

# WebLogic Multitenancy Workshop

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## **INTRODUCTION:**

Multitenancy in WebLogic Server provides a sharable infrastructure for use by client organizations (tenants). By allowing one domain to support multiple tenants, WLS MT improves density and achieves a more efficient use of resources while eliminating the trade-offs that are traditionally made in a shared environment: Isolation issues. Multitenancy essentially creates the tension between isolation and sharing. Isolation separates both the administration and runtime of different tenants from each other, where resource sharing among tenants improves efficiency and reduces operation costs.

## **Domain Partition:**

WebLogic Server MT provides resource isolation with in domain partitions, an administrative and runtime slice of a WebLogic domain that is dedicated to running application instances and related resources for a tenant. Domain Partition achieve greater density by allowing application instances and related resources to share the domain, WebLogic Server itself, the Java virtual machine, and the operating system while isolating tenant specific application data, configuration, and runtime traffic. Each domain partition has its own runtime copy of the application and resources.

## **Resource Groups:**

WLS MT introduces resource groups, simply as a convenient way to group together Java EE applications and the resources they use into a distinct administrative unit within the domain. The resources and applications are “fully qualified” in that administrator provides all information needed to start or connect to those resources, including credentials for connecting to data source and targeting information for Java EE application. A resource group will either contain these deployable resources directly or refer to a resource group templates which contain the resources. Resource group can be defined at the domain level, or be specific to domain partition.

All the resources in or referenced by a resource group are targeted together (to the same target). Resource group can be started and stopped.

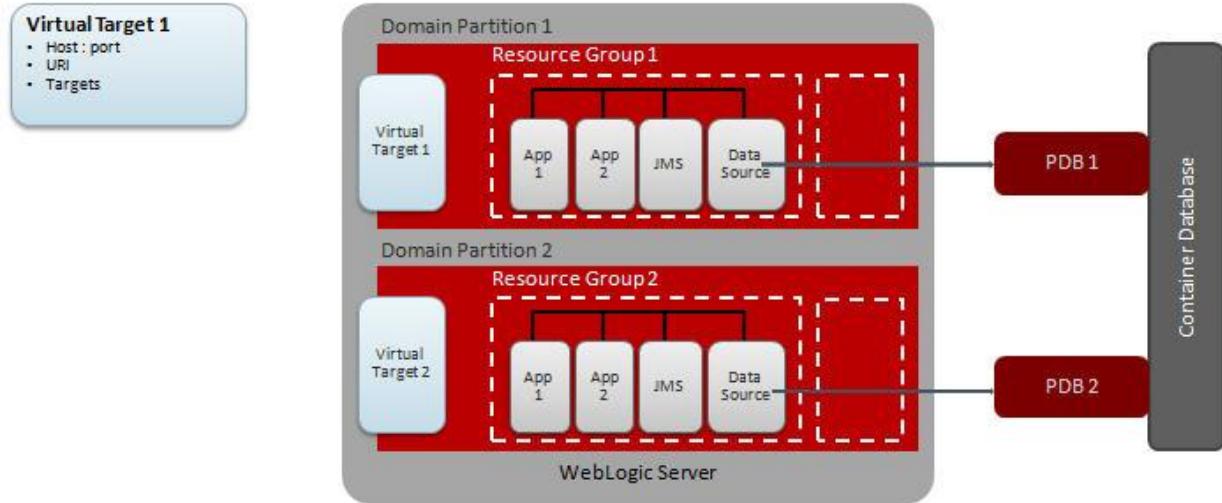
## **Virtual Target:**

Encapsulate where a partition or resource group runs and how to route traffic to them, including addresses, protocol settings, and targeting. Request routing is determined by the host name and optional URI.

May Include:-

- Host name and port
- Optional URI
- Network Access Point or Channel
- Protocol specific configuration
  - T3, IIOP
  - Web Server
- Target Clusters and managed servers

In Multitenant environment, We create Virtual Target first, In previous versions of WebLogic Server, We Targeted our application, system resources (JDBC or JMS Resources) to Clusters, Managed Servers part of Cluster or stand alone managed server. But here we target our resources to Virtual Target. After creation of Virtual Target, we create a domain partition, while creating domain partition we can create resource group. A domain partition can have multiple resource groups. Then we target domain partition to the Virtual Target. Below diagram gives you the picture how they work together.



As in the Above Diagram, We created Virtual target 1, Virtual Target 2 which are Targeted to WebLogic Server. Then we created Two Domain partitions, Domain partition 1 has Resource Group 1 and Domain Partition 2 has Resource Group 2.

To know more about the Multitenancy, you can follow the link [here](#).

We have total 6 Labs; the brief information about each lab is given below.

Lab 1 consist Non MT configuration, in this Lab we create basic configuration required for each lab. First we create **base\_domain** using the **Restricted-JRF** template. This is the domain we are using in each lab. Using the Fusion Middleware Control Console, we will create machine and one dynamic cluster of initial size of two managed server inside it.

Lab 2 consist creation of MT configuration, in which we creates virtual target, domain partition and resource group. We show you can easily deploy one application twice in a domain in different domain partition. In this case both applications will be connected to different database. Good thing is that you don't need to modify the application deploying to different domain partition because we have JNDI isolation. We also use day trader application which is build by IBM, we made few changes in the application to run the application in Non MT environment, and we took the same application to deploy in MT environment (inside domain partition). So you don't need any specific application development to deploy the application in Multitenant environment.

Lab3 shows how you can have two or more security realms active inside a domain. Traditionally in WebLogic server, we have more than one Security realm but only one is active for the domain. Here, we have multiple domain partition, so you can have separate security realm for each domain partition. In Lab 2 we deploy Medrec application in domain partition dp1 and dp2. As while creating domain partition dp2 we do not choose any security realm so it uses the default security realm. In Lab 3 we create a new security realm and assign it to domain partition dp1. So both domain partitions will have different set of authorized user.

Lab 4 shows how you can easily move domain partition from one environment to another environment. Generally we work in simple development environment, like no restricted JRF, no cluster. But we need to test our application in testing environment, run in production environment. In Lab 4 we create a **dev\_domain** using a by default templates and it consist only admin server. We do the required configuration for Medrec Application in **dev\_domain**, once we have Medrec application is deployed in domain partition Medrec-Dev in **dev\_domain**, we export the domain and import it in **base\_domain**.

Lab 5 shows how you can configure the resource configuration manager. As the domain partition is targeted to the Virtual target which is targeted to a cluster. So multiple domain partition may be using the same cluster, in that scenario to avoid one partition to use the resources excessively, we set the limit using resource configuration management, we specify the limit for notify, slow and shutdown action. As the resource uses reaches that limit, particular action happens.

Lab 6 shows how you can integrate OTD as a front end in domain partition. It shows the steps how to integrate OTD while creating the domain partition. This Lab also shows you the Resource group migration from one cluster to other cluster. As OTD is front ending your domain partition, so without any interruption you can access the application using the same URL.

Lab 7 shows how you can clone existing domain partition. We are importing the domain partition in the same domain from where we exported the domain partition to perform the clone operation. We need to create virtual target and specify the name of new virtual target in **partition-attributes.json** file. We also need to specify new partition name while importing the partition.

You create three domains as part of this workshop. There role are as given:

**base\_domain:** We create this domain as part of Lab 1. This is the main domain which we are using in each lab. We create machine, dynamic cluster and domain partitions.

**dev\_domain:** We create this domain as part of Lab 4. This domain uses default template and contain Admin Server only. This domain represent domain which we generally uses for development purposes. We create a domain partition Medrec-Dev inside it, which we later export and import it to **base\_domain**.

**otd\_domain:** We create this domain as part of Lab 6. This domain consist Admin Server, and Load Balance instance.

How to Use Individual Labs:

Lab 1 and Lab 2 are compulsory.

Lab 3: You need to run Lab 1 and Lab2 before executing Lab 3.

Lab 4: You need to run Lab 1 and Lab 2 before executing Lab 4.

Lab 5: You need to run Lab 1 and Lab 2 compulsory for it. And if you do not execute Lab 4 before running Lab 5, then instead of modifying the changes to Medrec-Dev domain, you need to modify the domain partition dp1.

Lab 6: You need to run Lab 1 before executing the Lab 6.

## Virtual Box Environment

### The Hands on Lab Environment

#### Operating System Details

Operating System	Oracle Linux 6.4 x86_64
Hostname	localhost, wins-vbox
Root User	root/oracle
Oracle User	oracle/welcome1

Note: For this hand on lab you should only need to use **oracle** user account.

#### Installation Directories

JDK 1.8.0_60	/usr/java/jdk1.8.0_60/
WebLogic Server 12.2.1	/u01/wins/wls1221/
Oracle Traffic Director 12.2.1	/u01/wins/wls1221/
Oracle Database 12c	/u01/app/oracle/product/12.1.0/dbhome_1/

#### Workshop Content:

Labs Directory	/u01/content/weblogic-innovation-seminars/WInS_Demos/MT-Workshop/
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# LAB 1: DOMAIN CREATION AND NON-MT CONFIG

## Overview

In this lab, we are going to perform the below operations.

- We create a WebLogic domain, in that domain we create machine, dynamic cluster.

## Start the database

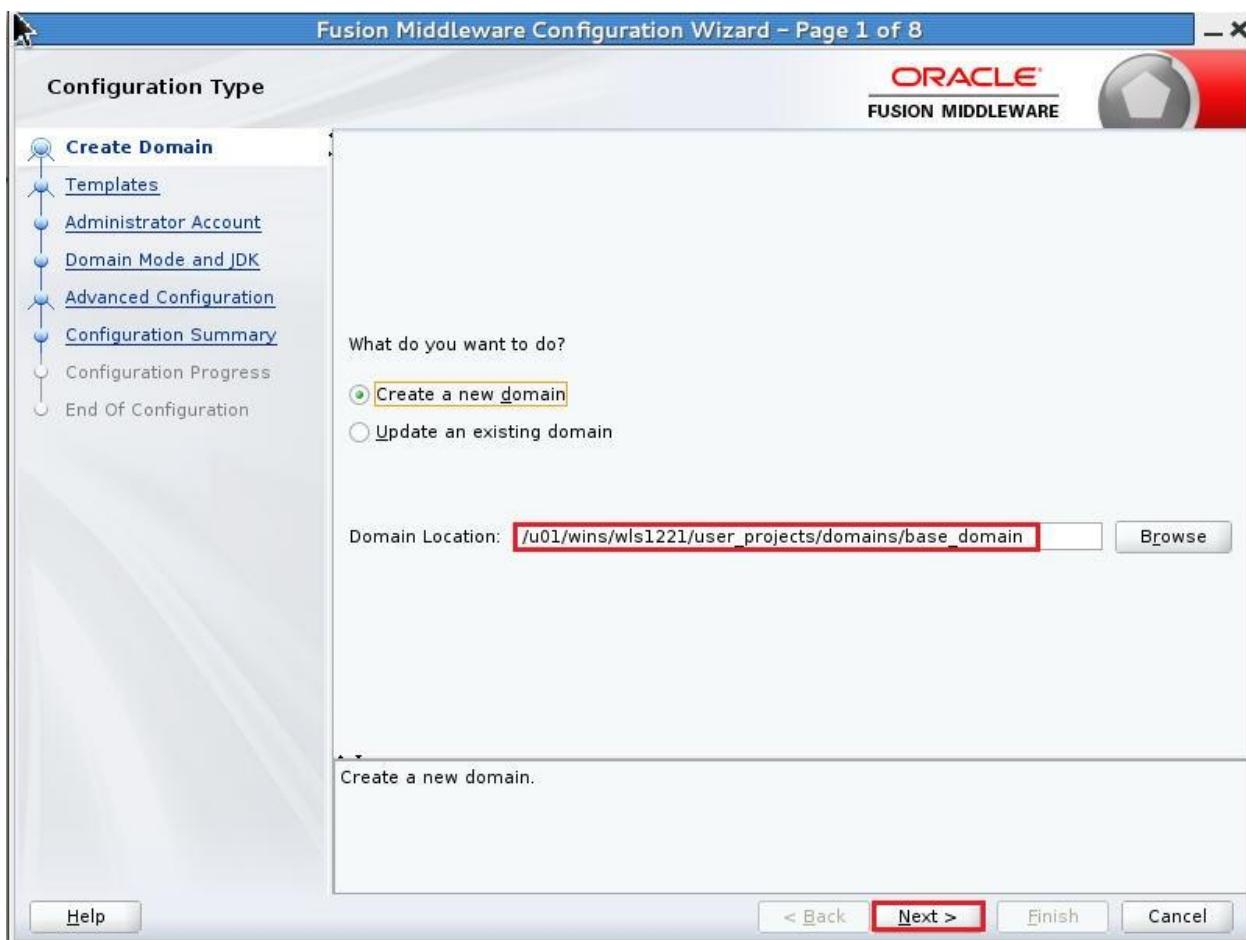
We have two Pluggable database **pdborcl** and **pdb2**; we are going to start both the database.

- a. In Desktop, Double Click on Icon “**Start Database**”.

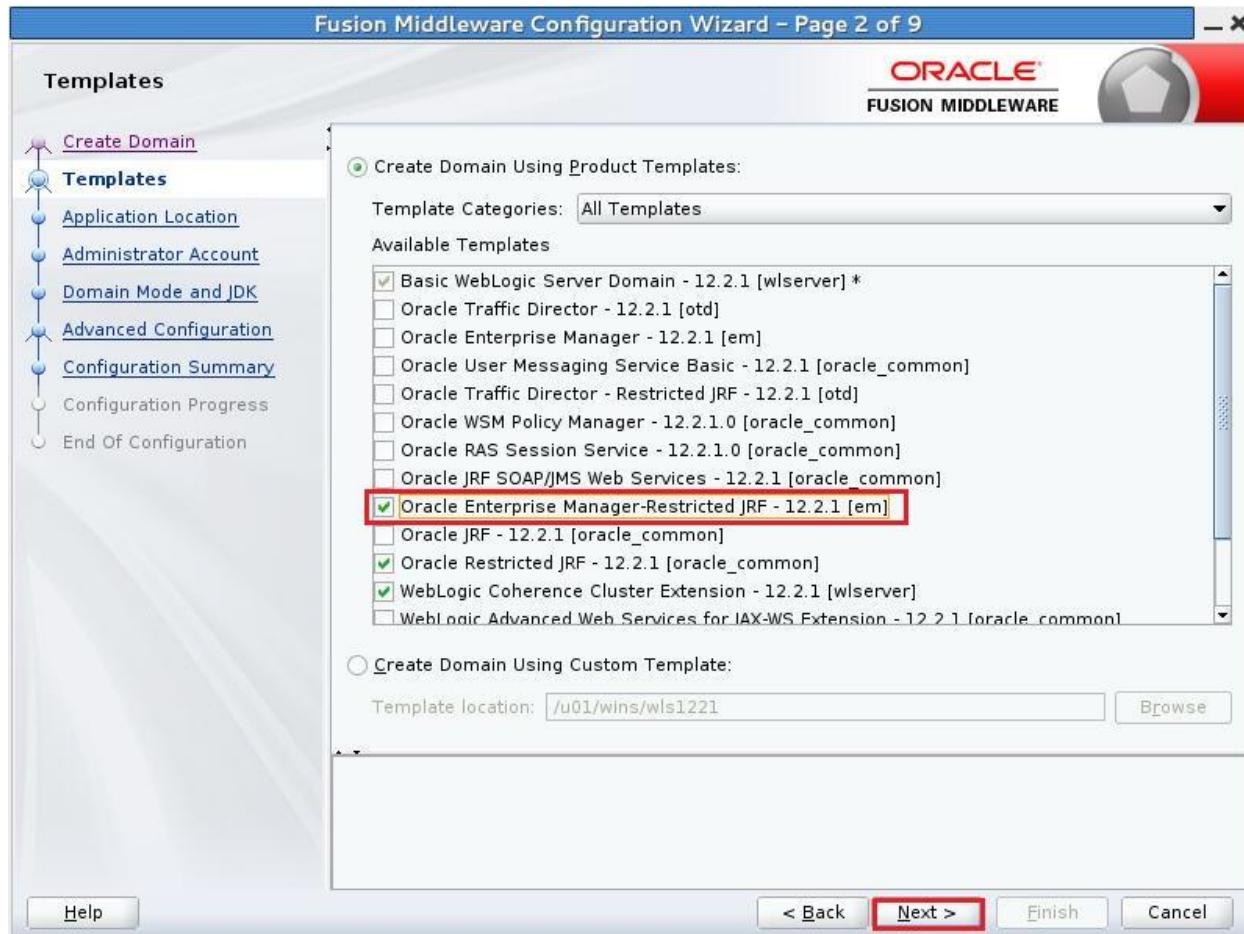
Note: Wait until the Window disappears.

## Create WebLogic Restricted JRF Domain

- a. Open a new terminal.
- b. cd /u01/wins/wls1221/oracle\_common/common/bin/
- c. ./config.sh
- d. Select “**Create a new domain**” and Enter  
“/u01/wins/wls1221/user\_projects/domains/base\_domain” as Domain Location then click on **Next**.



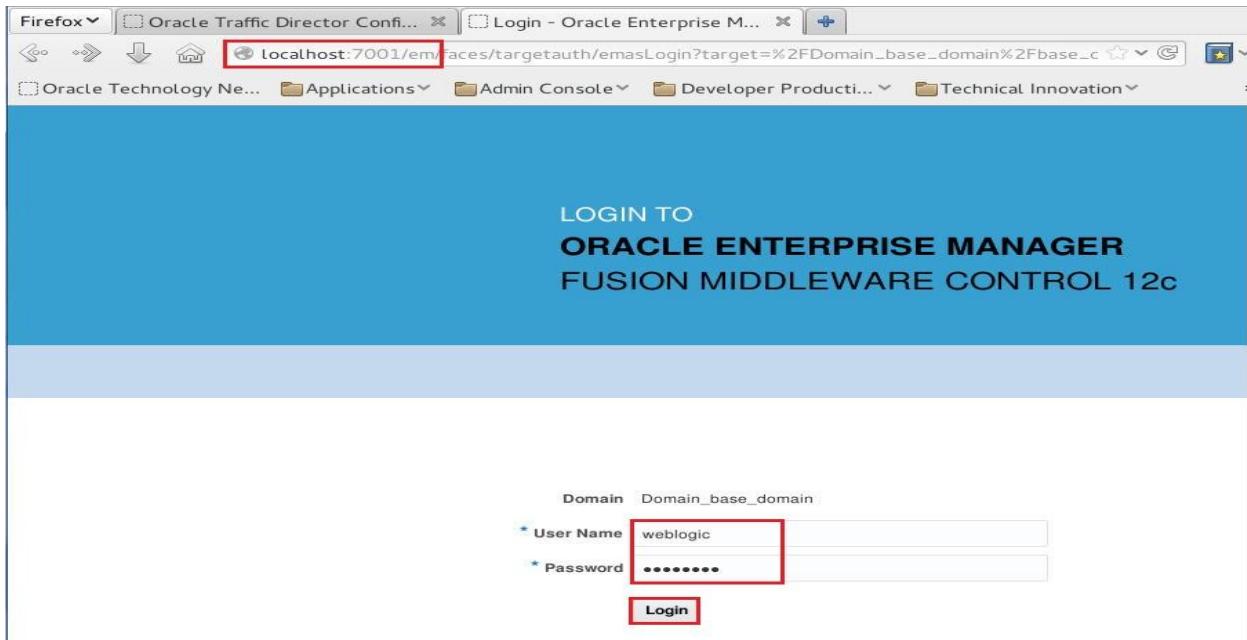
- e. Select “**Oracle Enterprise Manager –Restricted JRF-12.2.1 [em]**” as it also select the remaining required check boxes then click on **Next**.



- f. Leave Default on **Application Location** then click on **Next**.  
g. Enter **weblogic/welcome1** as Name/Password then click on **Next**.  
h. Leave Default on **Domain Mode and JDK Screen** then click on **Next**.  
i. Leave Default on **Advanced Configuration** then click on **Next**.  
j. Click on **Create**.  
k. Click on **Next** then click on **Finish**.

## Configuration of WebLogic base\_domain

- a. cd /u01/wins/wls1221/user\_projects/domains/base\_domain/bin/
- b. ./startNodeManager.sh
- c. In tab, Click on **Terminal -> Set Title**. Enter **base\_nm** as Title then click on OK.
- d. Open a new tab.
- e. cd /u01/wins/wls1221/user\_projects/domains/base\_domain/bin/
- f. ./startWebLogic.sh
- g. In tab, Click on **Terminal -> Set Title**. Enter **base\_admin** as Title then click on OK.
- h. Go back to Firefox and type the Fusion Middleware Control URL <http://localhost:7001/em>
- i. Enter **weblogic/welcome1** as **username/password** then click on **Login**.



- j. Create a Machine.
  - i. Click on **WebLogic Domain-> Environment -> Machine**.
  - ii. Click on **Create**.
  - iii. Enter “**machine**” as Name, Select “**Unix**” as Machine OS, then click on **Next**.
  - iv. Leave Defaults on Node Manager Properties then click on **Create**.
  - v. Click on the Machine name **machine**.
  - vi. Click on **Monitoring** tab and verify the status as **Reachable**.

k. Create a Dynamic Cluster

- Click on **WebLogic Domain -> Environment -> Clusters.**

The screenshot shows the Oracle Enterprise Manager interface. The left sidebar has three main categories: Server, Cluster, and Deployment. Under the Cluster category, the 'Environment' link is highlighted with a red box. The main content area shows a 'Server' configuration for 'AdminServer' on 'localhost' port 7001. A dropdown menu is open over the 'Clusters' link, also highlighted with a red box. This dropdown menu lists several options: Servers, Server Templates, Clusters (which is selected and highlighted with a red box), Machines, Domain Partitions, OTD Runtimes, Resource Groups, Resource Group Templates, Partition Work Managers, and Resource Consumption Managers. To the right of the dropdown is a table titled 'Clusters' with columns 'Name', 'Machine', and 'State'. One row is visible with the value 'Running'. At the bottom of the table, it says 'Servers 1 of 1'. The top right corner of the interface shows the date and time: Nov 5, 2015 2:10:29 AM PST.

- Click on **Create -> Dynamic Cluster.**

The screenshot shows the 'Clusters' creation page. At the top, there is a 'Create' button with a dropdown arrow, which is also highlighted with a red box. Below the button is a table with columns: Name, Cluster, Cluster Type, Servers, Cluster Messaging Mode, Default Load Algorithm, Replication Type, Multicast Address, and Multicast Port. The 'Name' column header is also highlighted with a red box. In the first row of the table, the 'Name' field contains 'Dynamic Cluster'. Below the table, a message says 'No clusters found'.

- Enter **app-cluster** as Name then click on **Next.**

- Leave Default on **Dynamic Server Properties** page and click on **Next.**

- v. Select “**Use a single machine for all dynamic servers**” and choose the **machine**, then click on **Next**.

**ORACLE® Enterprise Manager** Fusion Middleware Control 12c

base\_domain i

Machine Bindings

Cluster Properties   Dynamic Server Properties   Machine Bindings   Listen Port Bindings   Review

**Create a Dynamic Cluster: Machine Bindings**

Back Step 3 of 5 **Next** Create Cancel

Use this page to associate dynamic servers with machines.

How do you want to distribute dynamic servers across machines?

Use any machine configured in this domain  
 Use a single machine for all dynamic servers

Selected Machine **machine**

Use a subset of machines in this domain

Machine Name Match Expression

- vi. Leave Default on Listen Port Bindings, and then click on **Next**.  
vii. Review the Configuration and click on **Create**.

I. Start Managed Servers.

- i. Click on **WebLogic Domain -> Control ->Clusters**.

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base\_domain i

WebLogic Domain i

OTD ✓ Success

View i

Nar

OTD

Oracle Traffic Director domain configuration

OTD

Control

Servers

Clusters

Start Up

Shut Down

Deployments

Servers

Clusters

JDBC Data Sources

Messaging

Cross Component Wiring

Web Services

Other Services

Administration

Refresh WebLogic Domain

Security

Admin Server Port Username OTD Domain

8001 weblogic otd\_domain

Nov 5, 2015 2:22:46 AM PST

- ii. Check the box near to **app-cluster** to make it highlighted and then Click on **Control -> Start -> Start Servers**.

The screenshot shows the Oracle Enterprise Manager Fusion Middleware Control 12c interface. The title bar reads "ORACLE Enterprise Manager Fusion Middleware Control 12c". The top navigation bar includes "WebLogic Domain" and "weblogic", with "Auto Refresh" set to "Off". The date and time are shown as "Nov 5, 2015 2:26:48 AM PST". The main content area is titled "Clusters (Control)". A pie chart indicates "Down (1)" status. Below it is a table with columns: Name, Cluster Type, Servers, Cluster Messaging Mode, Default Load Algorithm, and Replication Type. One row is selected, showing "app-cluster" in the Name column, "Dynamic" in Cluster Type, "2" in Servers, "Unicast" in Cluster Messaging Mode, "Round Robin" in Default Load Algorithm, and "(None)" in Replication Type. The "Control" dropdown menu is open over the "app-cluster" row, with the "Start" option highlighted by a red box.



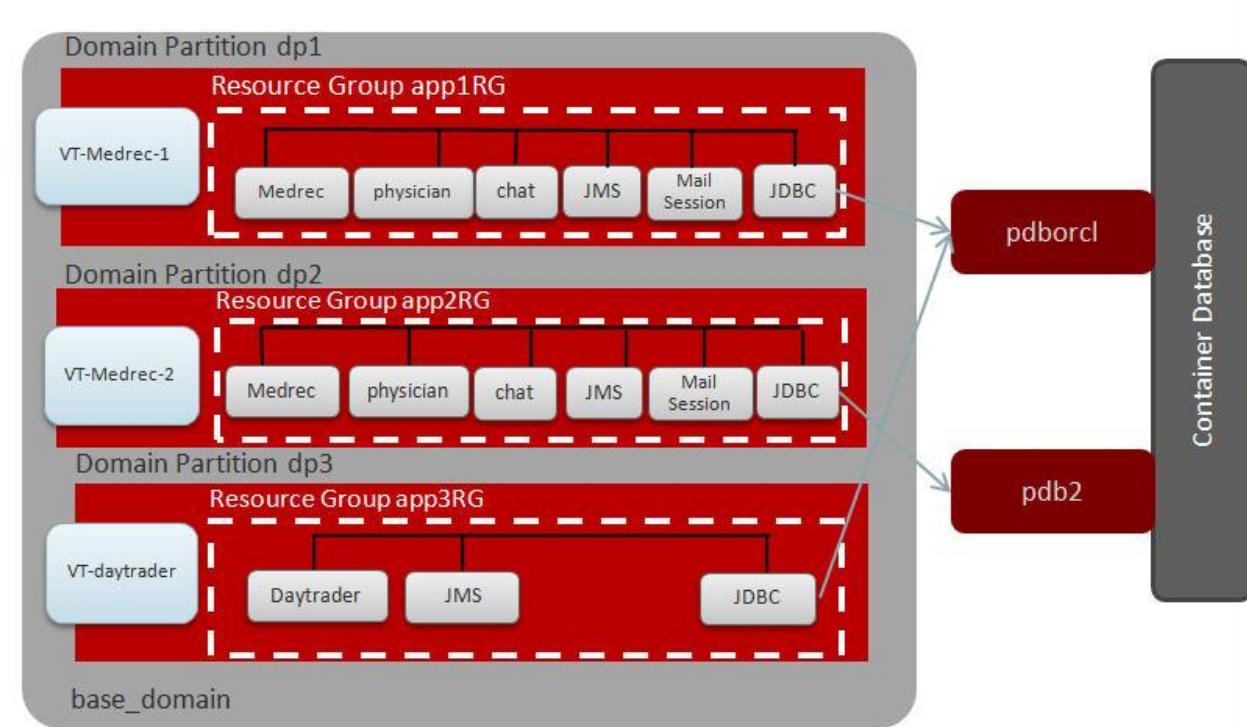
## LAB 2: MULTITENANCY CONFIGURATION

### Overview:

In this lab, we are going to learn the following:

- Configuration of Virtual Target, Domain Partition and Resource Group
- Run multiple instances of Medrec application in different domain partition without modifying the application. We try to show **JNDI Isolation** for that we are using the same Medrec applications and same JNDI name for the Datasources, connection factory and Distributed queue in both the domain partition.
- Run Day trader application which is build by WebSphere to WebLogic 12.2.1.
- You don't need to modify your application to run in Multitenant environment. So no special application development needed.

