PO Detail, Update PO Header, or Delete PO Detail.

### Thread Value

The thread value is used for parallel processing of messages within the same family. This value is added to the message during publication to JMS so that it can be routed through a specific adapter and/or process.

### Alert

A system generated event that occurs when the set threshold is met.

### Snapshot of Messages

The current state of the messages stored in-memory to enable users to browse through the message content even if messages are consumed by the subscribers.

### JMS Header Properties

A set of properties (name-value pairs) that can be set as part of JMS Message XML Headers. For example, the header properties used in a RIB System like threadValue, appName, retryLocation, etc.