

SOA Suite Setup for BPEL Process Flow  
Oracle FLEXCUBE Universal Banking  
Release 14.2.0.0.0  
[December] [2018]



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# Table of Contents

- 1. PREFACE ..... 1-1**
  - 1.1 BACKGROUND ..... 1-1
  - 1.2 AUDIENCE ..... 1-1
  - 1.3 ORGANIZATION ..... 1-1
  - 1.4 ACRONYMS AND ABBREVIATIONS ..... 1-1
- 2. INSTALLING THE JDK, WEBLOGIC, RCU, SOA AND DOMAIN CREATION.....2**
  - 2.1 INTRODUCTION .....2
  - 2.2 LIST OF DOWNLOADED FILES .....2
  - 2.3 INSTALL JDK.....3
  - 2.4 INSTALLING WEBLOGIC SERVER SOFTWARE.....3
  - 2.5 INSTALLING ORACLE FUSION MIDDLEWARE 12C SOFTWARE. ....10
  - 2.6 CREATING PRODUCT SCHEMAS IN ORACLE DATABASE .....16
  - 2.7 WEBLOGIC SERVER DOMAIN CONFIGURATION.....23
  - 2.8 REMOTE SETUP CONFIGURATION: .....35

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# 1. Preface

## 1.1 Background

This document provides an overview of configuring SOA suite for Oracle FLEXCUBE Universal Banking BPEL process deployment.

Refer Oracle documentation for HA ([FCUBS Switch Interface Gateway High Availability Configuration.pdf](#)) and other configuration patterns.

## 1.2 Audience

The audience for this document will be the development groups of BPEL/BPM process flows FLEXCUBE Universal Banking.

## 1.3 Organization

This manual is organized as follows:

- The document helps in download and installation of Oracle SOA 12c.

## 1.4 Acronyms and Abbreviations

Acronym/Abbreviation	Description
BPEL	Business Process Execution Language
HA	High Availability

---

## 2. Installing the JDK, WebLogic, RCU, SOA and domain Creation

### 2.1 Introduction

The download of software can be done from the below oracle edelivery portal  
<https://edelivery.oracle.com>

Refer to the Oracle certification matrix for qualified databases.

### 2.2 List of downloaded files

Search: Oracle JDK Latest JDK 1.8 Update 144 for Linux x86-64 Search:  
[Oracle Fusion Middleware 12c Infrastructure 12.2.1.2.0](#)

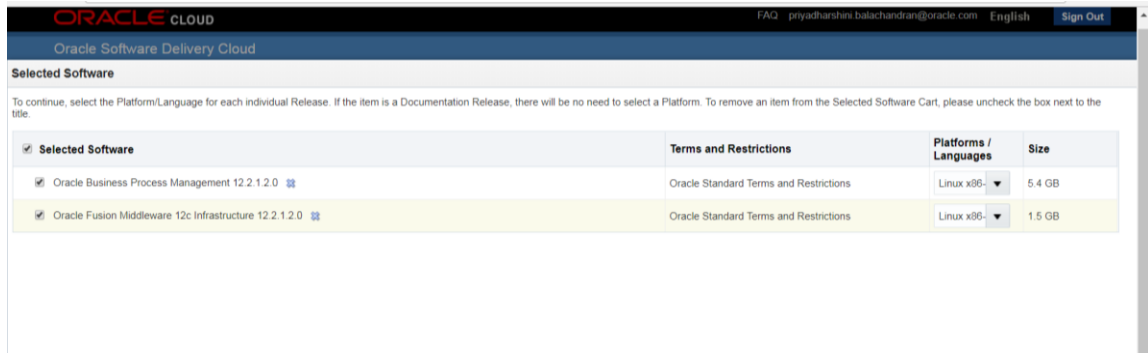
V779122-01.zip - Oracle Fusion Middleware 12c Infrastructure 12.2.1.2.0

Search: [Oracle Business Process Management 12.2.1.2.0](#)

V789369-01.zip - Oracle Fusion Middleware 12c (12.2.1.2.0) SOA Suite and Business Process Management

List of platform which can be selected based on the installation platform

<input checked="" type="checkbox"/> All
<input type="checkbox"/> HP-UX Itanium
<input type="checkbox"/> IBM AIX on POWER Systems (64-bit)
<input type="checkbox"/> Linux x86-64
<input type="checkbox"/> Microsoft Windows x64 (64-bit)
<input type="checkbox"/> Oracle Solaris on SPARC (64-bit)
<input type="checkbox"/> Oracle Solaris on x86-64 (64-bit)



**NOTE (Doc ID 1904280.1):** As part of the new Release of SOA 12c, you need to get WebLogic 12c through the Oracle Fusion Middleware Infrastructure installation, which contains all required components for SOA. The standard WebLogic 12.2.1.0.0 Installer i.e. `fmw_12.2.1.0.0_wls.jar`, does not have the required JRF templates.

## 2.3 Install JDK

Login to WebLogic server host upload and install JDK package. Refer to the release certificate for the version of java JDK.

## 2.4 Installing WebLogic Server software

Installation of the software can be done from local machine or from the app server

1. Installation from the app server location:

a) Login to the app server host and connect through putty

b) Copy the zipped file into the app server in the location `/scratch/app/<[app_name]>`

eg: `/scratch/app/bpm12212`

c) Unzip the file with the command “`unzip V779122-01.zip`”

d) Once it is unzipped, `fmw_12.2.1.2.0_soa.jar` and `fmw_12212_readme.htm` will be extracted into the same path

e) execute the jar file to launch the installer for 12c SOA installation with the below command

“`java -jar fmw_12.2.1.2.0_infrastructure.jar`”

```
[oracle@wls12c-node1 ~]$ cd /scratch/app/fmwTemp1221/
[oracle@wls12c-node1 fmwTemp1221]$ unzip V779122-01.zip
Archive:  V779122-01.zip
inflating: fmw_12.2.1.2.0_infrastructure.jar
[oracle@wls12c-node1 fmwTemp1221]$ java -jar fmw_12.2.1.2.0_infrastructure.jar
```

2. Installation from the local path:

a) open the command prompt in “Run as Administrator” mode and move to the location where the zip file is available using the command “cd” followed by the path

eg: C:\Users\pribalac\Downloads

b) Unzip the file with the command “unzip V779122-01.zip”

c) Once it is unzipped, fmw\_12.2.1.2.0\_soa.jar and fmw\_12212\_readme.htm will be extracted into the same path

d) execute the jar file to launch the installer for 12c SOA installation with the below command

“java -jar fmw\_12.2.1.2.0\_soa.jar”

```
[C:\Users\pribalac\ ~]$ cd C:\Users\pribalac\Downloads\V779122-01
[C:\Users\pribalac\Downloads\V779122-01]$ unzip V779122-01.zip
Archive:  V779122-01.zip
inflating: fmw_12.2.1.2.0_infrastructure.jar
[C:\Users\pribalac\Downloads\V779122-01]$ "C:\Program Files\Java\jdk1.8.0_144\bin\java" -jar
fmw_12.2.1.2.0_infrastructure.jar
```

**Step 1:**



## Step 2:

Select the option based on the requirement:

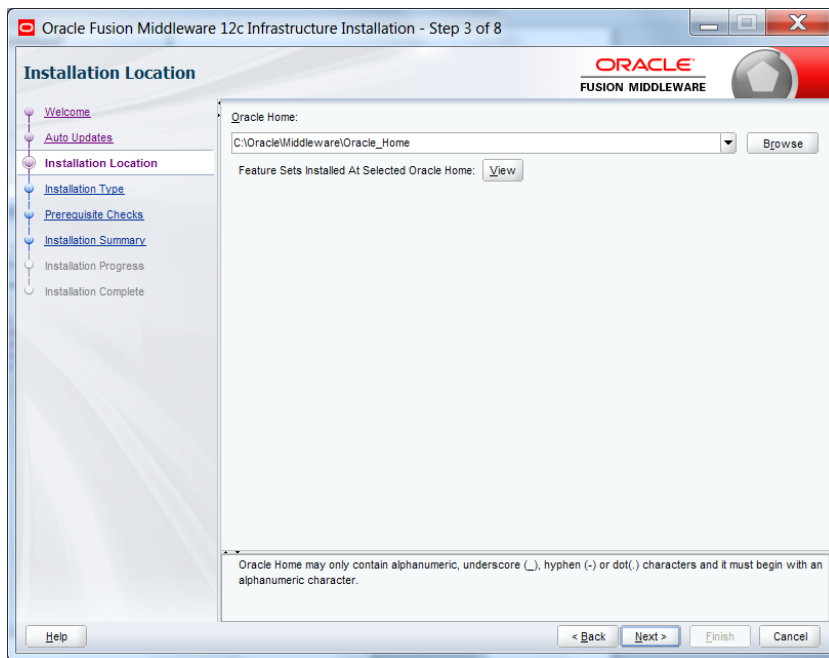
If you do not want the auto updates, select the first option.