The final deployment architecture will look like the below where we will create three domain partitions .Deploy Medrec application in domain partition dp1 and dp2. And Day Trader application on domain partition dp3.



## Configuration of Medrec Application in Domain Partition 1

In the next step we are creating the below configuration for Medrec application in domain partition dp1.

Virtual Target: VT-Medrec-1  
Domain Partition: dp1  
Resource Group app1RG  
app1RG:  
    Datasource:  
        Name: MedRecGlobalDataSourceXA  
        JNDI Name: jdbc/MedRecGlobalDataSourceXA  
    Mail Session:  
        Name: MedRecMailSession  
        JNDI Name: mail/MedRecMailSession  
    Persistence Store: MedRec-fs  
    JMS Server: MedRecJMSServer  
    JMS Module: MedRecModule  
    MedRecModule:  
        Subdeployment: MedRecJMS  
        Connection Factory:  
            Name: MedRecConnectionFactory  
            JNDI Name: com.oracle.medrec.jms.connectionFactory  
        Distributed Queue:  
            Name: PatientNotificationQueue  
            JNDI Name: com.oracle.medrec.jms.PatientNotificationQueue  
Applications: medrec.ear  
                  physician.ear  
                  chat.war

- a. Open a new tab.
- b. cd /u01/content/weblogic-innovation-seminars/WInS\_Demos/MT-Workshop/Lab2/
- c. **./Medrec1DB.sh** (It creates the required database user and populate sample data into database)
- d. Close the tab.
- e. In Enterprise Manager, Click on **WebLogic Domain -> Environment -> Virtual Targets**.

The screenshot shows the Oracle Enterprise Manager interface. The left sidebar has a tree view with nodes like 'Clusters' (expanded), 'Deployment' (selected), 'Virtual Hosts' (selected), and 'Virtual Targets'. The main content area shows a list of 'Virtual Targets' with columns: Cluster Messaging Mode, Default Load Algorithm, and Replication Type. A tooltip indicates the selected servers are 'app-cluster-2, app-cluster-1'. The status bar at the bottom right shows 'Nov 5, 2015 2:26:48 AM PST'.

Cluster Messaging Mode	Default Load Algorithm	Replication Type
Unicast	Round Robin	(None)

- f. Click on **Create**.
- g. Enter **VT-Medrec-1** as Name and **/dp1** as Uri Prefix and Add **localhost** as Hosts then click on **Next**.

The screenshot shows the 'Create Virtual Target: General' dialog in Oracle Enterprise Manager. It's Step 1 of 2. The 'Name' field contains 'VT-Medrec-1' and the 'Uri Prefix' field contains '/dp1'. Under the 'Hosts' section, there's a table with a single row containing 'localhost'. Buttons for 'Back', 'Step 1 of 2', 'Next', and 'Cancel' are visible.

h. Select Cluster **app-cluster** as Target then click on **Create**.

base\_domain i

General Targets

Create Virtual Target: Targets

Choose a server or cluster to be associated with this virtual target.

Cluster app-cluster

Server

Back Step 2 of 2 Next Create Cancel

i. Click on **WebLogic Domain -> Environment -> Domain Partitions**.

base\_domain i

WebLogic Domain ▼ weblogic ▼

Nov 5, 2015 2:34:08 AM PST ↻

/Domain ▼

**Virtua**  
A virtual allowing use by a

View ▼

**Nar**

WebLogic Domain ▼

Home

Monitoring

Diagnostics

Control

Logs

**Environment**

Deployments

JDBC Data Sources

Messaging

Cross Component Wiring

Web Services

Other Services

Administration

Refresh WebLogic Domain

Security

Servers

Server Templates

Clusters

Machines

**Domain Partitions**

OTD Runtimes

Resource Groups

Resource Group Templates

Partition Work Managers

Resource Consumption Managers

Used By

Log File Name

Virtual Targets 1 of 1

- j. Click on “**Enable Lifecycle Manager**”.
- k. Go back to base\_admin terminal, press CTRL+C, to stop the admin server.
- l. `./startWebLogic.sh`
- m. Go back to Firefox, and type the Fusion Middleware Control Console URL <http://localhost:7001/em>.
- n. Enter **weblogic/welcome1** as User Name/Password then Click on **Login**.
- o. Click on **WebLogic Domain -> Environment -> Domain Partition**.
- p. Click on **Create**.
- q. Enter **dp1** as Name then click on Next.

**ORACLE® Enterprise Manager** Fusion Middleware Control 12c

base\_domain [i](#)

General Available Targets Resource Group Summary

**Create Domain Partition: General**

Back Step 1 of 4 **Next** Cancel

Use this page to specify general attributes for this domain partition.

\* Name  Security Realm

Primary Identity Domain

**Load Balancer Configuration**

If you wish to use a load balancer to front-end this domain partition, choose an Oracle Traffic Director runtime from the list of registered runtimes shown below. If you wish to register a new OTD runtime, please use the Environment->OTD Runtimes menu item on the WebLogic Domain menu.

Use OTD for load balancing  OTD Runtime

- r. Check the left box near **VT-Medrec-1** and also check the box for **Set as Default** then click on **Next**.

**ORACLE® Enterprise Manager** Fusion Middleware Control 12c

base\_domain [i](#)

General Available Targets Resource Group Summary

**Create Domain Partition: Available Targets**

Back Step 2 of 4 **Next** Cancel

Select Virtual Target Set as Default

Select	Virtual Target	Set as Default
<input checked="" type="checkbox"/>	VT-Medrec-1	<input checked="" type="checkbox"/>

- s. Enter **app1RG** as Resource Group name and **None** as Resource Group Template, Move the **VT-Medrec-1** virtual target to **Selected targets** then click on **Next**.

**Create Domain Partition: Resource Group**

A resource group needs to be created within a partition before you can deploy applications or resources. The resource group can optionally extend a resource group template specified at the domain level.

\* Resource Group Name **app1RG**

Resource Group Template **None**

Targets for the Resource Group Select a target for the resource group from the list of available targets. If the partition has a default target specified, the resource group will implicitly inherit that target.

Available Targets	Selected Targets
VT-Medrec-1	VT-Medrec-1

- t. Verify the configuration and click on **Create**.  
u. Check the box near **dp1** and click on **Control -> Start**. Once you notice the message “**Partition state after the operation is RUNNING**” then Click on Close.

**Domain Partitions**

Domain partitions are the building blocks of WebLogic server multi-tenancy (MT). Multi-tenancy permits multiple client organizations to share a domain, improving efficiency and reducing operation costs. Before creating a domain partition, you must first create one or more virtual targets. Look at the Getting Started topics for more information.

► Getting Started with Multi-Tenancy

Hide Pie Chart

Name	Status	OTD Partition	Realm	Default Targets	Available Targets
dp1	Down	OTD Partition	Realm	VT-Medrec-1	VT-Medrec-1

Status

Control ▾

Start

Down (1) Shutdown(1)

Domain Partitions 1 of 1



v. Click on the Domain Partition **dp1**.

Name	Status	State	OTD Partition	Realm	Default Targets	Available Targets
dp1		Running			VT-Medrec-1	VT-Medrec-1

w. Click on Domain Partition -> Administration -> Resource Group.

The screenshot shows the Oracle Enterprise Manager interface for Fusion Middleware Control 12c. The top navigation bar includes "WebLogic Domain" and "weblogic". The main area shows a navigation tree on the left with the following structure:

- dp1** (highlighted with a red box)
  - Domain Partition** (highlighted with a red box)
    - Home
    - Monitoring
    - Diagnostics
    - Control
    - Logs
  - Start Up
  - Shut Down
- Monit
- Resou
- Deplo

The "Administration" node under "dp1" is also highlighted with a red box. A sub-menu for "Administration" is open, showing the following options:

- General
- Available Targets
- Resource Groups** (highlighted with a red box)
- Load Balancer Configuration
- Resource Overrides
- Resource Sharing
- Coherence Caches
- Notes

On the right side of the screen, there are two sections: "JDBC and JTA Usage" and "Resource Usage".

- x. Click on Resource Group **app1RG**.
- y. Creation of Datasource.
  - i. Select the **Services** tab.
  - ii. Choose JDBC tab, click on **Create -> Generic Data Source**.

The screenshot shows the Oracle Enterprise Manager interface for a WebLogic Domain named 'weblogic'. The top navigation bar includes 'WebLogic Domain' and 'weblogic'. Below the navigation is a toolbar with icons for 'Domain Partition', 'Start Up', 'Shut Down', 'Auto Refresh' (set to 'Off'), and a date/time stamp 'Nov 5, 2015 2:44:29 AM PST'. The main content area is titled 'Resource Group : app1RG'. The 'Services' tab is selected, and the 'JDBC' tab is active. A red box highlights the 'Create' button in the 'Generic Data Source' dropdown menu. The table below lists data source types: Name, JNDI Name, Type, Targets. The table has 4 columns and 0 rows of data.

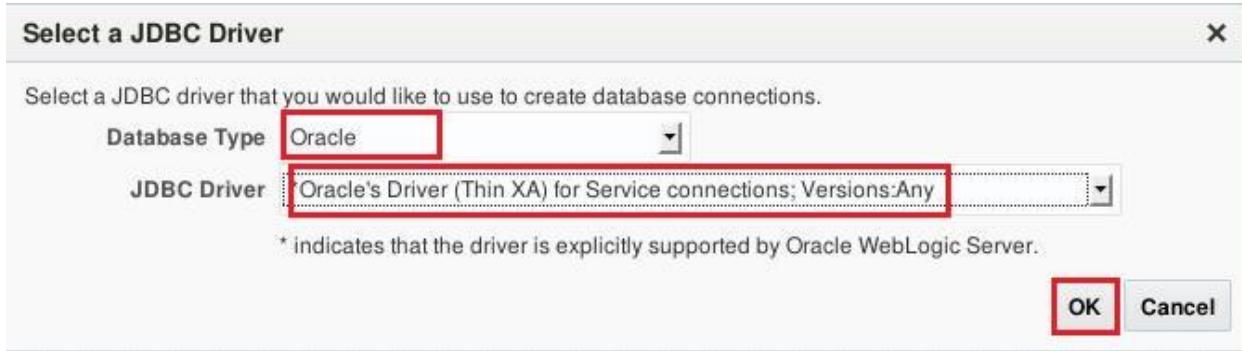
- iii. Enter **MedRecGlobalDataSourceXA** as Data Source Name and **jdbc/MedRecGlobalDataSourceXA** as JNDI Name, and then click on Select.

The screenshot shows the 'Create a JDBC Data Source: Data Source Properties' wizard, Step 1 of 5. The tabs at the top are 'Data Source Properties', 'Connection Properties', 'Transaction Properties', 'Select Targets', and 'Review'. The current tab is 'Data Source Properties'. The form fields include:
 

- Data Source Name:** MedRecGlobalDataSourceXA
- Scope:** Resource group "app1RG" in domain partition "dp1"
- Type:** Generic
- Database Type:** Oracle
- Driver Class Name:** oracle.jdbc.OracleDriver
- JNDI Name:** jdbc/MedRecGlobalDataSourceXA

 A red box highlights the 'Select...' button next to the Driver Class Name input field.

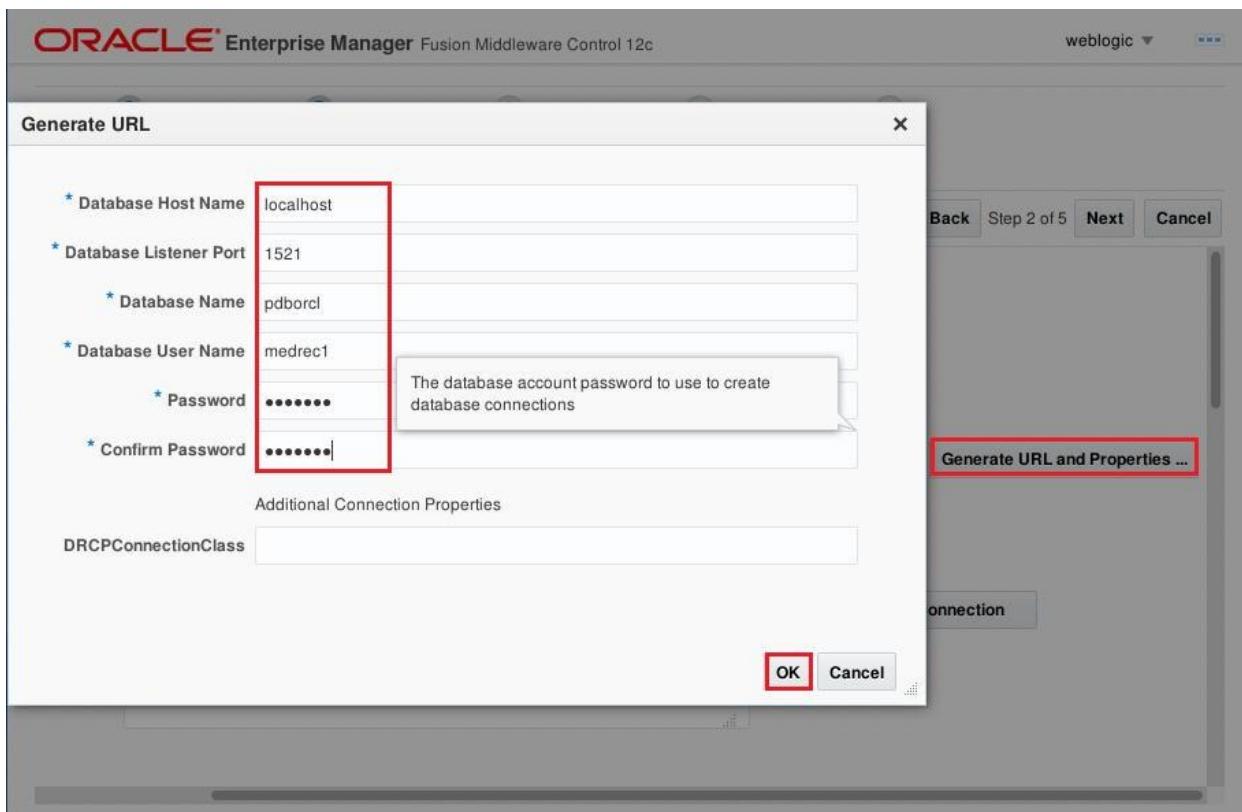
- iv. Select **Oracle** as Database Type and “**Oracle’s Driver (Thin XA) for service connections; Versions: Any**” as JDBC Driver then click on OK.



- v. Click on **Next**.  
 vi. Click on **Generate URL and Properties** and Enter the following:

Host Name:	localhost
Listen Port:	1521
Database Name:	pdborcl
User Name:	medrec1
Password:	medrec1
Confirm Password	medrec1

Click OK.



vii. Click on **Test Database Connection** to verify the connection. Click **Next**.

**Create a JDBC Data Source: Connection**

Use this page to define the connection properties for this JDBC Data Source.

**Database Connection Information**

Driver: oracle.jdbc.xa.client.OracleXADataSource

Class: oracle.jdbc.xa.client.OracleXADataSource

Name:

\* Database URL: jdbc:oracle:thin:@//localhost:1521/pdborcl

Password: \*\*\*\*\*

Confirm Password: \*\*\*\*\*

SQL ISVALID

Test Table Name or SQL Statement

**Properties**

localhost:7001/em/faces/as-emas-createDS\_taskflow/as/jdbc/createDSStep2#

viii. Leave Default on **Transaction Options** and click on **Next**.

ix. Verify the configuration and click on **Create**.

z. Adding User to Default Realm.

i. Click on **Weblogic Domain -> Security -> Users and Groups**.

**base\_domain**

WebLogic Domain

**Confirmation**

JDBC Data Source "MedRecGlobalDataSourceXA" has been created successfully. All changes have been saved.

/Domain\_base\_domain/base\_domain > Resource Groups > Resource Group : app1RG

**Resource Group : app1RG**

General Deployments Services Targets Monitoring Control Notes

JDBC Messaging Mail Persistent Stores Foreign JNDI Providers Diagnostics

This page lists the JDBC system data sources that have been created in this resource group. You can edit, delete, or detach them.

View Create Create Like Delete Detach

Name	JNDI Name	Security Realms
MedRecGlobalDataSourceXA	jdbc/MedRecGlobalDataSourceXA	Users and Groups Keystore

Columns Hidden 4

WebLogic Domain weblogic

- Home
- Monitoring
- Diagnostics
- Control
- Logs
- Environment
- Deployments
- JDBC Data Sources
- Messaging
- Cross Component Wiring
- Web Services
- Other Services
- Administration
- Refresh WebLogic Domain
- Security**
- System MBean Browser
- WebLogic Server Administration Console
- Target Sitemap

- ii. In **Users** tab, click on **Create**.

**Users and Groups**

This page displays information about the users and groups that have been configured in the selected security realm in this WebLogic Server domain.

Select a Realm myrealm

Default Realm for This WebLogic Domain true

**Users** Groups

**Create** Delete Detach

Name	Description	Provider
LCMUser	This is the default service account ...	DefaultAuthenticator
OracleSystemUser	Oracle application software syste...	DefaultAuthenticator
weblogic	This user is the default administrator.	DefaultAuthenticator

Columns Hidden 1

Users 3 of 3

- iii. Enter the following then click on **Create**.

Name: administrator  
 Description: Medrec Admin  
 Provider: Default Authenticator  
 Password: administrator123  
 Confirm Password: administrator123

aa. Configuring Mail Session.

- i. Click on **Weblogic Domain ->Environment ->Domain Partition**.
- ii. Click on Domain Partition **dp1**.
- iii. Click on **Domain Partition -> Other Services -> Mail Sessions**.

**ORACLE® Enterprise Manager** Fusion Middleware Control 12c

WebLogic Domain | weblogic

dp1

Domain Partition Start Up Shut Down

Nov 5, 2015 7:09:41 AM PST

**Monit**

- Home
- Monitoring
- Diagnostics
- Control
- Logs

**Resou**

- Deployments
- JDBC Data Sources
- Messaging
- Coherence Caches

**Deplo**

- Web Services
- Other Services**
- Administration
- Security
- System MBean Browser
- Target Sitemap

**Start Up** **Shut Down**

**General**

State: Running

Default Targets: VT-Medrec-1

Available Targets: VT-Medrec-1

**JDBC and JTA Usage**

Open JDBC Connections: 0

JDBC Connection Creates (per minute): 0.00

Active Transactions: 0

**Work Manager**

Requests (per minute): 6.41

Pending Requests: 0

Transaction Commits (per minute): 0.00

Transaction Rollbacks (per minute): 0.00

**Resource Usage**

CPU Usage (%): Unavailable

Open Files: Unavailable

**Persistent Stores**

**Mail Sessions**

Foreign JNDI Providers

Current Messages: 0

iv. Click on **Create**.

v. Enter the following and click on **Next**.

Name: MedRecMailSession  
Scope: Leave as default  
JNDI Name: mail/MedRecMailSession

Use this page to configure a mail session, which enables applications to access a pre-configured javax.mail.Session object through JNDI.

\* Name

\* Scope  app1RG in partition dp1

\* JNDI Name

Session Username

Session Password

Confirm Session Password

vi. Click on **Create**.

bb. Configuring JMS Server.

i. Click on **Domain Partition** -> **Messaging** -> **JMS Servers**.

WebLogic Domain | weblogic | Nov 5, 2015 7:13:04 AM PST

dp1

Domain Partition Start Up Shut Down

Home as been created successfully. All changes have been activated.

Monitoring Mail Sessions

Diagnostics

Control

Logs

Deployments

JDBC Data Sources

**Messaging** JMS Servers Store-and-Forward Agents

Coherence Caches JMS Resources and Modules

Web Services Path Services

Other Services Bridges

Administration JMS Bridge Destinations

Security

System MBean Browser

Target Sitemap

Mail Sessions 1 of 1

- ii. Click on **Create**. Enter **MedRecJMSServer** as Name then click on **Create a Store** -> **File Store**.

JMS servers act as management containers for the queues and topics in JMS modules that are targeted to them. A JMS server's primary responsibility for its destinations is to maintain information on what persistent store is used for any persistent messages that arrive on the destinations, and to maintain the states of durable subscribers created on the destinations.

Use this page to define the general configuration parameters for this JMS server.

\* Name

Scope Domain Partition Resource Group

Persistent Store

- iii. Enter **MedRec-fs** as Name then click on **Next**. Click on **Create**.  
 iv. In **JMS Server: General Setting**, Select the newly created file store as persistent store then click on **Next**.

**Information**  
Persistent store "MedRec-fs" has been created successfully. All changes have been activated.

JMS servers act as management containers for the queues and topics in JMS modules that are targeted to them. A JMS server's primary responsibility for its destinations is to maintain information on what persistent store is used for any persistent messages that arrive on the destinations, and to maintain the states of durable subscribers created on the destinations.

Use this page to define the general configuration parameters for this JMS server.

\* Name

Scope Domain Partition Resource Group

Persistent Store

v. Click on **Create**.

cc. Configure JMS Module.

i. Click on **Domain Partition -> Messaging -> JMS Resources and Modules**.

The screenshot shows the Oracle Enterprise Manager interface for a WebLogic Domain named 'weblogic'. The left sidebar is expanded to show the 'Domain Partition' section, which is currently selected. Under 'Messaging', the 'JMS Resources and Modules' link is highlighted with a red box. A tooltip message 'A new JMS module has been created successfully. All changes have been activated.' is displayed above the main content area. The main content area displays a table titled 'JMS Resources and Modules' with one row, 'app1RG', under the 'Resource Group' column. The table has columns for 'Store' and 'Resource Group'. At the bottom right of the main content area, it says 'JMS Servers 1 of 1'. The status bar at the bottom indicates 'Nov 5, 2015 7:17:58 AM PST'.

ii. Under the **JMS Modules** tab, click on **Create**.

The screenshot shows the same Oracle Enterprise Manager interface as the previous one, but now the 'JMS Modules' tab is selected. The 'Create' button in the top navigation bar is highlighted with a red box. Below the navigation bar, there is a message: 'To configure and manage JMS modules, use the [WebLogic Server Administration Console](#)'. The main content area contains a table with columns: Name, Resource Group, Queues, Topics, Connection Factories, Distributed Queues, Distributed Topics, Foreign Servers, Quotas, and Hand. A note at the bottom left says 'The table is empty'. The status bar at the bottom indicates 'Nov 5, 2015 7:19:02 AM PST'.

- iii. Enter **MedRecModule** as Name then click on **Next**. Click on **Create**.
- iv. Under **JMS Modules** tab, click on **MedRecModule**.

**JMS Resources and Modules**

To configure and manage JMS modules, use the [WebLogic Server Administration Console](#).

Name	Resource Group	Queues	Topics	Connection Factories	Distributed Queues	Distributed Topics	Foreign Servers	Quotas	Handlers
MedRecModule	app1RG	0	0	0	0	0	0	0	

Columns Hidden 2 JMS Modules 1 of 1

- v. Under **Subdeployment** tab, click on **Create**.

**JMS Module: MedRecModule**

To configure and manage this JMS module, use the [WebLogic Server Administration Console](#).

Name	Resources	Targets
The table is empty		

- vi. Enter **MedRecJMS** as Name and Select the box near **MedRecJMSServer** then click on **Create**.

**Create a Subdeployment**

Subdeployment Name  **Create** **Cancel**

Select targets for this subdeployment.

**JMS Servers**

Select Name

MedRecJMSServer

**SAF Agents**

Select Name

No data to display

- vii. Under **General** tab, click on **Create**.

**JMS Module: MedRecModule**

To configure and manage this JMS module, use the [WebLogic Server Administration Console](#).

**General** Subdeployments Notes

This page displays general information about a JMS system module and its resources. It also allows you to configure new resources and access existing resources.

Name: MedRecModule

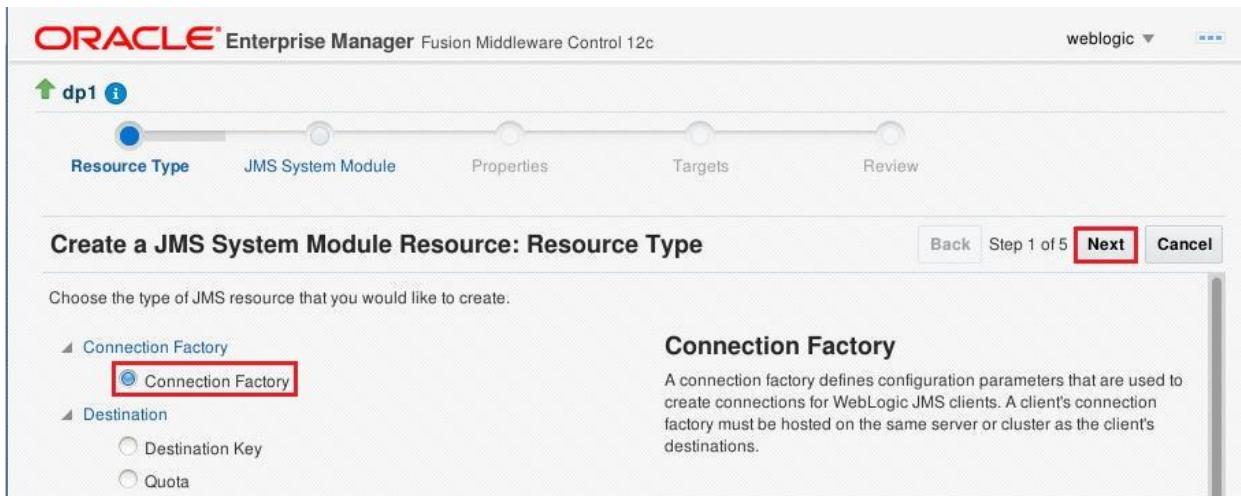
Scope: Resource group "app1RG" in domain partition "dp1"

Descriptor File Name: partitions/dp1/jms/medrecmodule-jms.xml

This page summarizes the JMS resources that have been created for this JMS system module, including queue and topic destinations, connection factories, JMS templates, destination sort keys, destination quota, distributed destinations, foreign servers, and store-and-forward parameters.

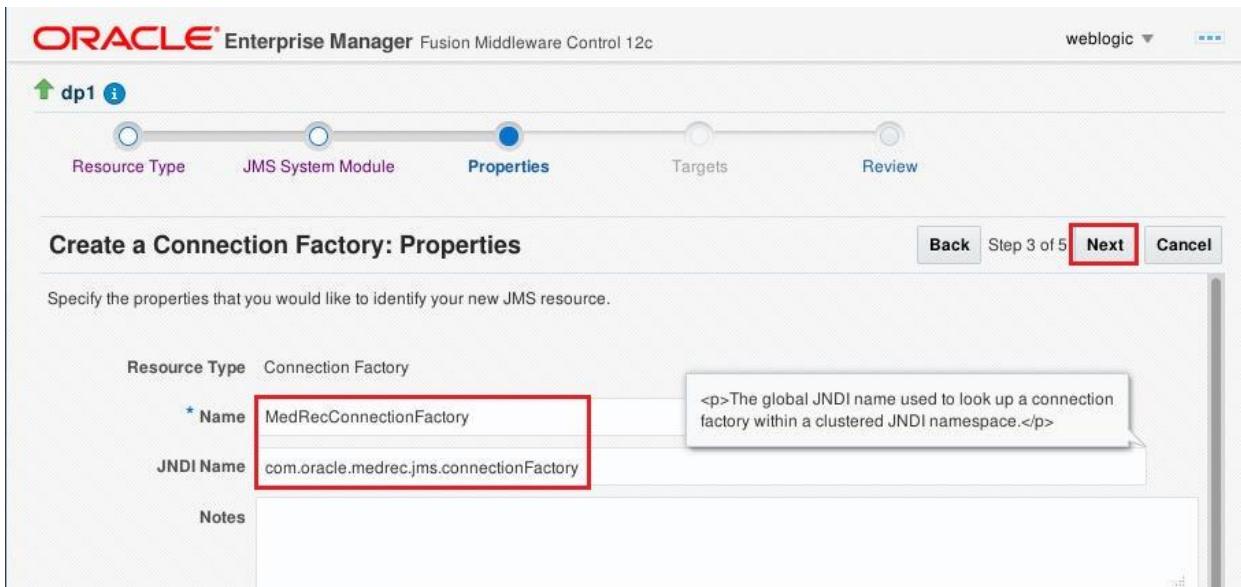
View **Create** **Delete** **Detach**

viii. Select box near **Connection Factory** then click on **Next**.



