Oracle® Banking Payments

Payments Weblogic JMS Configuration

Release 14.8.0.0.0
G32378-01
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Oracle Banking Payments Payments Weblogic JMS Configuration, Release 14.8.0.0.0

G32378-01

Contents

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Preface

1.1 Purpose

This guide is designed to help acquaint you with the Oracle Banking Payments application. This guide provides answers to specific features and procedures that the user need to be aware of the module to function successfully.

1.2 Audience

This manual is intended for the following User/User Roles:

Table 1-1 User Roles

Role	Function
Implementation & IT Staff	Implementation & Maintenance of the Software

1.3 Documentation Accessibility

For information about Oracle's commitment to accessibility, visit the Oracle Accessibility Program website at http://www.oracle.com/pls/topic/lookup?ctx=acc&id=docacc.

Access to Oracle Support

Oracle customers that have purchased support have access to electronic support through My Oracle Support. For information, visit http://www.oracle.com/pls/topic/lookup?ctx=acc&id=info or visit http://www.oracle.com/pls/topic/lookup?ctx=acc&id=trs if you are hearing impaired.

1.4 Critical Patches

Oracle advises customers to get all their security vulnerability information from the Oracle Critical Patch Update Advisory, which is available at Critical Patches, Security Alerts and Bulletins. All critical patches should be applied in a timely manner to make sure effective security, as strongly recommended by Oracle Software Security Assurance.

1.5 Diversity and Inclusion

Oracle is fully committed to diversity and inclusion. Oracle respects and values having a diverse workforce that increases thought leadership and innovation. As part of our initiative to build a more inclusive culture that positively impacts our employees, customers, and partners, we are working to remove insensitive terms from our products and documentation. We are also mindful of the necessity to maintain compatibility with our customers' existing technologies and the need to ensure continuity of service as Oracle's offerings and industry standards evolve. Because of these technical constraints, our effort to remove insensitive terms is ongoing and will take time and external cooperation.

1.6 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.
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.

2
Introduction

2.1 Purpose

The purpose of this document is to explain the steps required for JMS Configuration in cluster mode for

- FCUBS 12.1
- WebLogic Server 12.1.3.0.0

2.2 Introduction

Below is brief description on major components in Weblogic JMS Server architecture

JMS Server

JMS server acts as management container for JMS queue and topic resources defined within JMS modules that are targeted to specific that JMS server. A JMS server's main responsibility is to maintain persistent storage for these resources, maintain the state of durable subscriber and etc. JMS servers can host a defined set of modules and any associated persistent storage that reside on a WebLogic Server instance.

JMS Module

JMS modules are application-related definitions that are independent of the domain environment. JMS modules group JMS configuration resources (such as queues, topics, and connections factories). These are outside domain configuration. JMS modules are globally available for targeting to servers and clusters configured in the domain and therefore are available to all the applications deployed on the same targeted. JMS modules contain configuration resources, such as standalone queue and topic destinations, distributed destinations, and connection factories.

Subdeployment

Subdeployment is also known as Advanced Targeting. Subdeployment resource is a bridge between the group of JMS resources and JMS Servers. When you create a JMS resource you need to choose one Subdeployment.

JMS Resources

1. **Queue:** defines a point-to-point destination type, which are used for asynchronous peer communications. A message delivered to queue is distributed to only one customer.
2. **Topic:** defines a publish/subscribe destination type, which are used for asynchronous peer communication. A message delivered to topic is distributed to all topic consumers.

3. **Distributed queue:** defines a set of queues that are distributed on multiple JMS servers, but are accessible as a single, logical queue to JMS clients.
4. **Distributed topic:** defines a set of topics that are distributed on multiple JMS servers, but which as accessible as a single, logical topic to JMS clients.
5. **Uniform Distributed Queue:** queue members are created uniformly from a common configuration.

Persistence store

A persistent store provides a built-in, high-performance storage solution for weblogic server subsystems and services that required persistence. There are two type of mechanism to store the message

1. File based persistence store –> Message is stored in a file.
2. DB based persistence store –> Message is stored in Database.

2.3 Weblogic 12c New Features

Before weblogic 12c JMS Servers and stores are targeted to individual WLS Servers. Scaling up requires configure the JMS server, the store and target it to new WLS Server.

In 12c JMS Servers and stores are targeted to WLS cluster. Scaling up requires to add a WLS server to the cluster.

Figure 2-1 Architecture previous to 12c

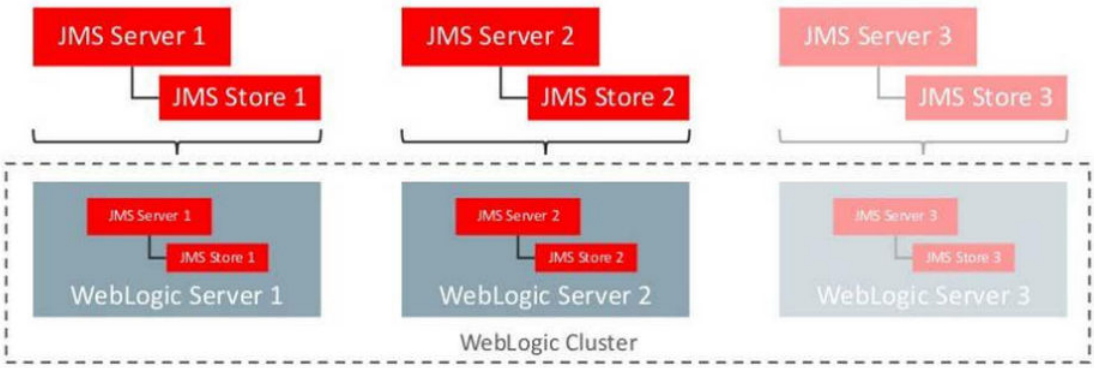
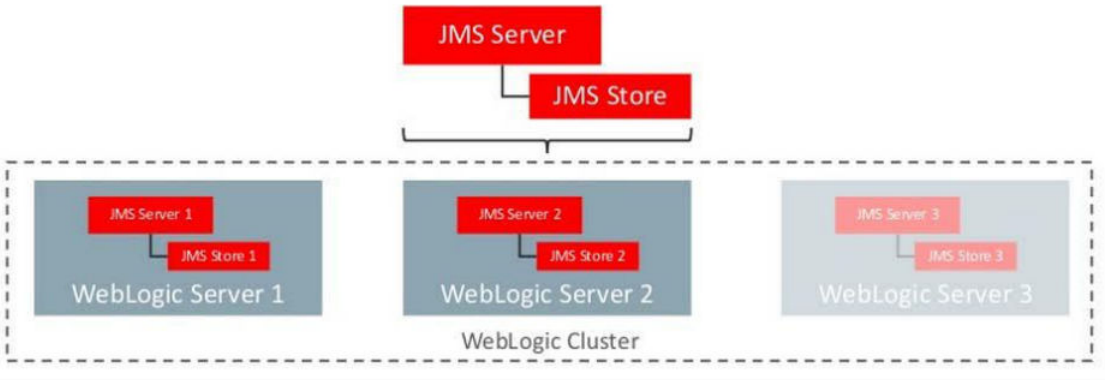


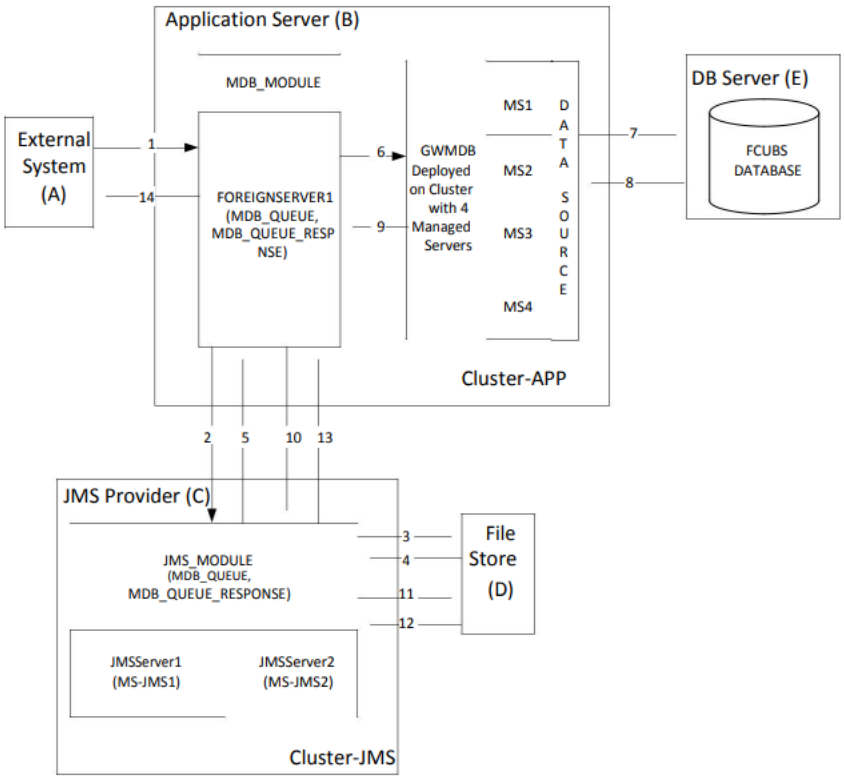
Figure 2-2 Architecture in 12c



2.4 Components Diagram & Data Flow

Below is the flow diagram which indicates various components that are used and the document explain steps to create.

Figure 2-3 Components Diagram & Data Flow



Servers Involved:

- External System interacts with the application C server
- Application Server can be Weblogic or Websphere and has managed servers clusterd
- JMS Provider exposes the Queue's and this can be Weblogic or Websphere. Here JMS_MODULE is Cluster-APP deployed on 2 new MS's but it can be done even on MS's that are part of Cluster-APP(MS1-MS4)
- FileStore is the persistance store which stores 2 5 10 13 the messages, this can be database or clustered file system
- Database Server which has FCUBS database

Data Flow:

- External System sends message to MDB_MODULE
- MDB_MODULE internally sends message to JMS_MODULE
- JMS_MODULE stores message in FILESTORE. A request JMS_MODULE 4 Store queue is formed at FILESTORE as and when messages are received
- Message is sent to JMS_MODULE in FIFO
- Message is sent to MDB_MODULE
- GWMDB application picks up the message for processing
- GWMDB after validating against XSD sends message to FCUBS database for processing
- Response from DB to MDB
- Response from MDB to MDB_MODULE
- MDB_MODULE sends response to JMS_MODULE
- RESPONSE is stored in FILESTORE. A response queue is formed in FILESTORE as and when messages are received
- Message is sent to JMS_MODULE in RESPONSE QUEUE in FIFO
- External system to read the response message from Response Queue

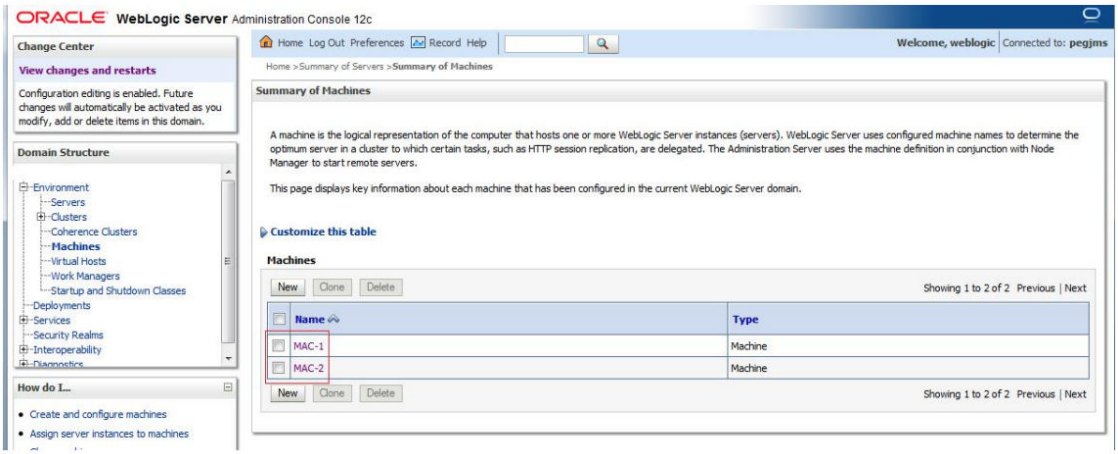
3
Pre-Requisites

The document assumes that the below are created before proceeding JMS creation.

- Machines
- Dynamic Clusters and Managed Servers
- DataSource
- Shared Folder

3.1 Machines

Figure 3-1 MAC-1 & MAC-2



3.2 Dynamic Clusters and Managed Servers

Ensure Dynamic cluster for FCUBS (4 Managed Servers) and Dynamic cluster for JMS Deployment (2 Managed Servers)

Figure 3-2 Dynamic Clusters and Managed Servers

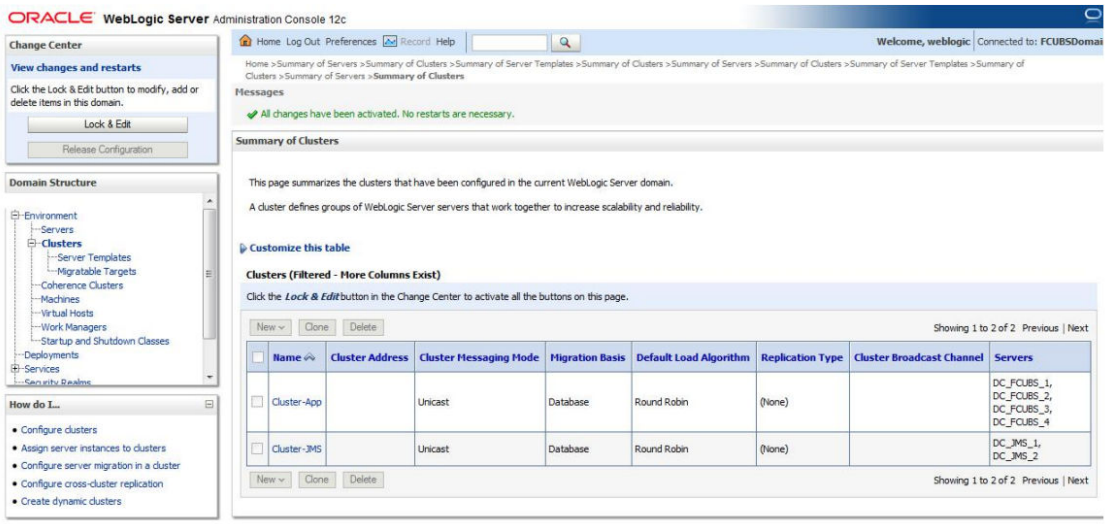
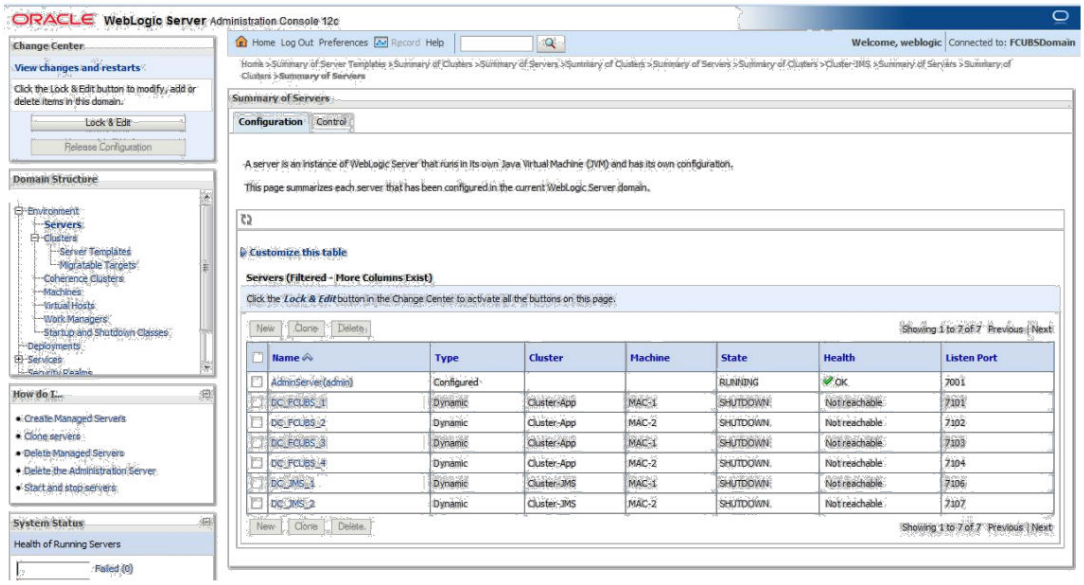


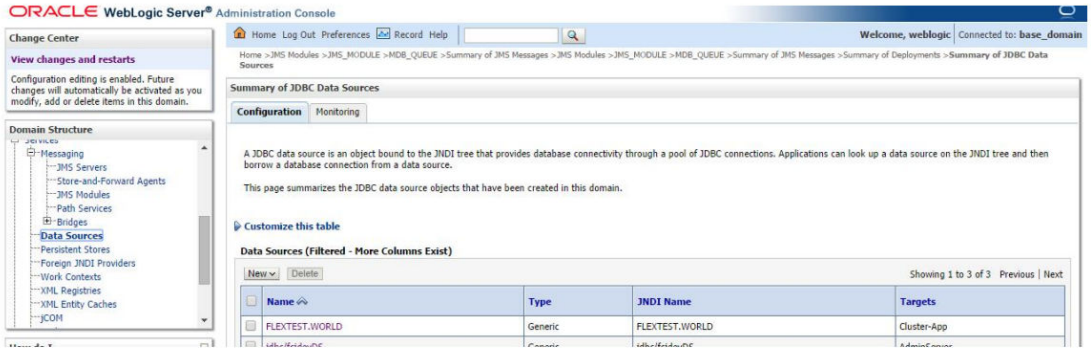
Figure 3-3 Dynamic Clusters and Managed Servers



3.3 DataSource

Ensure that DataSource required for the MDB ear is created with Target as Cluster-App

Figure 3-4 DataSource



3.4 Shared Folder

A shared folder for File Store Creation is required and this folder should be accessible across both the servers (eg, NFS mount).

4
JMS Configuration

4.1 Persistence Store Creation

1. Go to **Services** and click **Persistent Stores**.
2. Under **Persistent Stores**, click **New** and select **Create FileStore**.