If you are applying patches, select the second option.

The screenshot shows the 'Auto Updates' step of the Oracle Fusion Middleware 12c Infrastructure Installation wizard. The window title is 'Oracle Fusion Middleware 12c Infrastructure Installation - Step 2 of 8'. The Oracle logo and 'FUSION MIDDLEWARE' text are visible in the top right corner. A navigation pane on the left lists the following steps: Welcome, Auto Updates (current), Installation Location, Installation Type, Prerequisite Checks, Installation Summary, Installation Progress, and Installation Complete. The main area contains three radio button options: 'Skip Auto Updates' (selected), 'Select patches from directory', and 'Search My Oracle Support for Updates'. The 'Select patches from directory' option includes a 'Location:' text box and a 'Browse' button. The 'Search My Oracle Support for Updates' option includes 'Username:' and 'Password:' text boxes, a 'Proxy Settings' button, and a 'Test Connection' button. Below these options is a 'Search' button and a large empty text area. At the bottom of the window are buttons for '< Back', 'Next >', 'Finish', and 'Cancel'. A 'Help' button is located in the bottom left corner.

### Step 3:

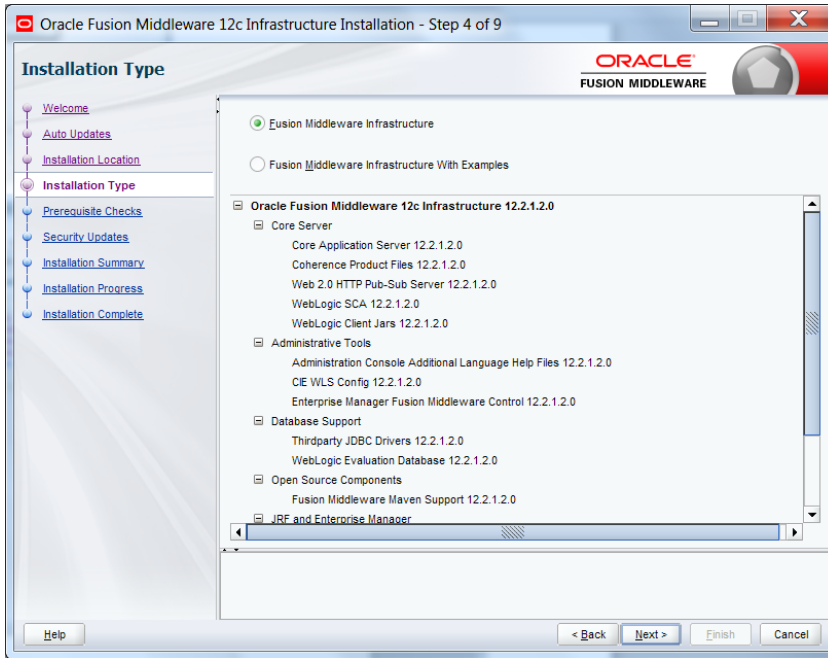
Define the oracle home path



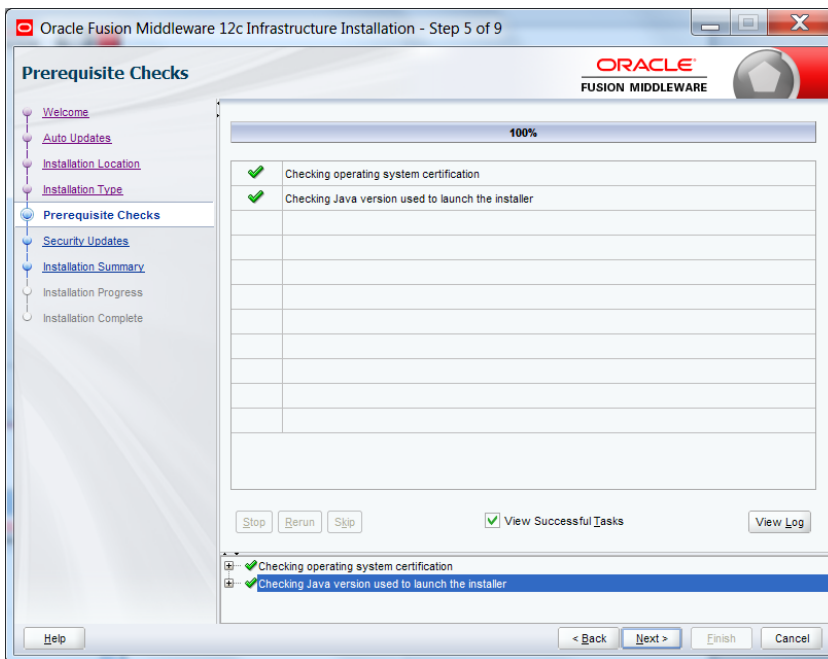
### Step 4:

Select fusion middleware infrastructure



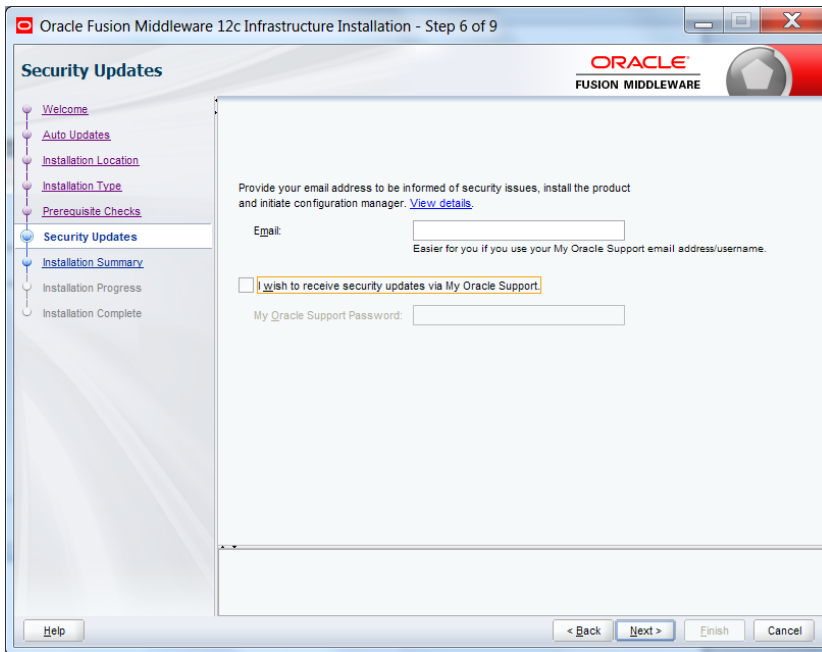


**Step 5:**

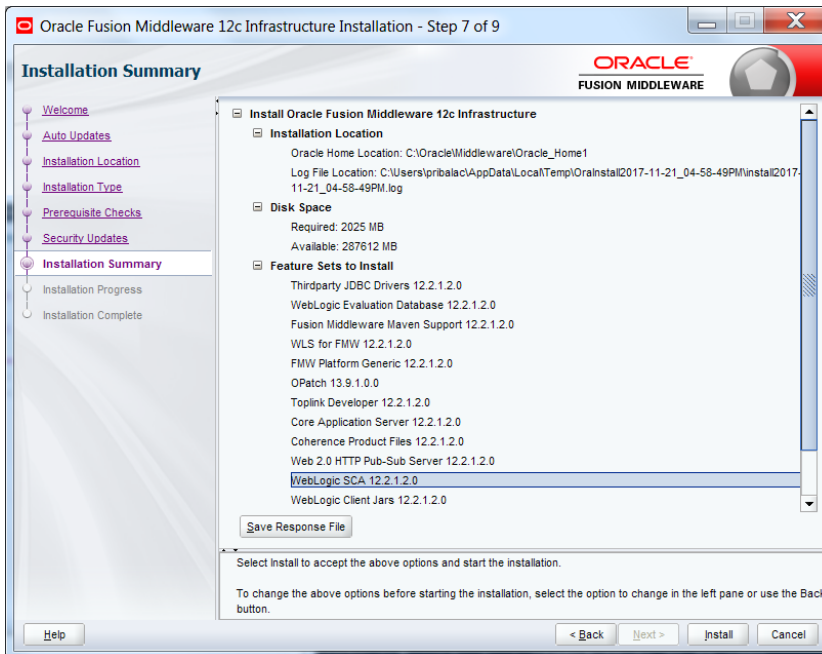


**Step 6:**

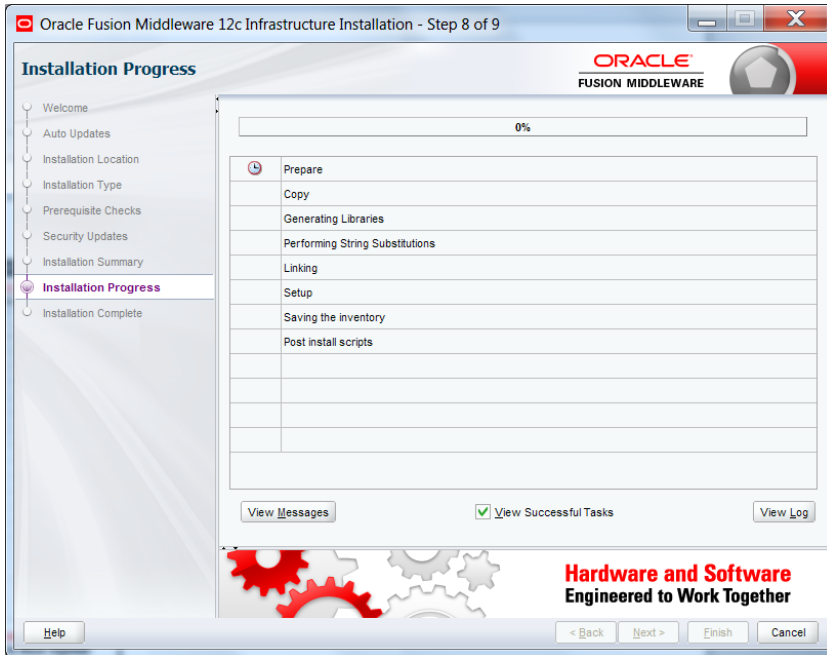
Optional based on installation requirement



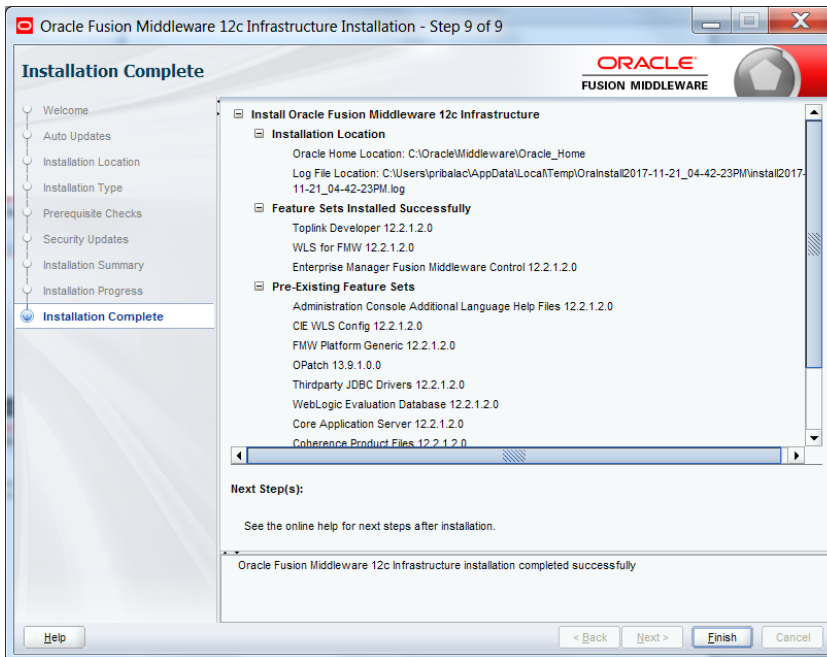
### Step 7:



### Step 8:



### Step 9:



## 2.5 Installing Oracle Fusion Middleware 12c software.

Installation of the software can be done from local machine or from the app server

1. Installation from the app server location:

a) Login to the app server host and connect through putty

b) Copy the zipped file into the app server in the location /scratch/app/<[app\_name]>

eg: /scratch/app/bpm12212

c) Unzip the file with the command “unzip V789369-01.zip”

d) Once it is unzipped, fmw\_12.2.1.2.0\_soa.jar and fmw\_12212\_readme.htm will be extracted into the same path

e) execute the jar file to launch the installer for 12c SOA installation with the below command

“java -jar fmw\_12.2.1.2.0\_soa.jar”

```
[bpm12212@whf00an1:~]$ cd /scratch/app/bpm12212/
[bpm12212@whf00an1:/scratch/app/bpm12212]$ unzip V789369-01.zip
Archive:  V789369-01.zip
  inflating: fmw_12.2.1.2.0_soa.jar
[bpm12212@whf00an1:/scratch/app/bpm12212]$ java -jar fmw_12.2.1.2.0_soa.jar
```

2. 1) Installation from the local path:

a) open the command prompt in “Run as Administrator” mode and move to the location where the zip file is available using the command “cd” followed by the path

eg: C:\Users\pribalac\Downloads

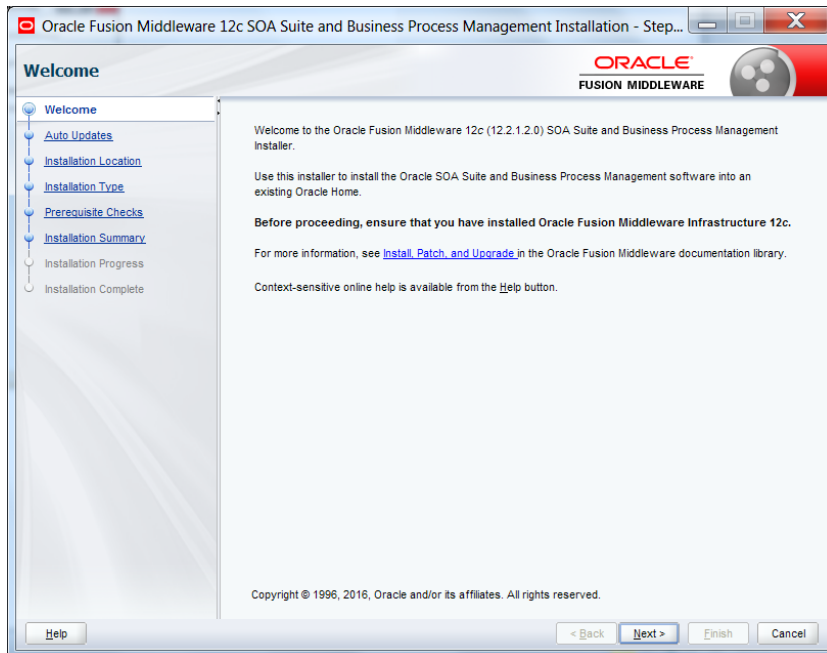
b) Unzip the file with the command “unzip V789369-01.zip”

c) Once it is unzipped, fmw\_12.2.1.2.0\_soa.jar and fmw\_12212\_readme.htm will be extracted into the same path

d) execute the jar file to launch the installer for 12c SOA installation with the below command