The screenshot shows the Oracle Enterprise Manager interface for creating a JMS System Module Resource. The top navigation bar indicates 'ORACLE Enterprise Manager Fusion Middleware Control 12c' and 'weblogic'. The main title is 'Create a JMS System Module Resource: Resource Type'. Below it, a sub-header says 'Choose the type of JMS resource that you would like to create.' A tree view on the left shows 'Connection Factory' (selected) and 'Destination' (with 'Destination Key' and 'Quota' options). To the right, a detailed description of 'Connection Factory' is provided: 'A connection factory defines configuration parameters that are used to create connections for WebLogic JMS clients. A client's connection factory must be hosted on the same server or cluster as the client's destinations.' At the bottom right of the screen are 'Back', 'Step 1 of 5', 'Next' (highlighted with a red box), and 'Cancel' buttons.

- ix. Leave Default in **JMS System Module** Page then click on **Next**.  
x. Enter **MedRecConnectionFactory** as Name and  
**com.oracle.medrec.jms.connectionFactory** as JNDI Name then click on **Next**. Click on **Create**.



The screenshot shows the Oracle Enterprise Manager interface for creating a Connection Factory. The top navigation bar indicates 'ORACLE Enterprise Manager Fusion Middleware Control 12c' and 'weblogic'. The main title is 'Create a Connection Factory: Properties'. Below it, a sub-header says 'Specify the properties that you would like to identify your new JMS resource.' A table lists properties: 'Resource Type' (Connection Factory), 'Name' (\* MedRecConnectionFactory), and 'JNDI Name' (com.oracle.medrec.jms.connectionFactory). A tooltip for the 'JNDI Name' field states: '<p>The global JNDI name used to look up a connection factory within a clustered JNDI namespace.</p>'. At the bottom right of the screen are 'Back', 'Step 3 of 5', 'Next' (highlighted with a red box), and 'Cancel' buttons.

- xi. Under **General** tab, Click on **Create**.
- xii. Select **Uniform Distributed Queue** then click on **Next**.

**Create a JMS System Module Resource: Resource Type**

Choose the type of JMS resource that you would like to create.

**Resource Type**

- Connection Factory
  - Connection Factory
- Destination
  - Destination Key
  - Quota
  - JMS Template
- Queue
  - JMS Queue
  - Uniform Distributed Queue
- Topic
  - JMS Topic
  - Uniform Distributed Topic

**Uniform Distributed Queue**

A uniform distributed topic is a logical topic that references a set of automatically generated JMS topic instances, each hosted on a different JMS server.

Note: depending on the type of resource selected, you will be prompted to enter basic information for the new JMS resource to be created in next step. For targetable resources, like stand-alone queues and topics, connection factories, distributed queues and topics, foreign servers, and SAF import destinations, you can also proceed to "Targets" step for selecting the appropriate targeting policy. For untargetable resources, like destination keys, quotas, templates, SAF error handling, and remote SAF context, the "Targets" step will be skipped.

xiii. Click on **Next**.

xiv. Enter the following and click on **Next**.

Name: PatientNotificationQueue

JNDI Name: com.oracle.medrec.jms.PatientNotificationQueue

**Create a Uniform Distributed Queue: Properties**

Specify the properties that you would like to identify your new JMS resource.

**Properties**

Resource Type: Uniform Distributed Queue

\* Name: PatientNotificationQueue

Notes:

JNDI Name: com.oracle.medrec.jms.PatientNotificationQueue

Template: (None)

The name used to bind a virtual destination to the JNDI tree. Applications can use the JNDI name to look up the virtual destination.

- xv. Click on **Create**. Click on **PatientNotificationQueue**, Under **Targeting**, Select **Subdeployment targeting as Targeting Policy** and **MedRecJMS** as **Subdeployment** then click on **Apply**.

The screenshot shows the Oracle Enterprise Manager interface for configuring a JMS resource. In the 'Targeting' section, the 'Subdeployment targeting' radio button is selected, and the 'Subdeployment' dropdown is set to 'MedRecJMS'. A red box highlights the 'Subdeployment targeting' selection.

Note: You must restart domain partition before going to deploy Medrec Application.

- Click on Change Center -> View Restart Checklist.

The screenshot shows the Oracle Enterprise Manager interface with a context menu open over a domain partition named 'dp1'. The 'View Restart Checklist' option is highlighted with a red box. Other menu items include Edit Sessions, Lock & Edit, View Change List, View & Resolve Conflicts, Release Configuration, Activate Changes, Undo All Changes, and Console.

b. Select the box near to dp1 then click on Restart.

Restart Checklist			
This page lists servers, domain partitions, system components, and other resources that must be restarted for configuration changes to take effect. To restart, select the resource you would like to restart and click <b>Restart</b> button.			
Name	Resource Type	Targets	Status of Last Action
dp1	Domain Partition		START (TASK COMPLETED)

c. On Confirmation Screen, Click on Restart.

dd. Deployment of Medrec Application.

i. Click on **WebLogic Domain -> Environment -> Resource Groups**.

The screenshot shows the Oracle Enterprise Manager Fusion Middleware Control 12c interface. On the left, there's a sidebar with a tree view showing 'dp1' under 'Domain Partition'. Below it are 'Start Up' and 'Shut Down' buttons. The main content area is titled 'Uniform Distributed Queue: PatientNotificationQueue' and contains tabs for 'Configuration', 'Monitoring', and 'Notes'. Under 'Configuration', there's a 'General' tab with fields for 'Name' (PatientNotificationQueue), 'Scope' (Resource g), 'JNDI Name' (com.oracle), and 'Template' (None). A note says: 'Use this page to define the general configuration parameters for the messages that arrive on the distributed queue members.' On the right, a navigation menu is open under 'WebLogic Domain' for the 'weblogic' domain. The 'Environment' option is highlighted with a red box. Other options in the menu include Home, Monitoring, Diagnostics, Control, Logs, Deployments, JDBC Data Sources, Messaging, Cross Component Wiring, Web Services, Other Services, Administration, Refresh WebLogic Domain, Security, System MBean Browser, and WebLogic Server Administration Console. At the bottom of the menu is a 'Target Sitemap' link.

- ii. Click on Resource Group **app1RG**, click on **Deployments** tab.
- iii. Click on **Deployment -> Deploy**.

The screenshot shows the Oracle Enterprise Manager interface for a WebLogic Domain. The top navigation bar includes 'WebLogic Domain' and 'weblogic'. The main title is 'Resource Group : app1RG'. Below it, the 'Deployments' tab is highlighted with a red box. A dropdown menu is open over the 'Deployment' button, also highlighted with a red box. The menu options are: Deploy, Redeploy, Undeploy, and Fetch Deployment Plan. The main content area displays a table with columns: Name, Status, State, Health, and Type. A message in the center says 'No deployments found. Select a deployment target or application archive to deploy.' At the bottom right of the table, it says 'Deployments 0 of 0'.

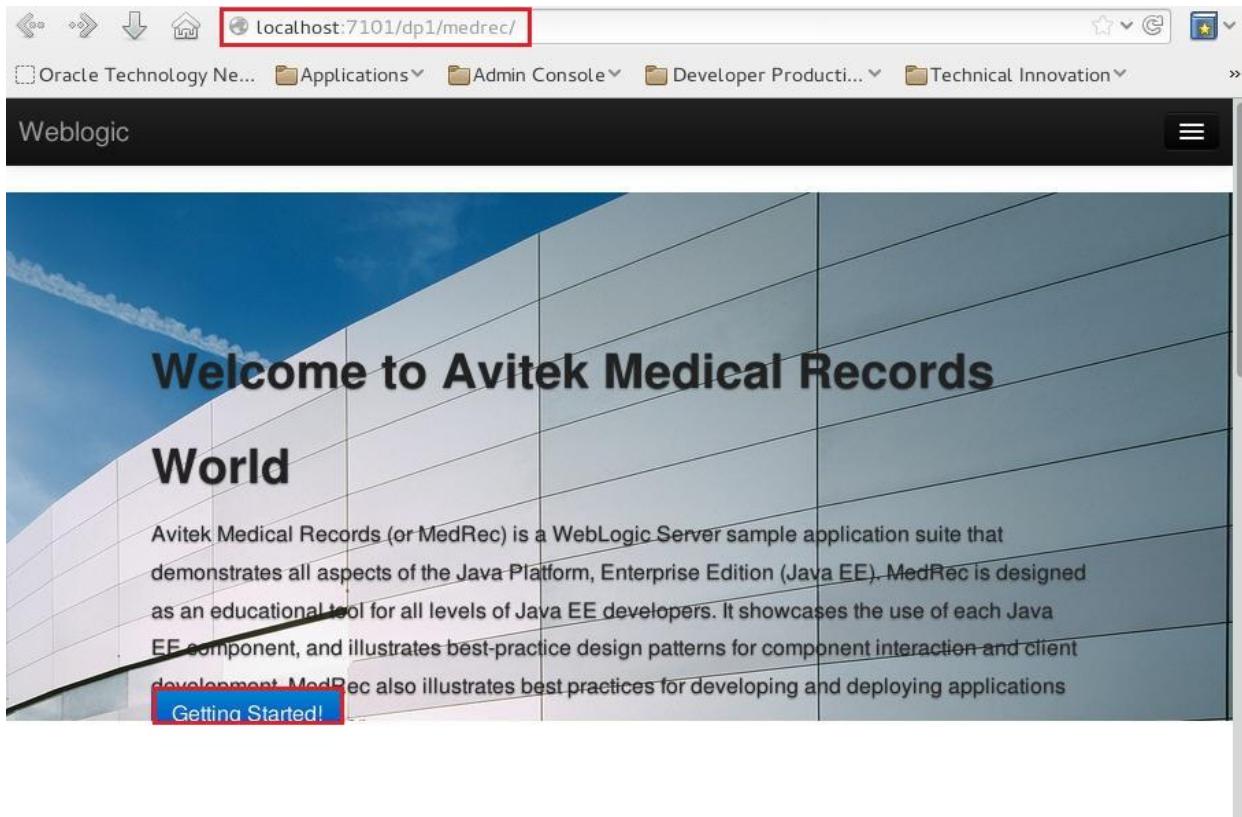
- iv. Select “Archive or exploded directory is on the server where Enterprise Manager is running” then click on **Browse**. Specify the location of **medrec.ear** from **/u01/content/weblogic-innovation-seminars/WInS\_Demos/MT-Workshop/Lab2** then click on **OK**.

The screenshot shows the 'Deploy Java EE Application: Select Archive' step of a deployment wizard. The top navigation bar includes 'base\_domain'. The steps are: Select Archive (highlighted with a blue circle), Select Target, Application Attributes, Deployment Settings. The current step is 'Step 1 of 4'. The 'Scope' section indicates the deployment target is 'Resource group "app1RG" in domain partition "dp1"'. The 'Archive or Exploded Directory' section contains a description: 'Java EE archives, Web Modules (WAR files), EJB Modules (EJB JAR files), Resource Adapter Modules (RAR files), Coherence Archives (GAR files), JDBC Modules, JMS Modules, and library files (Jar files) can be deployed. You can also deploy an exploded archive that is present on the server where Enterprise Manager is running.' There are two radio button options: 'Archive is on the machine where this Web browser is running.' (unchecked) and 'Archive or exploded directory is on the server where Enterprise Manager is running.' (checked). Below this is a 'Browse...' button and a text input field containing the path '/u01/content/weblogic-innovation-seminars/WInS\_Demos/MT-Workshop/Lab2/medrec.ear'. To the right of the input field is another 'Browse...' button. A vertical scroll bar is visible on the right side of the form.

- v. Click on **Next** then click on **Deploy**. Click on Close.
- vi. Deploy **physician.ear** file similarly from the **/u01/content/weblogic-innovation-seminars/WInS\_Demos/MT-Workshop/Lab2** location.
- vii. Deploy **chat.war** file similarly from the **/u01/content/weblogic-innovation-seminars/WInS\_Demos/MT-Workshop/Lab2** location.

## Accessing Medrec Application in Domain Partition dp1

- i. Go to Firefox and type the URL: <http://localhost:7101/dp1/medrec/>
- ii. Click on Getting Started.



- iii. Under Patient, Click on **I'm New Here**
- iv. Enter the following or any other data then click on Submit.

Email:	<a href="mailto:weblogic@oracle.com">weblogic@oracle.com</a>
Password:	welcome1
Confirm Password:	welcome1
First Name:	Ankit
Last Name:	Pandey
Gender:	Male
DOB:	Jun 23, 1988
SSN:	123456788

Note: Make sure you not use 123456789 as SSN Number.

- v. Click on **Getting Started** again on Medrec Home Page.
- vi. Under Administrator, Click on **Login**.

- vii. Enter **administrator/administrator123** as username and password then click on **Sign In**.

The image shows a login interface titled "Administrator". It features a large central text area that says "Please sign in.". Below this, there are two input fields: "Username" and "Password". The "Username" field contains the text "administrator" and the "Password" field contains a series of dots representing a password. At the bottom right is a blue "Sign In" button.

- viii. Under **Pending Requests**, click on **Go**.  
ix. Click on the Email Id, and then click on **Approve**.  
x. Click on Logout. Click on Logout again.  
xi. You can login as [weblogic@oracle.com/welcome1](mailto:weblogic@oracle.com/welcome1) as username/password as Patient.  
xii. You can view your record summary, and you can also have interaction with physician.



**Patient** look up and view your visit and prescription history and edit your profile information.

The Patient application allows patients to log in, edit their profile information, or request that their profile be added to the system. Patients can also view prior medical records of visits with their physician.

## Configuration of Medrec Application in Domain Partition 2

In the next step we are creating the below configuration for Medrec application in domain partition dp2. We are using the same Medrec applications and same JNDI name for the Datasources, connection factory and Distributed queue but we will connect to different database. So there are two benefits of Multitenancy.

- In a domain, you can deploy the same application in two different domain partitions and there will be no JNDI conflict. You do not have to make any changes in application.
- In single domain, you can have same application deployed in two different domain partitions and connected to two databases. So both the application will have different Set of Users in our case or different set of Application Specific Data.

Virtual Target: VT-Medrec-2

Domain Partition: dp2

Resource Group app2RG

app1RG:

Datasource:	MedRec2GlobalDataSourceXA, jdbc/MedRecGlobalDataSourceXA
Mail Session:	MedRecMailSession, mail/MedRecMailSession
Persistence Store:	MedRec2-fs
JMS Server:	MedRec2JMSServer
JMS Module:	MedRec2Module
MedRecModule:	
Subdeployment:	MedRec2JMS
Connection Factory:	MedRec2ConnectionFactory, com.oracle.medrec.jms.connectionFactory
Distributed Queue:	PatientNotificationQueue com.oracle.medrec.jms.PatientNotificationQueue
Applications:	medrec.ear physician.ear chat.war

The Scripts MedrecInDP2.sh creates the Virtual Target, Domain Partition, Resource Group, JDBC Datasource, JMS Server, JMS Module, Distributed Queue and Connection Factory then deploys the medrec.ear, physician.ear and chat.war.

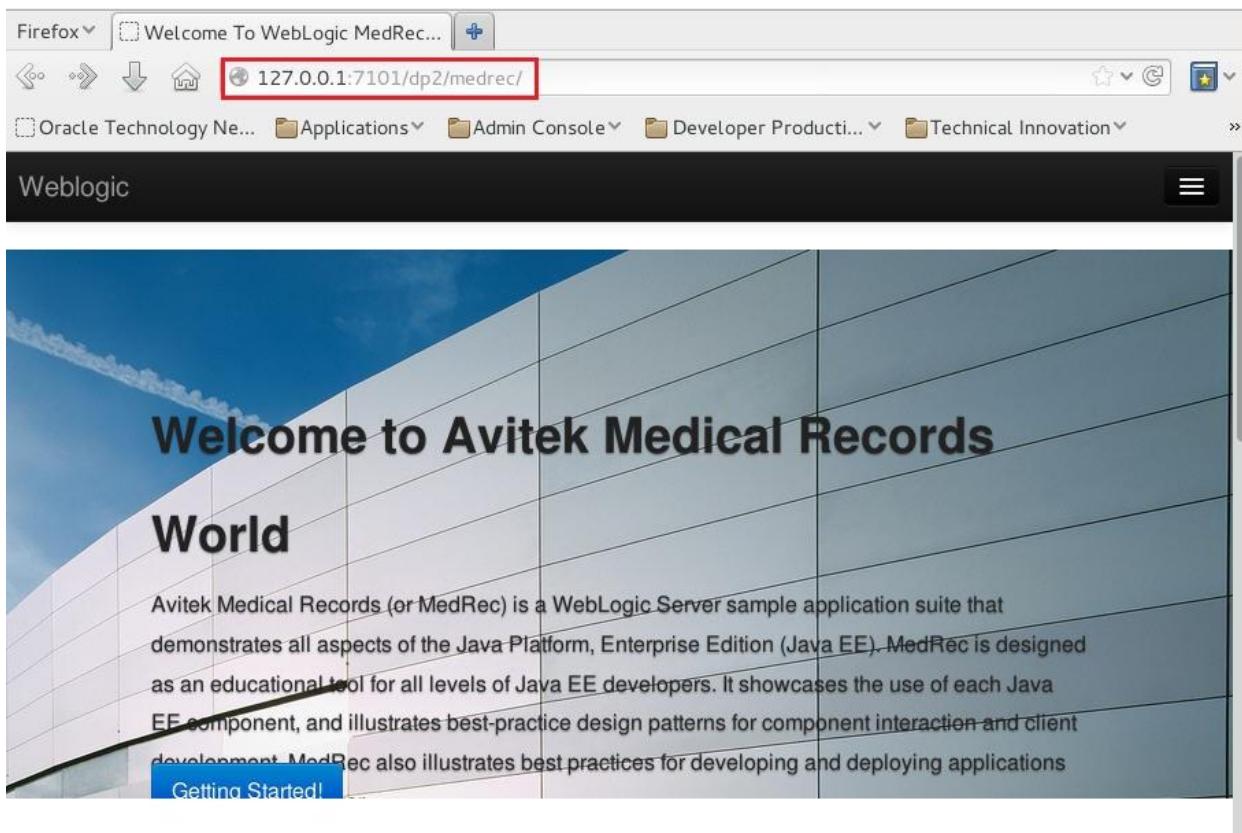
- a. Open a new tab.
- b. cd /u01/content/weblogic-innovation-seminars/WInS\_Demos/MT-Workshop/Lab2
- c. ./Medrec2DB.sh (It creates the required user medrec2 in pdb2 and populates the sample data.)
- d. ./MedrecInDP2.sh
- e. Go back to Fusion Middleware Control <http://localhost:7001/em>.
- f. Verify the creation of the following resources.
  - i. Click on **WebLogic Domain ->Environment ->Virtual Target**. Here we have **dp2** as **URI Prefix** for the Virtual Target **VT-Medrec-2**.
  - ii. Click on **WebLogic Domain ->Environment ->Domain Partition**.
  - iii. Click on Domain Partition **dp2** then Select **Domain Partition -> Administration -> Resource Groups**.
  - iv. Click on Resource group **app2RG**.

- v. In the “Services” and “Deployments” tab, you can verify the creation of above System Resources here.

## Accessing Medrec Application in Domain Partition dp2

While accessing the application we need to use the Virtual Target URL. As domain partition dp2 is targeted to Virtual Target VT-Medrec-2, which has /dp2 as URI, we need to add it in URL for the accessing the application.

- a. In Firefox, type the URL: <http://localhost:7101/dp2/medrec/>



- b. As both this application has exactly same JNDI name used within application, JNDI name of Datasource, JMS connection factory, mail sessions, Distributed Queue.  
c. Click on Getting Started!  
d. Under **Patient**, Click on Login, Try to login with [weblogic@oracle.com/welcome1](mailto:weblogic@oracle.com/welcome1). You will not be able to login. As both Medrec application is connected to different database. So in Multitenant WebLogic Server, you can deploy exactly same application with same configuration but with different database and there will be no JNDI conflict in domain.

## Configuration of Day Trader application in domain partition 3

Here we will create the below configuration through WLST to Run Day Trader Application on Domain Partition dp3.

Virtual Target: VT-daytrader

Domain Partition: dp3

Resource Group app3RG

app1RG:

Datasource:

Name:	jdbc/datasources/TradeDataSource,
JNDI Name:	<b>jdbc/datasources/TradeDataSource</b>
Name:	jdbc/datasources/NoTxTradeDataSource
JNDI Name:	<b>jdbc/datasources/NoTxTradeDataSource</b>

Persistence Store: MyFileStore

JMS Server: MyJMSServer

JMS Module: MyJMSModule

MyJMSModule:

Subdeployment: MySubdeployment

Connection Factory:

Name:	jms/myQueueConnectionFactory,
JNDI Name:	<b>jms/myQueueConnectionFactory</b>
Name:	jms/myTopicConnectionFactory
JNDI Name:	<b>jms/myTopicConnectionFactory</b>

Distributed Queue:

Name:	jms/TradeBrokerQueue
JNDI Name:	<b>jms/TradeBrokerQueue</b>

Distributed Topic:

Name:	jms/TradeStreamerTopic
JNDI Name:	<b>jms/TradeStreamerTopic</b>

Applications: web-3.0.0.war

This DayTraderInDP3.sh creates the Virtual Target, Domain Partition, Resource Group, JDBC Datasource, JMS Server, JMS Module, Distributed Queue and Connection Factory then deploys the web-3.0.0.war.

- a. cd/ **u01/content/weblogic-innovation-seminars/WInS\_Demos/MT-Workshop/Lab2**
- b. **./DayTrader3DB.sh** (It creates the required user for pdborcl database.)
- c. **./DayTraderInDP3.sh**
- d. Go back to Fusion Middleware Control <http://localhost:7001/em>
- e. Verify the creation of the following resources.
  - i. Click on **WebLogic Domain ->Environment ->Virtual Target**. Here we have **dp3** as **URI Prefix** for the Virtual Target **VT-daytrader**.
  - ii. Click on **WebLogic Domain ->Environment ->Domain Partition**.
  - iii. Click on Domain Partition to **dp3** then Select **Domain Partition -> Administration -> Resource Groups**.
  - iv. Click on Resource group **app3RG**.
  - v. In **Services** and **Deployments** tab, you can verify the creation of above System Resources here.

## **Access Day Trader Application in Domain Partition dp3**

- a. Go to Firefox and type the URL: <http://localhost:7101/dp3/daytrader/>
- b. We will not test here the application behavior. The application is loaded and is running inside partition.

You can create many domain partitions in WebLogic 12.2.1. Your application does not require any specific application development. Your application which is working in previous version of WebLogic 12c, you can deploy them in multitenant environment without modifying the application. Daytrader application is developed by IBM which we deployed in domain partition dp3. So you can also easily deployed application build on different platform to WebLogic Server.

## LAB 3: SECURITY ISOLATION

### Overview

A security realm comprises mechanism for protecting WebLogic resources. Each security realm consists of a set of configured security providers, users, groups, security roles, and security policies. You use realms to configure authentication, authorization, role mapping, credential mapping, auditing and other services.

WebLogic Server traditionally supports multiple realms in a domain configuration, but only one realm—typically referred to as the “default realm” or “admin realm”—can be active at any given time.

In contrast, WebLogic Server MT supports multiple active realms and allows each partition to execute against a different realm.

This means that a partition can have unique security providers, users, groups, security roles and security policies. Resources and applications in the domain partition are available to only to users within the domain partition’s security realm. Other tenants cannot see or access the resources or applications.

Note: Partition can share a security realm, with consequent loss of independence isolation. In particular if you do not specify a realm when you create a partition, the default realm is shared with the partition and there is no security isolation between the partition and the domain.

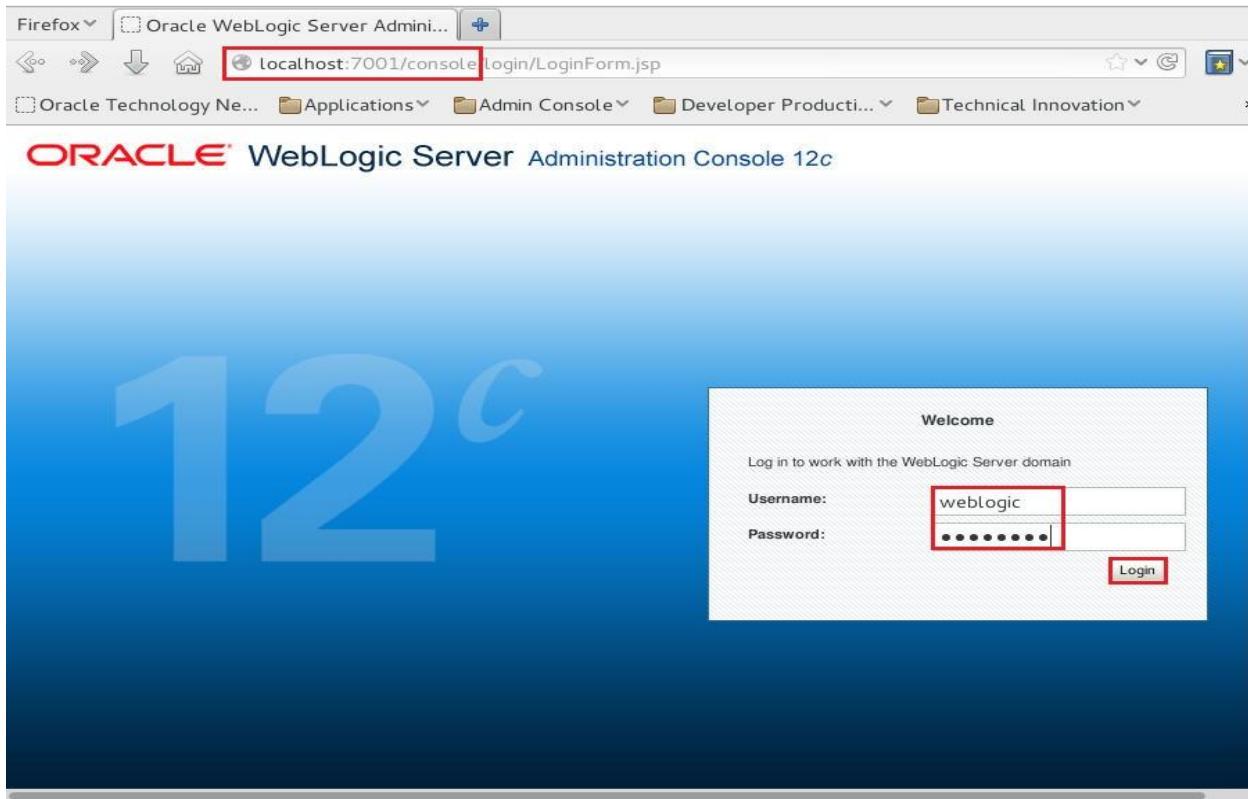
In this Lab, first we will create a new security realm then we will assign the security realms to a partition dp1. So we will have two security realms in our domain one which we created and one is default security realm. Domain partition dp1 will have new security realm and other domain partitions will have default security realm. Default security realm has a user administrator with password administrator123. And new security realm will have user administrator with password welcome1. So Medrec application deployed in dp1 can be used by users of new security realm. You will not be able to login as an Admin in Medrec Application with default security realm user (administrator/administrator123).

In this lab we are going to perform the following operations:

- Creation of New Security Realm.
- Assigning a new Security realm to Domain Partition.
- Medrec application deployed in two different domain partitions which are using two different security realms in single domain.

## Creating a New Security Realm

- i. The creation of Security Realm is more automated still inside WebLogic Console versus Fusion Middleware Control. This is why we will use WebLogic Console for that action. Go to Firefox and type the WebLogic Admin Console URL: <http://localhost:7001/console>.
- ii. Enter **weblogic/welcome1** as username/password then click on Login.



- iii. Under Domain Structure, click on **Security Realms**.