Figure 4-1 Summary of Persistent Stores

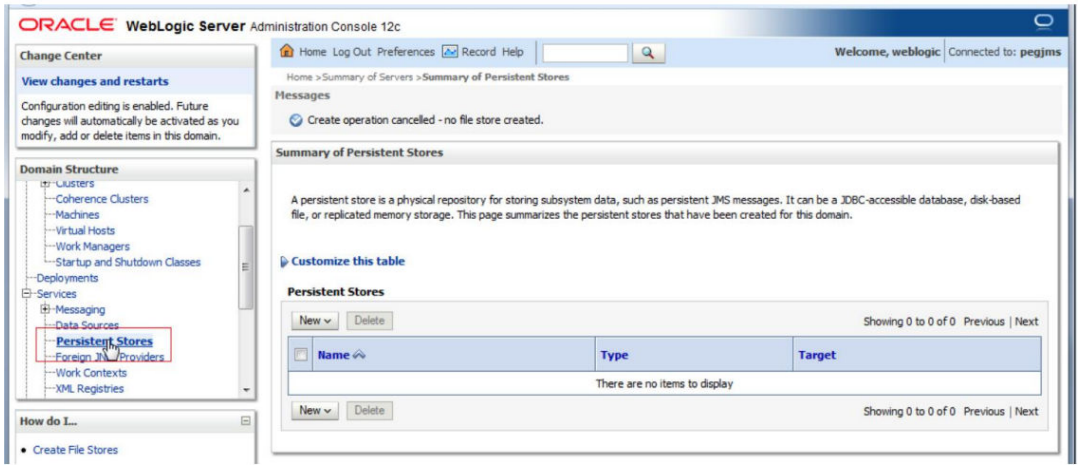
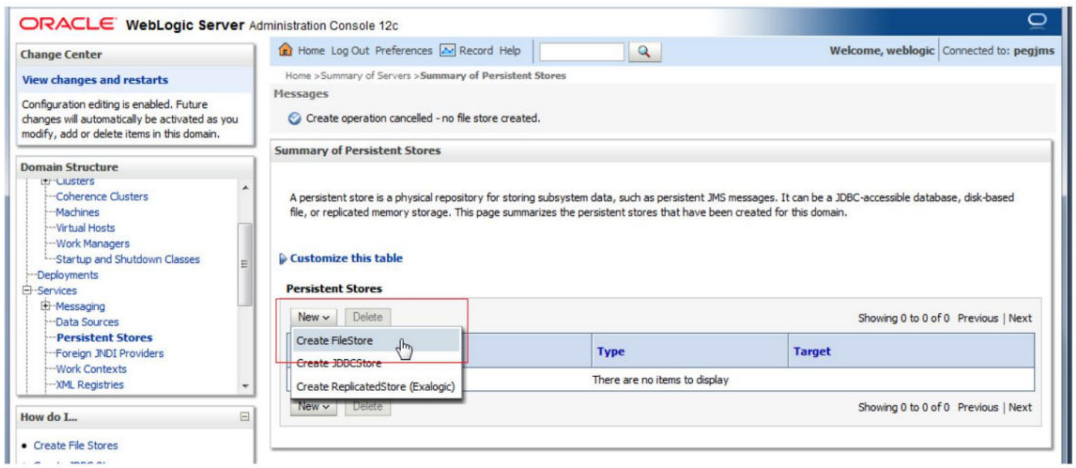
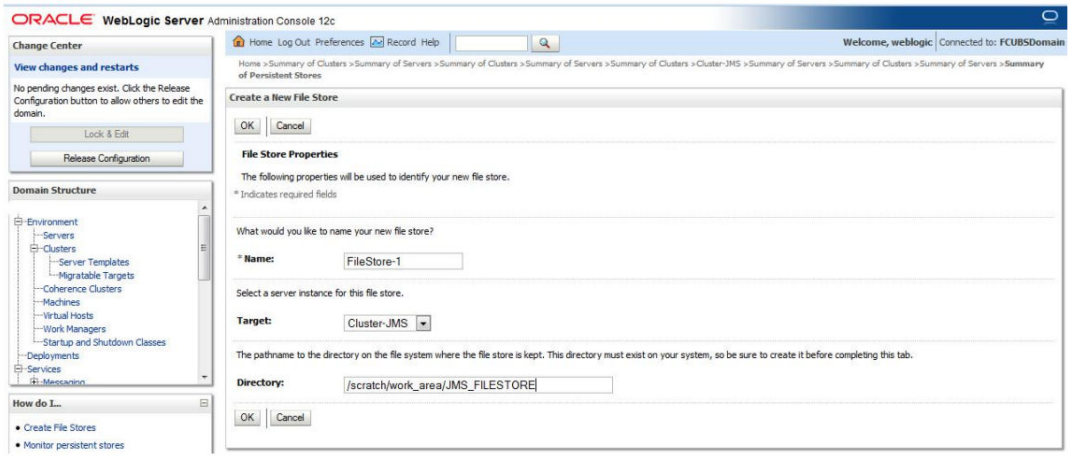


Figure 4-2 Summary of Persistent Stores



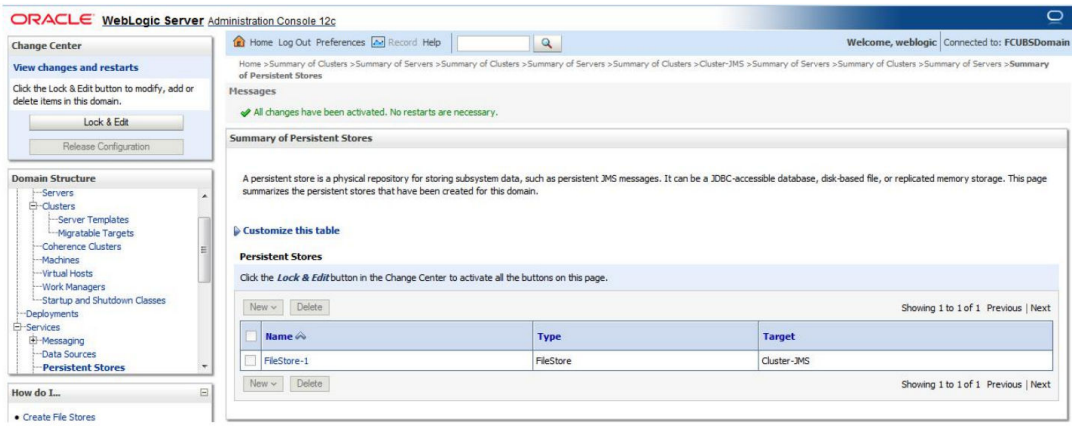
3. Select Cluster-JMS under target dropdown and Click on OK.

Figure 4-3 Create a New File Store



4. **FileStore-1** is created.

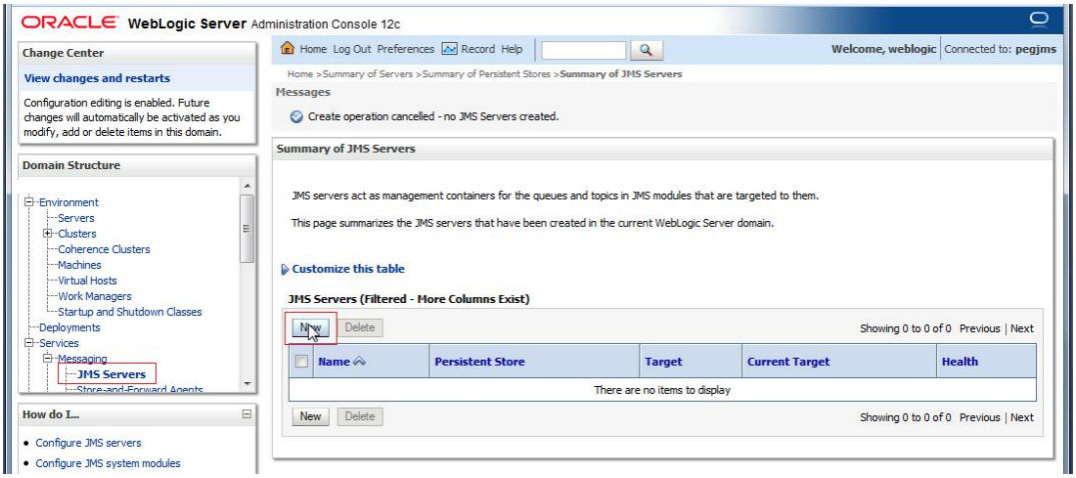
Figure 4-4 Summary of Persistent Stores



4.2 JMS Server Creation

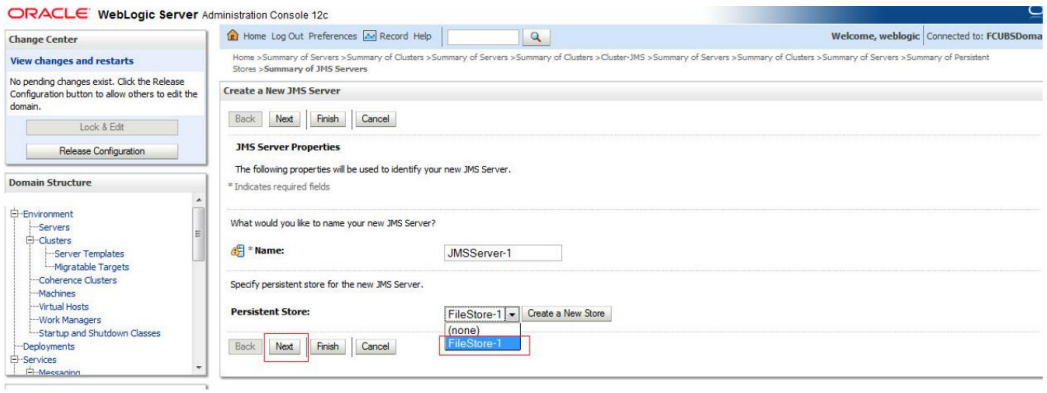
1. Go to **Services** then **Messaging**.
2. Select **JMS Servers** and click on **New**.

Figure 4-5 Summary of JMS Servers



3. Select FileStore-1 , Click **Next**

Figure 4-6 Create a New JMS Servers



4. Select Target as Cluster-JMS and click on **Finish**

Figure 4-7 Create a New JMS Servers

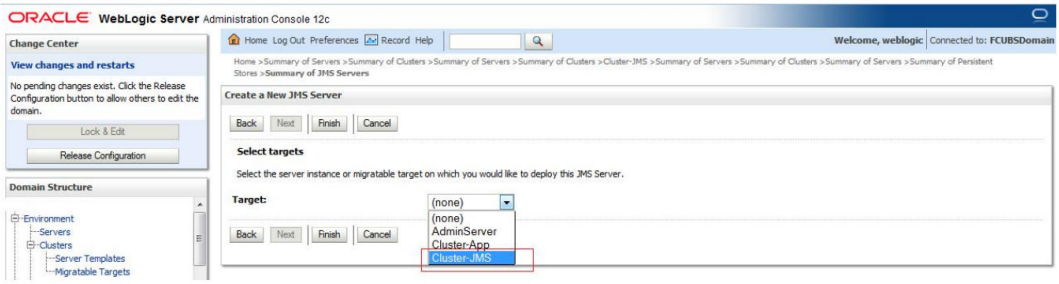
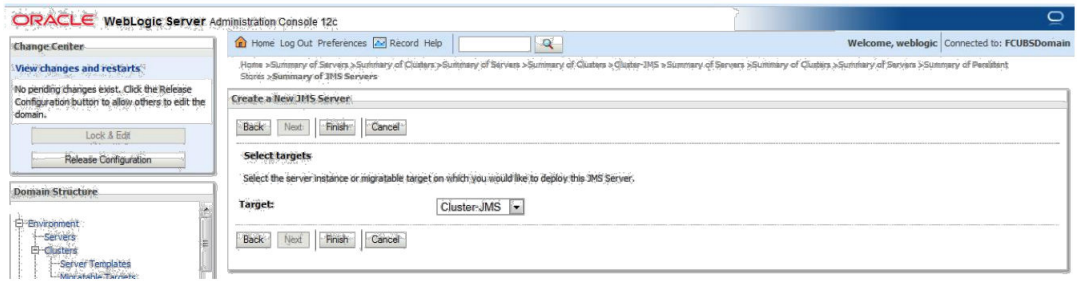
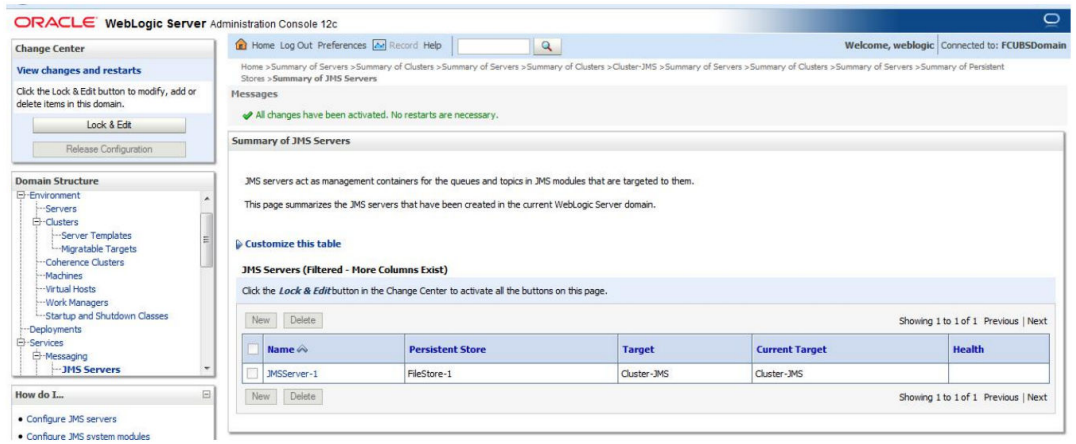


Figure 4-8 JMS Server



5. JMS-Server-1 is created.

Figure 4-9 Create a New JMS Server



6. In NFS below filestores can be seen

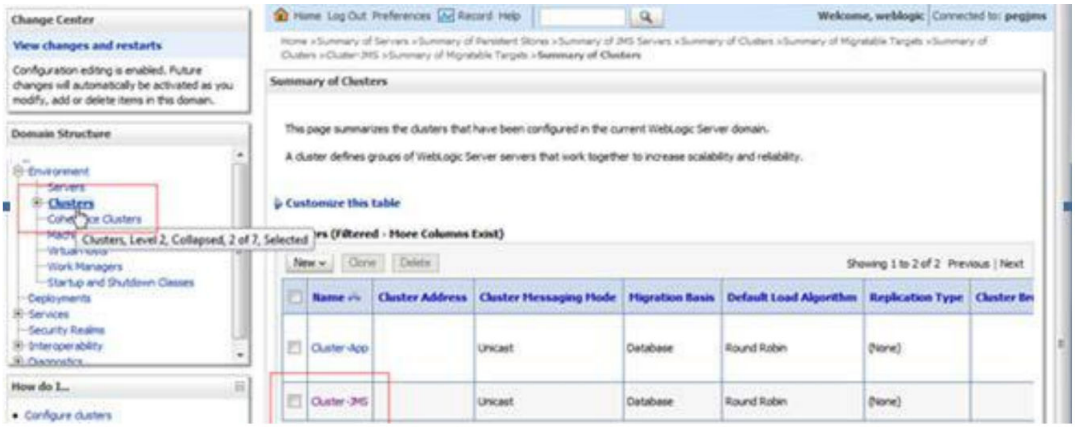
Figure 4-10 NFS

```
[root@          JMS_FILESTORE]# ll
total 2056
-rw-r----- 1 wl12c oinstall 1049088 Jun 16 14:10 FILESTORE-1@DC_JMS_1000000.DAT
-rw-r----- 1 wl12c oinstall 1049088 Jun 16 14:10 FILESTORE-1@DC_JMS_2000000.DAT
[root@          JMS_FILESTORE]# pwd
/scratch/work_area/JMS_FILESTORE
[root@          JMS_FILESTORE]#
```

4.3 Cluster Configuration for Service Migration

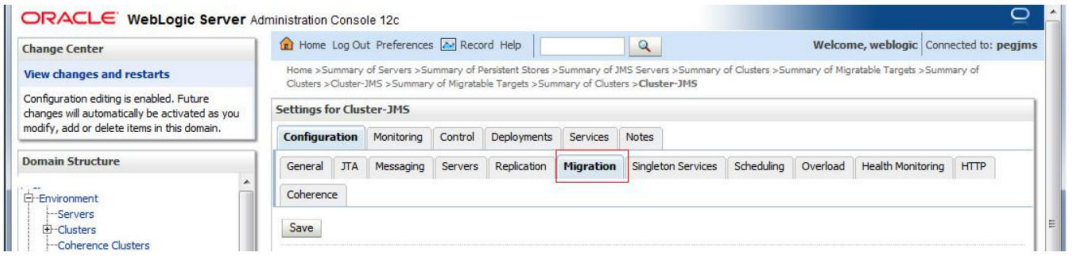
1. Click on Environment, select Clusters and then Cluster-JMS

Figure 4-11 Summary of Clusters



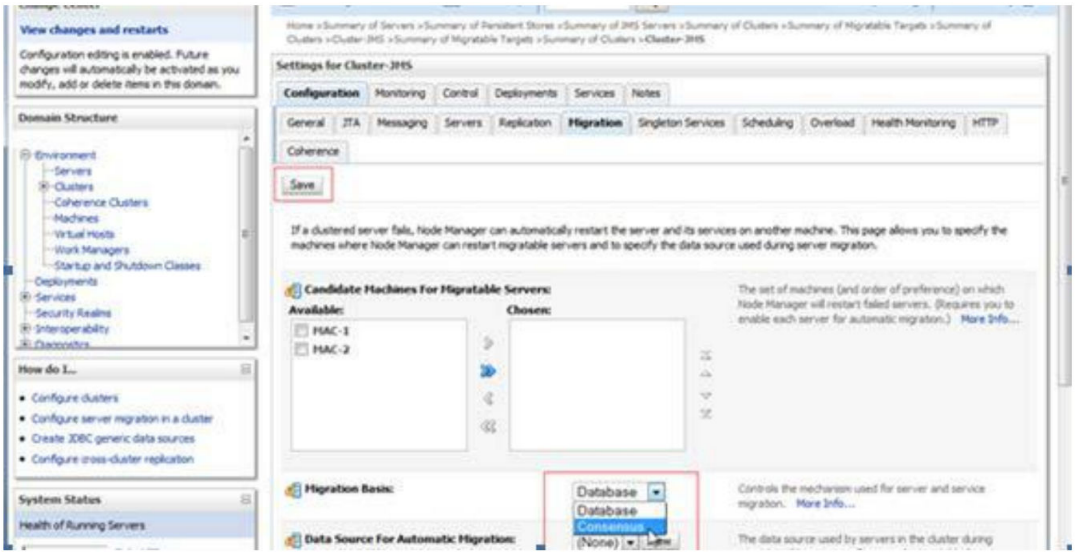
2. Click on **Migration** Tab

Figure 4-12 Summary of Clusters-JMS



3. Change Migration Basis to Consensus and Click on **Save**.

Figure 4-13 Summary of Clusters-JMS



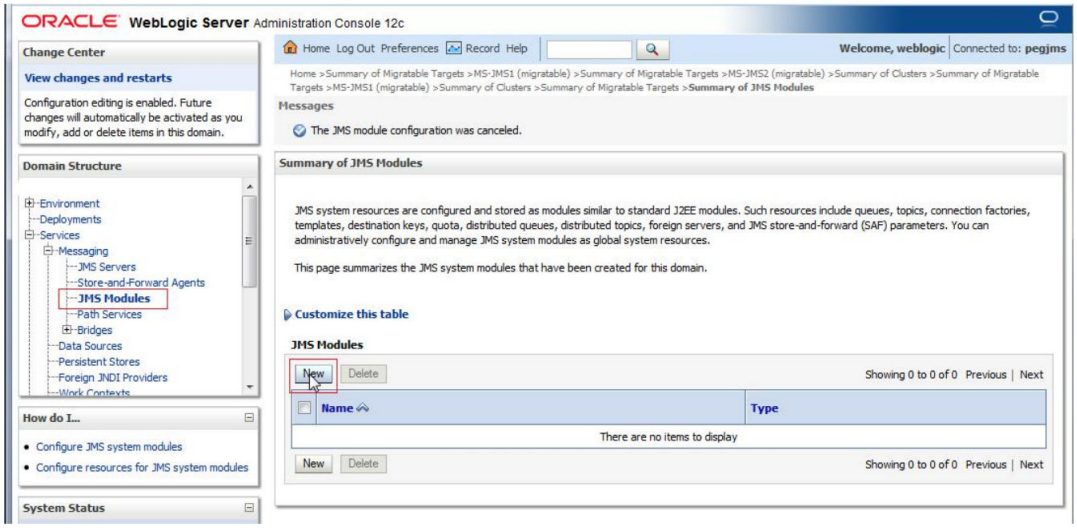
5

JMS Module Creation

5.1 Module Creation

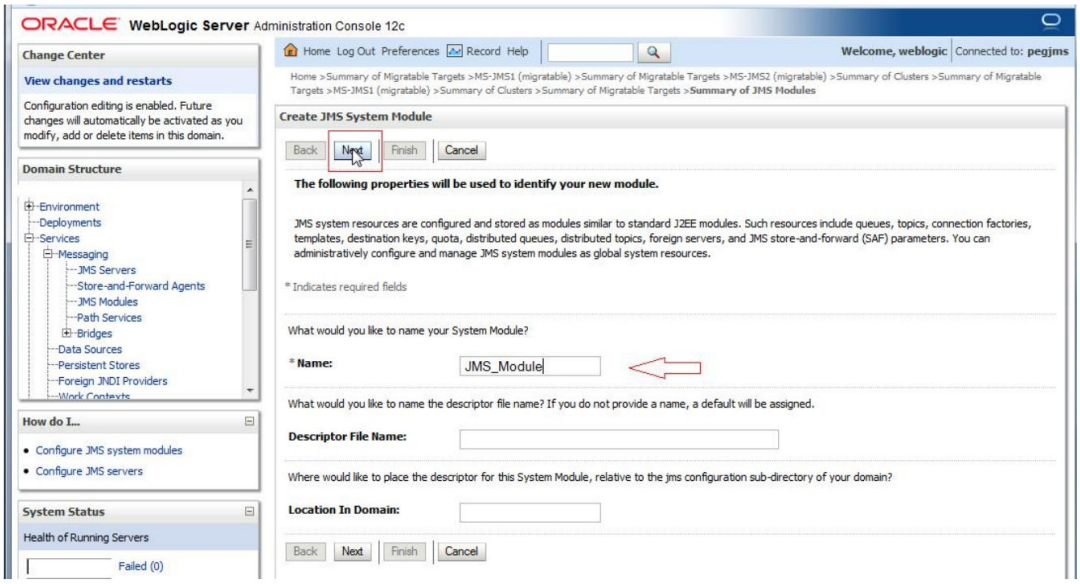
1. Go to **Services**, select **Messaging** and then **JMS Modules**.
2. Under **JMS Modules** and Click on **New**.