“java -jar fmw\_12.2.1.2.0\_soa.jar”

**Step 1:**



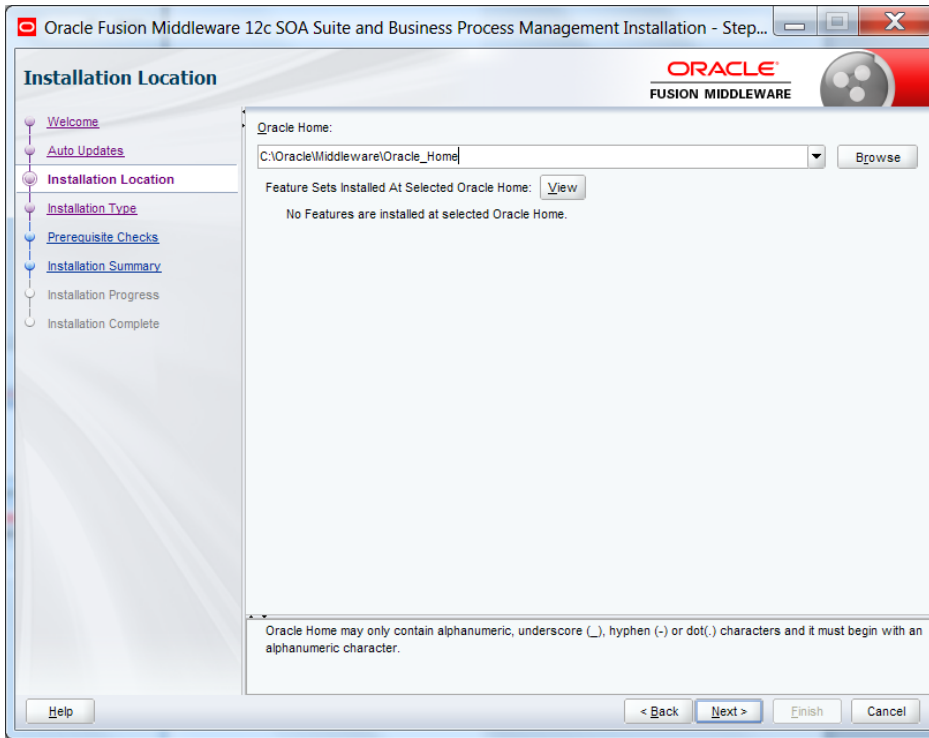
## Step 2:

Option need to be selected based on the requirement :

- If you don't want the auto updates, select the first option.
- If you are applying patches , select the second option .

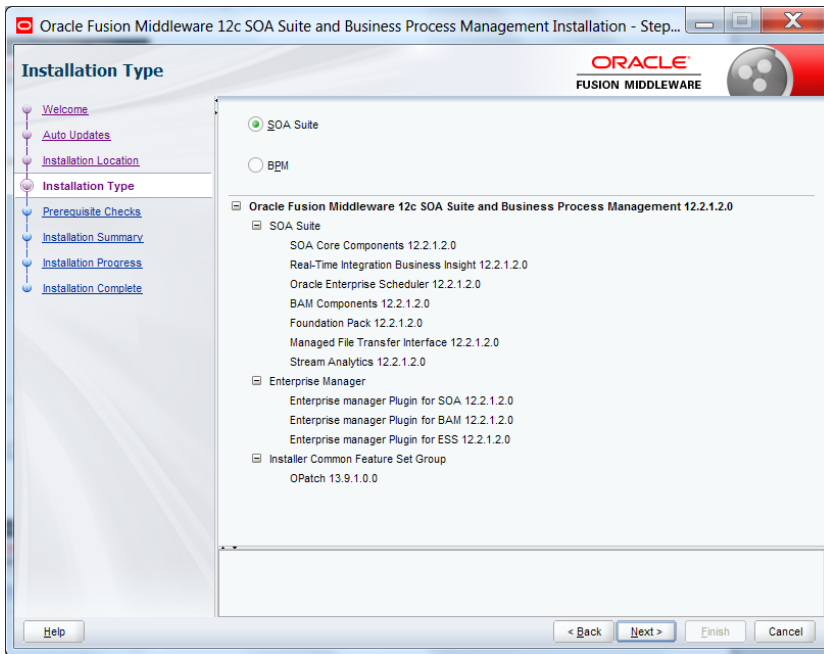
Please select the below option based on the requirement:

**Step 3:**

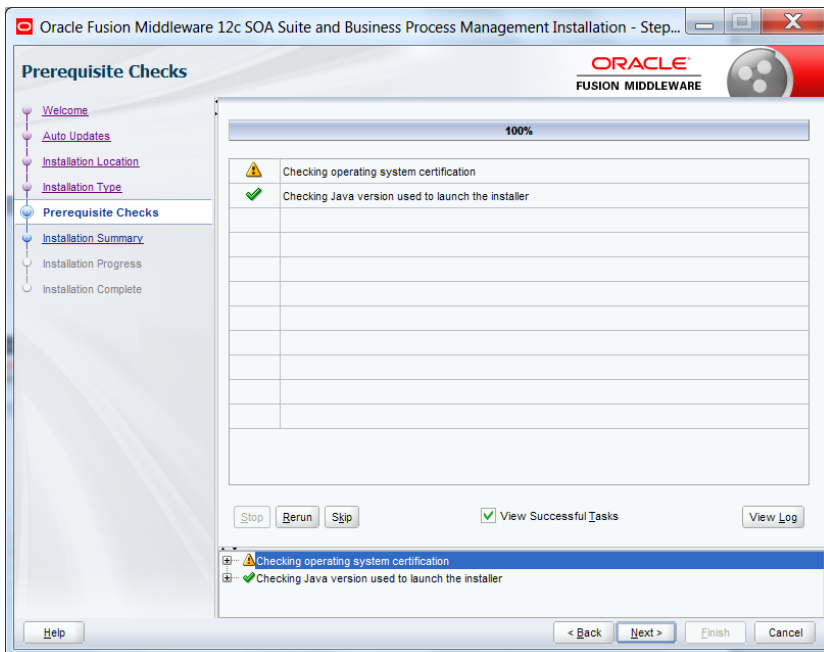


#### Step 4:

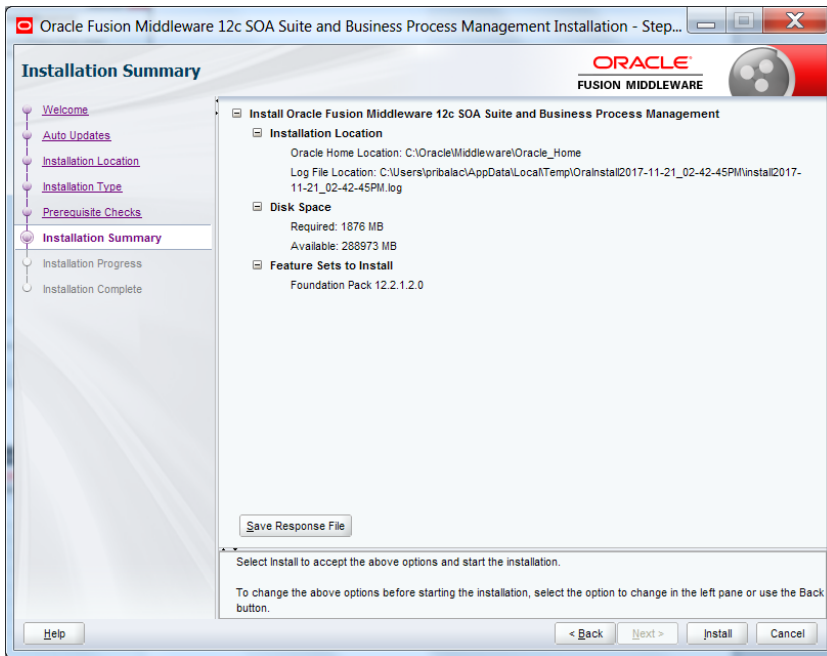
Select BPM if the environment requires BPM process flow deployment