A screenshot of the Oracle WebLogic Server Administration Console 12c home page. The left sidebar shows a 'Domain Structure' tree with nodes like 'base\_domain', 'Services', and 'Security Realms' (which is highlighted with a red box). The main content area has sections for 'Information and Resources' (with links to 'Configure applications', 'GridLink', etc.) and 'General Information' (with links to 'Common Administration Task Descriptions', 'Documentation', etc.). The top navigation bar includes 'Home', 'Log Out', 'Preferences', and a search bar. The top right shows the user 'Welcome, weblogic' and the domain 'Connected to: base\_domain'.

- iv. Click on **New**.
- v. Enter **mynewrealm** as Name; check the box for “**Create default providers within new realm**” and “**Ignore Deploy Credential Mapping**” then click on **OK**.

**Create a New Realm**

**Realm Properties**

The following properties will be used to identify your new realm.

\* Indicates required fields

What would you like to name your new realm?

\* Name:

Valid security realms must include a number of providers, each of which is responsible for some aspect of the overall security framework. You can use either the WebLogic Server supplied providers or your own custom providers.

**Create default providers within this new realm**

To avoid overwriting new credential mapping information with old information in a weblogic-ra.xml deployment descriptor file, check the Ignore Deploy Credential Mapping setting below.

**Ignore Deploy Credential Mapping**

- vi. Click on **mynewrealm**.
- vii. Click on **Users and Groups -> Users** tab.

Settings for mynewrealm

Configuration **Users and Groups** Credential Mappings Providers Migration

**Users** Groups

This page displays information about each user that has been configured in this security realm.

Customize this table

Users (Filtered - More Columns Exist)

	New	Delete	Showing 0 to 0 of 0 Previous   Next		
	Name	Description	Provider		
There are no items to display					
	New	Delete	Showing 0 to 0 of 0 Previous   Next		

- viii. Click on New.
  - ix. Enter the following then click on **OK**.
- |                   |                          |
|-------------------|--------------------------|
| Name:             | administrator            |
| Description:      | Domain Partition 1 users |
| Provider:         | Default Authenticator    |
| Password:         | welcome1                 |
| Confirm Password: | welcome1                 |

Create a New User

**OK** **Cancel**

**User Properties**

The following properties will be used to identify your new User.

\* Indicates required fields

What would you like to name your new User?

\* Name: **administrator**

How would you like to describe the new User?

Description: **Domain Partition 1 users**

Please choose a provider for the user.

Provider: **DefaultAuthenticator**

The password is associated with the login name for the new User.

\* Password: **\*\*\*\*\***

\* Confirm Password: **\*\*\*\*\***

## Assign the mynewrealm security realm to domain partition dp1.

- i. Click on **Domain Partitions**, then on **Control** tab.
- ii. Check the box near dp1 and click on **Shutdown ->Force Shutdown Now**.

The screenshot shows the Oracle WebLogic Server Administration Console interface. On the left, there's a navigation tree under 'Domain Structure' with 'Domain Partitions' highlighted. The main area is titled 'Summary of Domain Partitions' with tabs for 'Configuration' and 'Control'. The 'Control' tab is active. Below it, a table lists three domain partitions: dp1, dp2, and dp3. For dp1, a dropdown menu is open over the 'Shutdown' button, showing 'When work completes' and 'Force Shutdown Now' options. The 'Force Shutdown Now' option is highlighted with a red box.

- iii. Once domain partition shutdown, click on dp1.
- iv. In **Configuration-> General** tab, Under Use Realm, select **mynewrealm** then click on **Save**.

This screenshot shows the 'Settings for dp1' configuration page. At the top, there are two tabs: 'Configuration' (highlighted with a red box) and 'Resource Groups'. Below them are several sub-tabs: Work Manager, Concurrent Templates, Monitoring, Notes, General (highlighted with a red box), Available Targets, File Systems, JTA, Concurrency, and Partition Work Manager. A 'Save' button is located at the bottom left of the main configuration area. The 'General' section contains a 'Select Default Targets:' section with 'Available' and 'Chosen' lists. The 'Available' list is empty. The 'Chosen' list contains one item: 'VT-Medrec-1'. Below this, there's a 'Use Realm:' dropdown set to 'mynewrealm' (highlighted with a red box). Other fields include 'Primary Identity' and 'Domain:'.

- v. Click on **Domain Partitions**, then on **Control** tab.
- vi. Select the box near dp1 and click on **Start**.

The screenshot shows the Oracle WebLogic Server Administration Console interface. On the left, there's a navigation tree under 'Domain Structure' for the 'base\_domain'. The 'Domain Partitions' node is selected and highlighted with a red box. The main content area is titled 'Summary of Domain Partitions' and shows a table of domain partitions. The table has columns: Name, Default Target(s), State, and Status of Last Action. It lists three partitions: dp1 (selected), dp2, and dp3. The 'dp1' row has a checked checkbox in the first column. Below the table are buttons for Start, Resume, Suspend, and Shutdown. The status bar at the bottom indicates 'Showing 1 to 3 of 3 Previous | Next'.

	Name	Default Target(s)	State	Status of Last Action
<input checked="" type="checkbox"/>	dp1	VT-Medrec-1	SHUTDOWN	TASK COMPLETED
<input type="checkbox"/>	dp2	VT-Medrec-2	RUNNING	TASK COMPLETED
<input type="checkbox"/>	dp3	VT-daytrader	RUNNING	TASK COMPLETED

## Verified that we have two security realms in different domain partition in single domain

- i. Go to Firefox and type the URL: <http://localhost:7101/dp1/medrec/index.xhtml>
- ii. Under Administrator, click on Login.
- iii. Login with old security realm credential that is administrator/administrator123.
- iv. You must get “Incorrect username or password!”
- v. Login with new security realm credential that is administrator/welcome1.
- vi. Click on Logout. Click on Logout again.
- vii. Go to Firefox and type the URL: <http://localhost:7101/dp2/medrec/index.xhtml>
- viii. Under Administrator, click on Login.
- ix. Login with new security realm credential that is administrator/welcome1.
- x. You must get “Incorrect username or password!”
- xi. Login with old security realm credential that is administrator/administrato123.
- xii. Click on Logout. Click on Logout again.

Here we learned how you can have two security realms in a domain. So one of your domain partitions can use default security realm and other can use custom security realm created by you in same domain.

## LAB 4: EXPORT/IMPORT DOMAIN PARTITION

### Overview

Exporting and importing partitions let WLS system administrators easily move partitions from one domain to another, including the applications that are deployed to the partition. This feature is useful for replicating partitions across the domains and for moving domains from a development to a testing then production environment.

Exporting a domain partition creates a partition backup and stores it in an archived format. You can export a domain partition from source domain with its entire configuration and data. With few configuration changes, you can then import the partition archive into another instance of multi-tenant WLS (the target domain). You might need to update any domain dependencies, such as targets and security realms, and optionally update other attributes in the partition configuration to make it valid.

When a partition is exported from the source domain it is packaged in a partition archive. Included in the partition archive is:

- The partition configuration.
- Any resource group contained in the partitions.
- Any resource group templates referred to by those resource groups.
- The contents of the file system, <partition-file-system>/config directory.
- Optionally, application binaries and configuration for applications deployed to the partition.

No application runtime state or application-specific runtime configuration is included in the partition archive. Examples of what would not be exported are JMS messages in queues, users in an embedded LDAP realm.

In this Lab, We will create a Non-JRF domain dev\_domain and configure it with all required resources for Medrec application. You will remove domain partition dp1 from base\_domain. As this domain partition is targeted to Virtual Target VT-Medrec-1 and we are going to import a new domain partition on this Virtual target. So we need to remove this domain partition dp1 for this Lab2.

We are going to learn the following:

- Exporting a domain partition from a Non-JRF domain dev\_domain and importing it to a Restricted JRF domain base\_domain.

**Note:** To simplify import/export both domains contain Virtual Target with the same name. In our case, base\_domain and dev\_domain has VT-Medrec-1 as Virtual Target. It is possible to make import/export without that restriction. To import partition and bind it to virtual target of different name, you should modify settings inside associated “\*-attributes.JSON” file

Please remember that Virtual Target may be assigned to the one and only one domain partition. This is why before importing please ensure that original domain partition “dp1” was completely removed from domain configuration (don’t miss step c on page 47!)

## Stop and remove domain partition dp1 from base domain.

- a. In Fusion Middleware Control <http://localhost:7001/em> , Click on **WebLogic Domain -> Environment -> Domain Partition**.
- b. Check the **box** near **dp1** then click on **Control -> Stop->Force Stop Now**. On the Confirmation Screen Click on **OK**. Once you see the message “**Partition state after the operation is SHUTDOWN**” then click on **Close**.

The screenshot shows the Oracle Enterprise Manager Fusion Middleware Control 12c interface for managing domain partitions. At the top, it says "ORACLE Enterprise Manager Fusion Middleware Control 12c" and "WebLogic Domain weblogic". The date and time are Nov 5, 2015 6:11:54 PM PST. The main area shows two pie charts: "Status" (Up: 3) and "State" (Running: 3). Below them is a table of domain partitions:

Name	Status	OTD Partition	Realm	Default Targets	Available Targets
dp1	Up	Stop	When work completes	vt-medrec-1	vt-medrec-1
dp2	Up	Running	vt-medrec	vt-medrec-2	vt-medrec-2
dp3	Up	Running	vt-daytrader	vt-daytrader	vt-daytrader

A red box highlights the "Control" dropdown menu for the dp1 row. Another red box highlights the "Force stop now" option in the dropdown menu. A tooltip for "Force stop now" says "When work completes".

- c. Check the box near **dp1** and make it highlighted then click on **Delete**. In Delete Domain Partition Screen, click on OK.

Name	Status	State	OTD Partition	Realm	Default Targets	Available Targets
dp1		Shutdown		mynewrealm	VT-Medrec-1	VT-Medrec-1
dp2		Running			VT-Medrec-2	VT-Medrec-2

- d. Go to Firefox and type the URL: <http://localhost:7101/dp1/medrec/>  
e. Confirm that page return “Error 404—Not Found”.

**Error 404--Not Found**

**From RFC 2068 Hypertext Transfer Protocol -- HTTP/1.1:**

**10.4.5 404 Not Found**

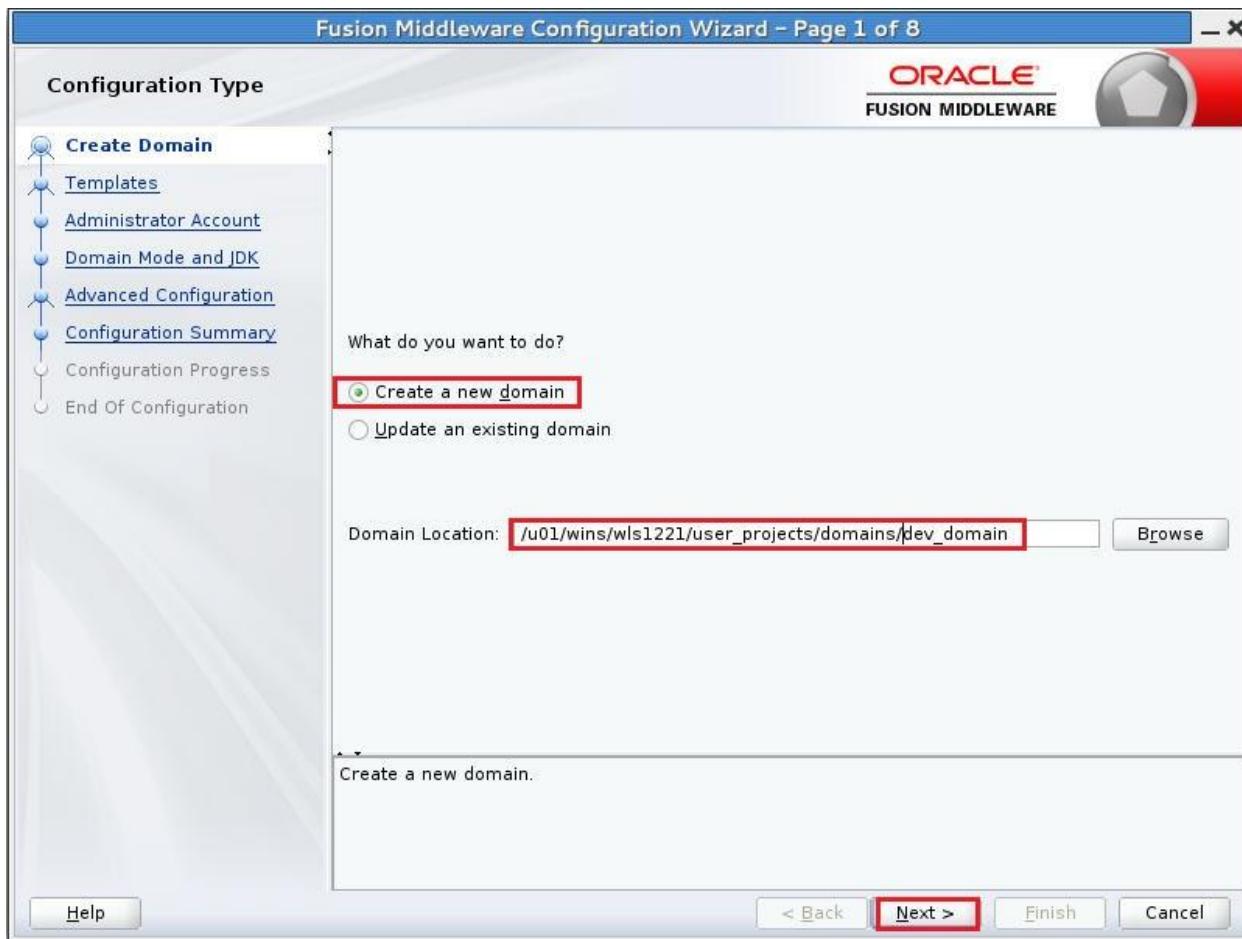
The server has not found anything matching the Request-URI. No indication is given of whether the condition is temporary or permanent.

If the server does not wish to make this information available to the client, the status code 403 (Forbidden) can be used instead. The 410 (Gone) status code SHOULD be used if the server knows, through some internally configurable mechanism, that an old resource is permanently unavailable and has no forwarding address.

## Create a new dev single server (Admin Server) domain

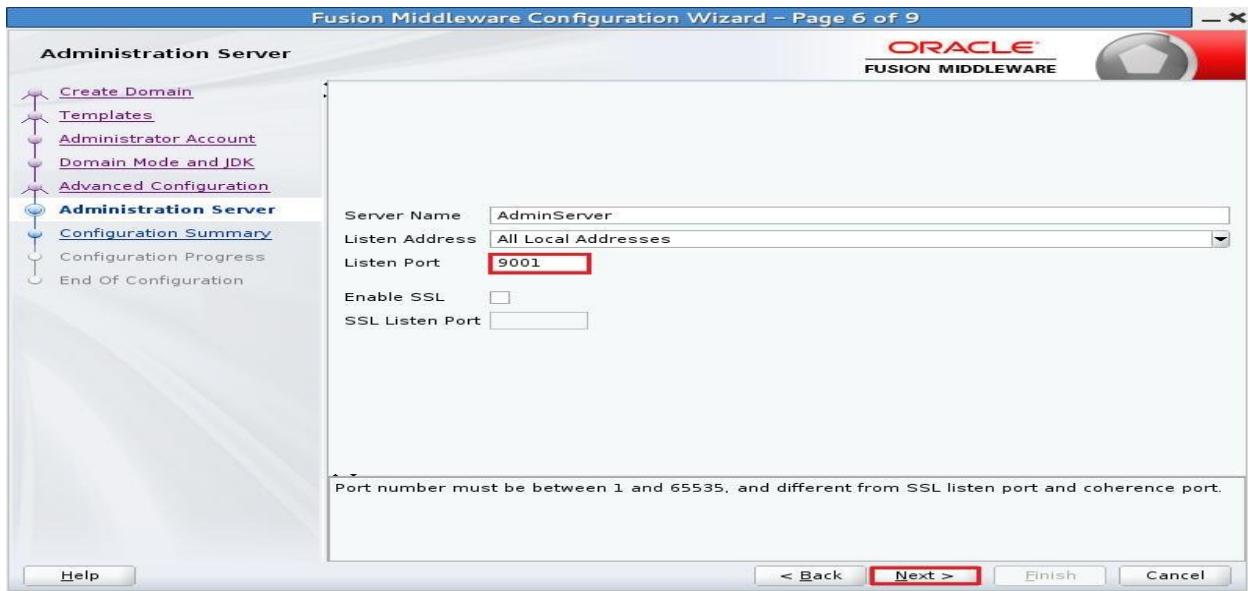
We are going to create a domain which contains only Admin Server, as the previous domain base\_domain is created with RESTRICTED-JRF template. But this domain will be created by default template that is with basic template.

- a. Open a new tab.
- b. cd /u01/wins/wls1221/oracle\_common/common/bin/
- c. ./config.sh
- d. Select “Create a new domain” and Enter “/u01/wins/wls1221/user\_projects/domains/dev\_domain” as Domain Location then click on **Next**.



- e. Leave **Default** on Templates then click on **Next**.
- f. Enter **weblogic/welcome1** as Name/Password in Administrator Account then click on **Next**.
- g. Leave default on Domain Mode and JDK then click on **Next**.
- h. Check the box near to Administration Server then click on **Next**.

- i. In Administration Server, Enter 9001 as Listen Port then click on **Next**.



- j. Click on **Create** then click on Next. Click on **Finish**.

### Configure domain for Medrec Application.

In Lab 2, you configure the domain using Fusion Middleware console, but here we are going to configure domain using Weblogic Admin Console. The operation related to Multitenancy, we can also perform using WebLogic Admin Console.

- cd /u01/wls/wls1221/user\_projects/domains/dev\_domain/
- ./startWebLogic.sh
- In Tab, Click on Terminal -> Set Title, Enter **dev\_admin** as Title then Click on OK.
- Go to Firefox and type the WebLogic Admin Console URL:  
<http://localhost:9001/console>.
- Enter **weblogic/welcome1** as Username/Password then click on Login.
- Creation of Virtual Target.
  - Click on **Environment -> Virtual Targets**.



- ii. Click on New.
- iii. Enter the following then click on **OK**.
 

Name:	VT-Medrec-1 (Both Virtual Target Name will be same)
Target:	Admin Server
URI Prefix:	/devDP

Home >Summary of Virtual Targets

Create a New Virtual Target

**Virtual Target Properties**

The following properties will be used to identify your new virtual target.

What would you like to name your new virtual target?

**Name:**

Select one managed server or cluster on which you would like to deploy this virtual target

**Target:**

Enter one or more hostnames, each on separate lines within the text box.

**Host Names:**

Enter an URI prefix starting with a / (forward slash).

**URI Prefix:**

- g. Creation of Domain Partition.
- i. Click on **Domain Partition -> New**.

ORACLE WebLogic Server Administration Console 12c

Change Center

View changes and restarts

Configuration editing is enabled. Future changes will automatically be activated as you modify, add or delete items in this domain.

Domain Structure

- dev\_domain
  - + Domain Partitions
  - Environment
  - Servers
  - Clusters
  - Coherence Clusters
  - Resource Groups
  - Resource Group Templates
  - Machines
  - Virtual Hosts
  - Virtual Targets
  - Work Managers
  - Concurrent Templates
  - Resource Management

How do I...

- Create Domain Partitions
- Configure Domain Partition General Settings
- Export partitions
- Import partitions

System Status

Health of Running Servers

Home >Summary of Virtual Targets >Summary of Domain Partitions

**Summary of Domain Partitions**

Configuration Control

Domain partitions are an administrative and runtime slice of a WebLogic domain that is dedicated to running application instances and related resources for a tenant.

This page summarizes the domain partitions that have been configured in the current WebLogic Server domain.

**Customize this table**

**Domain Partitions (Filtered - More Columns Exist)**

<input type="checkbox"/> Name	Resource Groups	Default Target(s)	State
There are no items to display			

- ii. Enter **Medrec-Dev** as Name and **unchecked** the box for **Default Resource Group**. Click on **Next**.
- iii. Check the box for **VT-Medrec-1** then click on **Next**.
- iv. In Default Targets, Move **VT-Medrec-1** to Chosen. Click on **Finish**.

**Create a New Domain Partition**

Back | Next | **Finish** | Cancel

**Domain Partition Configuration**

The following properties will be used to configure your new domain partition.

**Default Targets:**

Available:	Chosen:
[Empty]	<input checked="" type="checkbox"/> VT-Medrec-1

Security: Not assigned  
Realm:

Partition File System

- v. In **Domain Partition -> Control tab**, check the box near Medrec-Dev and click on Start.

**Summary of Domain Partitions**

Configuration | **Control**

This page lists the state of the domain partitions in this WebLogic Server domain.

**Domain Partitions**

<b>Start</b>	Name	Default Target(s)	State	Status of Last Action
<input checked="" type="checkbox"/>	Medrec-Dev	VT-Medrec-1	SHUTDOWN	None

Showing 1 to 1 of 1 Previous | Next

Start | Resume | Suspend | Shutdown

h. Creation of Resource Group

- i. Click on domain partition **Medrec-Dev**.
- ii. Click on **Resource Groups -> Configuration tab** then click on New.

This page summarizes the resource groups of a domain partition that have been configured in the current WebLogic Server domain.

**Resource Groups**

<b>New</b>	<b>Delete</b>	Showing 0 to 0 of 0 Previous   Next			
	Name	Resource Group Template	Effective Targets	State	Notes
There are no items to display					

**New**    **Delete**    Showing 0 to 0 of 0 Previous | Next

- iii. Enter **appRG** as Name, Leave others as default then click on **OK**.

Note: We have created script through which you can create the remaining resources, you need to run the file **MedrecInMedrec-Dev.sh** inside **/u01/content/weblogic-innovation-seminars/WInS\_Demos/MT-Workshop/Lab4**, and then you can directly go to **Exporting the domain partition** section.

i. Creation of Data Source.

- i. Click on **dev\_domain -> Services -> Data Sources** then click on **New-> Generic Data Sources**.

**Domain Structure**

- dev\_domain
  - Domain Partitions
  - Environment
  - Deployments
  - Services
    - Messaging
    - Data Sources**
    - Persistent Stores
    - Foreign JNDI Providers
    - Work Contexts
    - XML Registries
    - XML Entity Caches
    - JCOM
    - Mail Sessions

**How do I...**

- Create JDBC generic data sources
- Create JDBC GridLink data sources
- Create JDBC multi data sources
- Create UCP data sources
- Create Proxy data sources

**System Status**

**Summary of JDBC Data Sources**

<b>New</b>	<b>Delete</b>	Showing 0 to 0 of 0 Previous   Next				
	Type	JNDI Name	Targets	Scope	Domain Partitions	
There are no items to display						

**New**    **Delete**    Showing 0 to 0 of 0 Previous | Next

- ii. Enter the following and click on **Next**.

Name: MedRecGlobalDataSourceXA  
JNDI Name: jdbc/MedRecGlobalDataSourceXA  
Scope: appRG in Medrec-Dev  
Database Type: Oracle

Create a New JDBC Data Source

Back **Next** | Finish | Cancel

**JDBC Data Source Properties**

The following properties will be used to identify your new JDBC data source.  
\* Indicates required fields

What would you like to name your new JDBC data source?

\* Name: **MedRecGlobalDataSourceXA**

What scope do you want to create your data source in ?

Scope: **appRG in Medrec-Dev**

What JNDI name would you like to assign to your new JDBC Data Source?

JNDI Name: **jdbc/MedRecGlobalDataSourceXA**

What database type would you like to select?

Database Type: **Oracle**

- iii. Select “**Oracle’s Driver (Thin XA) for Service connections; Version: Any**” then click on **Next**.

- iv. In Transaction Options, click on **Next**.

v. Enter the following and click on **Next**.

Database Name: pdborcl  
Host Name: localhost  
Port: 1521  
Database User Name: medrec1  
Password: medrec1

Create a New JDBC Data Source

Back **Next** Finish Cancel

**Connection Properties**

Define Connection Properties.

What is the name of the database you would like to connect to?

Database Name: **pdborcl**

What is the name or IP address of the database server?

Host Name: **localhost**

What is the port on the database server used to connect to the database?

Port: **1521**

What database account user name do you want to use to create database connections?

Database User Name: **medrec1**

What is the database account password to use to create database connections?

Password: **\*\*\*\*\***

Confirm Password: **\*\*\*\*\***

- vi. Click on **Test Configuration** and verify the connectivity.  
vii. Click on **Next** then Click on **Finish**.

j. Creation of JMS Server.

- i. Click on **Services -> Messaging -> JMS Servers**.
- ii. Click on **New**.

ORACLE WebLogic Server Administration Console 12c

Change Center

View changes and restarts

Configuration editing is enabled. Future changes will automatically be activated as you modify, add or delete items in this domain.

Domain Structure

- dev\_domain
  - + Domain Partitions
  - + Environment
    - Deployments
  - Services
    - Message
      - JMS Servers
      - Store-and-Forward Agents
      - JMS Modules
      - Path Services
    - + Bridges
    - Data Sources
    - Persistent Stores
    - Foreign JNDI Providers

How do I...

- Configure JMS servers
- Configure JMS system modules

Welcome, weblogic | Connected to: dev\_domain

Home >Summary of Virtual Targets >Summary of Domain Partitions >Medrec-Dev >Summary of JDBC Data Sources >Summary of JMS Servers

**Summary of JMS Servers**

JMS servers act as management containers for the queues and topics in JMS modules that are targeted to them. This page summarizes the JMS servers that have been created in the current WebLogic Server domain.

Customize this table

**JMS Servers (Filtered - More Columns Exist)**

<input type="checkbox"/>	Name	Persistent Store	Target	Current Target	Health	Scope	Domain Partitions
There are no items to display							

New Delete Showing 0 to 0 of 0 Previous | Next

<input type="checkbox"/>	Name	Persistent Store	Target	Current Target	Health	Scope	Domain Partitions
Showing 0 to 0 of 0 Previous   Next							

New Delete Showing 0 to 0 of 0 Previous | Next

iii. Enter the following and click on **Next**.

Name: DevJMSServer  
Scope: appRG in Medrec-Dev

Create a New JMS Server

Back | **Next** | Finish | Cancel

**JMS Server Properties**

The following properties will be used to identify your new JMS Server.

\* Indicates required fields

What would you like to name your new JMS Server?

 \* Name: **DevJMSServer**

Would you like this new JMS Bridge Destination to be restricted to a specific resource group template or resource group ?

Scope: **appRG in Medrec-Dev**

Back | **Next** | Finish | Cancel

iv. Click on **Create a New Store**.

v. Select “File Store” as Type then click on **Next**.

vi. Enter “MedrecDev-fs” as Name and “appRG in Medrec-Dev” as Scope then click on **Next**. Click on **Finish**.

Create a New JMS Server

Back | **Next** | Finish | Cancel

**File Store Properties**

The following properties will be used to identify your new file store.

\* Indicates required fields

What would you like to name your new file store?

\* Name: **MedrecDev-fs**

What scope do you want to create your jms file store in ?

Scope: **appRG in Medrec-Dev**

The pathname to the directory on the file system where the file store is kept. This directory must exist on your system, so be sure to create it before completing this tab.

Directory:

Back | **Next** | Finish | Cancel

vii. Select “**MedrecDev-fs**” as Persistent Store then click on **Next**.



viii. Click on **Finish**.