Figure 5-1 Summary of JMS Modules



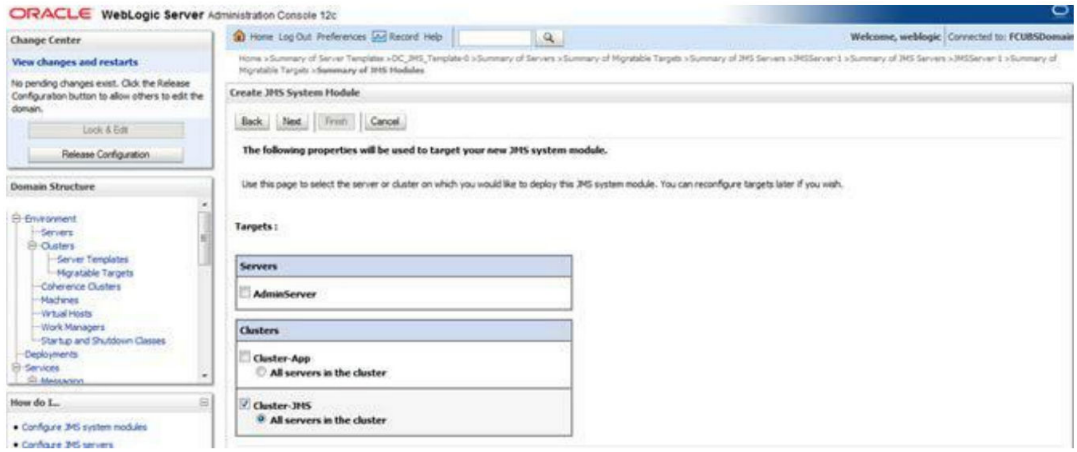
3. Enter name as JMS_MODULE and Click on **Next**.

Figure 5-2 Create JMS System Module



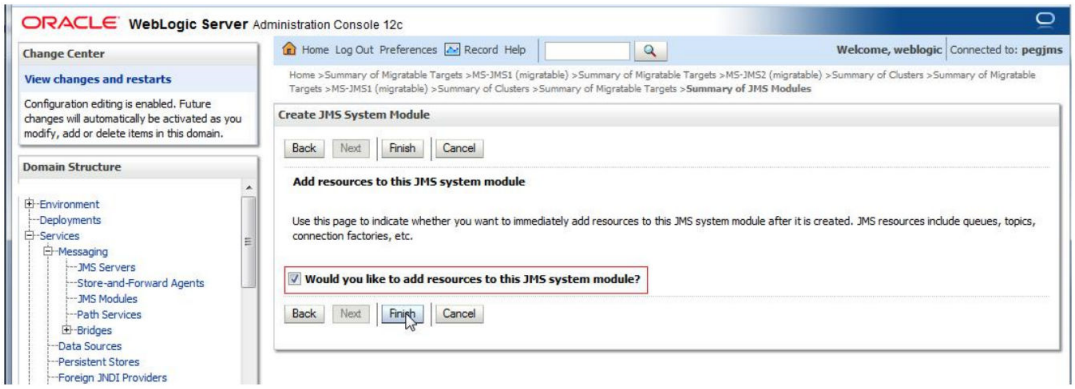
4. Select Target as Cluster-JMS and Click on **Next**.

Figure 5-3 Create JMS System Module



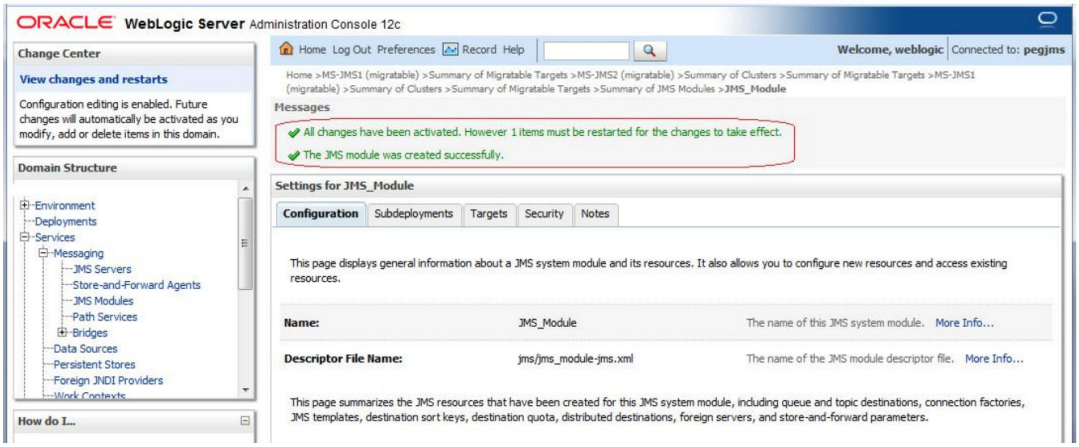
5. Select the checkbox and Click on **Finish**.

Figure 5-4 Create JMS System Module



6. JMS_MODULE is created.

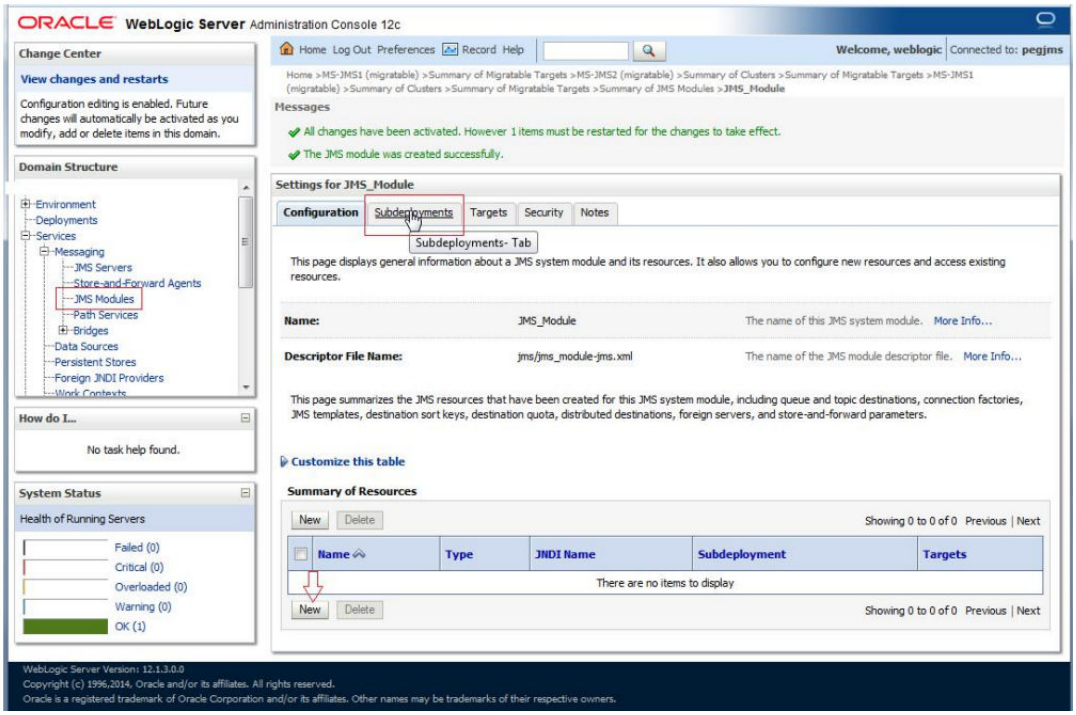
Figure 5-5 Settings for JMS_Module



5.2 Sub Deployment Creation

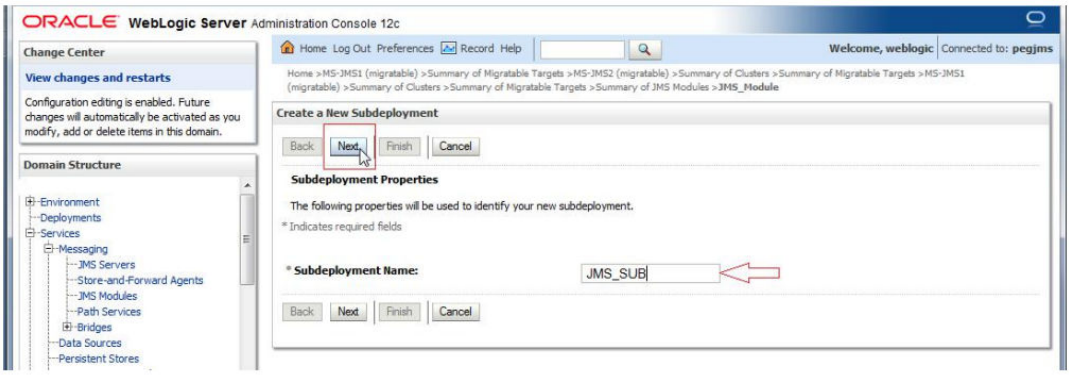
1. In JMS_MODULE, Click on Sub Deployment tab , Click on **New**.

Figure 5-6 Settings for JMS Module



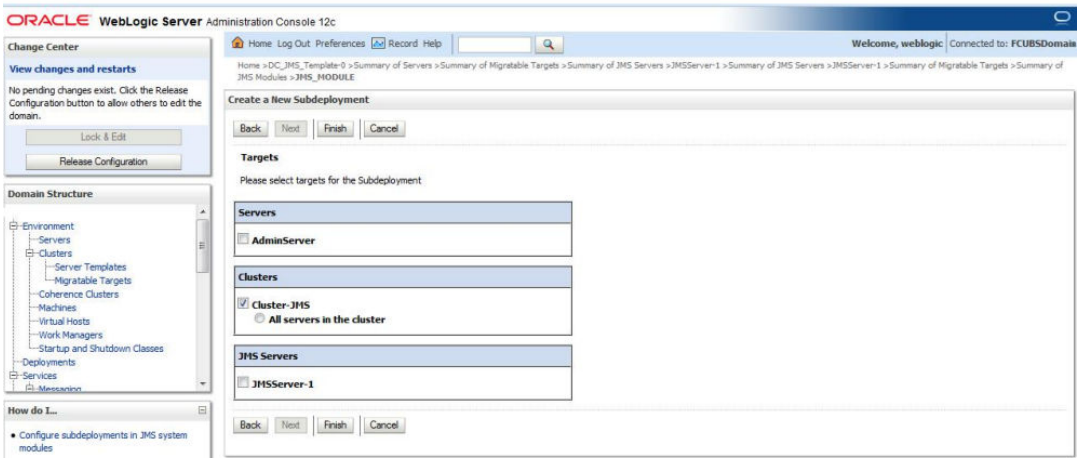
2. Enter name as JMS_SUB and click on **Next**.

Figure 5-7 Create a New Subdeployment



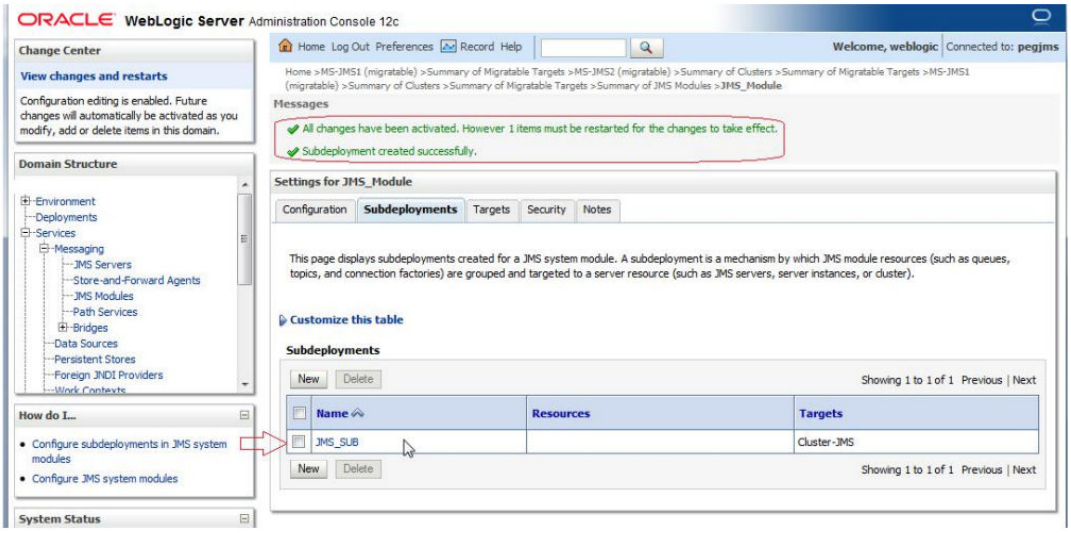
3. Select Target as Cluster-JMS and Click on **Finish**.

Figure 5-8 Create a New Subdeployment



4. Sub-Deployment is created.

Figure 5-9 Settings for JMS_Module



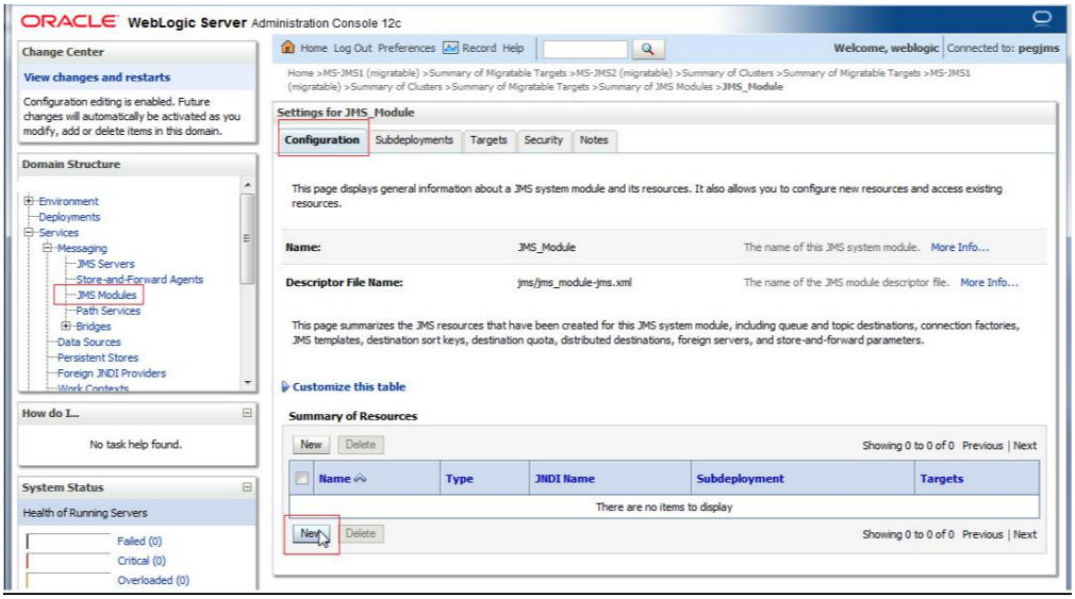
5.3 Resource Creation

- Queue Creation
- Connection Factory Creation

5.3.1 Queue Creation

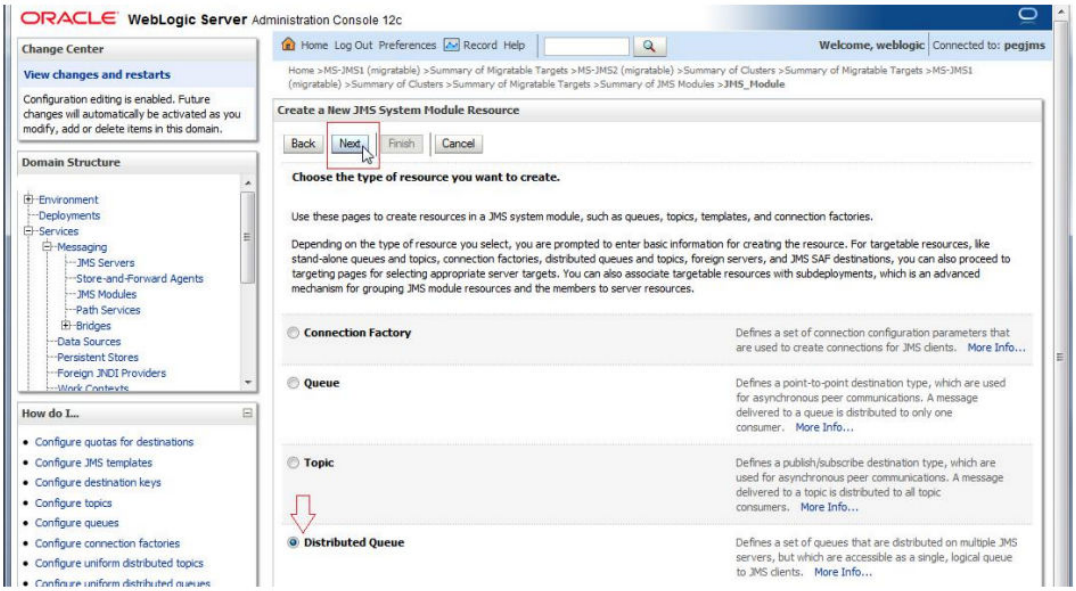
1. In JMS_MODULE Click on **New**.

Figure 5-10 Settings for JMS Module



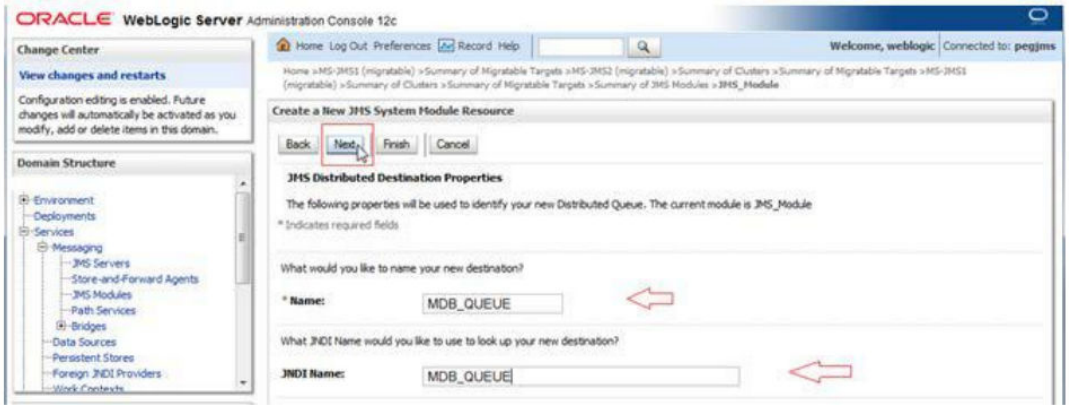
2. Select Distributed Queue and Click on **Next**.

Figure 5-11 Create a New JMS System Module Resource



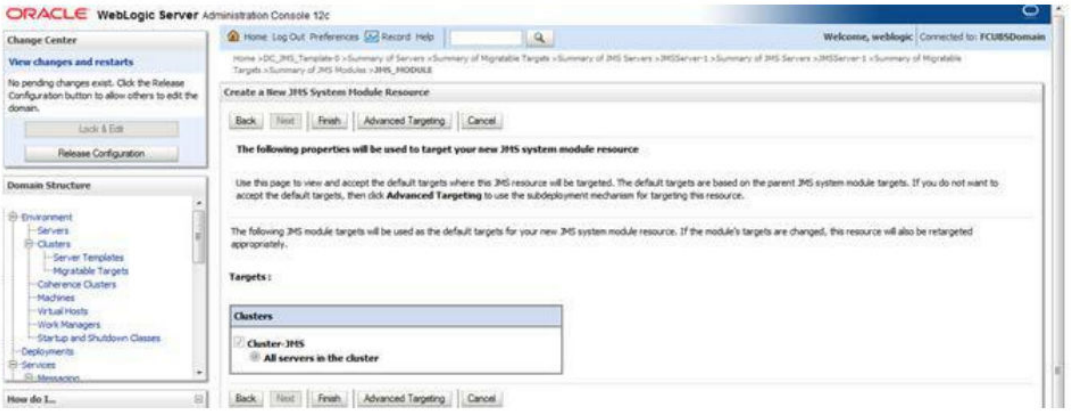
3. Enter the queue name and Click on **Next**.