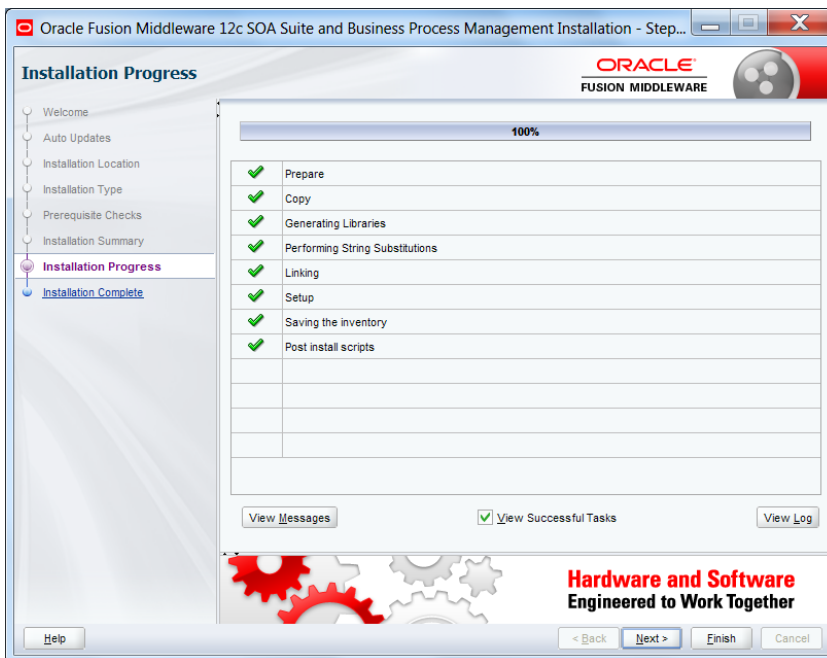
#### Step 5:



## Step 6:

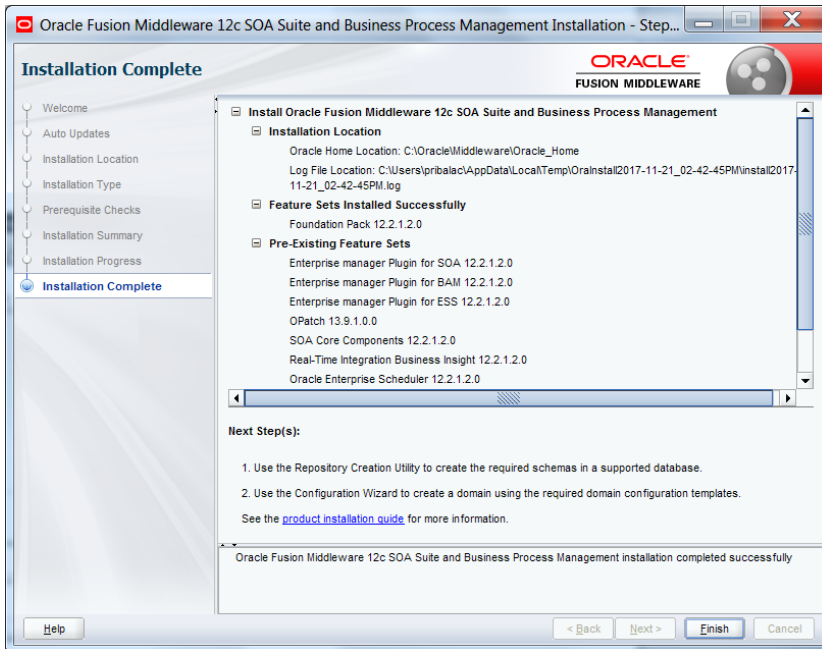


## Step 7:





## Step 8:



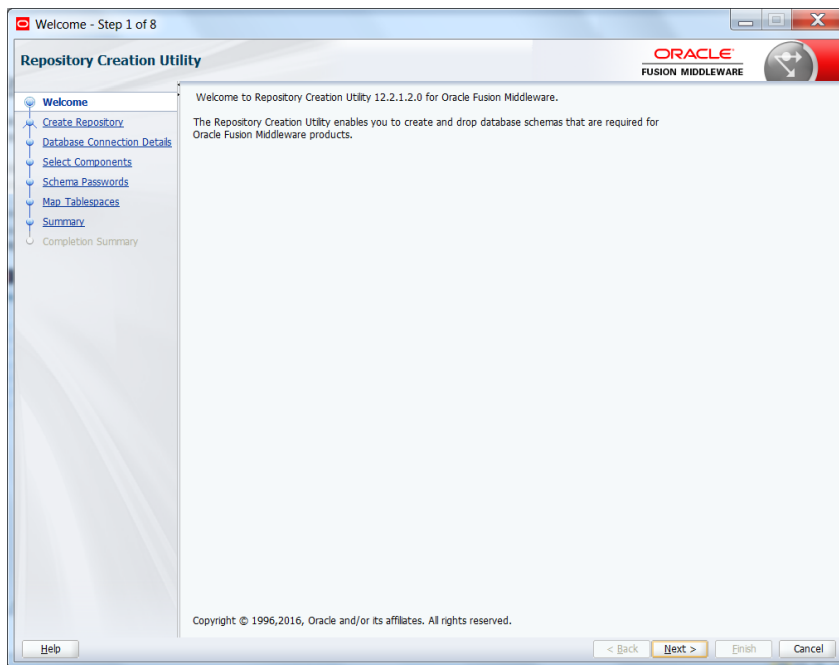
## 2.6 Creating product schemas in Oracle database

The Repository Creation Utility (RCU) is the tool used to create schemas in a database. This tool is available once we've installed the Oracle Fusion Middleware Infrastructure software (Point 2).

Refer to [Oracle Fusion Middleware Creating Schemas with the Repository Creation Utility](#) for more information about the Repository Creation Utility.