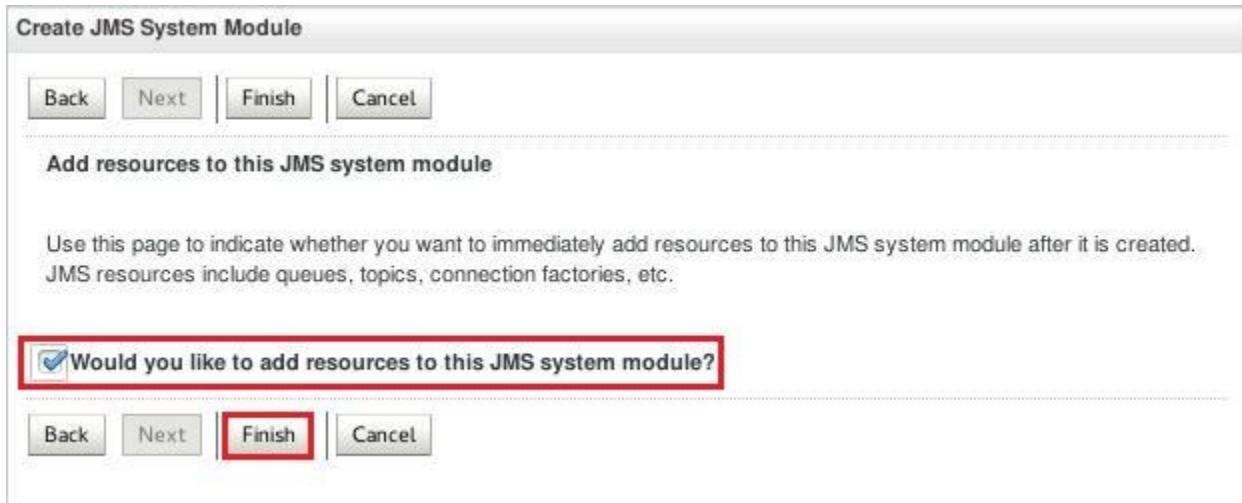
k. Creation of JMS Module.

i. Click on **Services -> Messaging -> JMS Modules** then click on New.

The screenshot shows the Oracle WebLogic Server Administration Console. The left sidebar has a 'Domain Structure' tree with nodes like dev\_domain, Domain Partitions, Environment, Deployments, Services, Messaging, JMS Servers, Store-and-Forward Agents, and JMS Modules. The 'JMS Modules' node is highlighted with a red box. The main content area is titled 'Summary of JMS Modules' and contains a table with one row: 'There are no items to display'. At the bottom of the table are 'New' and 'Delete' buttons. Navigation links at the top include Home, Log Out, Preferences, Record, Help, and a search bar. The URL in the address bar is 'Home >Summary of Virtual Targets >Summary of Domain Partitions >Medrec-Dev >Summary of JDBC Data Sources >Summary of JMS Servers >Summary of JMS Modules'. The status bar at the bottom right says 'Welcome, weblogic | Connected to: dev\_domain'.

ii. Enter **DevJMSModule** as Name and “**appRG in Medrec-Dev**” then click on **Next**.

- iii. Check the box for “Would you like to add resources to this JMS system module” then click on **Finish**.



- I. Creation of Subdeployment.  
i. Select **Subdeployments** tab then click on New.

	Name	Resources	Targets
There are no items to display			

- ii. Enter **DevMedrecJMS** as Name then click on **Next**.  
iii. Select **DevJMSServer** as Target then click on **Finish**.

- m. Creation of Connection Factory.
- i. Click on Configuration tab then click on New.

**Settings for DevJMSModule**

Configuration	Subdeployments	Security	Notes												
This page displays general information about a JMS system module and its resources. It also allows you to configure new resources and access existing resources.															
Name:	DevJMSModule														
			The name of this JMS system module. <a href="#">More Info...</a>												
Scope:	appRG in Medrec-Dev														
			Specifies if the JMS system module is accessible within the domain, a partition, or a resource group template. <a href="#">More Info...</a>												
Descriptor File Name:	partitions/Medrec-Dev/jms/devjmsmodule-jms.xml														
			The name of the JMS module descriptor file. <a href="#">More Info...</a>												
This page summarizes the JMS resources that have been created for this JMS system module, including queue and topic destinations, connection factories, JMS templates, destination sort keys, destination quota, distributed destinations, foreign servers, and store-and-forward parameters.															
<p><b>Customize this table</b></p> <p><b>Summary of Resources</b></p> <table border="1"> <thead> <tr> <th><input type="checkbox"/></th> <th>Name</th> <th>Type</th> <th>JNDI Name</th> <th>Subdeployment</th> <th>Targets</th> </tr> </thead> <tbody> <tr> <td colspan="6">There are no items to display</td> </tr> </tbody> </table>				<input type="checkbox"/>	Name	Type	JNDI Name	Subdeployment	Targets	There are no items to display					
<input type="checkbox"/>	Name	Type	JNDI Name	Subdeployment	Targets										
There are no items to display															
<p>New    Delete</p> <p>Showing 0 to 0 of 0 Previous   Next</p>															
<p>New    Delete</p> <p>Showing 0 to 0 of 0 Previous   Next</p>															

- ii. Select the box for Connection Factory then click on **Next**.
  - iii. Enter **DevMedRecConnectionFactory** as Name and **com.oracle.medrec.jms.connectionFactory** and leave other default then click on **Next**.
  - iv. Click on **Finish**.
- n. Creation of Distributed Queue.
  - i. Click on New.
  - ii. Select the box for Distributed Queue then click on **Next**.
  - iii. Enter **PatientNotificationQueue** as Name and **com.oracle.medrec.jms.PatientNotificationQueue** as JNDI Name and leave other default then click on **Next**.

- iv. Click on **Advanced Targeting**, Select DevMedrecJMS as Subdeployments and DevJMSServer as Targets then click on **Finish**.

**Create a New JMS System Module Resource**

Back | Next | **Finish** | Cancel

The following properties will be used to target your new JMS system module resource

Use this page to select a subdeployment to assign this system module resource. A subdeployment is a mechanism by which JMS resources are grouped and targeted to a server instance, cluster, or SAF agent. If necessary, you can create a new subdeployment by clicking the **Create a New Subdeployment** button. You can also reconfigure subdeployment targets later by using the parent module's subdeployment management page.

Select the subdeployment you want to use. If you select (none), no targeting will occur.

**Subdeployments:** **DevMedrecJMS** | Create a New Subdeployment

What targets do you want to assign to this subdeployment?

**Targets:** **DevJMSServer**

Back | Next | **Finish** | Cancel

- o. Creation of Mail Session.  
i. Click on **Services -> Mail Sessions**.



- ii. Click on **New**.
- iii. Enter the following then click on **Next**.
 

Name:	MedRecMailSession
JNDI Name:	mail/MedRecMailSession
Scope:	appRG in Medrec-Dev

**Create a New Mail Session**

Back **Next** Finish Cancel

**Mail Session Properties**

The following property will be used to identify your new mail session.

\* Indicates required fields

What would you like to name your new mail session?

\* Name:

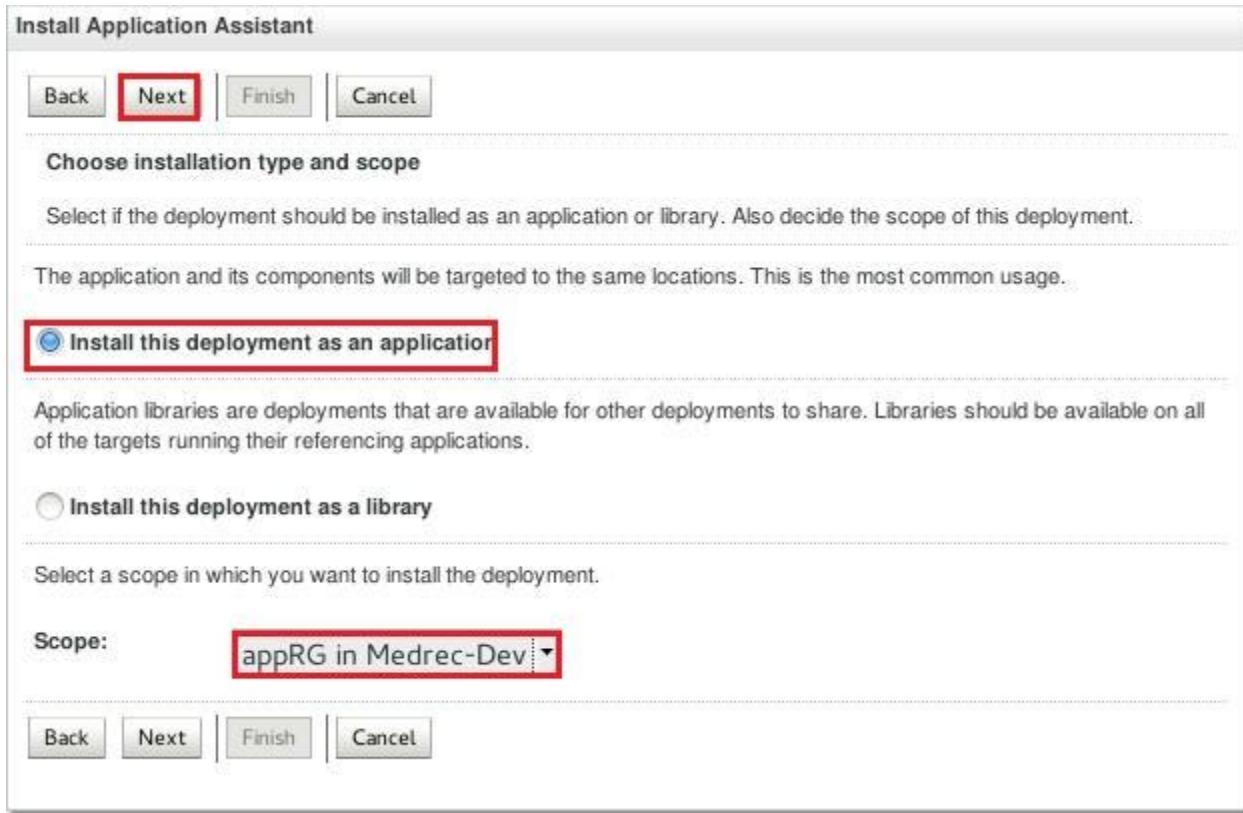
\* JNDI Name:

What scope do you want to create your mail session in ?

Scope:

- iv. Click on **Finish**.
- p. Deployments of Application
  - i. Click on **Deployments** then on **Install**.
  - ii. Select the medrec.ear application from the Path /u01/content/weblogic-innovation-seminars/WInS\_Demos/MT-Workshop/Lab4/ then click on **Next**.

- iii. Select “**Install this deployment as an application**” and “**appRG in Medrec-Dev**” as Scope then click on **Next**. Click on **Finish**.



- iv. Click on **Install** then Select the physician.ear application from the Path /u01/content/weblogic-innovation-seminars/WInS\_Demos/MT-Workshop/Lab4/ then click on **Next**.
- v. Select “**Install this deployment as an application**” and “**appRG in Medrec-Dev**” as Scope then click on **Next**. Click on **Finish**.
- vi. Click on **Install** then Select the chat.war application from the Path /u01/content/weblogic-innovation-seminars/WInS\_Demos/MT-Workshop/Lab4/ then click on **Next**.
- vii. Select “**Install this deployment as an application**” and “**appRG in Medrec-Dev**” as Scope then click on **Next**. Click on **Finish**.
- viii. Go to Firefox and type the URL: <http://localhost:9001/devDP/medrec/> and confirm the execution of application.

## Exporting the domain partition

- Go back to admin console <http://localhost:9001/console/> of dev\_domain.
- Click on **Domain Partition**, and then check the box near to “**Medrec-Dev**” then click on Export.

Name	Resource Groups	Default Target(s)	State
Medrec-Dev	appRG	VT-Medrec-1	RUNNING

- Select the box for “**Include Application Bits**” and enter **/home/oracle/Desktop** as Path then click on **OK**.

OK | Cancel

**Export a Domain Partition**

Select or enter the directory where the domain partition archive should be placed. Each domain partition should be located in its own directory. The domain partition archive will be overwritten if it already exists. Other files in the directory may be overwritten as well.

Domain: Medrec-Dev  
Partition Name: Medrec-Dev

Do you want to include the installed applications in the exported ZIP file?

**Include Application Bits**

What is the full path to the key file you want to use to encrypt attributes in the partition archive?

Full path to the Key File:

Where do you want the domain partition archive to be placed ?

Path:

- Go to Desktop and Verify the Creation of **Medrec-Dev-attributes.json** and **Medrec-Dev.zip** file.

## Importing the domain partition

- a. Go back to EM console of base\_domain. Go to Firefox and type the WebLogic Admin Console URL: <http://localhost:7001/em>.
- b. Enter **weblogic/welcome1** as Username/Password and click on Login.
- c. Click on **WebLogic Domain-> Environment ->Domain Partition**.
- d. Click on Import. Click on **Browse** button, Select the file **Medrec-Dev.zip** from **/home/oracle/Desktop** directory then click on **OK**.

base\_domain

WebLogic Domain

Nov 5, 2015 9:32:21 PM PST

Status

Up (2)

State

Running(2)

Import

Name	Status	State	OTD Partition	Realm	Default Targets	Available Targets
dp2	Up	Running			VT-Medrec-2	VT-Medrec-2
dp3	Up	Running			VT-daytrader	VT-daytrader

Domain Partitions 2 of 2

### Import Domain Partition

Use this dialog to import a partition archive into the domain. The archive was previously generated by exporting a partition.

Import domain partition from zip file

/home/oracle/Desktop/Medrec-Dev.zip

Overwrite existing resource group templates

Override domain partition name (optional)

Full path to the key file used to decrypt attributes (optional)

- e. Initially it will have State “**Unknown**”. Wait for 1 or 2 minute, click on Refresh icon to get the current state.
- f. Once the status for **Medrec-Dev** domain partition is **Shutdown**, check the box, near Medrec-Dev then click on **Control -> Start**. Click on **Close**. Click on the Refresh icon to get the current state.

The screenshot shows the Oracle Enterprise Manager interface for a WebLogic Domain named 'base\_domain'. At the top, there are two pie charts: one for 'Status' showing 'Up (3)' and another for 'State' showing 'Running(3)'. Below these charts is a table listing domain partitions:

Name	Status	State	OTD Partition	Realm	Default Targets	Available Targets
dp2		Running			VT-Medrec-2	VT-Medrec-2
dp3		Running			VT-daytrader	VT-daytrader
Medrec-Dev		Running			VT-Medrec-1	VT-Medrec-1

- g. Go to Firefox and type the URL: <http://localhost:7101/dp1/medrec/>
- h. Click on “**Getting Started!**” Under Administrator, click on Login.
- i. Enter **administrator/administrator123** as Username/Password then click on Sign in.
- j. Click on Logout. Click on Logout again.

Note: As we have VT-Medrec-1 as Virtual target in both the domains `base_domain` and `dev_domain`. In `base_domain`, we have added `administrator` user to default security realm. So as this domain partition becomes part of this domain. It also uses the default security realm. Here you are accessing the application using `/dp1` in the URL because, we have Virtual target `VT-Medrec-1` has `/dp1` as URI, So Virtual target definition do not change during import.

- k. Come back to tab **dev\_admin**.
- l. Stop the Weblogic Server running in `dev_domain`, by pressing `Ctrl +C` in tab in which Admin Server is running. Close the Tab.

## LAB 5: RESOURCE CONSUMPTION MANAGEMENT

### Overview

When applications that are deployed to multiple collocated Domain Partitions, access shared resources (low level resources such as CPU, network, storage) two key problems are likely to be faced:

- Contention and unfairness during allocation: Multiple request for a Shared resources results in contention and interference. Abnormal resource consumption requests may happen due to benign reasons (high traffic-genuine or DDoS), misbehaving, buggy applications or malicious code. These requests could overload the capacity of shared resources, thereby preventing another consumer's access to the resource.
- Variable performance leading to potential Service Level Agreement (SLA) violations: From a cloud operations perspective, performance for different collocated consumers.

It is therefore critical to manage and isolate access to shared resources in the WebLogic application Server by domain partition to ensure fairness in allocation, prevent contention/interferences of access to shared resources and to provide consistent performance for multiple co resident tenants. The Resource Consumption Management (RCM) feature in WebLogic 12.2.1 Multitenancy allows WebLogic System administrator to specify resource consumption management policies (allows the specification of constraints, recourse actions and notification) on shared resources such as CPU, Heap, File and Network. You can create resource manager based on the following parameter:

- Retained Heap
- CPU Time
- Open File Descriptor

You need to provide the value for below action, as it reaches to that value. It will trigger the following action:

- Notify:** Inform administrator that a threshold has been crossed.  
**Slow:** Reduce Partition ability to consume more resources.  
**Stop:** Initiate the shutdown sequence for the offending partition.

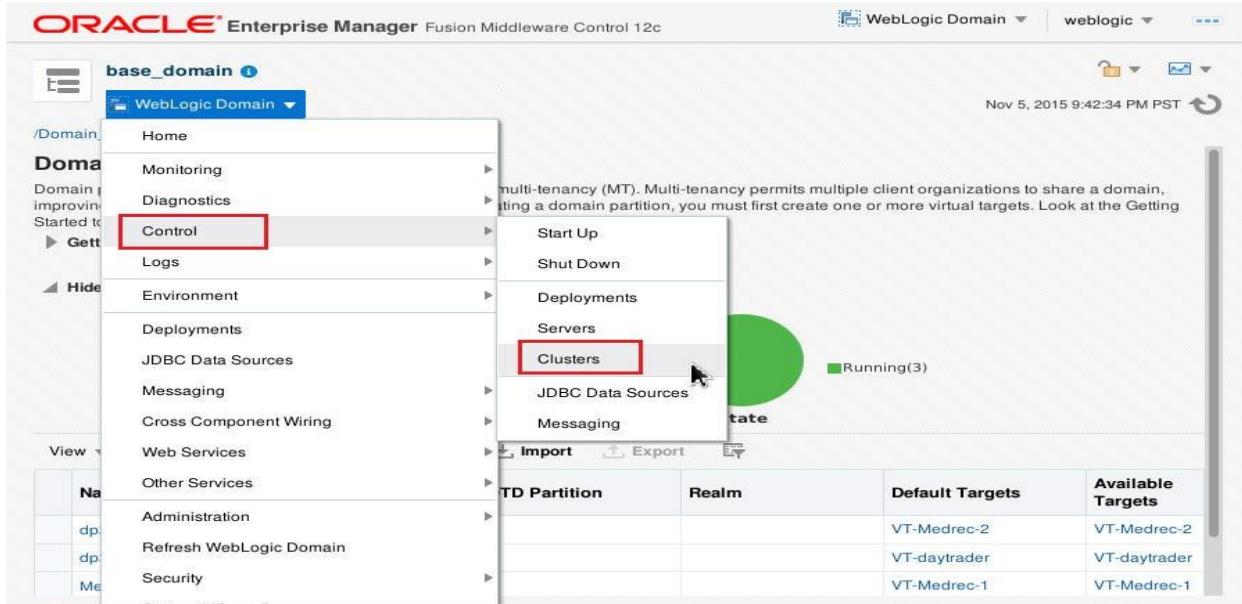
In this lab first we create a resource manager based on the Heap size then we specify the values with respective actions. So as following values reaches that action get triggered. We will use sample application through which we can modify the value of Heap size and we will see the action associated.

In this lab we are going to perform the following operations:

- Enabling RCM by adding extra arguments in Server Java Arguments.
- Creating Resource manager on the basis of Heap Size.
- Assign Resource manager to a Domain Partition.
- Running an example to understand the functioning of RCM.

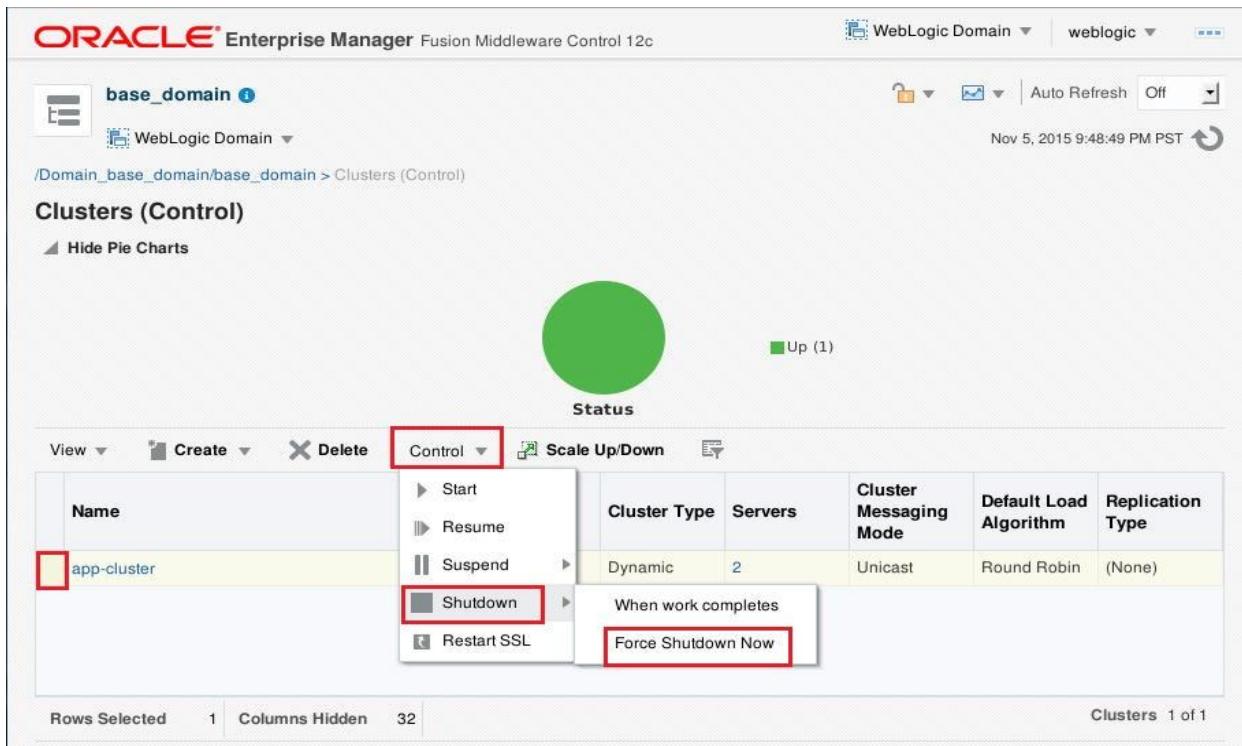
## Enabling RCM by adding extra arguments in Server JAVA\_OPTION Arguments

- Go to Firefox and type the Fusion Middleware Control Console URL:  
<http://localhost:7001/em>
- Click on **WebLogic Domain -> Control -> Clusters.**



The screenshot shows the Oracle Enterprise Manager Fusion Middleware Control 12c interface. The left sidebar shows a tree view with 'Domain' selected. Under 'Domain', 'Control' is highlighted with a red box. In the main content area, 'Clusters' is also highlighted with a red box. A pie chart indicates 'Running(3)'. Below the chart is a table with columns: TD Partition, Realm, Default Targets, and Available Targets. The data shows three entries: VT-Medrec-2, VT-daytrader, and VT-Medrec-1, each with corresponding targets listed under 'Available Targets'.

- Check the boxes near app-cluster then click on **Control -> Shutdown ->Force Shutdown Now**. Click on **Forcibly Shutdown Servers**.

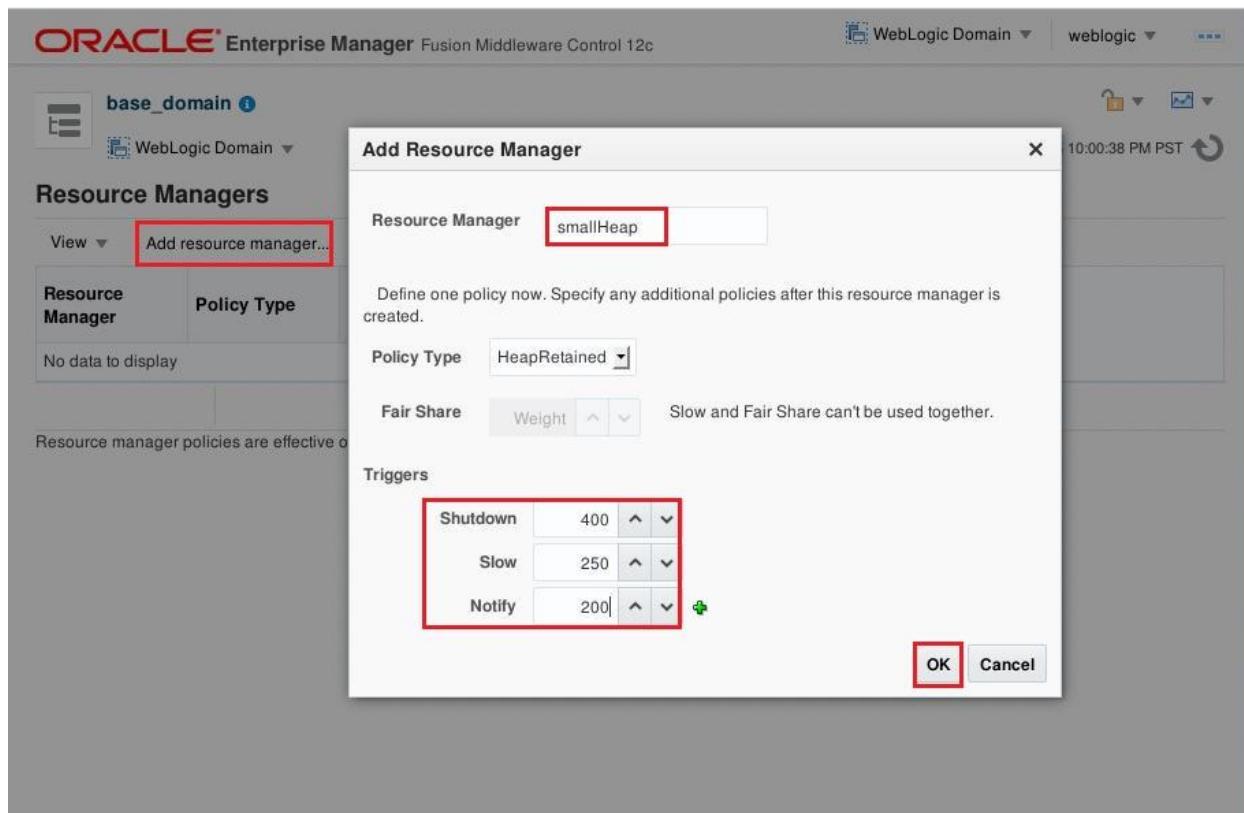


The screenshot shows the 'Clusters (Control)' page. The top navigation bar has 'Control' highlighted with a red box. A context menu is open over the row for 'app-cluster', with 'Shutdown' highlighted with a red box. A sub-menu for 'Shutdown' is open, showing 'When work completes' and 'Force Shutdown Now', with 'Force Shutdown Now' highlighted with a red box.

- d. Open a new tab.
- e. cd /u01/content/weblogic-innovation-seminars/WInS\_Demos/MT-Workshop/Lab5
- f. cp setDomainEnv.sh /u01/wins/wls1221/user\_projects/domains/base\_domain/bin/
- g. In above command we have modified the JAVA\_OPTIONS as specified below.  
`JAVA_OPTIONS="-XX:+UnlockCommercialFeatures -XX:+ResourceManagement -XX:+UseG1GC ${JAVA_OPTIONS} ${JAVA_PROPERTIES}"`
- h. Go back to Fusion middleware control then click on **WebLogic Domain -> Control -> Clusters**.
- i. Check the box near to **app-cluster** to make it highlighted and then click on **Control -> Start -> Start Servers**.
- j. tail -f /u01/wins/wls1221/user\_projects/domains/base\_domain/servers/app-cluster-1/logs/app-cluster-1.log
- k. In this tab, Click on Enter Terminal -> Set Title and app-cluster-1 then click on **OK**.  
We will use these logs to monitor resource consumption manager lab.

## Creating a Resource Manager and Configuring Resource Manager for a domain partition

- a. Go to FMW control <http://localhost:7001/em>
  - b. Enter weblogic/welcome1 as Username/Password then click on Login.
  - c. Click on **WebLogic Domain->Environment -> Resource Consumption Managers**.
  - d. Click on **Add Resource Manager** and Enter the following value then click on **OK**
- |                   |              |
|-------------------|--------------|
| Resource Manager: | smallHeap    |
| Policy Type:      | HeapRetained |
| Shutdown:         | 400          |
| Slow:             | 250          |
| Notify:           | 200          |



## Associate the Resource Manager with Medrec-Dev domain partition.

- Click on **WebLogic Domain** -> **Environment->Domain Partition** then click on **Medrec-Dev**.
- Click on **Domain Partition** ->**Administration** -> **Resource Sharing**.