Figure 5-12 Create a New JMS System Module Resource



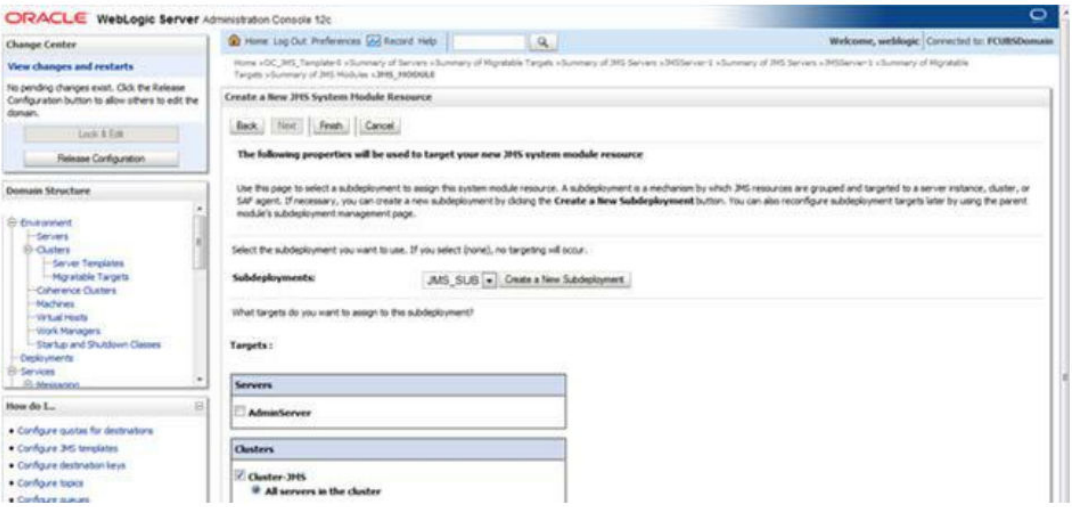
4. Click on **Advance Targeting**.

Figure 5-13 Create a New JMS System Module Resource



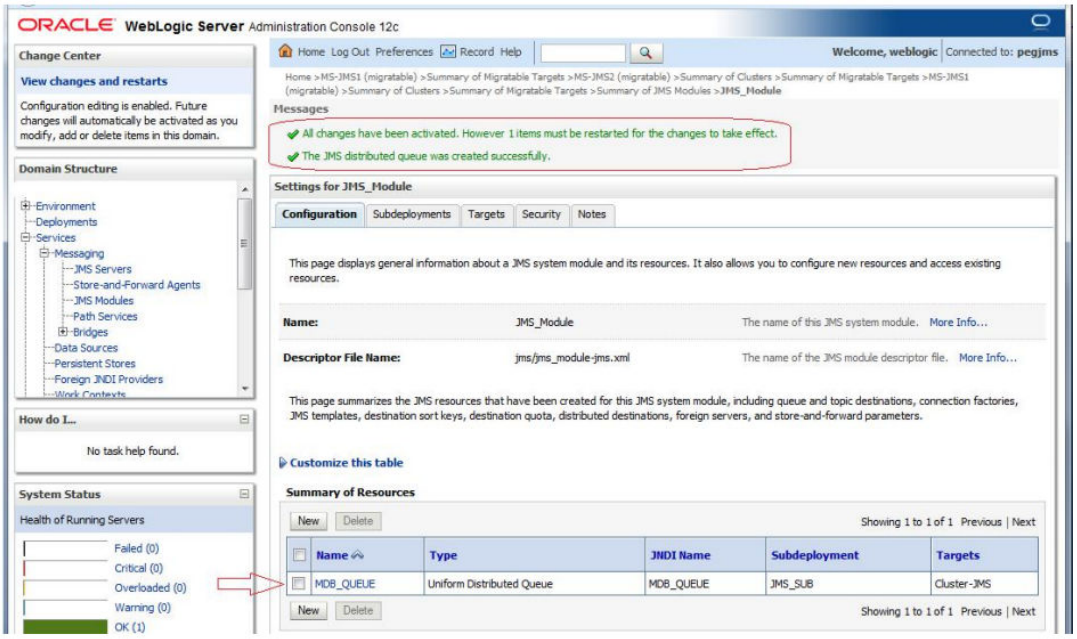
5. Select Subdeployement as JMS_SUB and Click on **Finish**.

Figure 5-14 Create a New JMS System Module Resource



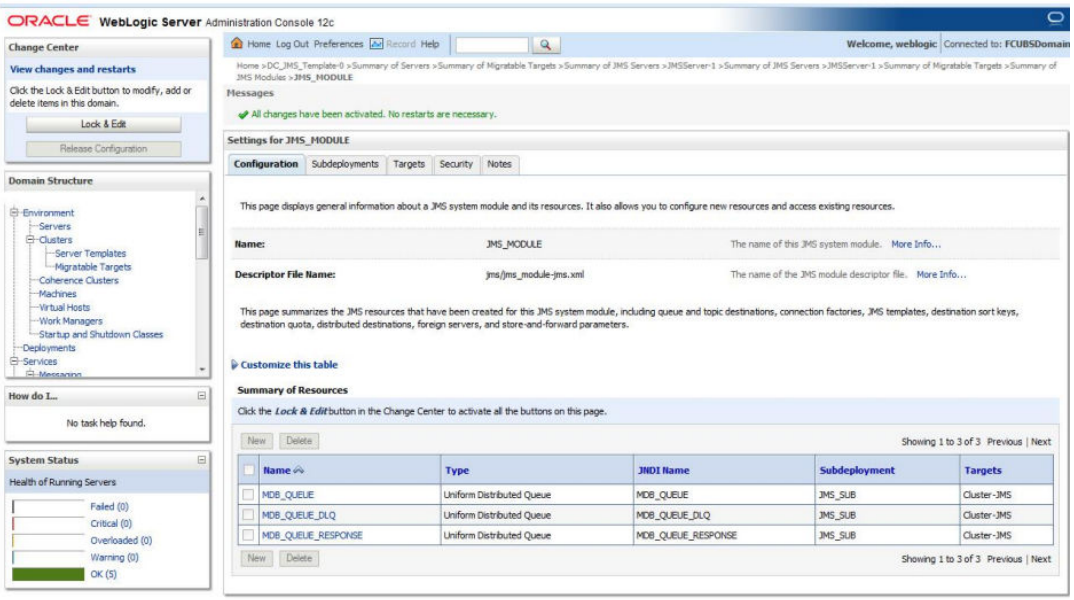
6. MDB_QUEUE is created.

Figure 5-15 Settings for JMS_Module



7. Similarly Create MDB_QUEUE_RESPONSE and MDB_QUEUE_DLQ

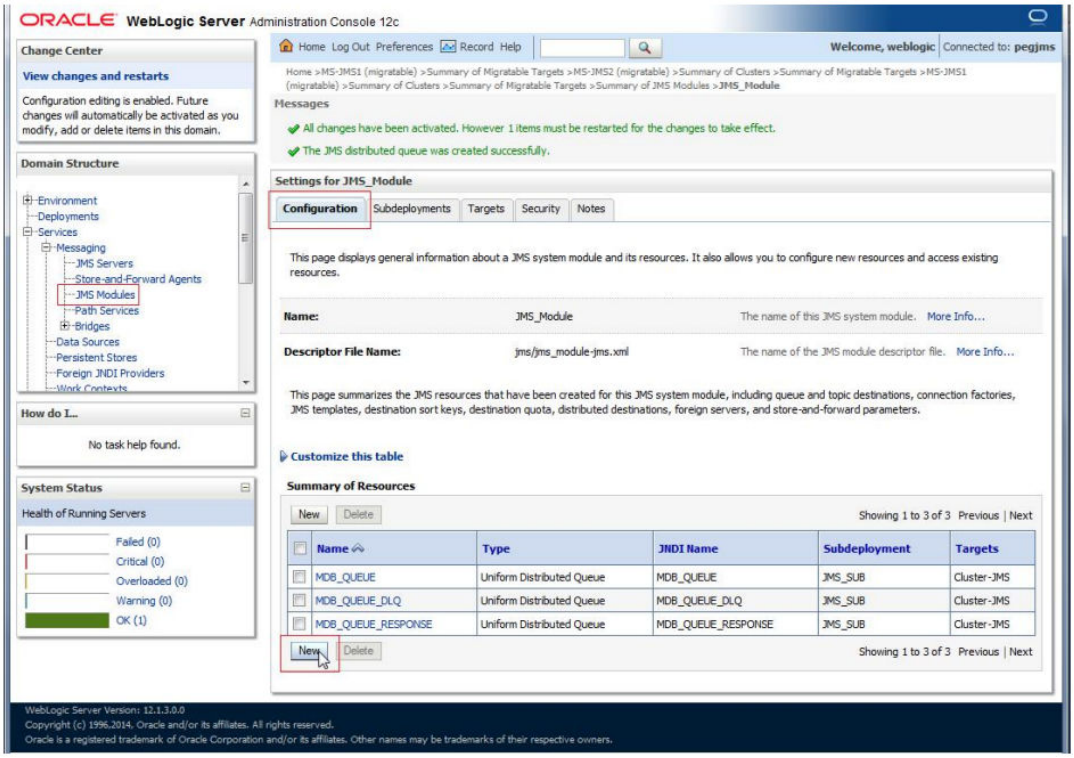
Figure 5-16 Settings for JMS Module



5.3.2 Connection Factory Creation

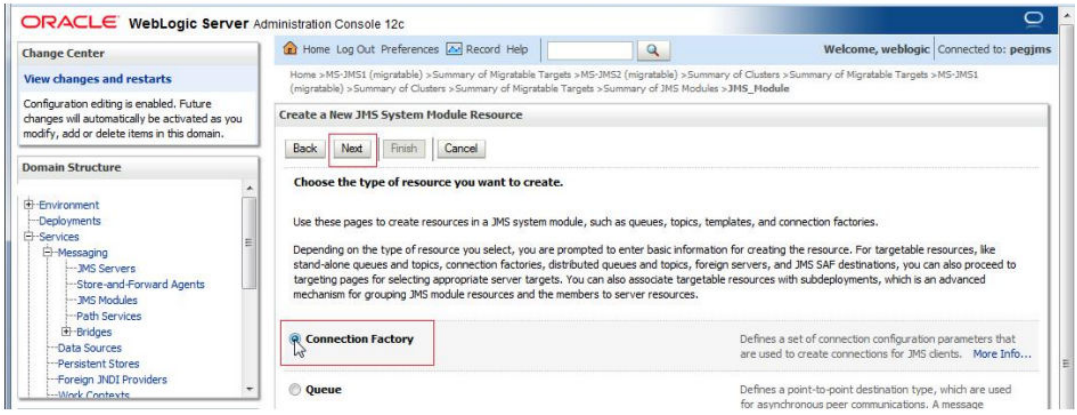
1. In JMS_MODULE Click on **New**.

Figure 5-17 Settings for JMS Module



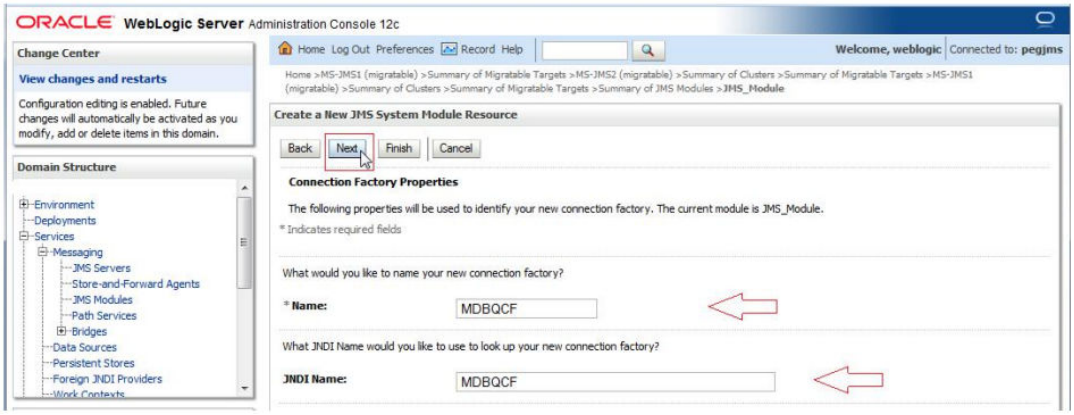
2. Select Connection Factory and click on **Next**.

Figure 5-18 Create a New JMS System Module Resource



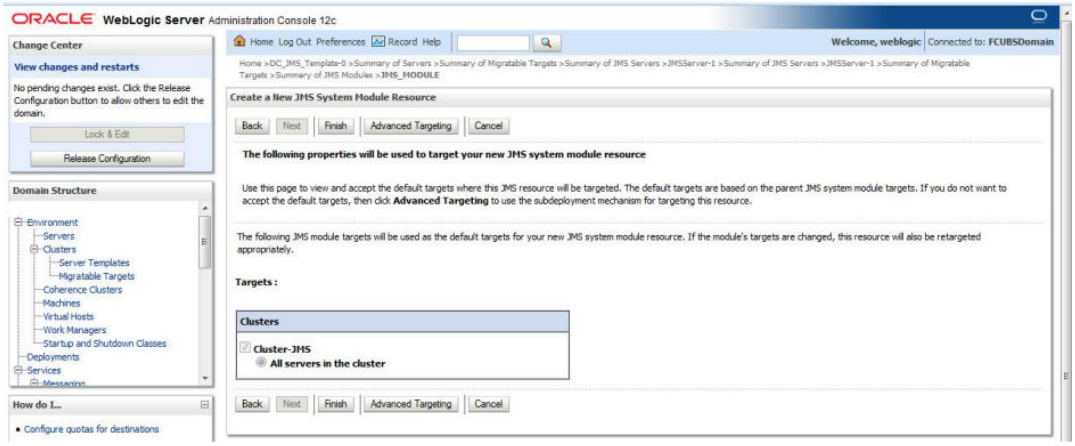
3. Enter the Name and Click on **Next**.

Figure 5-19 Create a New JMS System Module Resource



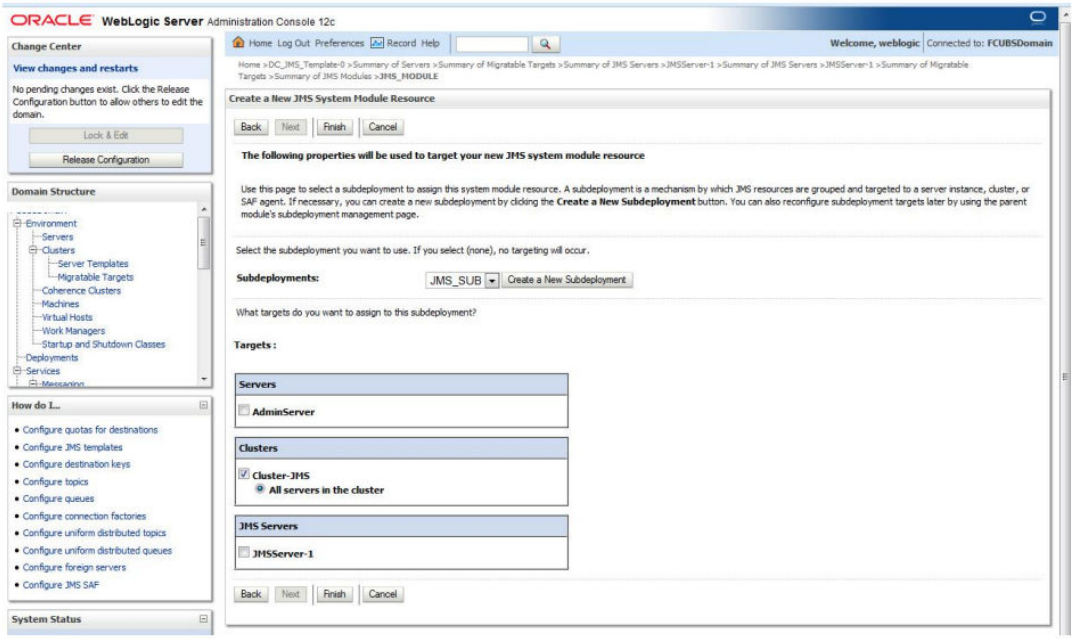
4. Click on **Advance Targeting**.

Figure 5-20 Create a New JMS System Module Resource



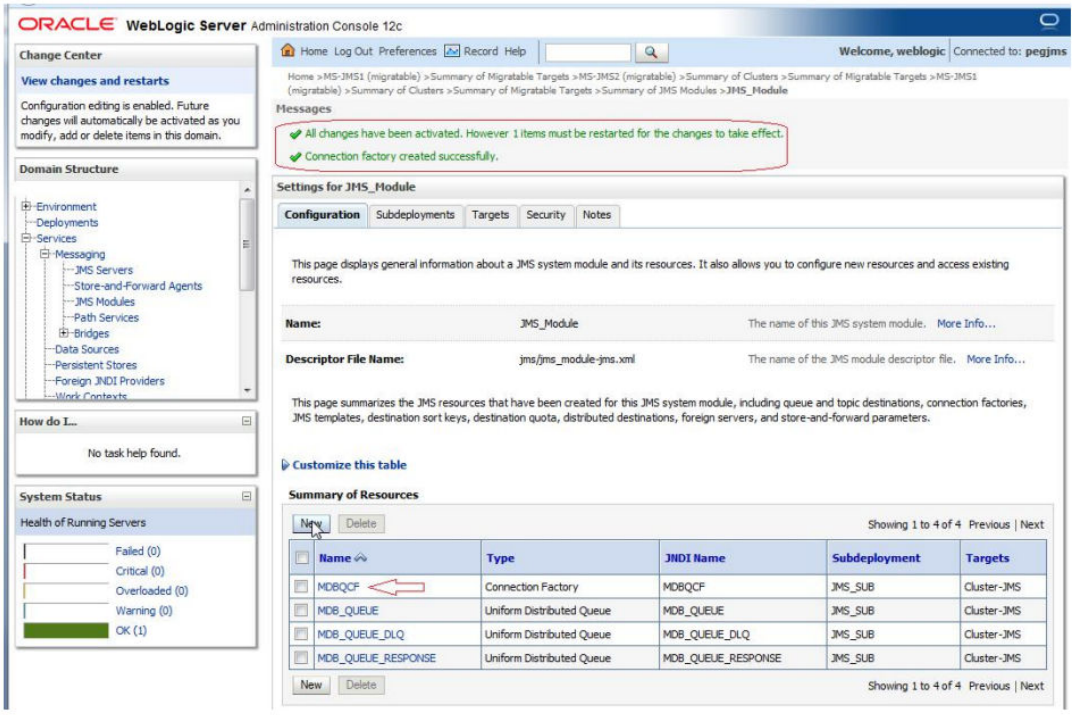
5. Select JMS_SUB and Click on **Finish**.