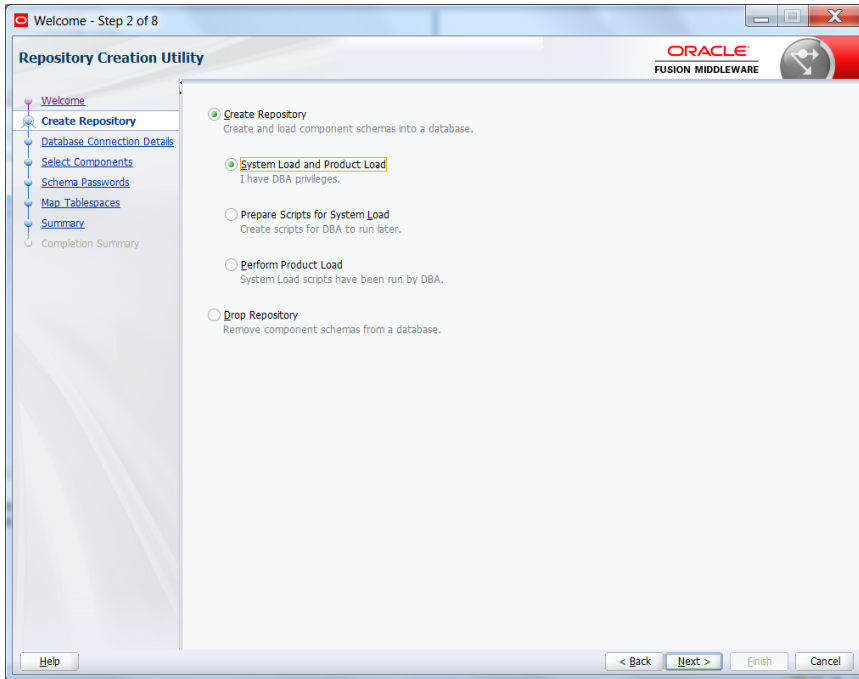
- [oracle@wls12c-node1 fmwTemp1221]\$ cd /scratch/app/fmwTemp1221/Oracle/Middleware/Oracle\_Home/bin/
- [oracle@wls12c-node1 bin]\$ ./rcu

### Step 1:



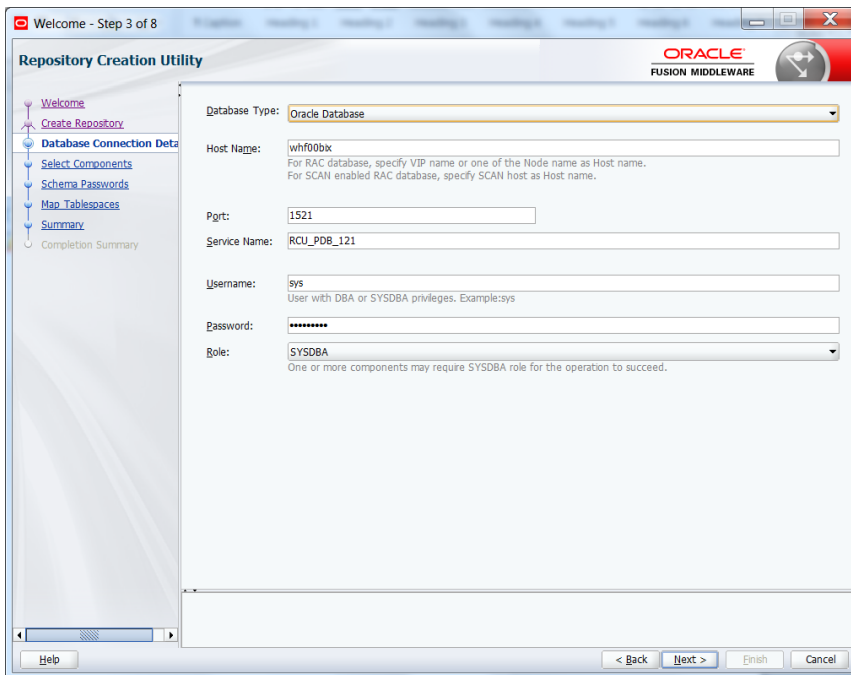
### Step 2:

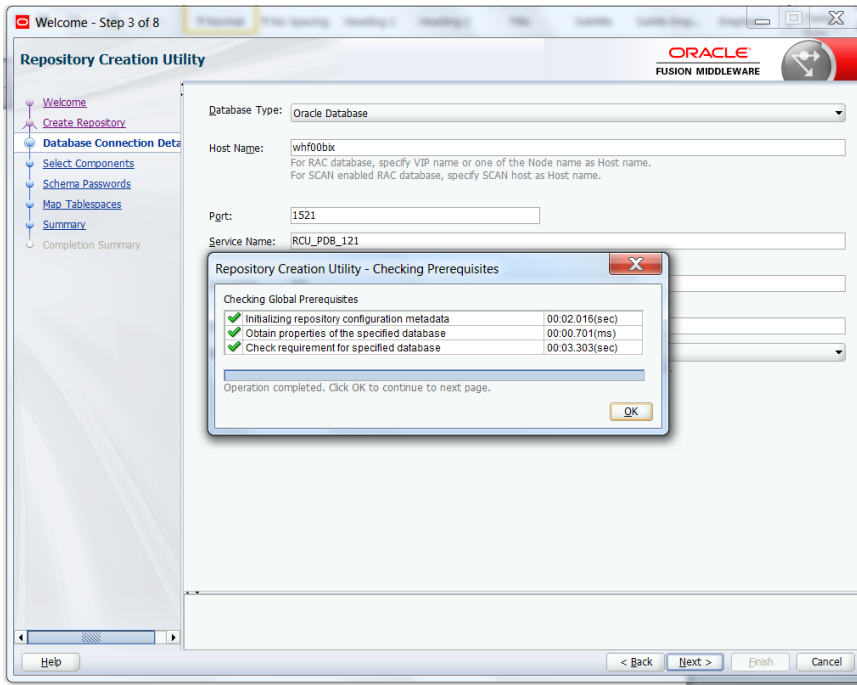
Select the option as System Load and Product Load and click on Next



### Step 3:

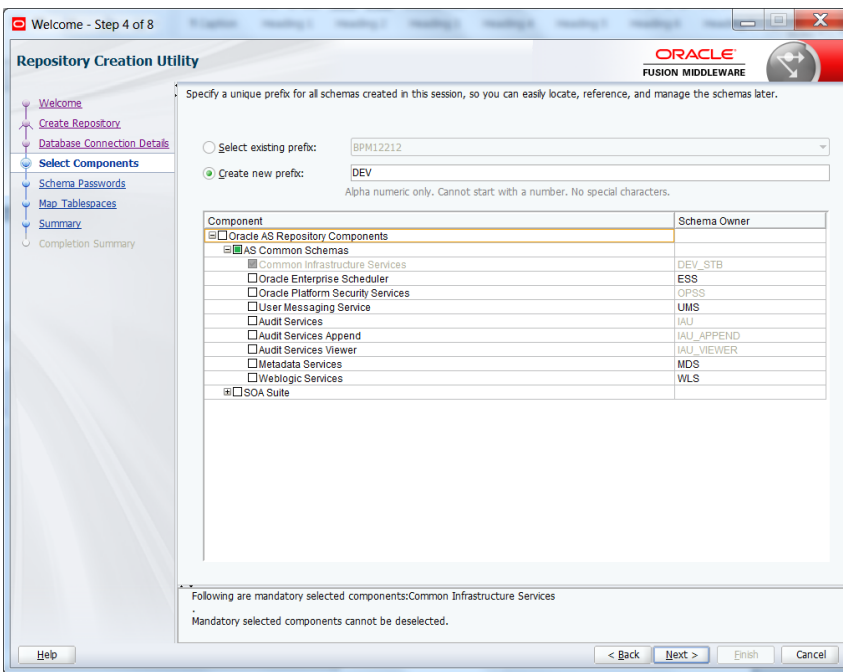
Define the host name port username and password for creating the RCU schemas in the database. The sys user required to create the rcu schemas.