The screenshot shows the Oracle Enterprise Manager interface for the Medrec-Dev domain. The left sidebar has sections for Monitoring, Resource, Deployment, and Administration. Under Administration, the 'Resource Sharing' option is highlighted with a red box. The main content area displays 'General' settings for the partition, including state (Running), default targets (VT-Medrec-1), and various resource usage metrics like Open JDBC Connections (0), Active Transactions (0), and Transaction Commits (per minute) (0.00). A sub-menu for Resource Sharing is open, showing options like Available Targets, Resource Groups, Load Balancer Configuration, Resource Overrides, and Notes. The 'Resource Sharing' option in this sub-menu is also highlighted with a red box.

- Under **Resource Manager Configuration**, and Select “**Use a Resource Manager configured for the domain**” and choose “**smallHeap**” then click on **Save**.

The screenshot shows the 'Partition Work Manager Configuration' page for the Medrec-Dev partition. It includes fields for selecting a Partition Work Manager (No Partition Work Manager selected) and a 'Save' button. Below it is the 'Resource Manager Configuration' section, which includes fields for selecting a resource manager (No resource manager selected) and a dropdown menu for 'Use a resource manager configured for the domain' set to 'smallHeap'. A note at the bottom states that resource manager policies will only be effective if the underlying JDK version is 8u40 or later.

- d. Click on **Start Up** near Domain partition. Click on Close.



- e. Open a new tab.
- f. cd /u01/content/weblogic-innovation-seminars/WInS\_Demos/MT-Workshop/Lab5
- g. ./DeployHeap.sh
- h. Close the tab.
- i. Go back to Firefox and type the URL: <http://localhost:7101/dp1/heapApp/>
- j. Enter 160 in **Allocate Heap** then click on Submit then observe the logs of app-cluster-1 managed server. After that no Warning message should be observed in the log as we didn't cross the boundary of any RCM action.

Total Heap in Use = 0 MB

Allocate Heap :  MB

- k. Enter 50 in **Allocate Heap** then click on Submit then observe the logs of app-cluster-1 managed server. We will cross the first ("Notify") boundary of RCM actions. So we should see associated log message.

```
####<Nov 5, 2015 10:12:23 PM PST> <Notice> <RCM> <localhost.localdomain> <app-cluster-1> <Thread-73> <weblogic> <> <f11a4b64-f694-4af6-8b28-7f32a9f96d47-0000003c> <1446790343249> <[Notifying Quota Reached For Partition: Medrec-Dev] [severity-value: 32] [rid: 0] [Previous Usage: 207153216] [partition-id: cd3147a2-5e49-4731-bad1-94689b69cd5b] [Resource Name: com.oracle.weblogic.rcm.framework.base.HeapRetainedResourceAttributes] [Current Usage: 215825984] [partition-name: Medrec-Dev]> <BEA-2165799> <Resource Consumption Management Notification Message: Given quota has been reached for the partition and a notify action has been executed.>
```

- l. Enter 50 in **Allocate Heap** then click on Submit then observe the logs of app-cluster-1 managed server. We crossed the second limit ("Slow") so the associated message should be seen in the log.

```
####<Nov 5, 2015 10:14:04 PM PST> <Notice> <RCM> <localhost.localdomain> <app-cluster-1> <Thread-72> <weblogic> <> <f11a4b64-f694-4af6-8b28-7f32a9f96d47-0000003d> <1446790444011> <[Slow Action Quota Reached For Partition: Medrec-Dev] [Current Usage: 299741448] [severity-value: 32] [Previous Usage : 298576032] [Was Required action to Slow the Partition is executed?: true] [Resource Name: com.oracle.weblogic.rcm.framework.base.HeapRetainedResourceAttributes] [partition-id: cd3147a2-5e49-4731-bad1-94689b69cd5b] [partition-name: Medrec-Dev] [rid: 0]> <BEA-2165800> <Resource Consumption Management Slow Message: Given quota has been reached for the partition and a slow action has been executed.>
```

- m. Enter 150 in **Allocate Heap** then click on Submit then observe the logs of app-cluster-1 managed server. This will exceed the limit of memory allowed to be used by that partition. So to prevent other partitions from suffering of lack of memory WebLogic will shutdown the partition.

```
####<Nov 5, 2015 10:15:15 PM PST> <Notice> <RCM> <localhost.localdomain> <app-cluster-1> <Thread-74> <weblogic> <> <f11a4b64-f694-4af6-8b28-7f32a9f96d47-0000003e> <1446790515227> <[severity-value: 32] [Proposed Usage: 459764600] [rid: 0] [partition-id: cd3147a2-5e49-4731-bad1-94689b69cd5b] [Shutdown Action Quota Reached For Partition: Medrec-Dev] [Resource Name: com.oracle.weblogic.rcm.framework.base.HeapRetainedResourceAttributes] [Current Usage: 442240104] [partition-name: Medrec-Dev]> <BEA-2165801> <Resource Consumption Management Shutdown Message: Given quota has been reached for the partition and a shutdown action has been executed.>
```

- i. Refresh the page, <http://localhost:7101/dp1/heapApp/> which return 404 and confirm shutdown of the domain partition Medrec-dev in managed server 1.



## Error 404--Not Found

**From RFC 2068 Hypertext Transfer Protocol -- HTTP/1.1:**

### 10.4.5 404 Not Found

The server has not found anything matching the Request-URI. No indication is given of whether the condition is temporary or permanent.

If the server does not wish to make this information available to the client, the status code 403 (Forbidden) can be used instead. The 410 (Gone) status code SHOULD be used if the server knows, through some internally configurable mechanism, that an old resource is permanently unavailable and has no forwarding address.

Note: As this domain partition is target to virtual target which is target at cluster which consists of two managed servers. So this domain partition stopped working on managed server 1, but if you access the application on managed server 2, you still will be able to access the application in this domain partition. If similar things happen in managed server 2 and domain partition shutdown on managed server 2 as well, then domain partition will be shutdown.

## LAB 6: OTD INTEGRATION AND RESOURCE MIGRATION

### Overview

This lab describes how Oracle Traffic Director can front end a WLS MT Deployment topology for a large enterprise, providing an integrated, end to end administration experience for the server life cycle, and partition management.

For this lab, we installed OTD in Collocated mode. We create one domain otd\_domain for OTD instance then we show how to register an OTD instance in WebLogic Domain base\_domain. Then we show how you can create partition front ended by OTD.

Oracle Traffic Director has an administration plug in which is responsible for handling life cycle events and automatically configuring Oracle Traffic Director with the corresponding configuration

When you create a WLS MT partition, a corresponding Oracle Traffic Director partition is created for you. The Oracle Traffic Director partition is simply a grouping with the same name as the partition and the resource group. The life cycle of an Oracle Traffic Director partition and its corresponding artifacts are linked to the life cycle of the partition.

The Oracle Traffic Director console provided a partition table with the list of Oracle Traffic Director Partitions to identify the Oracle Traffic director artifacts that are mapped to partitions and resource groups.

Oracle Traffic Director Artifacts map to WebLogic Server MT artifacts as follows:

- Each cluster maps to an origin server pool.
- The hostnames of a virtual target that is associated with the partitions and/or resource groups maps to a virtual server.
- Each partition or resource group maps to a route within the virtual server corresponding to the hostname of the virtual target.

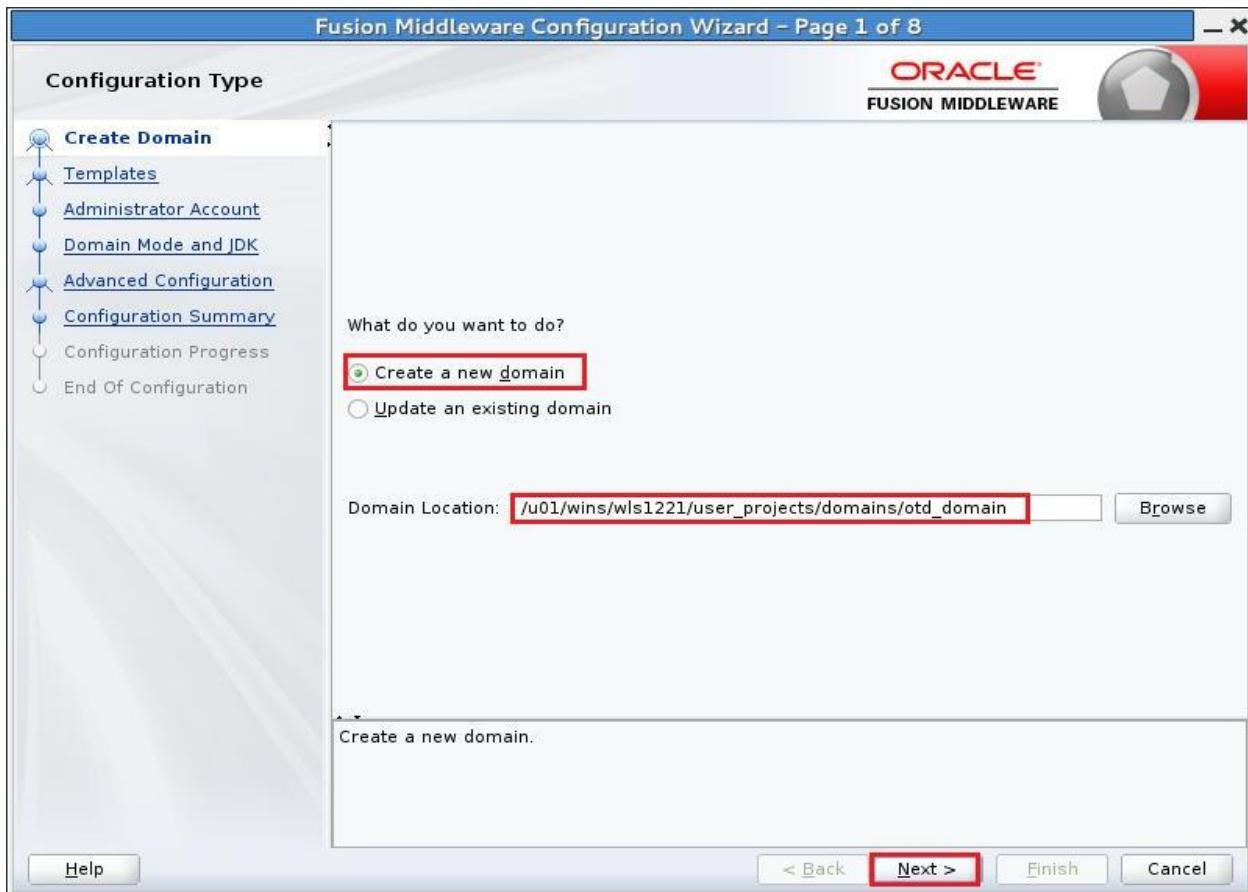
In this lab, we are going to perform the below operations.

- We create an OTD domain; in that domain we create a machine and OTD configuration.
- We register that OTD Runtime instance inside the WebLogic domain.
- We create a domain partition front ended by OTD.
- We deploy a simple application to verify the OTD integration with domain partition.
- We migrate a resource group from one cluster to other cluster.

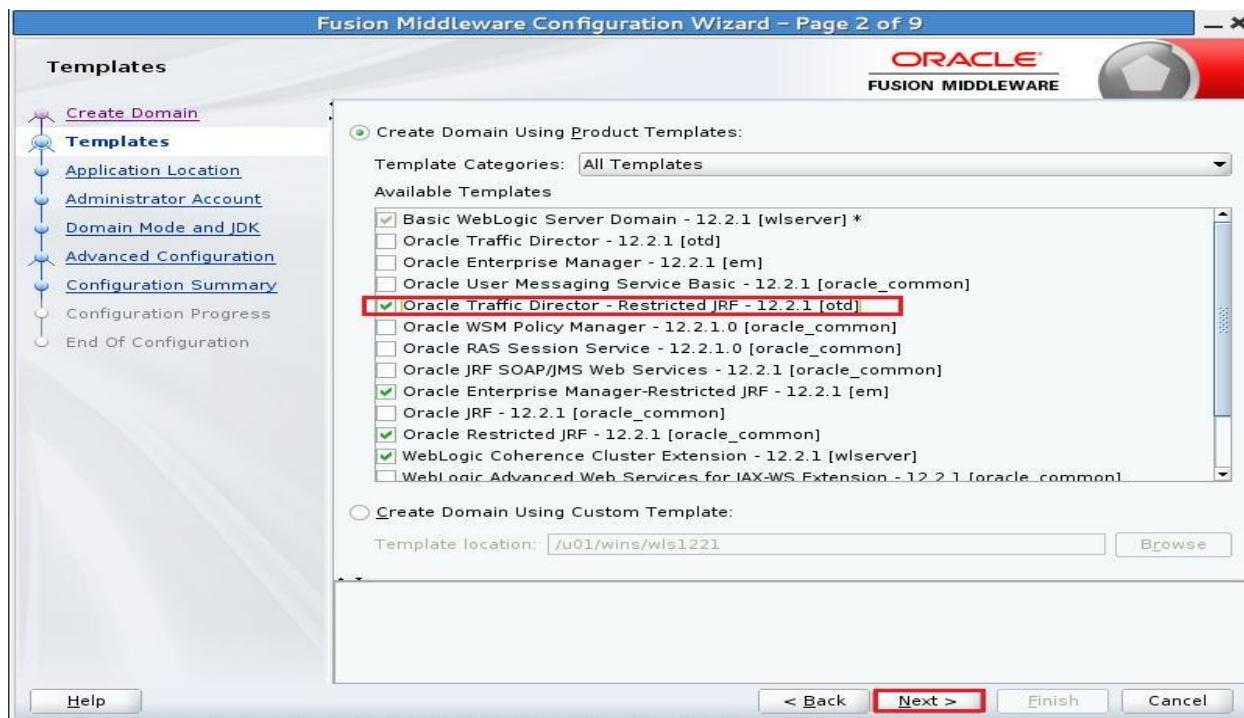
Note: - **SCRABBLE APPLICATION NEEDS INTERNET CONNECTION, OTHERWISE, YOU WILL NOT BE ABLE TO SEE GRAPH IN IT. IF YOU DON'T HAVE IT, YOU CAN USE HEAPAPP TO DEPLOY IN DP4.**

## Create OTD Restricted JRF Domain

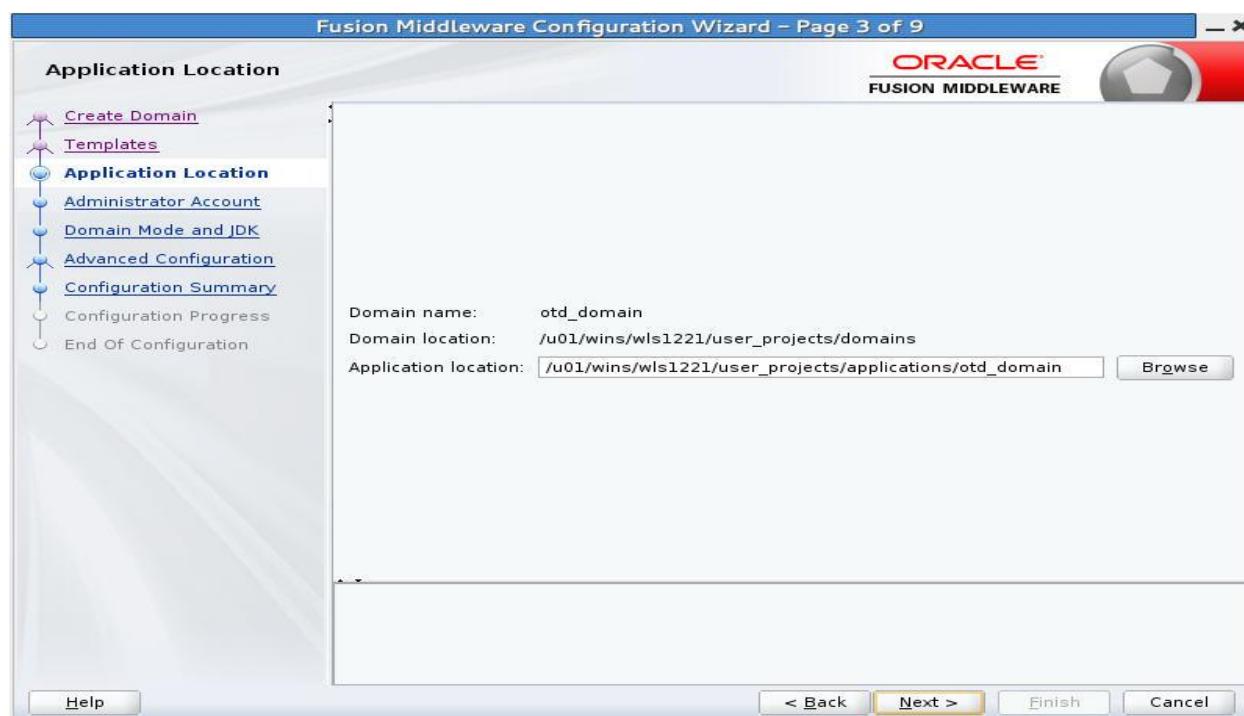
- a. Open a new tab.
- b. cd /u01/wins/wls1221/oracle\_common/common/bin/
- c. ./config.sh
- d. Select “Create a new domain” and enter “**/u01/wins/wls1221/user\_projects/domains/otd\_domain**” as Domain Location then Click on Next.



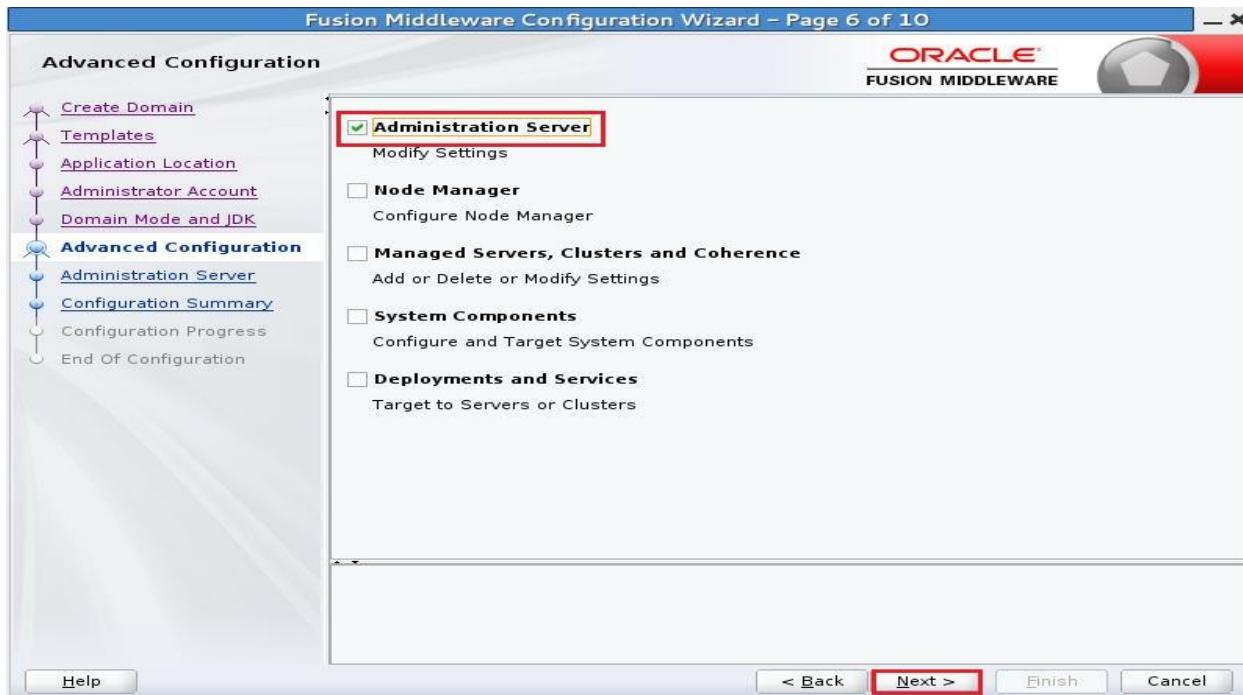
- e. Enter “**Oracle Traffic Director- Restricted JRF**” Template as it also selects other required template then Click on Next.



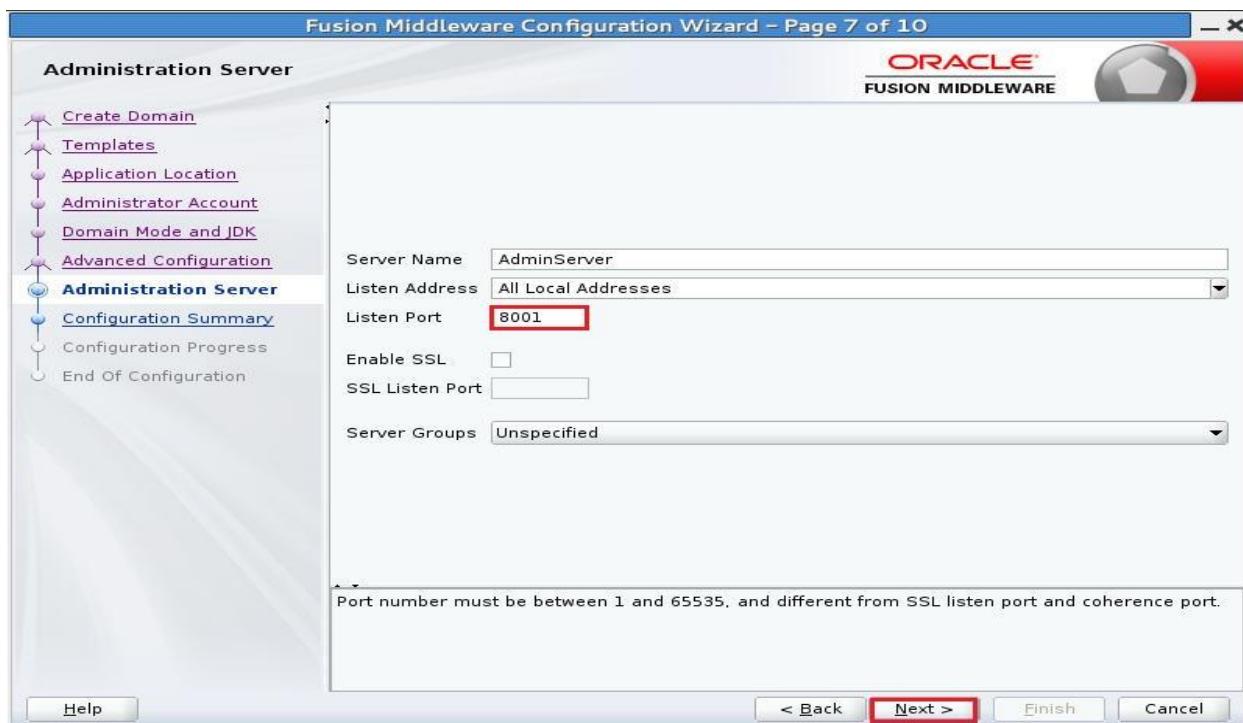
- f. Enter “**/u01/wins/wls1221/user\_projects/applications/otd\_domain**” as Application Location then Click on Next.



- g. Enter “**weblogic/welcome1**” as **Username/Password** then Click on Next.
- h. Leave Default in **Domain Mode and JDK** then Click on Next.
- i. In **Advanced Configuration**, Select the box near **Administration Server** then Click on Next.



- j. Change Listen port to **8001** then click on Next.



- k. Click on **Create**.
- l. Click on **Next** then Click on **Finish**.
- m. cd /u01/wins/wls1221/user\_projects/domains/otd\_domain/
- n. ./startWebLogic.sh
- o. In terminal, Click on **Terminal -> Set Title**. Enter **otd\_admin** as Title then click on OK.

```

oracle@localhost:u01/wins/wls1221/user_projects/domains/otd_domain
File Edit View Search Terminal Help
2015-11-05 01:40:58.5
' for queue: 'weblogi
"cache-factory-config
2015-11-05 01:40:58.5
' for queue: 'weblogi
"cache-factory-build
2015-11-05 01:40:58.5
' for queue: 'weblogi
"/custom-mbeans.xml"
Oracle Coherence Vers
Grid Edition: Develo
Copyright (c) 2000, 2
2015-11-05 01:40:58.7
d: '3' for queue: 'weblogic.kernel.default (set-timing)', member=n/a): Loaded FMW commons version:
12.2.1-0-0-SNAPSHOT b60603
1. 80x24
2. 80x43
3. 132x24
es. All rights reserved.
2.2.1.0.0 <Info> (thread=[STANDBY] ExecuteThrea

```

- p. Open a New tab.
- q. cd /u01/wins/wls1221/user\_projects/domains/otd\_domain/
- r. vi nodemanager/nodemanager.properties
- s. Change Listen Port to 5557 then save the file and close it.

---

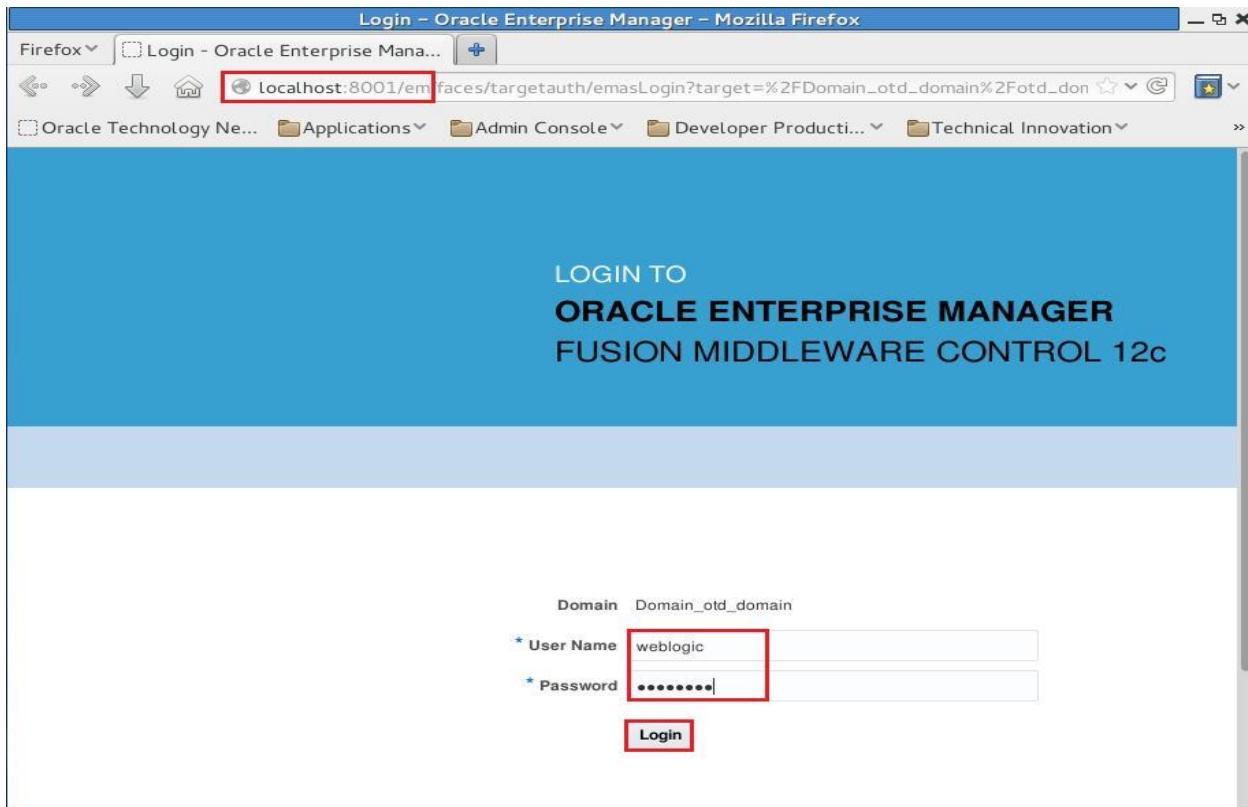
```

#Node manager properties
#Thu Nov 05 01:39:36 PST 2015
DomainsFile=/u01/wins/wls1221/user_projects/domains/otd_domain/nodemanager/nodemanager.domains
LogLimit=0
PropertiesVersion=12.2.1
AuthenticationEnabled=true
NodeManagerHome=/u01/wins/wls1221/user_projects/domains/otd_domain/nodemanager
JavaHome=/u01/java/jdk1.8.0_60
LogLevel=INFO
DomainsFileEnabled=true
StartScriptName=startWebLogic.sh
ListenAddress=localhost
NativeVersionEnabled=true
ListenPort=5557
LogIostderr=true
SecureListener=true
LogCount=1
StopScriptEnabled=false
QuitEnabled=false
LogAppend=true
StateCheckInterval=500
CrashRecoveryEnabled=false
StartScriptEnabled=true
LogFile=/u01/wins/wls1221/user_projects/domains/otd_domain/nodemanager/nodemanager.log
LogFormatter=weblogic.nodemanager.server.LogFormatter
ListenBacklog=50

```

- t. bin/startNodeManager.sh
- u. In tab, Click on **Terminal -> Set Title**. Enter **otd\_nm** as Title then click on OK.