Figure 5-21 Create a New JMS System Module Resource



6. Connection Factory is created.

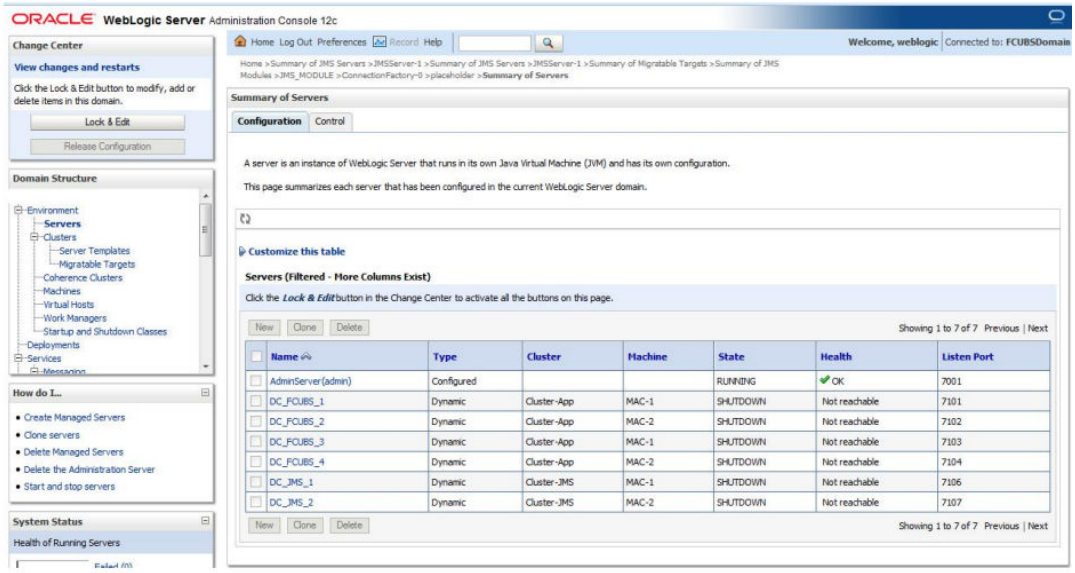
Figure 5-22 Settings for JMS_Module



6
Server Restart

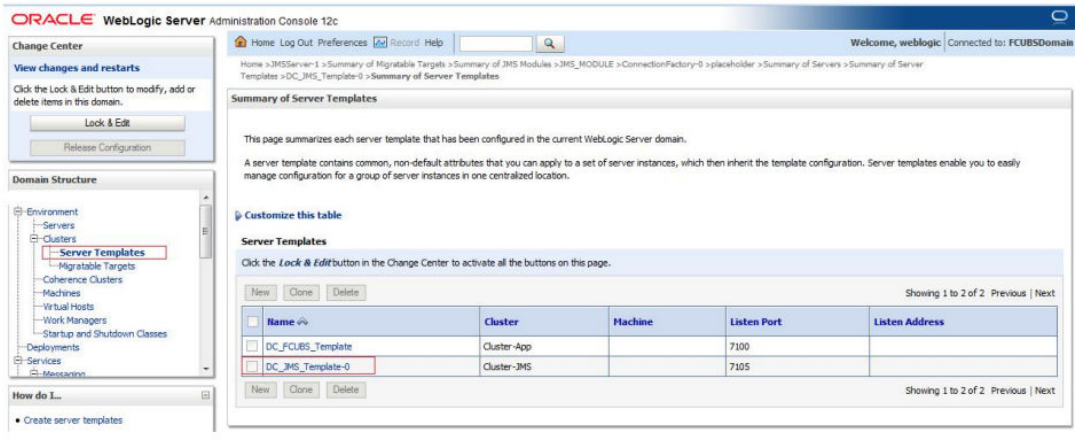
1. Increase the heap size of both DC_JMS_1 and DC_JMS_2 cluster.

Figure 6-1 Summary of Servers



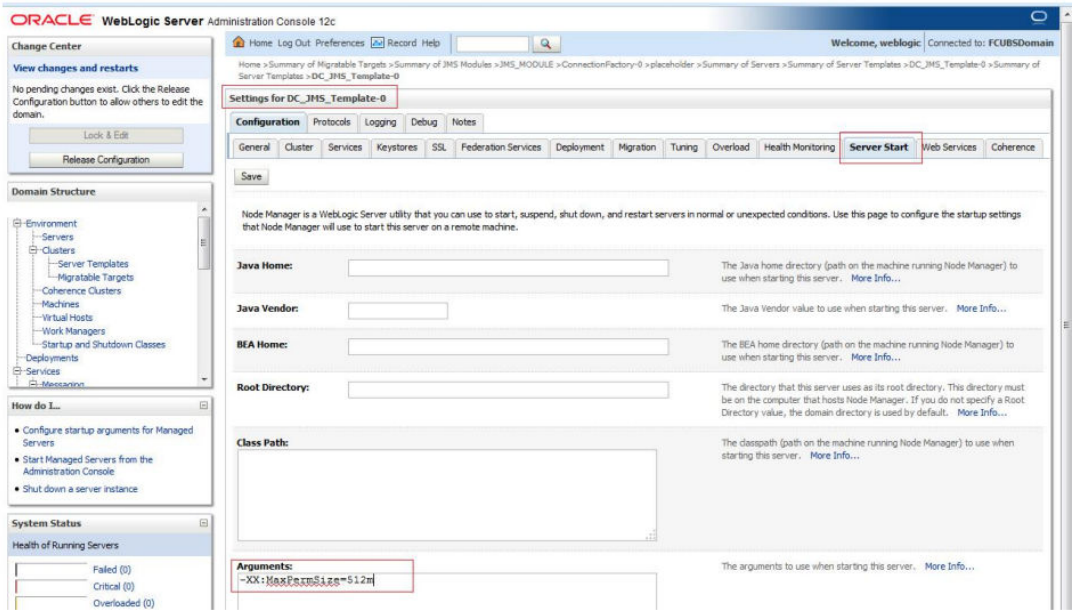
2. Select the cluster ‘DC_JMS_Template-0’

Figure 6-2 Summary of Server Templates



3. Click on Server Start Tab and in Arguments Section enter **–XX:MaxPermSize=512m**.

Figure 6-3 Settings for DC_JMS_Template-0



4. **Restart** the AdminServer and DC_JMS_1 and DC_JMS_2 managed servers.

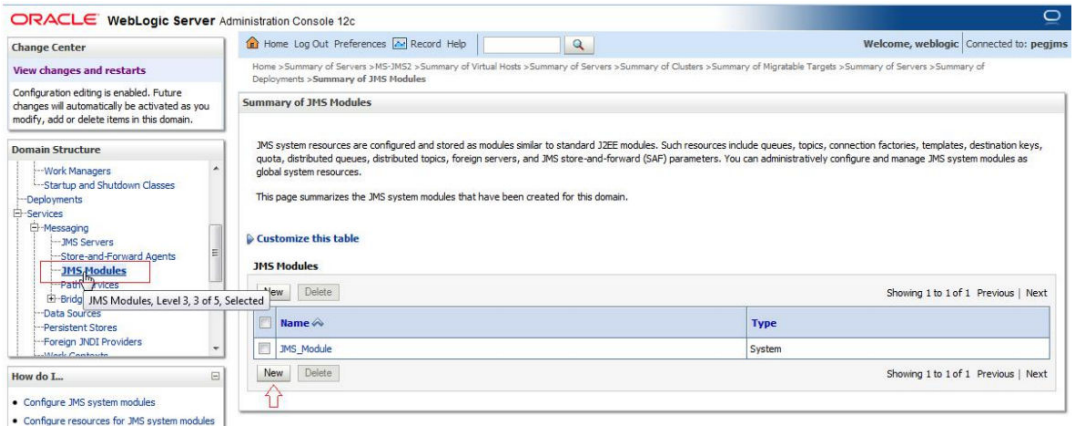
7

Foreign Server Creation

7.1 Module Creation

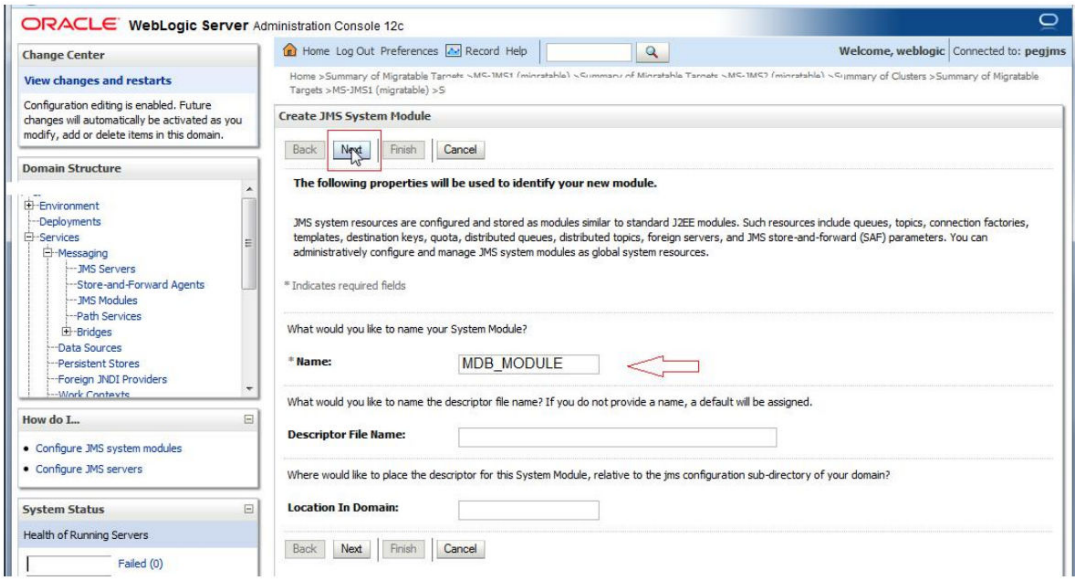
1. JMS_Modules and Click on **New**.

Figure 7-1 Summary of JMS Modules



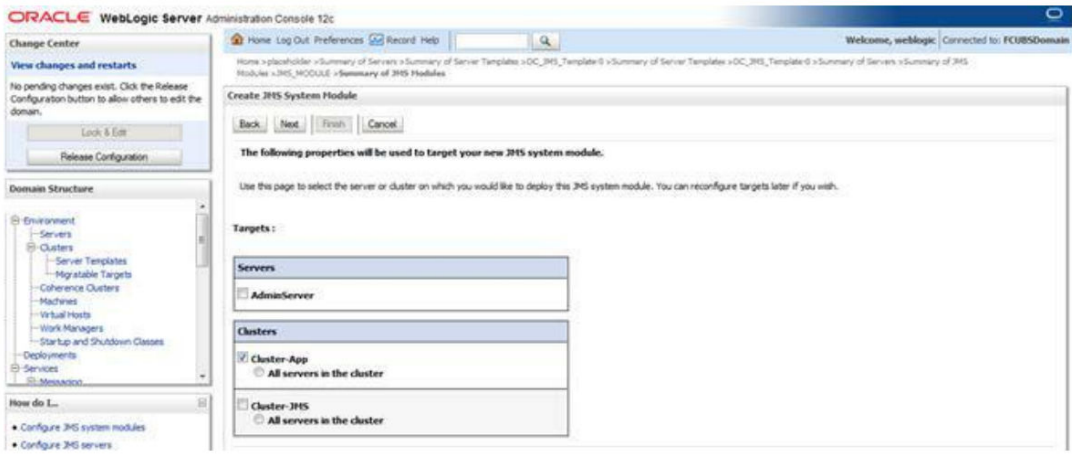
2. Enter name as MDB_MODULE and Click on **Next**.

Figure 7-2 Create JMS System Module



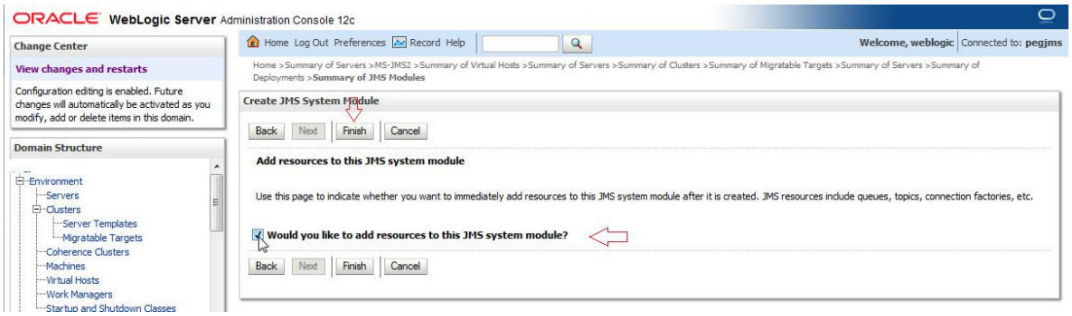
3. Select Target as Cluster-App and Click on **Next**.

Figure 7-3 Create JMS System Module



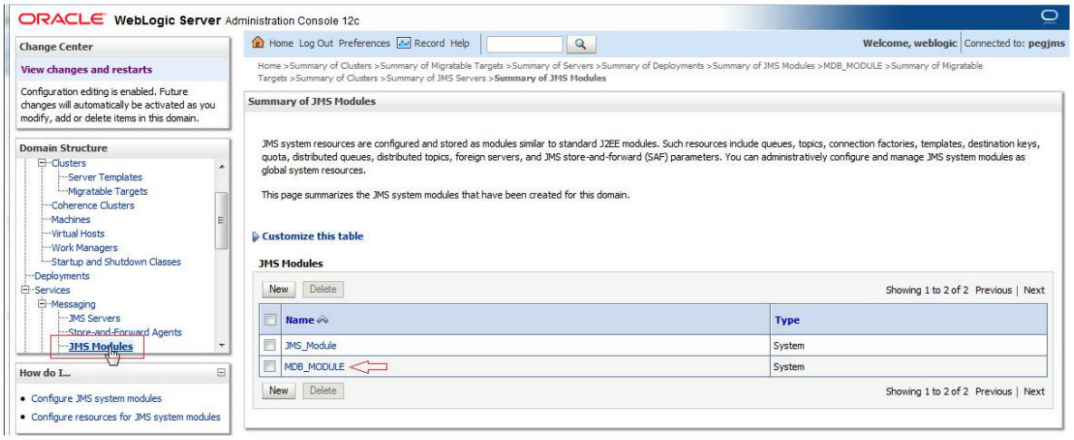
4. Select the checkbox and Click on **Finish**.

Figure 7-4 Create JMS System Module



5. MDB_MODULE is created.

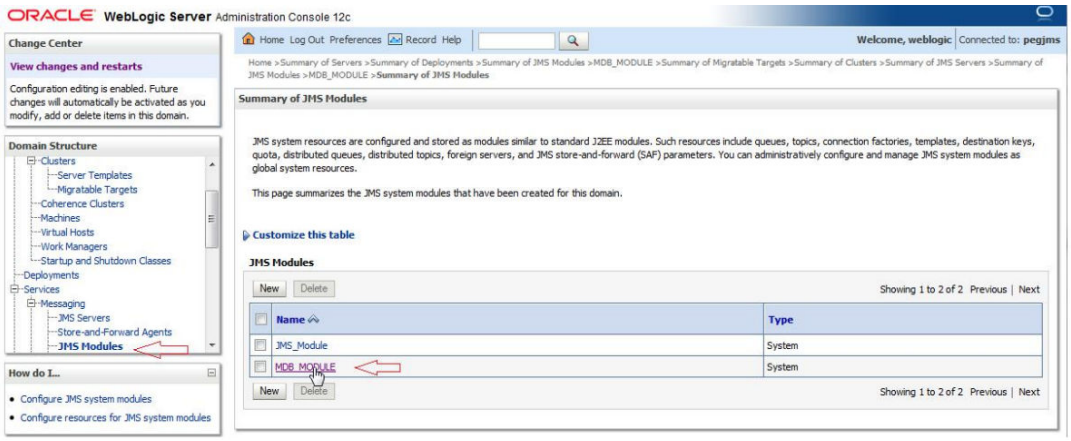
Figure 7-5 Summary of JMS_Module



7.2 Foreign Server Creation

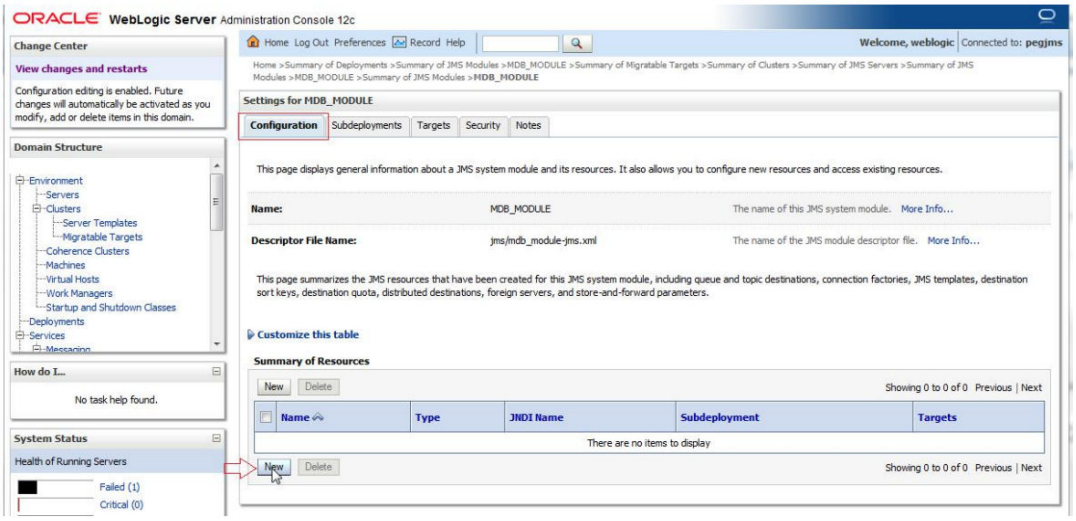
1. In MDB_MODULE, Click on New Resource, Select **Foreign Server**.

Figure 7-6 Summary of JMS Modules



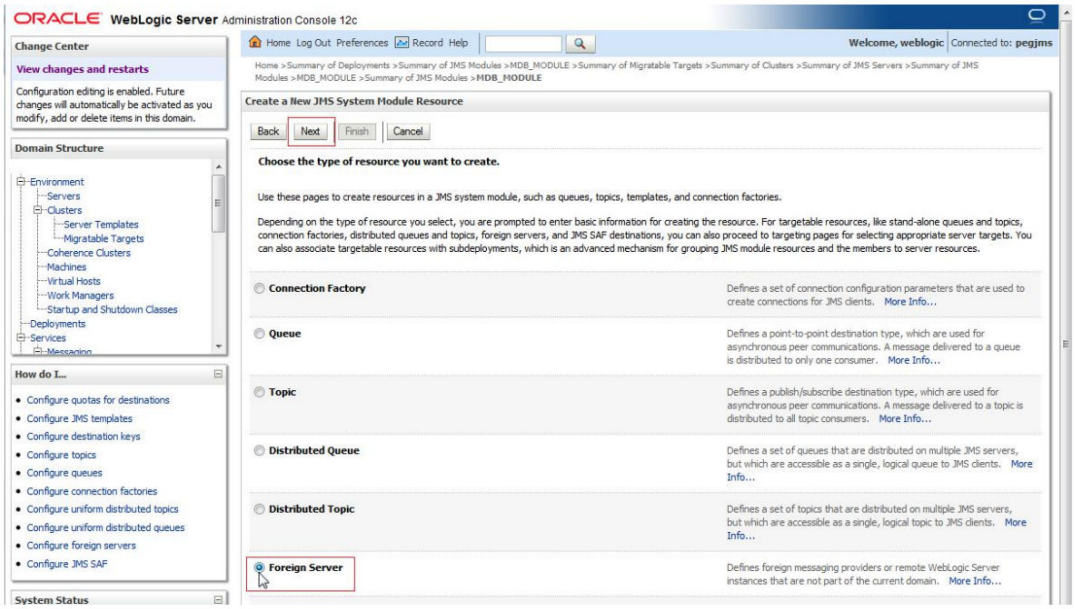
2. Click on Configuration and **New**.

Figure 7-7 Settings for MDB_Module



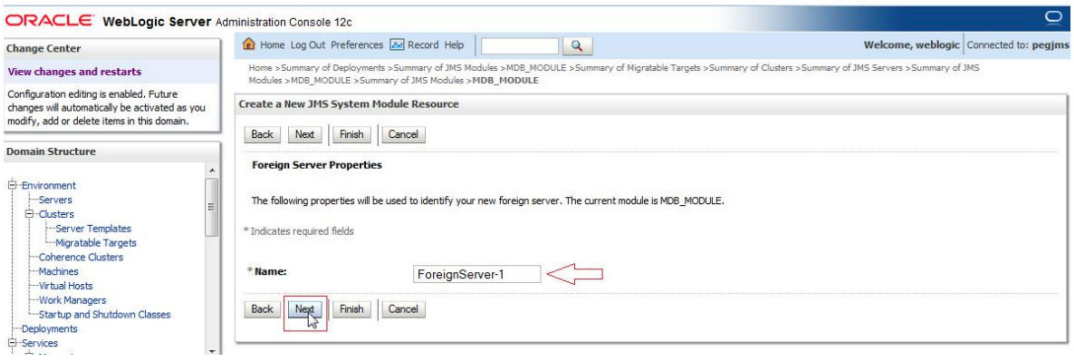
3. Select Foreign Server and Click on **Next**.