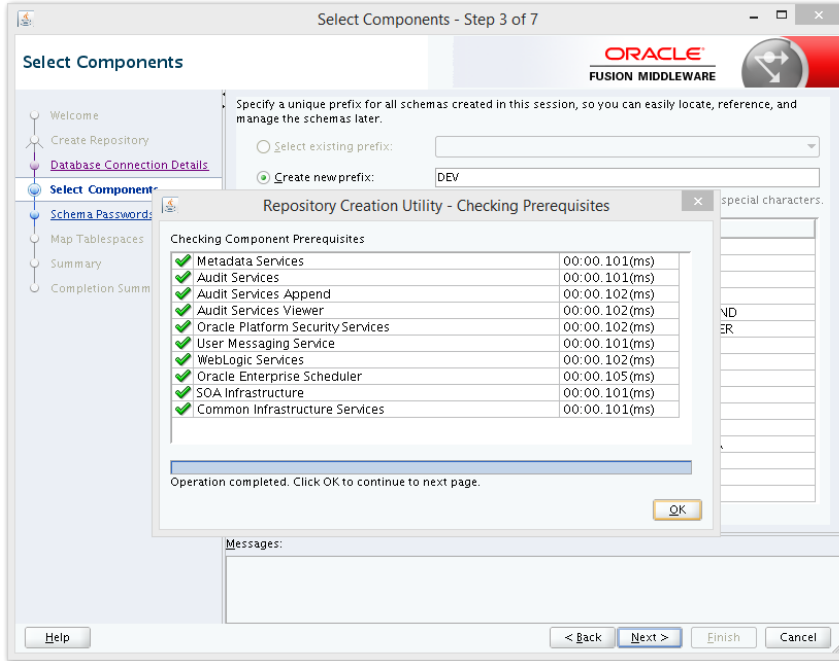




#### Step 4:

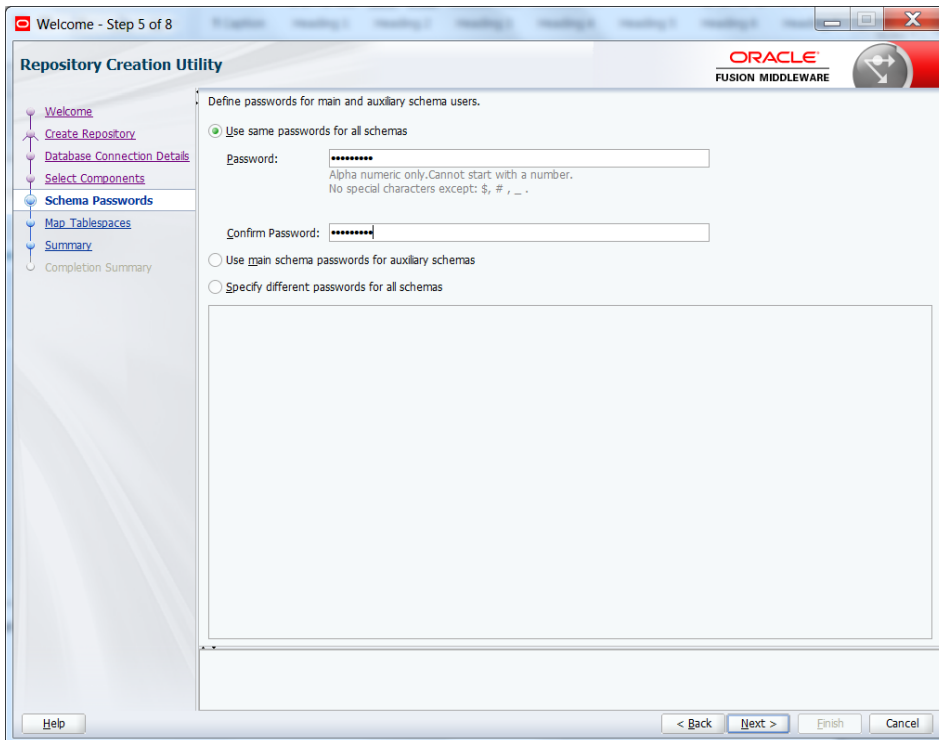
Define the prefix to be used for the schemas





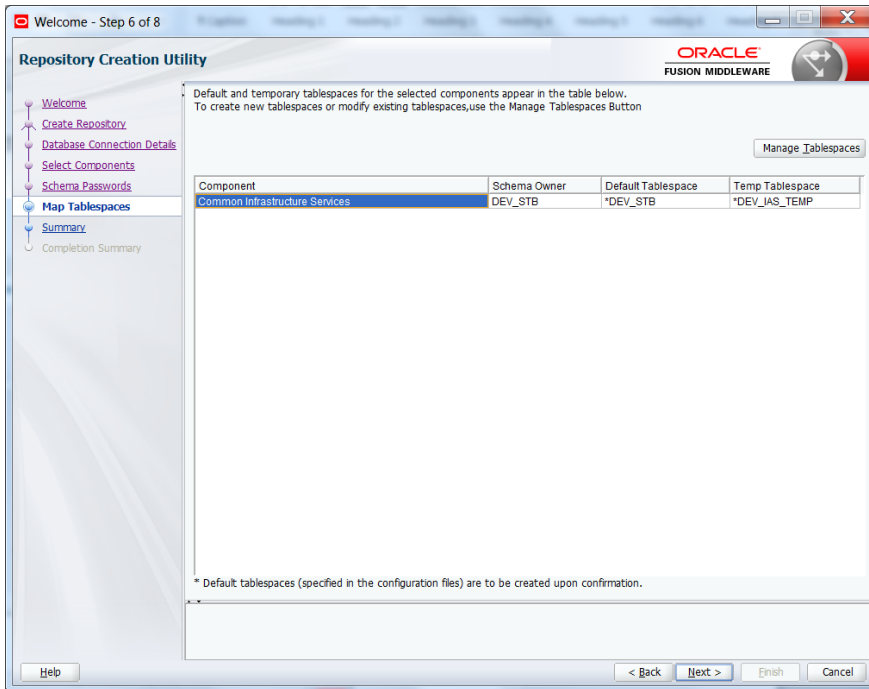
### Step 5:

Define the password for the schemas.