- v. Go to Firefox and type the Fusion Middleware Control URL <http://localhost:8001/em>.  
w. Enter “weblogic/welcome1” as Username/Password then click on Login.



- x. Create a Machine.  
i. Click on WebLogic Domain ->Environment ->Machines.

Server	Machine	State
AdminServer		Running

- ii. Click on Create, Enter “**otd\_machine**” as Name and “**Unix**” as Machine OS then Click on Next.

The screenshot shows the Oracle Enterprise Manager interface for creating a machine. The top navigation bar says "ORACLE Enterprise Manager Fusion Middleware Control 12c" and "weblogic". Below it, a progress bar indicates "otd\_domain" with three steps: "Machine Identity" (selected), "Node Manager Properties", and "Review". The main content area is titled "Create a Machine: Machine Identity". It contains fields for "Name" (set to "otd\_machine") and "Machine OS" (set to "Unix"). At the bottom right are buttons for "Back", "Step 1 of 3", "Next" (highlighted with a red box), "Create", and "Cancel".

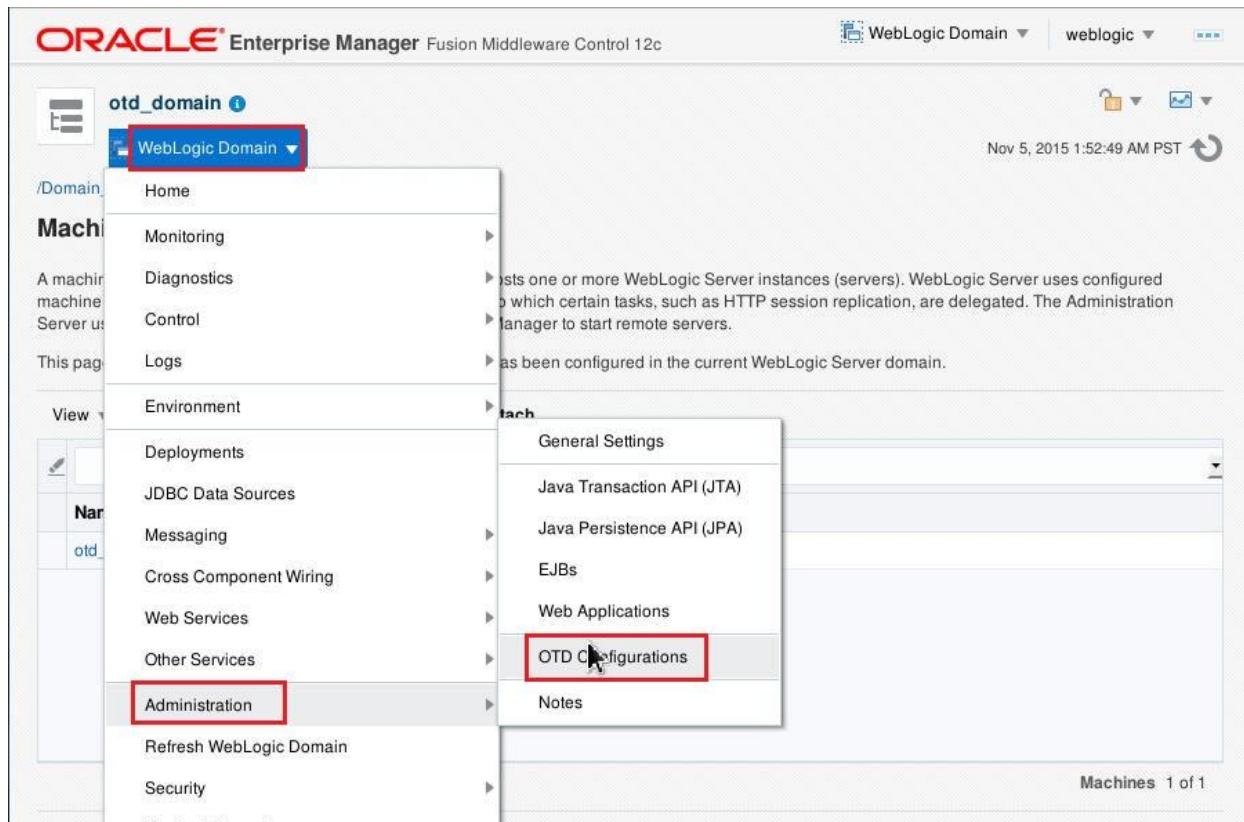
- iii. Change Listen Port to **5557** then Click on Next.

The screenshot shows the Oracle Enterprise Manager interface for creating a machine, specifically the "Node Manager Properties" step. The top navigation bar and progress bar are identical to the previous screenshot. The main content area is titled "Create a Machine: Node Manager Properties". It includes a note about configuring Node Manager for Managed Servers. Below it, there's a "Node Manager Type" dropdown set to "SSL". Under "For Java-based Node Manager, enter the listen address and listen port.", the "Listen Address" is "localhost" and the "Listen Port" is "5557" (highlighted with a red box). At the bottom right are buttons for "Back", "Step 2 of 3", "Next" (highlighted with a red box), "Create", and "Cancel".

- iv. Click on **Create**.

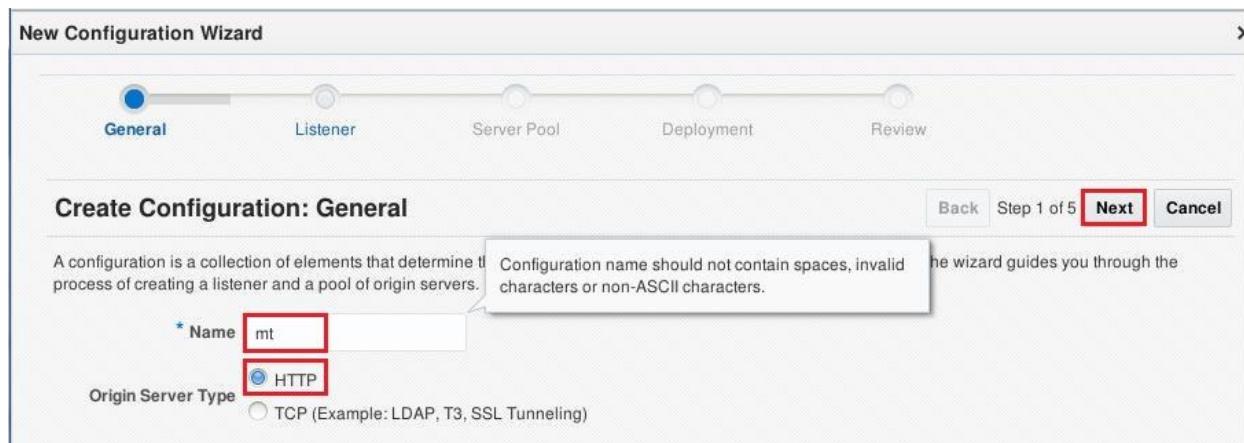
y. Create an OTD Configuration.

i. Click on **WebLogic Domain -> Administration -> OTD Configurations**.



ii. Click on Create.

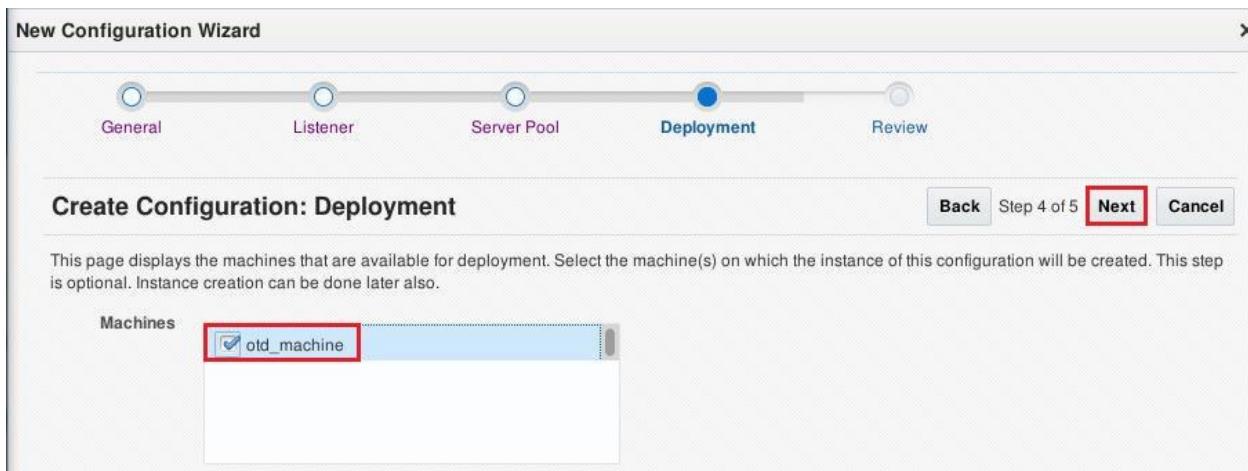
iii. Enter "mt" as Name and "HTTP" as Origin Server Type then click on Next.



iv. Leave Default in "Create Configuration: Listener" then click on Next.

v. Leave Default in "Create Configuration: Server Pool" then click on Next.

vi. Select the "otd\_machine" then click on Next.



- vii. Click on “**Create Configuration**”.
- viii. Check the box near “**mt**” to make it highlighted and then click on **Start Instances**. Click on Close.

**ORACLE® Enterprise Manager** Fusion Middleware Control 12c

WebLogic Domain ▾ weblogic ▾ ...

Nov 5, 2015 2:00:12 AM PST

**otd\_domain** ⓘ

WebLogic Domain ▾

**i Information**

Successfully created configuration "mt".

Successfully created instance(s) of configuration "mt" on machine(s) "otd\_machine".  
All changes have been activated.

**Oracle Traffic Director Configurations**

This page displays all the Oracle Traffic Director configurations. A configuration is a collection of elements that determine the run-time behavior of an Oracle Traffic Director instance. Click on 'Delete' to delete the selected configuration.

Configuration Name	Target Full Name
mt	/Domain_otd_domain/otd_domain/mt

**Create...** **Duplicate** **Delete...** **Stop Instances** **Start Instances**



Note: Go to Firefox and type the URL <http://localhost:8080> to verify that server is listening.

The screenshot shows a Firefox browser window with the address bar set to 'localhost:8080'. The main content area displays a large red-bordered box containing the text 'Service Unavailable'. Below this, a smaller message reads 'The server is too busy to respond to your request. Please try again later.'

## Registering an OTD Runtime Instance

- i. Go to base domain Fusion Middleware Control Console <http://localhost:7001/em> .
- ii. Enter weblogic/welcome1 as User Name/Password then click on Login.
- iii. Click on **Weblogic Domain -> Environment -> OTD Runtimes**.

The screenshot shows the Oracle Enterprise Manager Fusion Middleware Control 12c interface. The left sidebar shows a navigation tree under 'base\_domain' with 'WebLogic Domain' selected. In the main content area, the 'Environment' section is expanded, and 'OTD Runtimes' is selected. A message box says 'All changes have been activated.' A table lists one entry:

ID	Replication Type	Multicast Address	Multicast Port
1	(None)	239.192.0.0	7001

At the bottom right of the table, it says 'Clusters 1 of 1'.

iv. Click on **Register Runtime**.

The screenshot shows the Oracle Enterprise Manager Fusion Middleware Control 12c interface. The top navigation bar includes 'ORACLE Enterprise Manager' and 'Fusion Middleware Control 12c'. Below it, there's a breadcrumb trail: 'base\_domain' > 'WebLogic Domain'. The main content area is titled 'OTD Runtimes'. A sub-header states: 'Oracle Traffic Director can be used to front-end domain partitions created in this WebLogic domain. Oracle Traffic Director can be installed within this same domain or in a separate domain. OTD runtimes need to be registered with this WebLogic domain before they can be used.' Below this, there's a table with columns: 'Name', 'OTD Configuration Name', 'Admin Server Host', 'Admin Server Port', 'Username', and 'OTD Domain Name'. A message at the bottom says 'No Oracle Traffic Director runtimes have been registered in this WebLogic domain.'

v. Enter the following and then click on OK.

Runtime Name:	otd_runtime
OTD Configuration Name:	mt
Admin Server Host:	localhost
Admin Server Port:	8001
Username:	weblogic
Password:	welcome1
OTD Domain Name:	otd_domain

The screenshot shows the 'Register Runtime' dialog box. The title bar says 'Register Runtime'. The instructions inside say: 'An OTD configuration will be used to front-end domain partitions. Provide the OTD configuration name and connection information (host, port and credentials) for the WebLogic Admin Server where this configuration is located.' There are six input fields, each with a red box highlighting it: 'Runtime Name' (value: otd\_runtime), 'OTD Configuration Name' (value: mt), 'Admin Server Host' (value: localhost), 'Admin Server Port' (value: 8001), 'Username' (value: weblogic), and 'OTD Domain Name' (value: otd\_domain). At the bottom right are 'OK' and 'Cancel' buttons, with 'OK' also having a red box.

## Creating Domain Partition front ended by OTD

- a. Click on **WebLogic Domain -> Environment ->Virtual Targets**.
- b. Click on Create.
- c. Enter **VT-1** as Name and **/dp4** as Uri Prefix then click on Add to Enter **localhost** as Host Name then click on Next.

ORACLE® Enterprise Manager Fusion Middleware Control 12c

base\_domain

General Targets

Create Virtual Target: General

Name \* VT-1

Uri Prefix /dp4

Hosts

Specify the host name(s) that will be used for front-end access. If you are not using Oracle Traffic Director (OTD) to load balance connections for a domain partition, specify the actual host name(s) of the WebLogic server cluster or managed server. If you are using OTD to load balance connections for a domain partition, specify the host name(s) of the OTD administration server.

+ Add X Delete

Host Name

localhost

Advanced Options

Back Step 1 of 2 **Next** Cancel

- d. Select “app-cluster” as Cluster then click on **Create**.

ORACLE® Enterprise Manager Fusion Middleware Control 12c

base\_domain

General Targets

Create Virtual Target: Targets

Choose a server or cluster to be associated with this virtual target.

Cluster app-cluster

Server

Logging Configuration

Log File Name

Notes

Notes

Back Step 2 of 2 **Create** Cancel

- e. Click on **WebLogic Domain -> Environment -> Domain Partition**.
- f. Click on **Create**.

- g. Enter **dp4** as name and Check the box for “**Use OTD for load balancing**” and select “**otd\_runtime**” then click on Next.

**Create Domain Partition: General**

Use this page to specify general attributes for this domain partition.

\* Name  Security Realm

Primary Identity Domain

**Load Balancer Configuration**

If you wish to use a load balancer to front-end this domain partition, choose an Oracle Traffic Director runtime from the list of registered runtimes shown below. If you wish to register a new OTD runtime, please use the Environment->OTD Runtimes menu item on the WebLogic Domain menu.

Use OTD for load balancing   
 OTD Runtime

- h. Check the box for “VT-1” as shown below then click on Next.

**Create Domain Partition: Available Targets**

Select the virtual targets that will be available for this domain partition to use. Note that virtual targets can only be used by one partition; so, only available virtual targets are listed below.

Select	Virtual Target	Set as Default
<input checked="" type="checkbox"/>	VT-1	<input checked="" type="checkbox"/>

- i. Enter **app4RG** as Resource Group Name and Move **VT-1** to **Selected Targets** then click on Next.

**Create Domain Partition: Resource Group**

Back Step 3 of 4 **Next** Cancel

A resource group needs to be created within a partition before you can deploy applications or resources. The resource group can optionally extend a resource group template specified at the domain level.

\* Resource Group Name: app4RG

Resource Group Template: None

Targets for the Resource Group: Select a target for the resource group from the list of available targets. If the partition has a default target specified, the resource group will implicitly inherit that target.

Available Targets	Selected Targets
	VT-1

- j. Review the Configuration then click on **Create**.  
k. Check box near to **dp4** and click on **Control -> Start**. Click on Close.

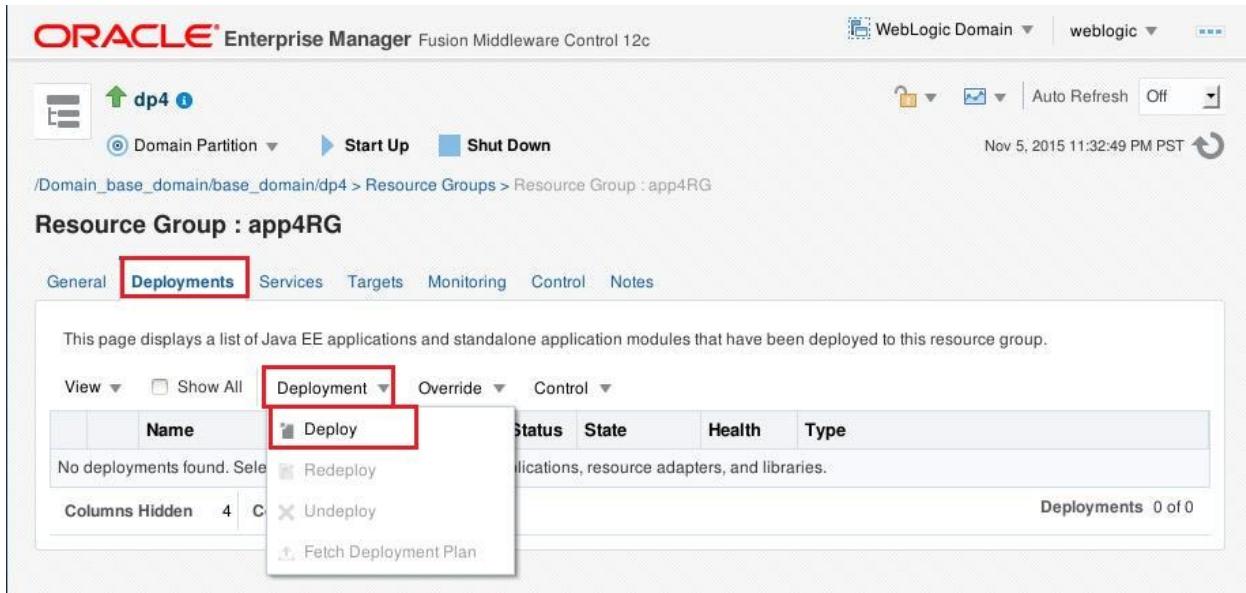
**Domain Partitions** 4 of 4

Name	Status	OTD Partition	Realm	Default Targets	Available Targets
dp2	Up			VT-Medrec-2	VT-Medrec-2
dp3	Running			VT-daytrader	VT-daytrader
dp4	Shutdown	dp4		VT-1	VT-1
Medrec-Dev	Running			VT-Medrec-1	VT-Medrec-1

## Deploying simple application to test OTD integration with weblogic

Here we are going to deploy heapApp.war which we used in Lab5. We will access that application through **load balancer** now.

- a. Click on dp4.
- b. Click on **Domain Partition -> Administration -> Resource Groups**.
- c. Click on Resource Group **app4RG**.
- d. Click on **Deployments** tab, and then click on **Deployment -> Deploy**.



The screenshot shows the Oracle Enterprise Manager interface for a WebLogic Domain named 'weblogic'. The navigation path is /Domain\_base\_domain/base\_domain/dp4 > Resource Groups > Resource Group : app4RG. The 'Deployments' tab is selected. A red box highlights the 'Deploy' button in the toolbar under the 'Deployment' dropdown. The main table displays deployment details with columns: Name, Status, State, Health, and Type. A message at the bottom indicates 'No deployments found. Select a deployment plan or redeploy an existing application, resource adapters, and libraries.' The status bar shows the date and time: Nov 5, 2015 11:32:49 PM PST.

- e. Select “Archive or exploded directory is on the server where Enterprise Manager is running” then click on **Browse**. Select the file **ScrabbleStage.war** from **/u01/content/weblogic-innovation-seminars/WInS\_Demos/MT-Workshop/Lab6/** location then click on **OK**.

**ORACLE® Enterprise Manager** Fusion Middleware Control 12c

base\_domain [i](#)

Select Archive Select Target Application Attributes Deployment Settings

**Deploy Java EE Application: Select Archive**

Back Step 1 of 4 **Next** Cancel

**Scope**  
The scope that this application will be deployed to : Resource group "app4RG" in domain partition "dp4"

**Archive or Exploded Directory**  
Java EE archives, Web Modules (WAR files), EJB Modules (EJB JAR files), Resource Adapter Modules (RAR files), Coherence Archives (GAR files), JDBC Modules, JMS Modules, and library files (Jar files) can be deployed. You can also deploy an exploded archive that is present on the server where Enterprise Manager is running.

Archive is on the machine where this Web browser is running.  
 Archive or exploded directory is on the server where Enterprise Manager is running.

Browse... No file selected.

/u01/content/weblogic-innovation-seminars/WInS\_Demos/MT-Workshop/Lab6/ScrabbleStage.war

**Deployment Plan**  
The deployment plan is a file that contains the deployment settings for an application. You can use a previously saved deployment plan for this application. Later in the deployment process, you can optionally edit the deployment plan and save it for a future deployment of this application. If you

**Inform**  
Use this page to applications through the Metadata Service. Take advantage of the Application Deployment Framework (ADF). If your application is a composite, use Composite deployment. If your application is a composite or it uses MDS repository connections, then use the Oracle WebLogic Administration

- f. Click on **Next** then click on **Deploy**. Click on **Close**.
- g. Go to Firefox and type the URL <http://localhost:8080/dp4/ScrabbleStage/Scrabble.jsp> .

Firefox ▾ [Resource Group : app4RG: b...](#) [Zero Downtime Patching De...](#) +

localhost:8080/dp4/ScrabbleStage/Scrabble.jsp

Oracle Technology Ne... Applications Admin Console Developer Producti... Technical Innovation Operations >

**ORACLE®**

**Zero Downtime Patching Demo - Scrabble Example - Stage Mode - Version 1**

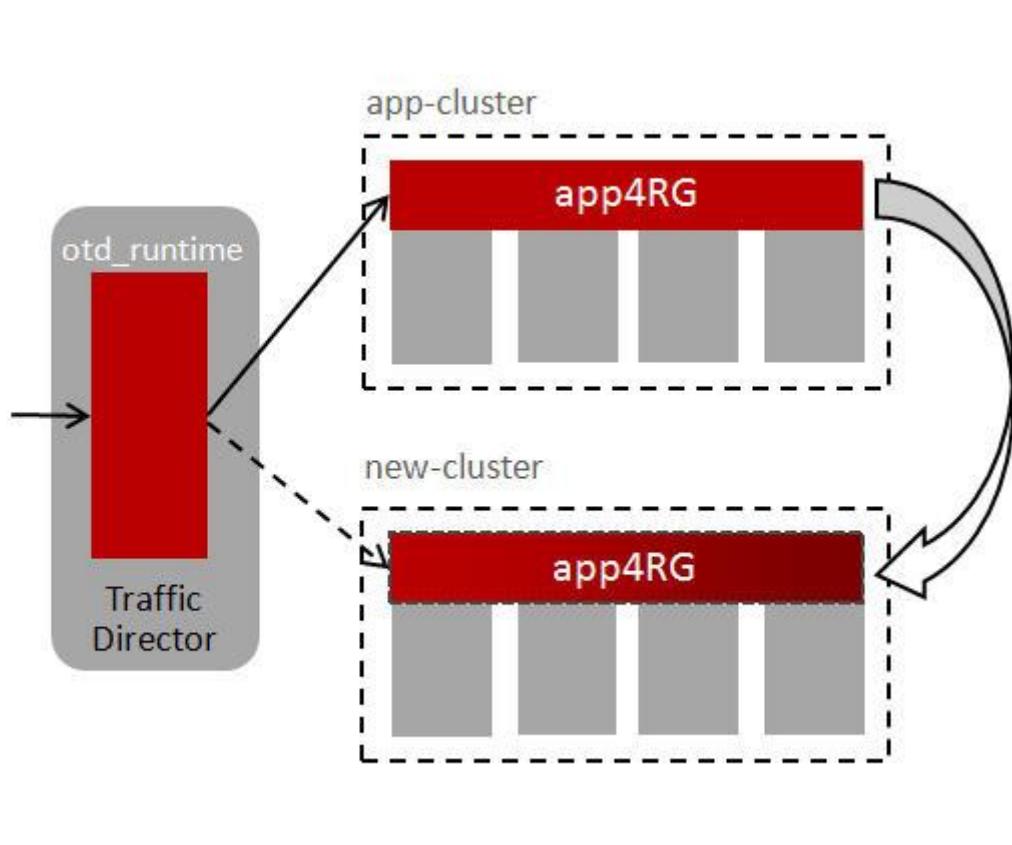
Illustrating session replication and continuous serviceability

This Zero Downtime Patching Demo uses a JSP to demonstrate the use of replication of a session in memory, using an OTD load balancer front end. An end-user client adds or deletes words to a session. The words are scored according to the rules of a popular board game and then displayed in the table. Server affinity allows WebLogic Server to retrieve the same session the next time the client visits the page.

The server currently hosting this session is app-cluster-2 (WebLogic Server 12.2.1.0.0 Tue Oct 6 10:05:47 PDT 2015 1721936)

## Migration Resource Group from one Cluster to other Cluster

Now we are going to migrate Resource Group app4RG from app-cluster to another cluster. As the application deployed in app4RG are front ended by OTD, when you migrate your resource group on other cluster. WebLogic automatically detect the server setting and you can access the application continuously without doing any manual configuration.



- When you click on **migrate** the following actions performs:
- Migrate API is called
- Resource Group starts on new hosts
- Sessions are replicated to new hosts.
- New origin server pool added to the OTD Configuration
  - Old pool used for sticky request to old pool only
  - New pool used for all new requests.
- Graceful shutdown called on resource group on original hosts.
- Virtual target configuration updated with new cluster only.

So using the same URL, you can access the application.

- a. Go back to Fusion middleware control console <http://localhost:7001/em>
- b. Create a new Cluster.
  - i. Click on **WebLogic Domain -> Environment -> Clusters.**
  - ii. Click on **Create -> Dynamic Cluster.**
  - iii. Enter **new-cluster** as Name then click on Next.
  - iv. Enter 1 as Dynamic Cluster Size then click on Next.
  - v. Select the box for "**Use a single machine for all dynamic servers**" and choose "**machine**" as Selected Machine then click on Next.
  - vi. Enter 9100 and 10101 as **Base Listen Port** and **SSL Base Listen Port** Respectively then click on Next.
  - vii. Review the Configuration then click on **Create**.
  - viii. Click on **WebLogic Domain -> Control -> Clusters**.
  - ix. Check the box near **new-cluster** to make it highlighted and then click on **Control -> Start -> Start Servers**.

Note: Before going to next step, wait till managed server in new-cluster get started, you can monitor the progress in base\_nm tab.

- c. Migration of Resource Group.
  - i. Click on **WebLogic Domain -> Environment -> Resource Groups..**
  - ii. Check the box near to app4RG to make it highlighted and then click on Migrate. Select **new-cluster** as New Target then click on Migrate. In Confirmation window, click on Migrate.
  - iii. Once you notice "**Migrating resource group "app4RG" – Completed successfully**" message then click on Close.