Figure 7-8 Create a New JMS System Module Resource



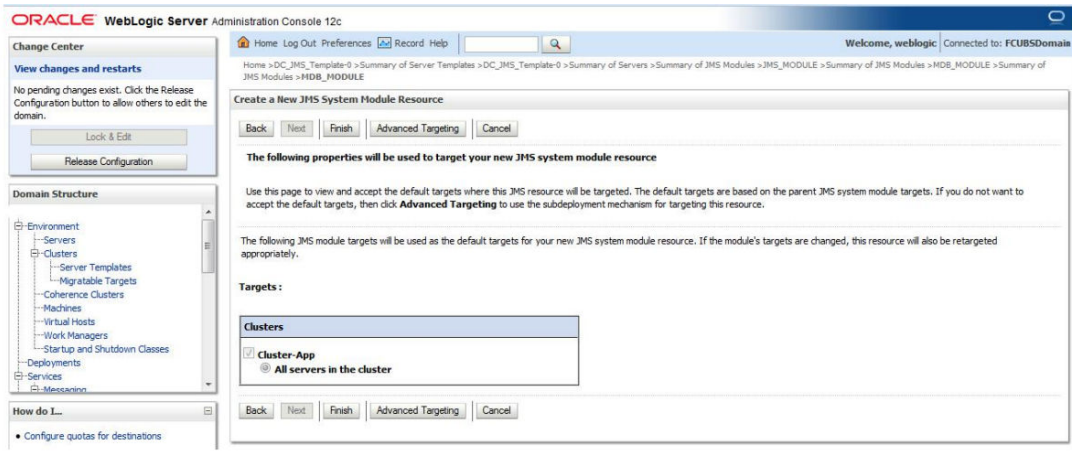
4. Enter name and Click on **Next**.

Figure 7-9 Create a New JMS System Module Resource



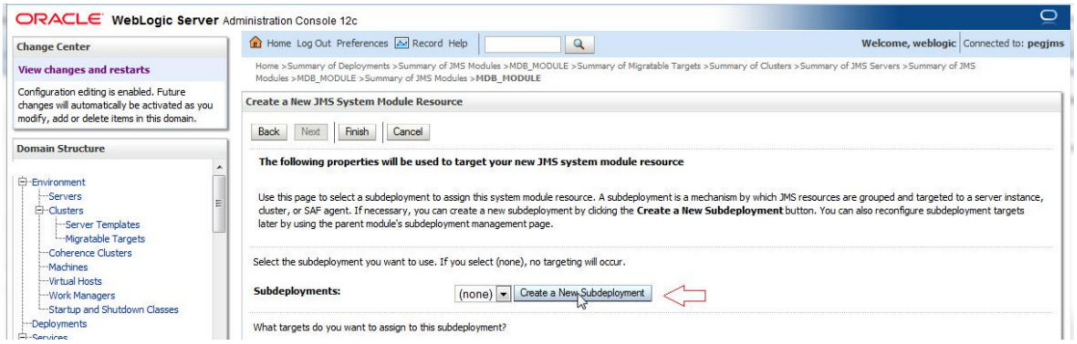
5. Click on Advanced Targeting.

Figure 7-10 Create a New JMS System Module Resource



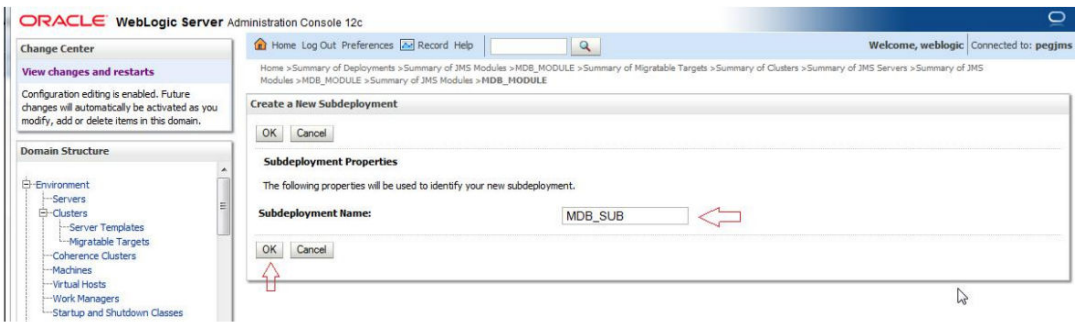
6. Click on **Create a New SudDeployment**.

Figure 7-11 Create a New JMS System Module Resource



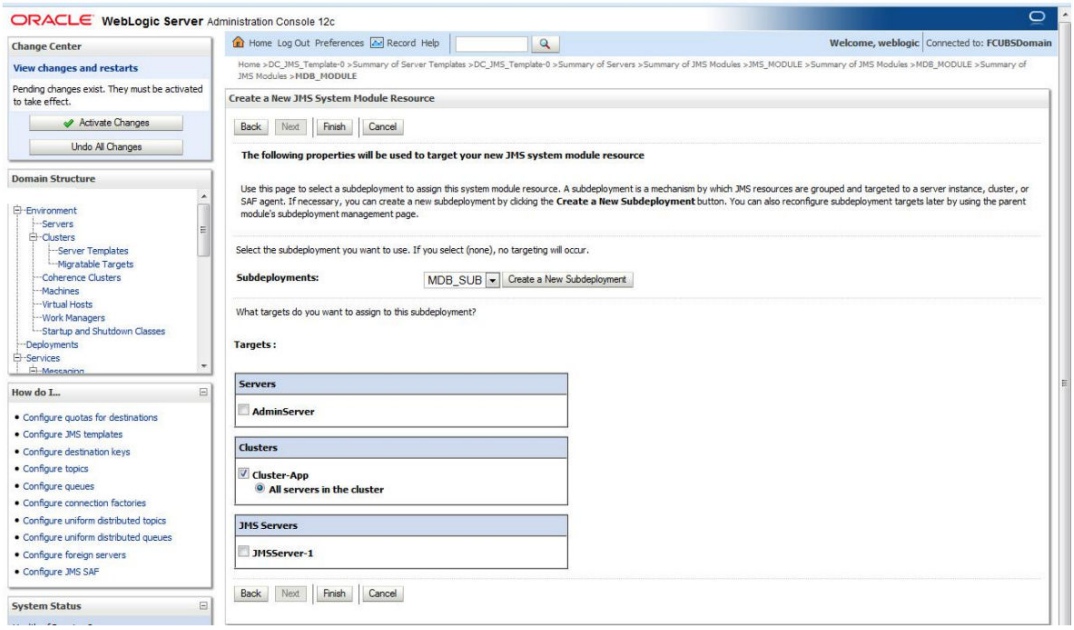
7. Enter Name as MDB_SUB and Click on **OK**.

Figure 7-12 Create a New Subdeployment



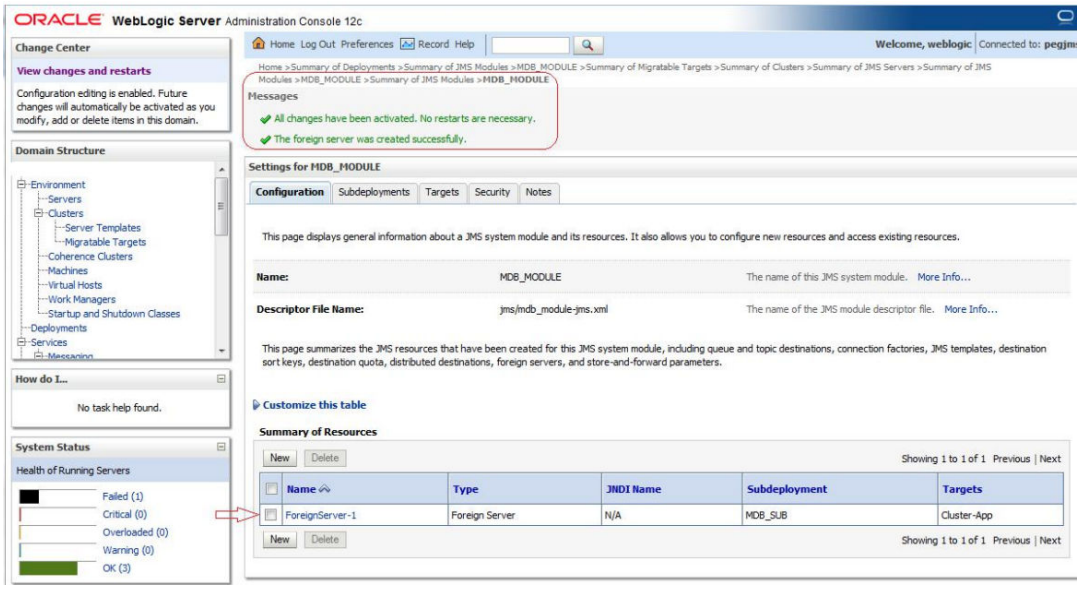
8. Select Target as Cluster-App and Click on **Finish**.

Figure 7-13 Create a New JMS System Module Resource



9. Foreign Server is created.

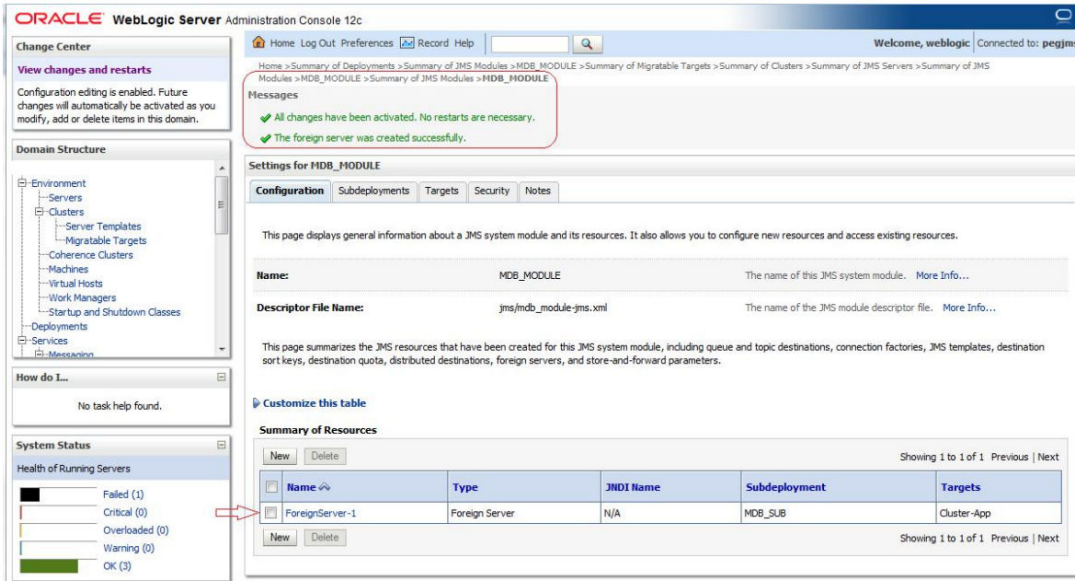
Figure 7-14 Settings for MDB_Module



7.3 Foreign Server Configuration

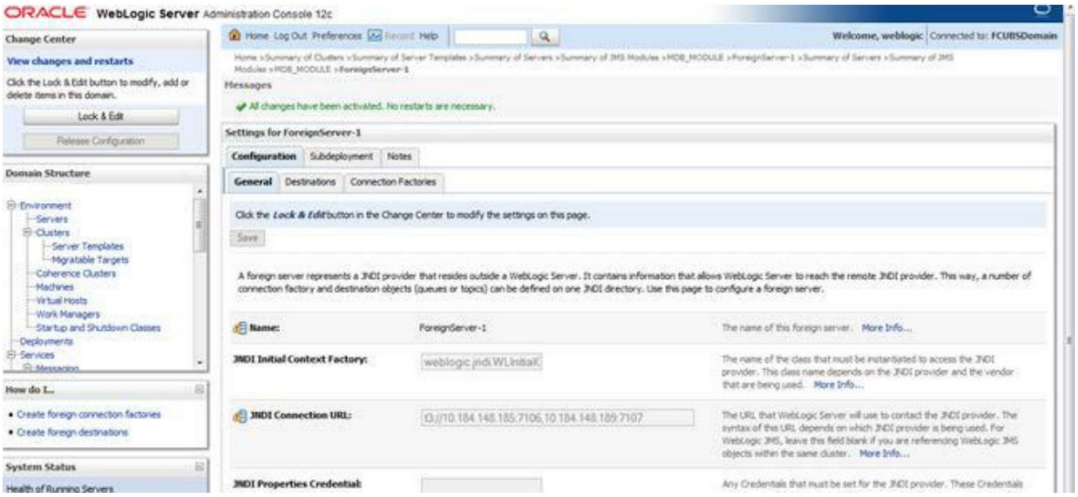
1. Click on ForeignServer-1.

Figure 7-15 Settings for MDB_Module



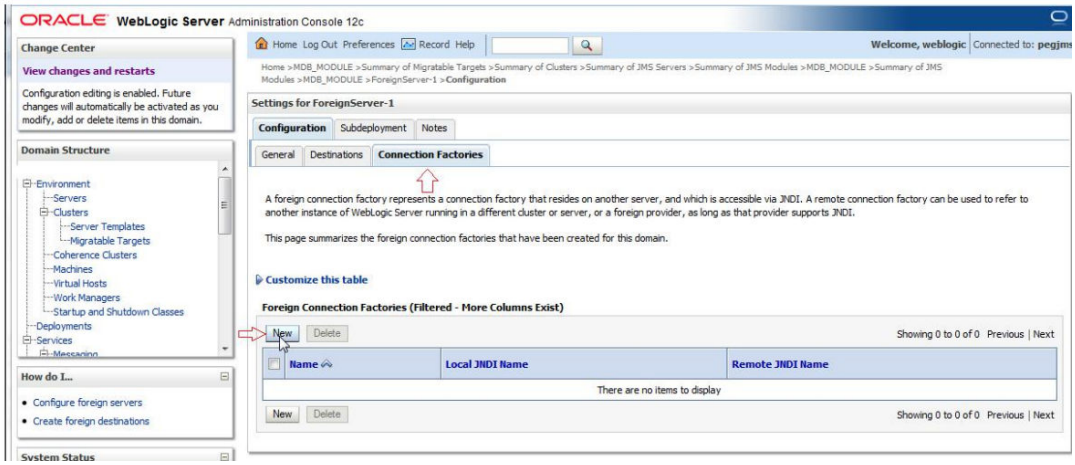
2. Enter the JNDI URL as Cluster URL(JMS Managed Servers) and Click on **Save**.

Figure 7-16 Settings for ForiegnServer-1



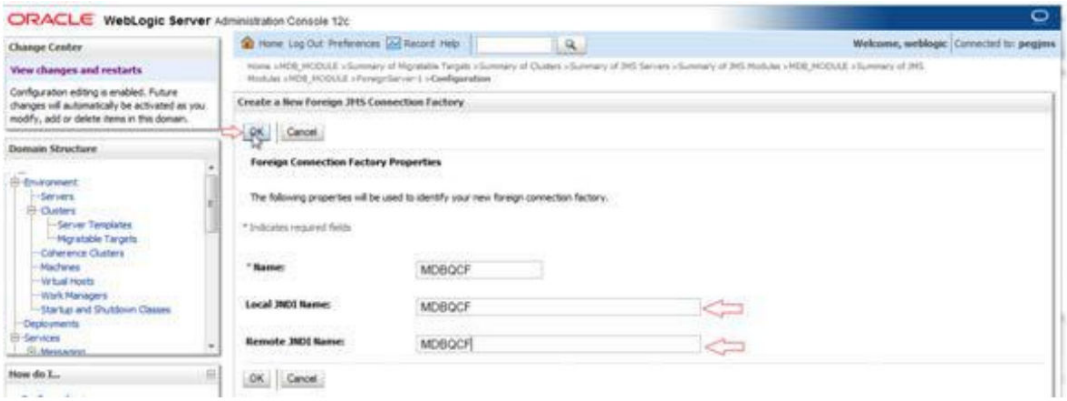
3. Click on Connection Factories.

Figure 7-17 Settings for ForiegnServer-1



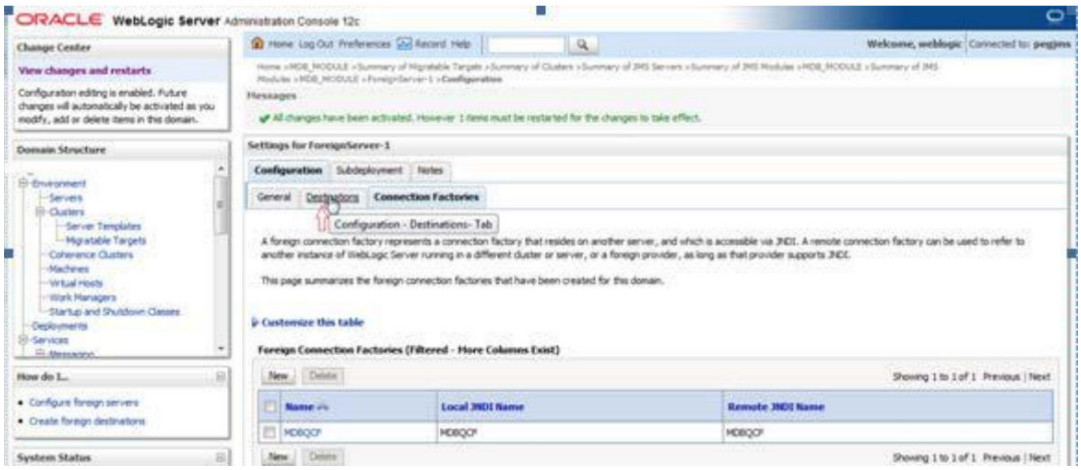
4. Create MDBQCF Connection Factory.