The screenshot shows the Oracle Enterprise Manager interface for a 'base\_domain'. On the left, there's a sidebar with a tree view showing 'base\_domain' and 'WebLogic Domain'. The main area displays a table of 'Resource Groups' with columns 'Name' and 'Status'. One row for 'app4RG' is selected and highlighted with a red box. A modal dialog titled 'Resource Group Migration' is open over the table. Inside the dialog, the 'Resource Group' is set to 'app4RG', 'Virtual Target' is 'VT-1', 'Current Target' is 'app-cluster (Cluster)', and 'New Target' is set to 'new-cluster (Dynamic cluster)' (also highlighted with a red box). A confirmation dialog box titled 'Confirmation' is overlaid on the main window, containing the message: 'Migrating resource group "app4RG" - Completed Successfully. The virtual target "VT-1", to which this resource group is targeted to, has been migrated from "app-cluster (Cluster)" to "new-cluster (Dynamic cluster)".' It includes 'Migrate' and 'Cancel' buttons, both of which are also highlighted with red boxes. The status bar at the bottom shows 'Rows Selected 1' and 'Resource Groups 4 of 4'.

## Access Application through OTD

- Go to Firefox and type the URL <http://localhost:8080/dp4/ScrabbleStage/Scrabble.jsp>.

The screenshot shows a Firefox browser window with the address bar containing "localhost:8080/dp4/ScrabbleStage/Scrabble.jsp". The page itself is titled "Zero Downtime Patching Demo - Scrabble Example - Stage Mode - Version 1" and features the ORACLE logo. Below the title, it says "Illustrating session replication and continuous serviceability". A note states: "This Zero Downtime Patching Demo uses a JSP to demonstrate the use of replication of a session in memory, using an OTD load balancer front end. An end-user client adds or deletes words to a session. The words are scored according to the rules of a popular board game and then displayed in the table. Server affinity allows WebLogic Server to retrieve the same session the next time the client visits the page." At the bottom, it says "The server currently hosting this session is new-cluster-1 (WebLogic Server 12.2.1.0.0 Tue Oct 6 10:05:47 PDT 2015 1721936)".

- As the Resource group migrated from app-cluster to new-cluster. But still you are able to access the application through same URL. Load balancer is redirecting all requests to new cluster. new-cluster-1 is running on 9101 port and app-cluster-2 is running on 7102.

The screenshot shows a Firefox browser window with the address bar containing "localhost:7102/dp4/ScrabbleStage/Scrabble.jsp". The page displays an "Error 404--Not Found" message. Below it, a section titled "From RFC 2068 Hypertext Transfer Protocol -- HTTP/1.1:" contains the definition of the 404 status code: "The server has not found anything matching the Request-URI. No indication is given of whether the condition is temporary or permanent." It also notes that if the server does not wish to make this information available to the client, the status code 403 (Forbidden) can be used instead. The 410 (Gone) status code SHOULD be used if the server knows, through some internally configurable mechanism, that an old resource is permanently unavailable and has no forwarding address.

The screenshot shows a Firefox browser window with the following details:

- Address Bar:** localhost:9101/dp4/ScrabbleStage/Scrabble.jsp
- Toolbar:** Oracle Technology Ne..., Applications, Admin Console, Developer Producti..., Technical Innovation, Operations
- Content Area:**
  - Header:** ORACLE
  - Title:** Zero Downtime Patching Demo - Scrabble Example - Stage Mode - Version 1
  - Text:** Illustrating session replication and continuous serviceability
  - Description:** This Zero Downtime Patching Demo uses a JSP to demonstrate the use of replication of a session in memory, using an OTD load balancer front end. An end-user client adds or deletes words to a session. The words are scored according to the rules of a popular board game and then displayed in the table. *Server affinity* allows WebLogic Server to retrieve the same session the next time the client visits the page.
  - Footer:** The server currently hosting this session is new-cluster-1 (WebLogic Server 12.2.1.0.0 Tue Oct 6 10:05:47 PDT 2015 1721936)

So you can successfully migrate the resource group from one cluster to another cluster without affecting the front end of your application.

## LAB 7: CLONING A PARTITION

### Overview:

This lab describes, how you can clone the existing partition, Earlier in Lab 2, we created two domain partitions dp1, dp2 for Medrec applications. The differences are both the partitions were targeted to different Virtual target and database connections and they were using different security realms. Instead of creating dp2 manually and configure it manually through WLST, Admin Console or Fusion Middleware Console. We can use the dp2 partition and we can clone it and later modify it to use different database and use different security realms.

We will use dp2 partition for cloning.

### Applying Patch to domain:

We have found some bug in existing installer, so we are using an interim patch Patch.jar as a workaround. There is bug opened for it [OWLS-35927](#).

- a. In Fusion Middleware Console, Click on Weblogic Domain -> Environment -> Clusters.
- b. Check the box near app-cluster to make it highlighted, and then click on **Control -> Shutdown -> Force Shutdown Now -> Forcibly Shutdown Servers**.
- c. Go back to terminal named **base\_admin**.
- d. Press CTRL+C to shutdown the Admin Server in base\_domain.
- e. **export PATCH\_CLASSPATH="/u01/content/weblogic-innovation-seminars/WInS\_Demos/MT-Workshop/Lab7/Patch.jar"**
- f. **./startWebLogic.sh**
- g. Once Admin Server up and running, go back to FMW Console, and Click on **WebLogic Domain -> Environment -> Clusters**.
- h. Check the box near app-cluster to make it highlighted and then click on **Control -> Start -> Start Servers**.

### Exporting a domain:

- a. Go back to Firefox and type the Fusion Middleware Control Console URL:  
<http://localhost:7001/em> .
- b. Enter **weblogic/welcome1** as **Username/Password** then Click on **Login**.
- c. Click on **WebLogic Domain -> Environment -> Domain Partitions**.
- d. Check the box near **dp2** to make it highlighted, and then Click on **Export**.
- e. Click on Browse and Select the **Desktop** folder from **/home/oracle** location and click on **OK**.
- f. Check the box for **“Include application bits in the zip archive”** then click **OK**.
- g. You can go to the Desktop and verify the creation of **dp2.zip** and **dp2-attributes.json** file.

### Importing a domain:

- a. Click on **WebLogic Domain -> Environment -> Virtual Targets**.
- b. Click on **Create**.
- c. Enter the following and then click on Next.

Name:	VT5
Uri Prefix:	/dp5
Hosts:	localhost

ORACLE® Enterprise Manager Fusion Middleware Control 12c

base\_domain [i](#)

General Targets

Create Virtual Target: General

Back Step 1 of 2 **Next** Cancel

Name \* VT5

Uri Prefix /dp5

**Hosts**

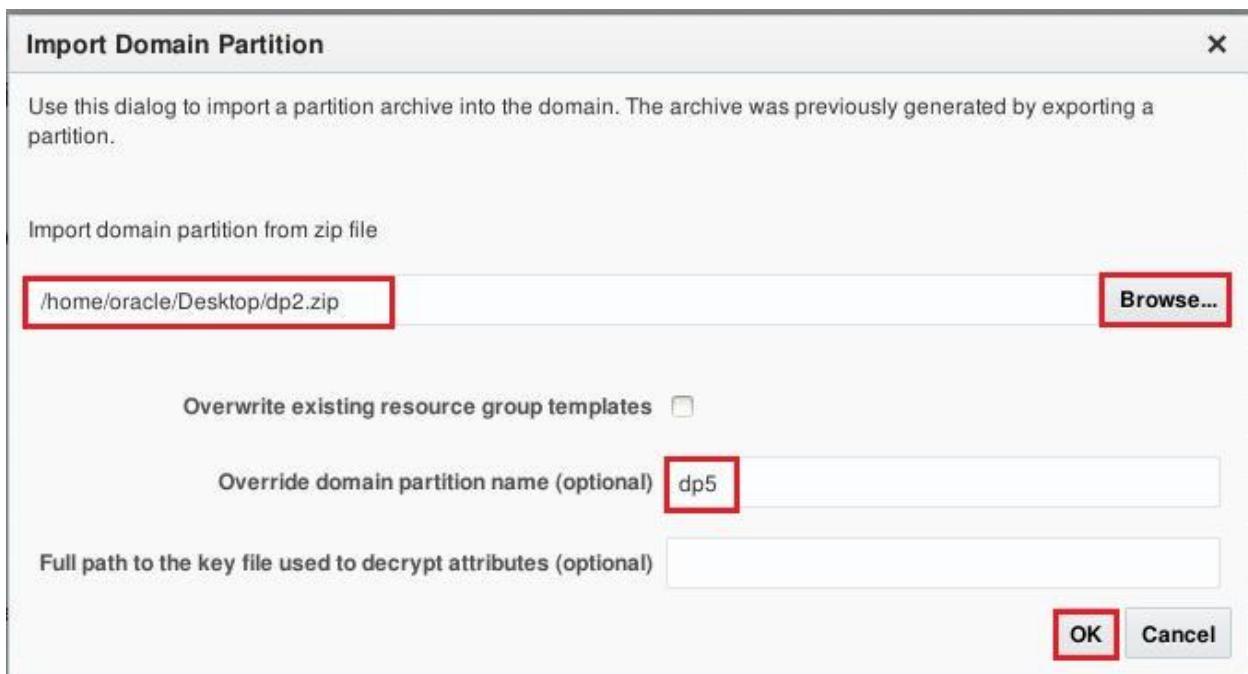
Specify the host name(s) that will be used for front-end access. If you are not using Oracle Traffic Director (OTD) to load balance connections for a domain partition, specify the actual host name(s) of the WebLogic server cluster or managed server. If you are using OTD to load balance connections for a domain partition, specify the host name(s) of the OTD administration server.

View [▼](#) [+ Add](#) [X Delete](#)

Host Name
localhost

[Advanced Options](#)

- d. Select **app-cluster** as Cluster and then click on **Create**.
- e. Go back to the terminal. The below command will modify the Virtual Target name in JSON file.
- f. sed -i -e 's/VT-Medrec-2/VT5/g' /home/oracle/Desktop/dp2-attributes.json
- g. Go back to Firefox in Fusion Middleware Control Console, Click on **WebLogic Domain -> Environment -> Domain Partitions**.
- h. Click on Import, Browse to the /home/oracle/Desktop/dp2.zip and click on OK.
- i. Specify the new domain partition name dp5 in "**Override domain partition name (optional)**" and then click on Ok.



j. Click on Refresh icon.

The screenshot shows the Oracle Enterprise Manager Fusion Middleware Control 12c interface. The top navigation bar includes "WebLogic Domain" and "weblogic". The main area displays "Domain\_Partitions" under "base\_domain". Two pie charts are shown: one for "Status" (Up 4, Down 1) and one for "State" (Running 4, Shutdown 1). A table lists domain partitions:

Name	Status	State	OTD Partition	Realm	Default Targets	Available Targets	Res Gro
dp2		Running			VT-Medrec-2	VT-Medrec-2	app
dp3		Running			VT-daytrader	VT-daytrader	app
dp4		Running	dp4			VT-1	app
dp5		Shutdown			VT5	VT5	app
Medrec-Dev		Running			VT-Medrec-1	VT-Medrec-1	app

At the bottom right, it says "Domain Partitions 5 of 5".

- k. Check the box near **dp5** to make it highlighted, and then click on **Control -> Start**.  
l. Once you see “Start Operation on target **dp5** successful” in Confirmation window, click on **Close**.

m. Verify the execution of Medrec application in dp5 at <http://localhost:7101/dp5/medrec> .

## CLEANING AND RESETING

### Cleaning up Environment

- a. Go back to Fusion Middleware Control <http://localhost:7001/em>
- b. Click on WebLogic Domain -> Control -> Cluster.
- c. Check the boxes near to both the cluster then click on Control -> Shutdown -> Force Shutdown now. Click on Forcibly Shutdown Servers.

Name	Cluster Type	Servers	Cluster Messaging Mode	Default Load Algorithm	Replication Type
app-cluster	Dynamic	2	Unicast	Round Robin	(None)
new-cluster	Dynamic	1	Unicast	Round Robin	(None)

- d. Press CTRL + C on Tab title with otd\_admin, otd\_nm, base\_nm, base\_admin, dev\_admin, app-cluster-1.
- e. Open a new terminal.
- f. cd /u01/content/weblogic-innovation-seminars/WInS\_Demos/MT-Workshop/CleanUp/
- g. ./CleanEnvironment.sh

## **Appendix:**

This Section is to provide you help, if you already run this workshop once, and only interested to showcase any specific features or any specific lab. We created few scripts about which the description is given below.

Lab1-2.sh: It starts the DB, and create user and populates the DB for all domain partition we need. Then it creates the base\_domain, in that domain we create the machine and dynamic cluster. After that we create three domain partition dp1, dp2 and dp3. Basically after execution of this script, you will be at the end of Lab 2.

Note: After executing Lab1-2.sh, if you want to see proper metrics/state of cluster/servers you need to manually apply JRF template to cluster. You need to restart the cluster as well.

Lab3.sh: This script stops the domain partition dp1 and creates new security realm newrealm and assigns this security realm to dp1, and starts the domain partition dp1. It performs the same task what Lab 3 does.

Lab4.sh: This script creates dev\_domain, it configures the Medrec application in Medrec-Dev domain partition in dev\_domain, and then it removes the dp1 in base\_domain. So you can login to admin console of dev\_domain and export the partition and later import it in base\_domain through admin console.

Lab5.sh: It sets the configuration parameter for RCM in SetDomainEnv.sh script then it restarts the cluster and also deploys heapApp.war in dp2 partition in base\_domain.

Lab6.sh: This script creates otd\_domain first, inside otd\_domain; it creates otd\_machine and OTD Configuration. Then it creates load balancer instance and starts it. Then in base\_domain, it creates the Virtual target VT-1, and registers OTD Runtime, after that it creates domain partition dp4 with otd\_runtime and then deploys the heapApp.war in app4RG resource group inside dp4 partition. It also creates new-cluster dynamic cluster, and starts domain partition dp4 and server in new-cluster. After running this script, you can move to resource group app4RG in dp4 in FMW console, and migrate the resource group.

Lab7\_prep.sh: This script applies the patch, for this it stops the Cluster and Admin Server first, then it starts Admin Server and Cluster, and later it creates virtual target VT5. To perform Lab 7 as demo, user needs to run this script, then he needs to export partition, modify json file to include new virtual target, then he can import partition.

CleanEnvironment.sh: This script stops the servers and Node managers, removes the otd\_domain, base\_domain, dev\_domain. It also removes the user from pluggable database, and then it stops the DB.

## Appendix- Multitenancy Workshop in Cloud

This section helps you to demo the features of Multitenancy on Cloud; we have seen Lab2, Lab3, Lab4, Lab5 and Lab7 in on premise. Multitenancy Workshop as demo exactly goes parallel to Multitenancy workshop in on premise. You need to follow the below steps to perform the same.

### Lab 1: CREATING DBCS/JCS INSTANCES

In this, we create the required environment. We expect the user to run command in Lab 1 as pre-requisite before he comes to workshop, as these steps are time taking.

#### Creation of pair of SSH Key:

- a. `cd /u01/content/weblogic-innovation-seminars/WInS_Demos/MT-Workshop`
- b. `./createSSHkeys.sh` (`createSSHkeys.sh` scripts create the pair of public and private key for you with name `winsmt.pub` and `winsmt` respectively.)

#### Preparation of environment:

You need to modify the `environment.properties.MT` file present in `/u01/content/weblogic-innovation-seminars/cloud.demos` folder. We expect the user to modify the following parameter values:

`opc.identity`, `opc.username`, `opc.password` and `ssh.public.key`, he needs to copy the public key value from `winsmt.pub` file and put it in `ssh.public.key` value. You can modify the values of other parameters as well, but in order to keep things simple, modify only these four values and then you need to rename the file with new name `environment.properties`.

- a. We assume that it is your fresh Oracle Cloud account, and you didn't perform any operation on it, so we will start from scratch. As the steps for creating Cloud Storage Container, DBCS and JCS takes 15-20 minutes, you can refer the doc **WInS - Demo Guides - JCS Setup.PDF** available in `/u01/content/weblogic-innovation-seminars/cloud.demos/common/doc` folder inside the Virtual Box for more information.
- b. We need to create the Storage cloud container first.
- c. `cd /u01/content/weblogic-innovation-seminars/cloud.demos`
- d. `mvn install -DexecuteCloudUtil -Dgoal=storage-create`
- e. Verify the creation of storage container by below command.
- f. `mvn install -DexecuteCloudUtil -Dgoal=storage-list`
- g. We create the DBCS instance with name `winsdemo`.
- h. `mvn install -DexecuteCloudUtil -Dgoal=dbcs-create`
- i. Creation of DBCS instance may take about 20 minutes!! Please don't execute creation of JCS instance until you get information that DBCS is in "Running" state.
- j. `mvn install -DexecuteCloudUtil -Dgoal=dbcs-get-instance-details` (execute as many times until DBCS is in "Running" state – in that case write down DBCS IP address)
- k. We create the JCS instance with name `winsdemoWLS`.
- l. `mvn install -DexecuteCloudUtil -Dgoal=jcs-create`
- m. Creation of JCS instance may take about 20 minutes!! Verify the creation of JCS instance.
- n. `mvn install -DexecuteCloudUtil -Dgoal=jcs-get-instance-details` (execute as many times until JCS is in "Running" state – in that case write down JCS IP address)

The above steps creates a domain `winsdemoWLS_domain` inside the JCS VM, and pluggable database `PDB1.{Value of opc.identity from environment.properties}.oraclecloud.internal`. A WebLogic domain contains the cluster `winsdemoWLS_cluster` with `winsdemo_adminserver` as Admin Server and `winsdemo_server_1` as managed server.

## LAB 2: MULTITENANCY CONFIGURATION

- a. cd /u01/content/weblogic-innovation-seminars/WInS\_Demos/MT-Workshop/Lab2
- b. mvn install -D**Lab2** -Djcs.ip={PUBLIC IP OF JCS INSTANCE} -Ddbc.ip={PUBLIC IP OF DBCS INSTANCE}

The above maven commands create users and populate the database for all the domain partitions, after that it creates three domain partitions dp1, dp2 and dp3. Basically it creates the similar environment as we have at the end of Lab 2 in workshop for on premise, but here on the cloud environment.

You can access the Medrec application running in domain partition dp1 and dp2; you can also access the day trader application running in dp3 partition.

Accessing Medrec application in dp1: <http://{PUBLIC IP OF JCS INSTANCE}/dp1/medrec>

Accessing Medrec application in dp2: <http://{PUBLIC IP OF JCS INSTANCE}/dp2/medrec>

Accessing Daytrader application in dp3: <http://{PUBLIC IP OF JCS INSTANCE}/dp3/daytrader>

## LAB 3: SECURITY ISOLATION

- a. cd /u01/content/weblogic-innovation-seminars/WInS\_Demos/MT-Workshop/Lab3
- b. mvn install -D**Lab3** -Djcs.ip={PUBLIC IP OF JCS INSTANCE} -Ddbc.ip={PUBLIC IP OF DBCS INSTANCE}

The above maven commands stops the domain partition dp1 and creates new security realm **newrealm** and assign this security realm to dp1, and adds the user **administrator** to new security realm with password **welcome1**, and then starts the domain partition dp1. It perform the same task, we do as part of Lab 3 of Multitenancy workshop in on premise.

## LAB 4: EXPORT/IMPORT PARTITION

- a. cd /u01/content/weblogic-innovation-seminars/WInS\_Demos/MT-Workshop/Lab4
- b. ./Lab4\_cloud.sh

This Lab4\_cloud.sh scripts start the Database in local Virtual box, then it creates the user and populate the database with sample data. Then it creates a dev\_domain, and starts admin server in it, later we configure all the resources required for conference planner application. This is simple application which we used during Java One in 2011 for registration purpose for various events. At the end of execution of this script, you can access the application on <http://localhost:9001/dp6/ConferencePlanner/>.

- c. Open a new tab in browser, and type the URL for Admin Console for **dev\_domain** <http://localhost:9001/console> .
- d. Enter **weblogic/welcome1** as **Username/Password** then click on **Login**.
- e. Click on **Domain Partitions** from left side, then check the box for **dp6** and then click on **Export**.
- f. Check the box for “**Include Application Bits**” and Enter the Path “/u01/content/weblogic-innovation-seminars/WInS\_Demos/MT-Workshop/Lab4/JCS” and then click on **OK**.
- g. Verify the creation of **dp6.zip** and **dp6-attributes.json** file in the JCS folder inside Lab4 folder.
- h. mvn install -D**Lab4** -Djcs.ip={PUBLIC IP OF JCS INSTANCE} -Ddbc.ip={PUBLIC IP OF DBCS INSTANCE}

The above maven command copies the required files to DBCS instance first, and populate the database with sample data. Here we used the SQL scripts for that, In general, you can unplug the local database, copies related files to DBCS instance and then plug the pluggable database to database in DBCS or you can export and import database. But to simply the demo, we used the SQL scripts here.

Then it copies the ZIP and JSON file to **/tmp** folder of JCS instance, and provides it sufficient permissions. It also creates the Virtual Target **VT6**, which we will use during the import partition.

- i. Open a new tab in terminal.
- j. Click on **Terminal -> Set Title**, enter “remote” as Title and then click on **OK**.
- k. **cd /u01/content/weblogic-innovation-seminars/WInS\_Demos/MT-Workshop**
- l. **ssh -i winsmt -L 7001:{PUBLIC IP OF JCS INSTANCE}:7001 opc@{PUBLIC IP OF JCS INSTANCE}**

The above ssh commands, open an ssh tunnel to remote jcs instance, and port forwarding for admin server port 7001, in that way you can run the commands in remote machine as opc user. And access the admin console running in JCS by <http://localhost:7001/console> .

- m. Go to Admin Console of JCS instance <https://{PUBLIC IP OF JCS INSTANCE}:7002/console> and enter **weblogic/welcome1** as **Username/Password** and then click on **Login**. If you face any issue in opening the admin console in Virtual box, you can open your host machine browser, to open the Admin Console URL.
- n. Click on **Domain Partitions** and then click on **Lock & Edit**.
- o. Click on **Import**, specify the file **/tmp/dp6.zip** in **Path** and click on **OK**.
- p. Click on **Lock & Edit**, and then click on **Services -> Data Sources -> cp**.
- q. Click on the **Connection Pool** tab for **cp** datasource, and modify the URL  
`jdbc:oracle:thin:@localhost:1521/pdborcl with`  
`jdbc:oracle:thin:@DBCS_INSTANCE_NAME:1521/PDB1.{Value of opc.identity from environment.properties file}.oraclecloud.internal` and then click on **Save**. Click on **Activate Changes**.

Where DBCS\_INSTANCE\_NAME should be **winsdemo**, if you did not modify it in environment.properties file, and **opc.identity** name is your identity domain name, you specified in environment.properties file.

- r. Click on **Domain Partitions**, go to **Control** tab, Check the box near **dp6** partition and then click on **Start**. On Confirmation screen click on **Yes**.
- s. Click on the refresh icon, once the partition is in RUNNING state, go to the browser and access the application <http://{PUBLIC IP OF JCS INSTANCE}/dp6/ConferencePlanner/> .

Here we showed how can you lift and shift the partition running in development mode in on premise to production mode domain in Java Cloud Service.

## LAB 5: RESOURCE CONSUMPTION MANAGEMENT

- a. **cd /u01/content/weblogic-innovation-seminars/WInS\_Demos/MT-Workshop/Lab5**
- b. **mvn install -DLab5 -Djcs.ip={PUBLIC IP OF JCS INSTANCE} -Ddbcsc.ip={PUBLIC IP OF DBCS INSTANCE}**

The above maven commands configure the parameter for RCM in **setDomainEnv.sh** script then it restart the cluster and also deploys the **heapApp.war** in **dp2** partition in **winsdemowls\_domain**.

- c. You need to **Lock & Edit** in Fusion middleware console of **winsdemowls\_domain**, then you need to create “**Add resource manager**” as specified in workshop or you can specify the value 200,300 and 400 respectively for **Notify**, **Slow** and **Shutdown** action for **smallHeap** and then you need to **assign it to domain partition dp2**. Make sure to activate the changes at the end.
- d. Go back to **remote** tab, where you open **ssh tunnel** to JCS instance.
- e. **sudo su**
- f. **tail -f**  
`/u01/data/domains/winsdemowls_domain/servers/winsdemowls_server_1/logs/winsdemowls_server_1.log | grep 'RCM'`

- g. Go to heap Application page <http://{PUBLIC IP OF JCS INSTANCE}/dp2/heapApp> Add the Value 100 each time, and observe the logs output, wait for 10 seconds after entering 100 every time. At the end of this lab, your partition dp2 will be shutdown. As in this case, Cluster has only one managed server, while in on premise Lab5, we have cluster with two managed server.

## LAB 7: CLONNING A PARTITION

- a. cd /u01/content/weblogic-innovation-seminars/WInS\_Demos/MT-Workshop/Lab7
- b. mvn install -DLab7 -Djcs.ip={PUBLIC IP OF JCS INSTANCE} -Ddbc.ip={PUBLIC IP OF DBCS INSTANCE}

The above maven scripts applies the patch, for this it stops the cluster and Admin Server first, add the patch jar in PATCH\_CLASSPATH and then it starts Admin Server and Cluster, and later it creates Virtual target **VT5** in **winsdemoWLS\_domain**.

- c. Go back to **remote** tab; enter **CTRL+C** to stop the execution of tail command.
- d. chmod -Rf 777 /tmp
- e. Go back to Admin Console of winsdemoWLS\_domain <http://localhost:7001/console> .
- f. Enter **weblogic/welcome1** as **Username/Password** then click on **Login**.
- g. Click on **Lock & Edit** and then Click on **Domain Partitions**, then check the box for **dp6** and then click on **Export**.
- h. Check the box for “**Include Application Bits**” and Enter the Path “**/tmp**” and then click on **OK**.
- i. Go back to **remote** tab; modify the Virtual target name in **dp6-attributes.json** file.
- j. **sed -i 's/VT6/VT5/g' /tmp/dp6-attributes.json**
- k. The above commands, replace the string ‘VT6’ with ‘VT5’. VT5 is the virtual target name, which we use for importing the partition.
- l. Click on **Domain Partitions**, and then Click on **Import**, Enter **dp5** as domain partition name and specify the file **/tmp/dp6.zip** in **Path** and click on **OK**.
- m. In **Domain Partitions**, click on **Control** tab.
- n. Check the box for dp5, and click on Start, on confirmation screen, click on **Yes**.
- o. Click on refresh icon, once the Status for dp5 is RUNNING.
- p. You can access the application on <http://{PUBLIC IP OF JCS INSTANCE}/dp5/ConferencePlanner/> .

Note: In Lab 4, we also copied the dp6.zip to /tmp folder, But here when we Export the partition dp6, it override the dp6.zip and dp6-attributes.json. That’s why we don’t need to change the URL for JDBC data source cp in domain partition dp5. Make sure to close the ssh tunnel by pressing **CTRL +C** on remote tab.

## CLEANUP:

- a. cd /u01/content/weblogic-innovation-seminars/WInS\_Demos/MT-Workshop/CleanUp

Here we have two options for the cleanup.

First case, if you execute all the labs Lab2, Lab3, Lab4, Lab5 and Lab7. Then you can reuse both the JCS instance and DBCS instance for the demo purpose. You need to perform the next step.

- b. mvn install -DCleanUp -Djcs.ip={PUBLIC IP OF JCS INSTANCE} -Ddbc.ip={PUBLIC IP OF DBCS INSTANCE}
- c. ./CleanEnvironment.sh

This script stops the admin server running in dev\_domain and deletes the domain. It removes the user conference from database inside the Virtual Box and stops the database.

Second case, if you did not run any of the above lab or you runs only Lab1 and Lab4 or you configured the database for Medrec, Daytrader and Conference Planner application. You need to perform the next step. So you can reuse the DBCS instance for the demo purpose again.

- b. **mvn install -DCleanDBCS -Djcs.ip={PUBLIC IP OF JCS INSTANCE} -Ddbc.ip={PUBLIC IP OF DBCS INSTANCE}**
- c. You need to delete the JCS instance and create the JCS instance again.
- d. **cd /u01/content/weblogic-innovation-seminars/cloud.demos**
- e. **mvn install -DexecuteCloudUtil -Dgoal=jcs-delete**

The above steps take 10-15 minutes; you can confirm the status from browser through your cloud account access. Once it is deleted then executes the next command only.

- f. **mvn install -DexecuteCloudUtil -Dgoal=jcs-create**

The above steps take 15-20 minutes; you can confirm the status from browser through your cloud account access.

- g. **./CleanEnvironment.sh**

This script stops the admin server running in dev\_domain and deletes the domain. It removes the user conference from database inside the Virtual Box and stops the database.