Figure 7-18 Create a New Foreign JMS Connection Factory



5. Click on **Destination**.

Figure 7-19 Settings for ForiegnServer-1



6. Create MDB_QUEUE.

Figure 7-20 Settings for ForiegnServer-1

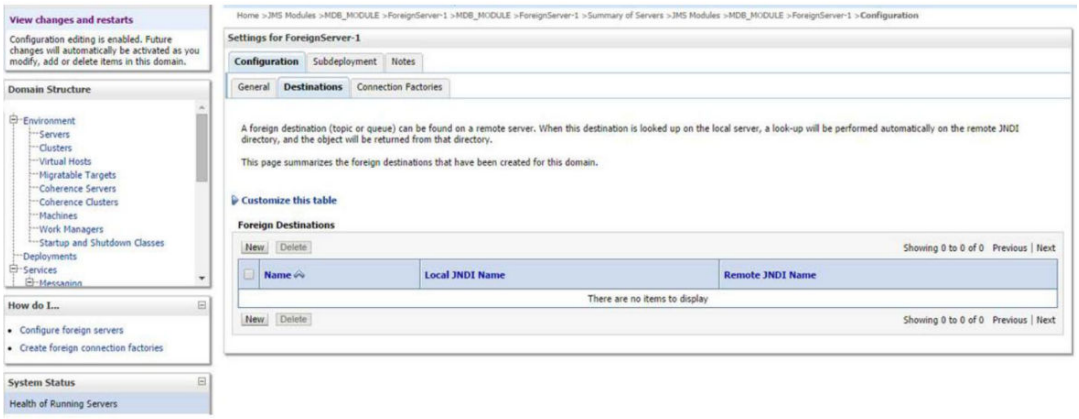
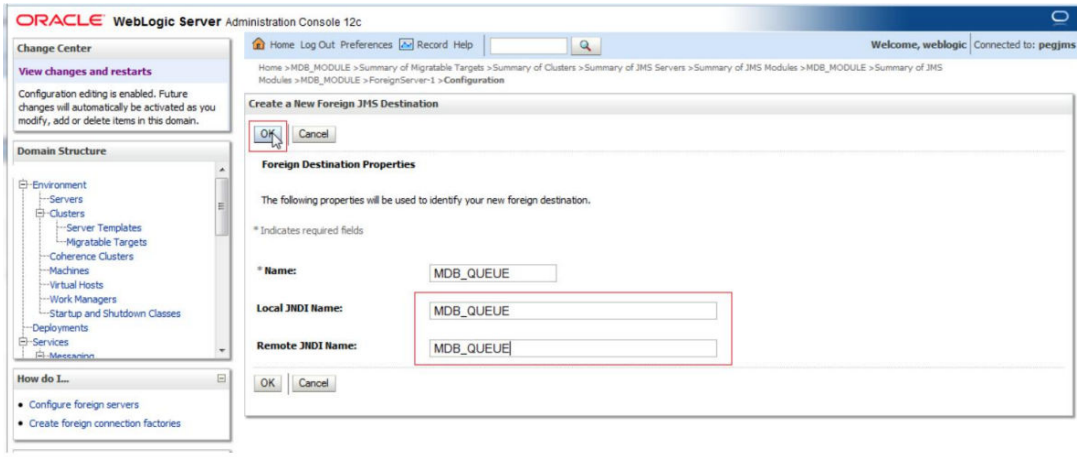
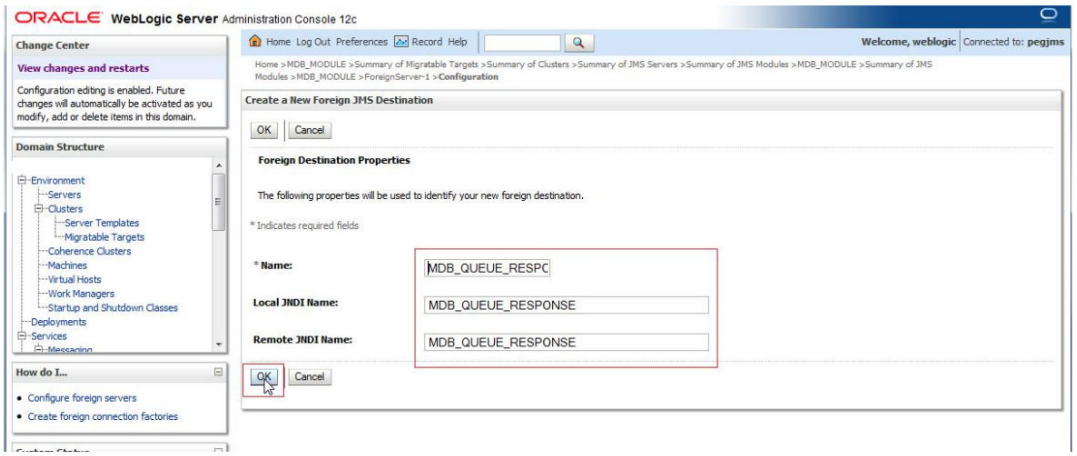


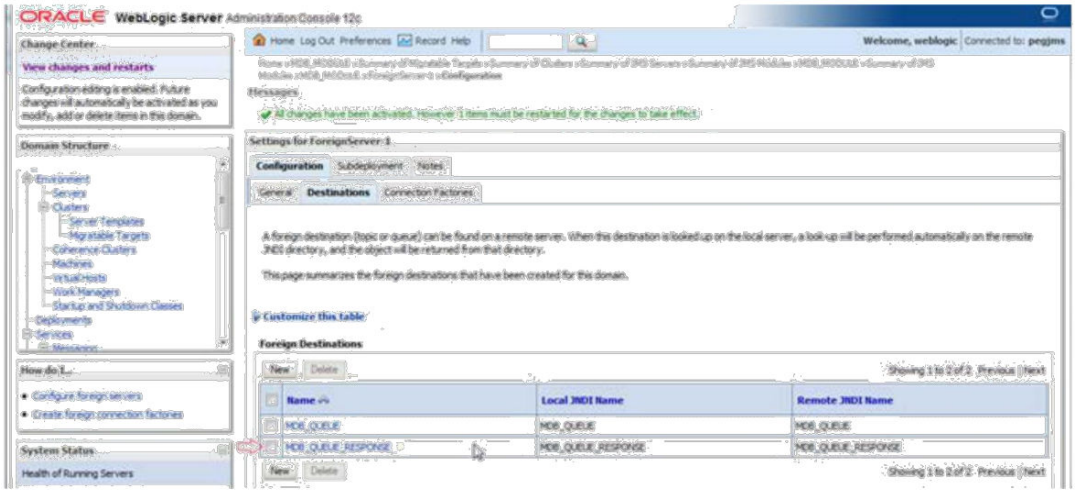
Figure 7-21 Create a New Foreign JMS Destination

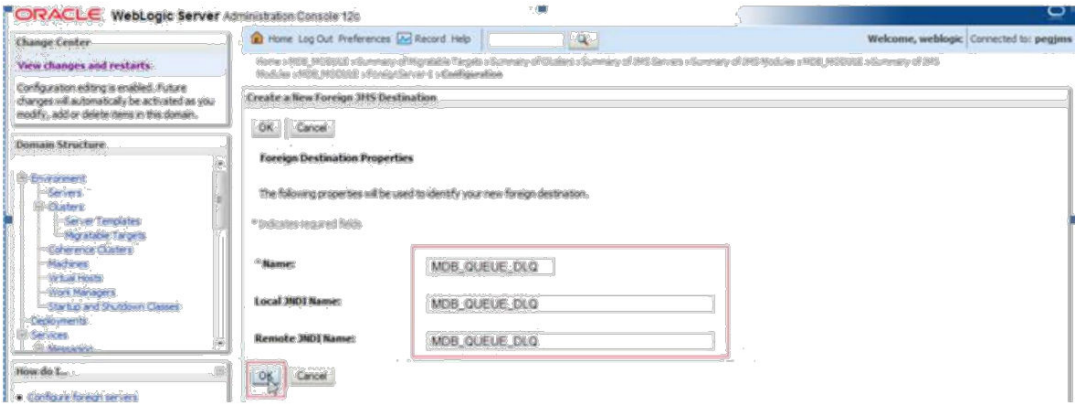


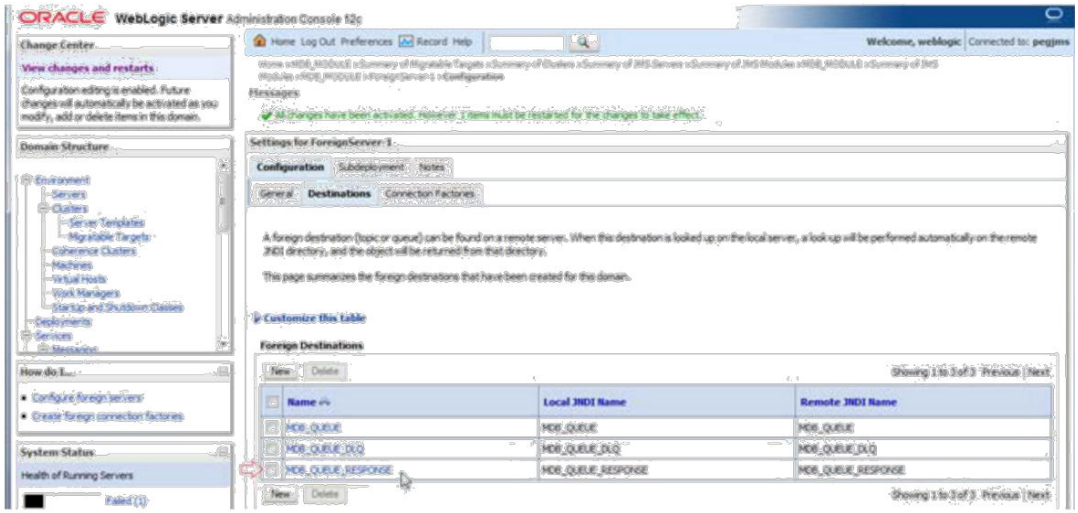
7. Similarly Create MDB_QUEUE_RESPONSE, MDB_QUEUE_DLQ.

Figure 7-22 Create a New Foreign JMS Destination









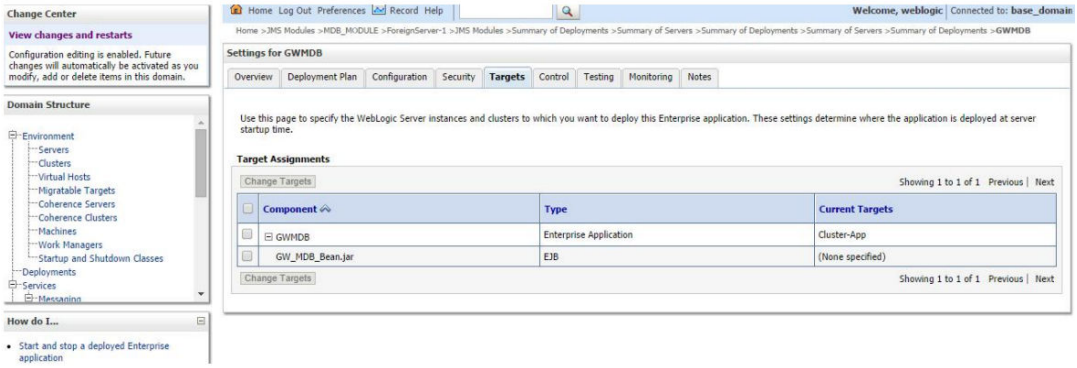
8. After all the resources are created, **Restart** the Admin and Managed Servers.

8

Application Deployment

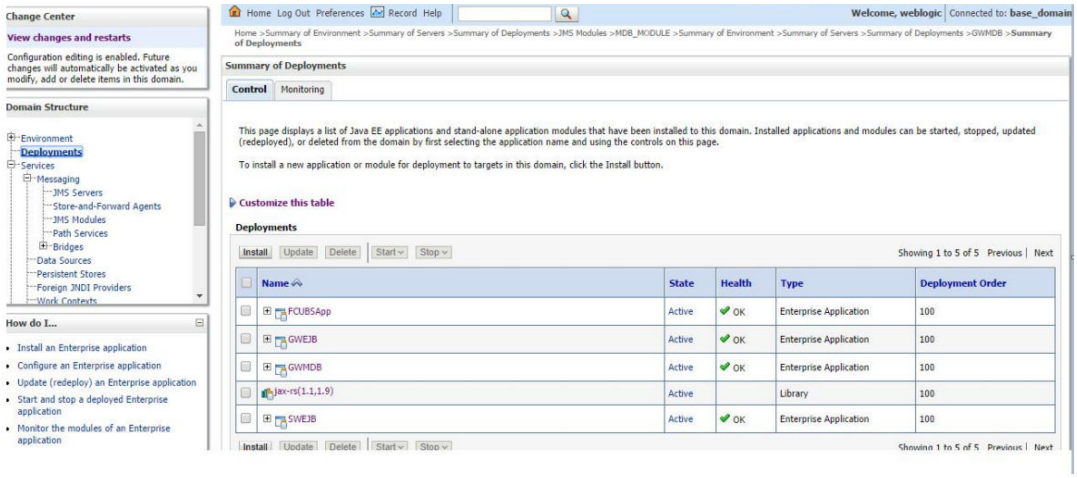
1. Deploy the EAR with Target as Cluster-App.

Figure 8-1 Settings for GWMDB



2. Health Should be OK if JMS is configured properly, otherwise Warning will be displayed.

Figure 8-2 Summary of Deployments



9

Frequently Asked Questions

9.1 Application and JMS Cluster Deployed on Same Cluster

Application and JMS Module can be deployed on the same cluster. In this document both are on different clusters, however it is possible to deploy on the one cluster. When it is deployed on same cluster then

1. Foreign Server Creation is not required
2. Targets should be given accordingly during SubDeployment Creation

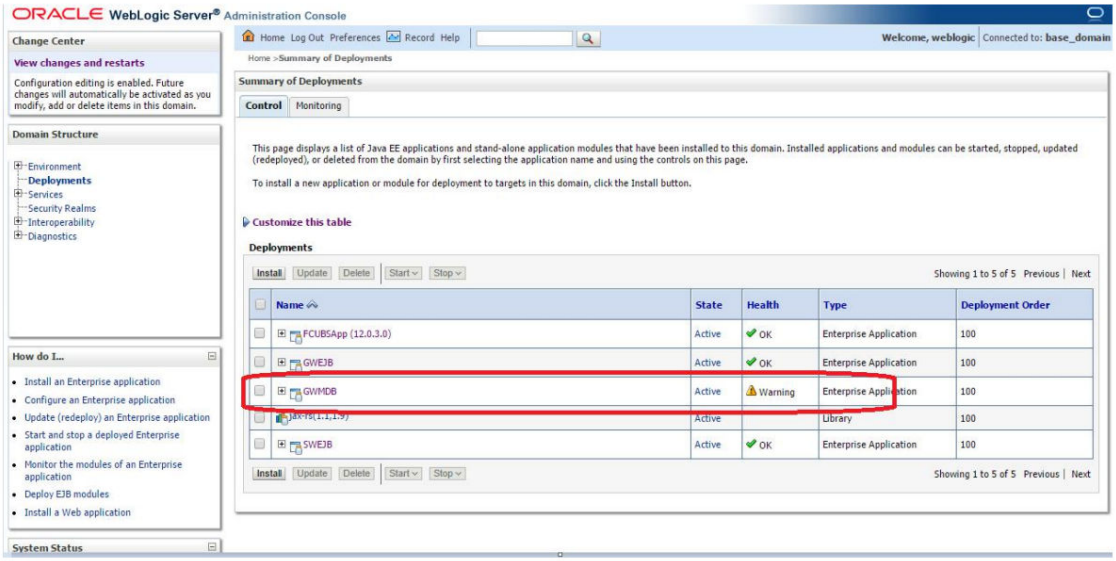
9.2 Application Shows Warning upon Restart of Managed Servers

Managed Servers Start Order

1. Stop all managed servers.
2. Start only the JMS Cluster managed servers.
3. After these are started then start the App Cluster managed servers.

Even after proper JMS setup when the managed servers are restarted Health of the Application is Warning

Figure 9-1 Summary of deployments



1. Force Stop the Application.
2. Then Start the Application, this would resolve the Warning and the Health of Deployment is changed to OK.

9.3 Securing File Store Data

In order to properly secure file store data, set appropriate directory permissions on all file store directories. If data encryption is required, use appropriate third-party encryption software.

9.4 t3s Protocol

To secure the communication with the JMS Server use t3s protocol instead of t3. This is applicable when connecting to the connection factory to send or receive messages and also in the JNDI Connection URL provided in foreign server creation.

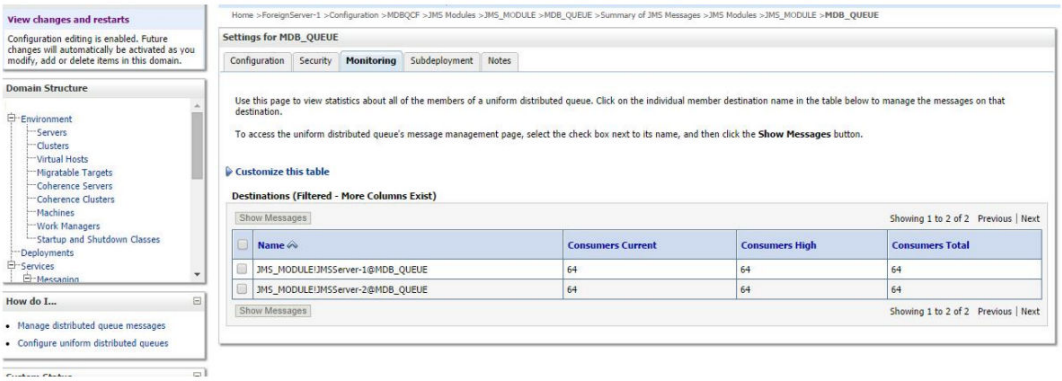
> **Note:**
>
> when using the t3s protocol SSL Listen Port Enabled should be checked in server template and the port number used in the URL should be secure port.

9.5 How to Test the Deployment

Application and JMS Module can be deployed on the same cluster. In this document both are on different clusters, however it is possible to deploy on the one cluster. When it is deployed on same cluster then

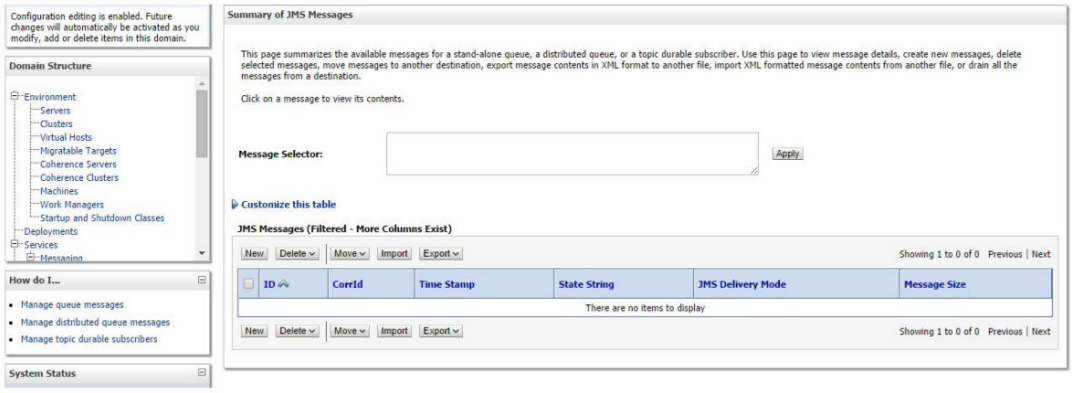
1. Navigate to Services JMS Modules JMS_MODULE MDB_QUEUE MONITORING

Figure 9-2 Settings for MDB_Queue



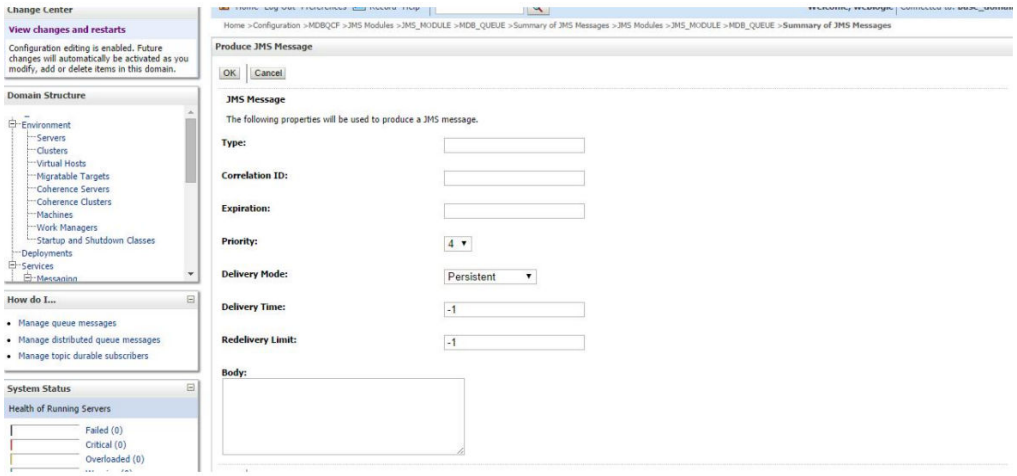
2. Select any one Server and Click on Show Messages.

Figure 9-3 Summary of JMS Messages



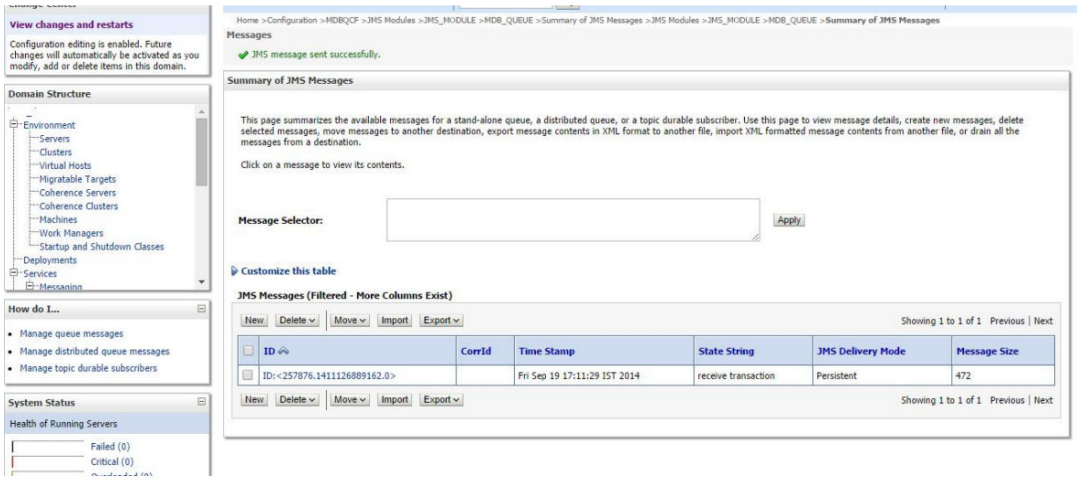
3. Click on New and enter the Message in Body and Click on OK.

Figure 9-4 Produce JMS Messages



4. Message is Sent.

Figure 9-5 Summary of JMS Messages



5. Verify at backend or in the MDB log if the message is processed successfully.

9.6 Increase maximum number of message-driven bean threads

Default number of consumers for an MDB is 16. To increase or restrict this number create Custom Work Manager with a Max Threads Constraint in conjunction with MDBs.

The solution is to create a work manager with a max threads constraint and assign the proxy services dispatch policy to this work manager.

Steps to create custom work manager

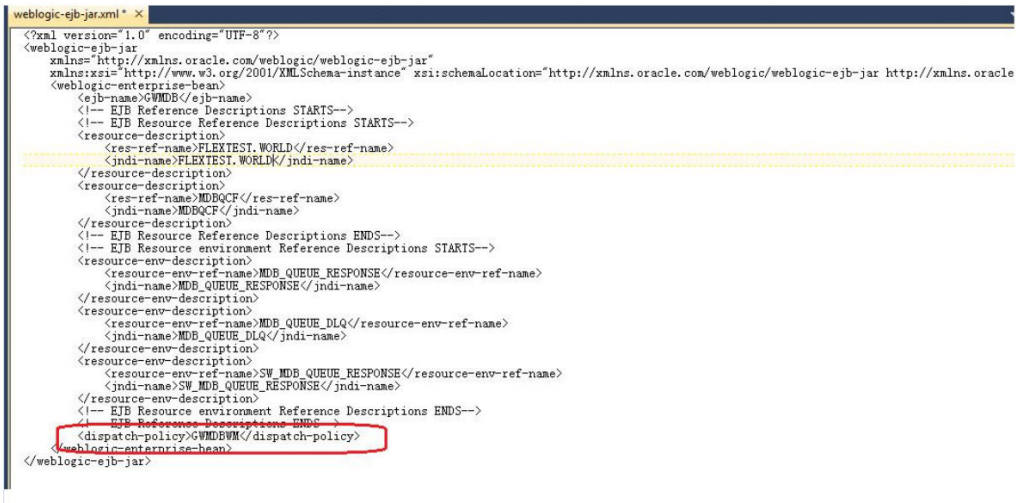
1. Modify the MDB deployment descriptior and redploy the EAR
2. Create Custom Workmanager and add constraints to limit the number of the max MDB threads

- Modify weblogic-ejb-jar.xml
- Work Manager Creation

9.6.1 Modify weblogic-ejb-jar.xml

1. Add below line to the weblogic-ejb-jar.xml of the MDB Ear
<dispatch-policy>GWMDBWM</dispatch-policy>

Figure 9-6 weblogic-ejb-jar.xml

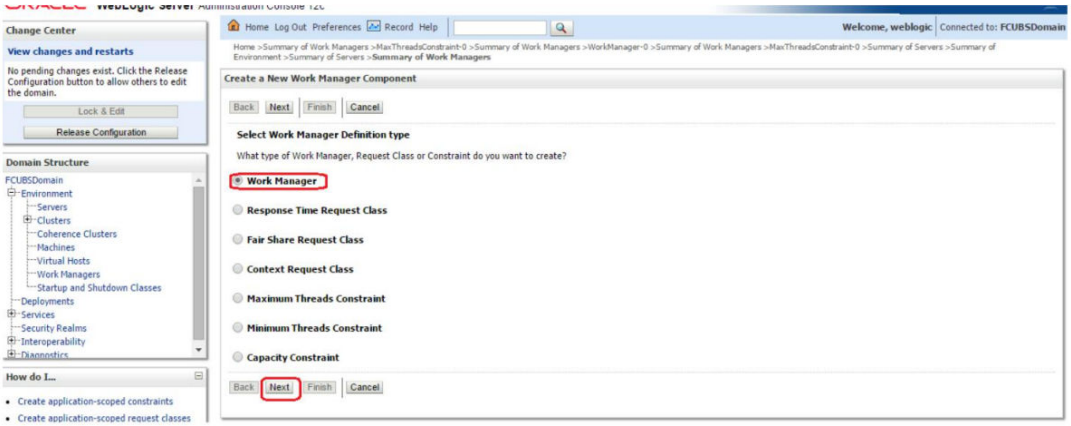


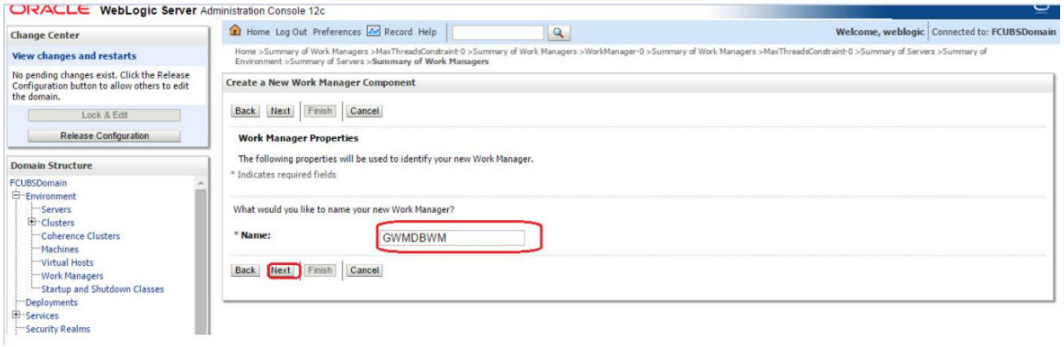
2. Remove if any of the below tags present in weblogic-ejb jar.xml max-beans-in-free-pool and initial-beans-in-free-pool
3. Save the ear file and redeploy the EAR file.

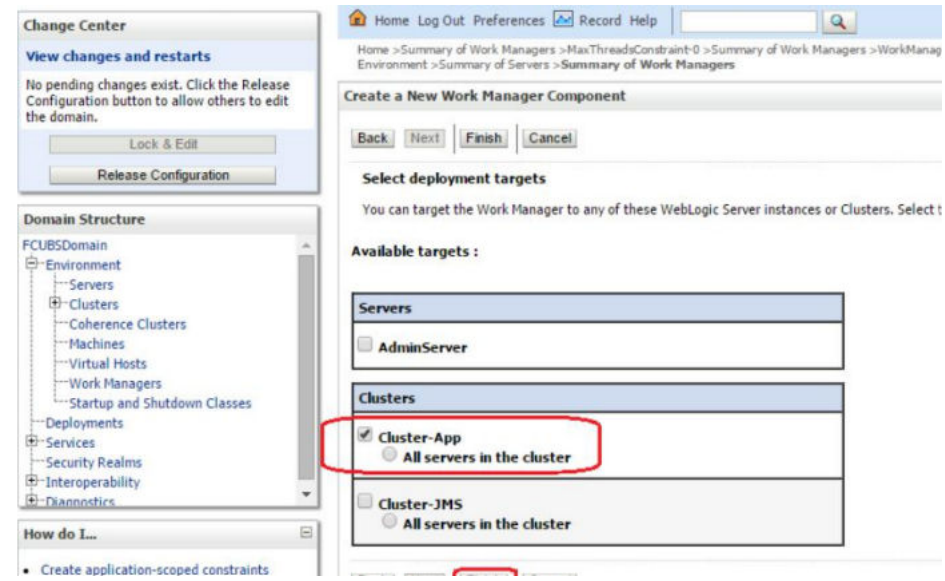
9.6.2 Work Manager Creation

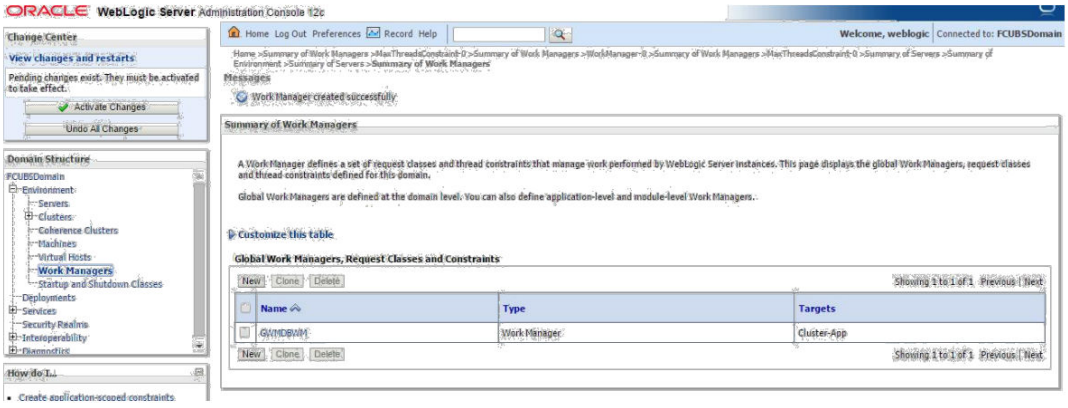
1. Login into weblogic console, navigate to Domain Environment WorkManager Create new workmanager with the name GWMDBWM(as mentioned in property file) by following below steps

Figure 9-7 weblogic-ejb-jar.xml



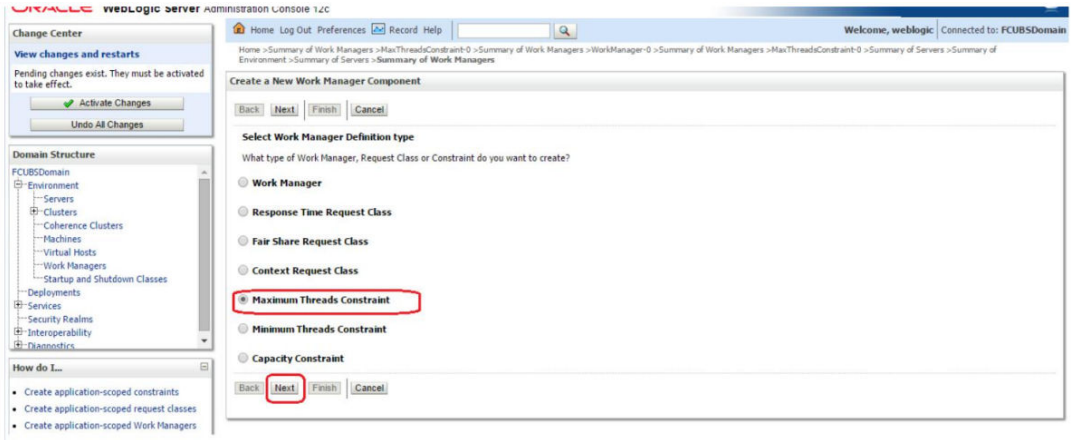


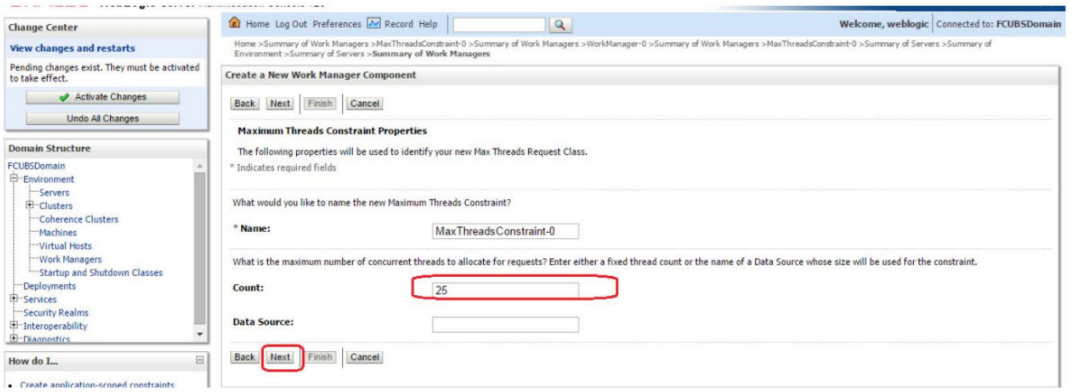


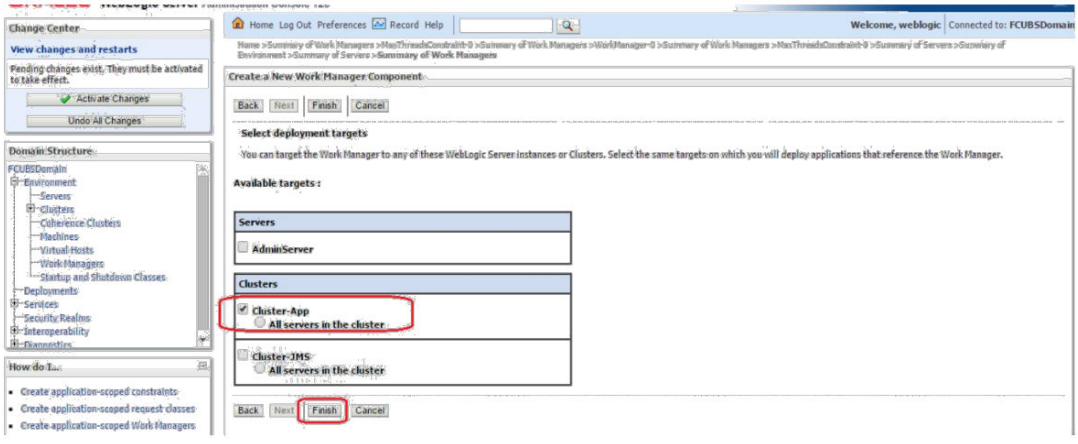


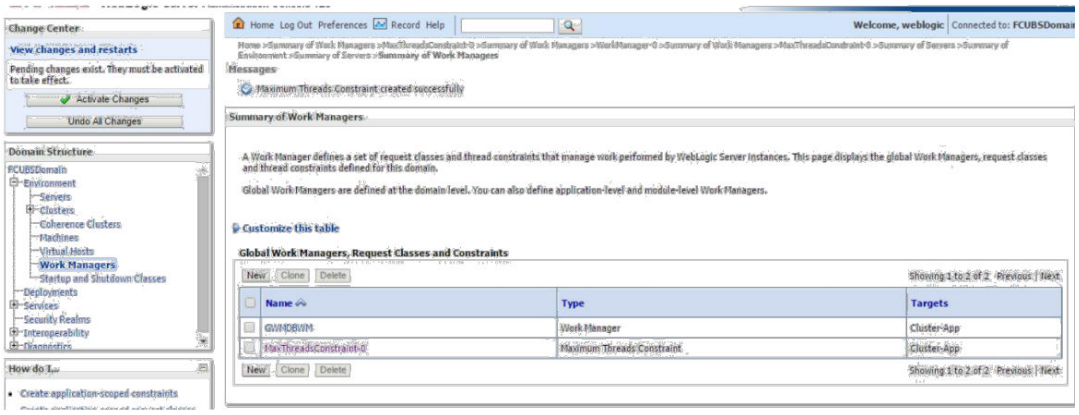
2. Create new Max Thread Constraint and in the Count field give the desired thread count

Figure 9-8 Create a New Work Manager Component



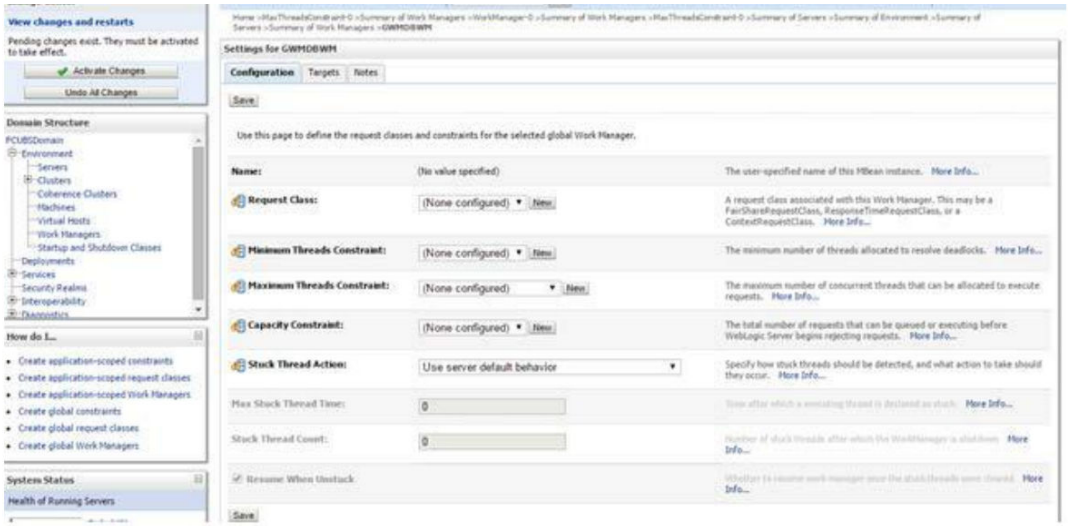


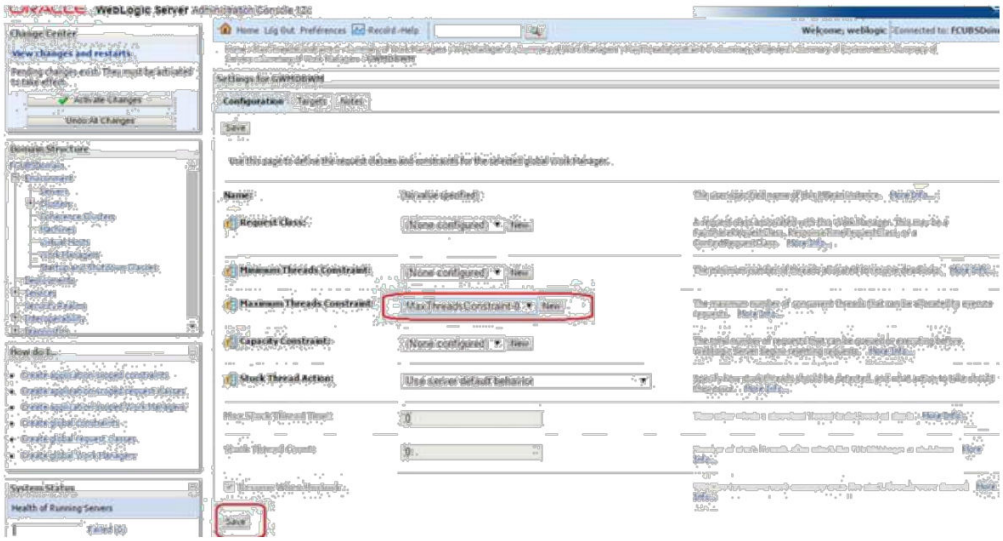




3. Modify the newly created workmanager and assign the Maximum Thread Constraint that is created in above step.

Figure 9-9 Settings for GWMDBWM





4. Restart managed servers and notice the change in the number of consumers for the QUEUE's.

9.7 How High Availability is achieved

1. Application Server: MDB_MODULE and the GWEJB ear are deployed in a cluster. Cluster has 4 managed servers, if any server goes down then the messages are processed by other managed servers.
2. JMS Provider: JMS is deployed on 2 managed servers, JMSServer1 and JMSServer2, if any one goes down other will handle the messages.
3. FileStore: File store is a cluster file system or database where if one node goes down then other will handle the requests.
4. DB Server: Database is installed in RAC mode where it has more than 1 node, if a node goes down then other nodes will handle messages.

9.8 How to setup for Scheduler/Notifications

The above document can be used for setting up JMS for scheduler/notifications but additional queues and connection factory needs to be created.

9.9 What other modules uses JMS Queue's

JMS is used by following modules, relevant queues and factories needs to be created additionally:

1. EMS for swift messages
2. GI for upload
3. ELCM
4. BIP

9.10 References

JMS is used by following modules, relevant queues and factories needs to be created additionally:

1. FCUBS_12.1_Weblogic12c_Middleware_Practices.doc
2. GATEWAY_Applications_WL.doc
3. Resource_Creation_WL.doc