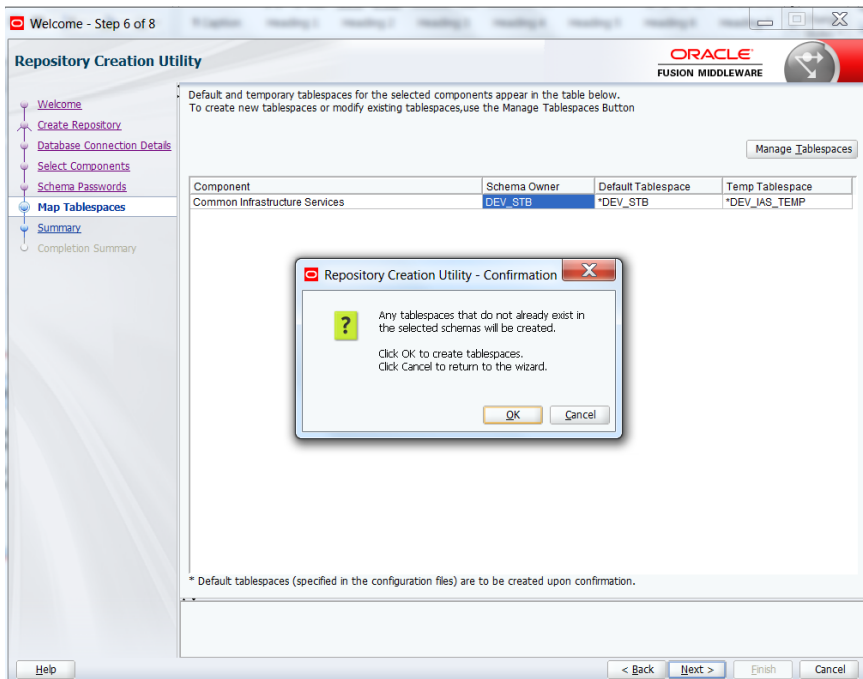


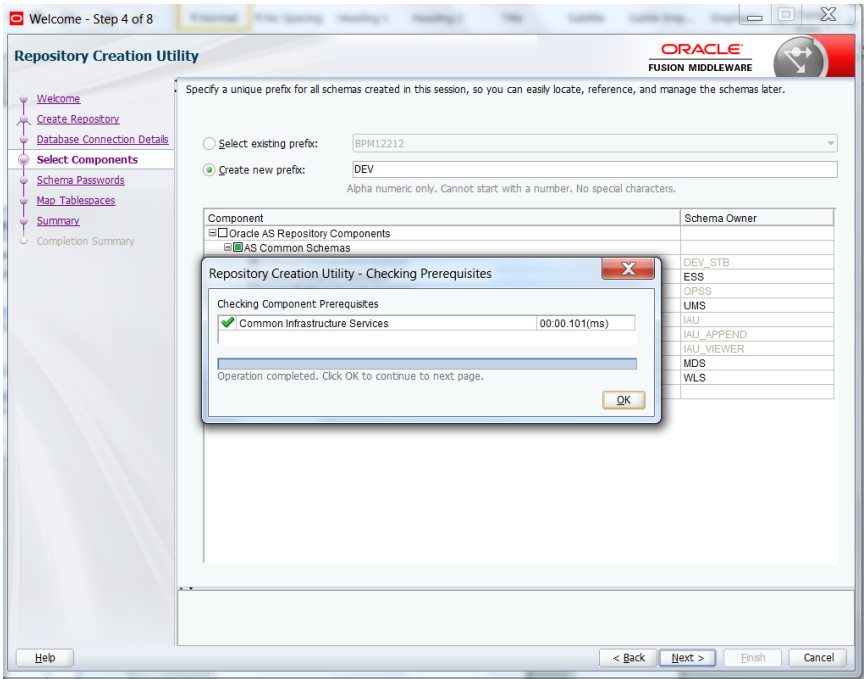
**Note:** It is important to remember the password or passwords that you enter during the process.

## Step 6:

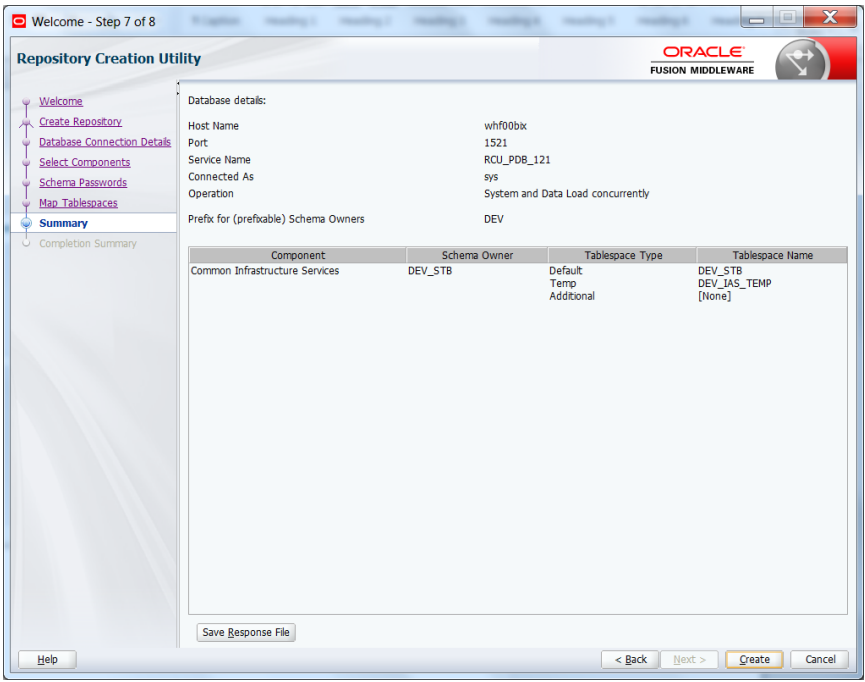


## Step 7:



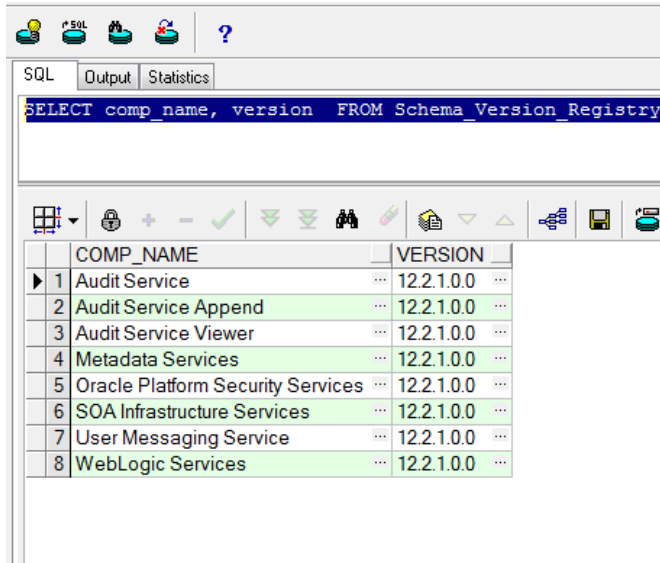


**Step 7:**



Note: Verifying Schema Version Numbers in the database where RCU is executed

```
SQL> select comp_name, version from schema_version_registry;
```



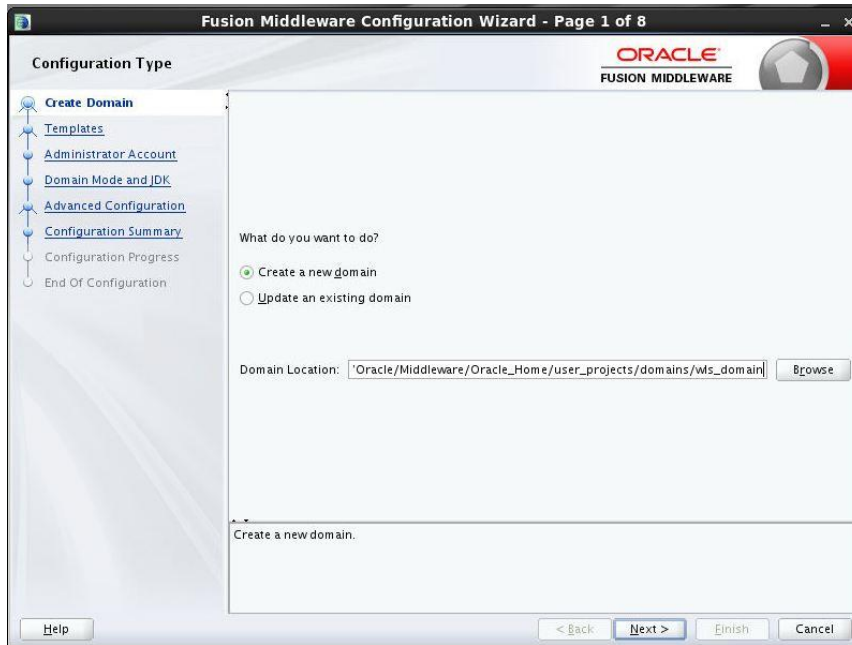
The screenshot shows the SQL Developer interface. The SQL editor contains the query: `SELECT comp_name, version FROM Schema_Version_Registry`. Below the editor is a toolbar with various icons. The results pane displays a table with two columns: `COMP_NAME` and `VERSION`. The table contains 8 rows of data, all with a version of 12.2.1.0.0.

	COMP_NAME	VERSION
1	Audit Service	12.2.1.0.0
2	Audit Service Append	12.2.1.0.0
3	Audit Service Viewer	12.2.1.0.0
4	Metadata Services	12.2.1.0.0
5	Oracle Platform Security Services	12.2.1.0.0
6	SOA Infrastructure Services	12.2.1.0.0
7	User Messaging Service	12.2.1.0.0
8	WebLogic Services	12.2.1.0.0



## 2.7 WebLogic Server Domain Configuration

### Step 1:



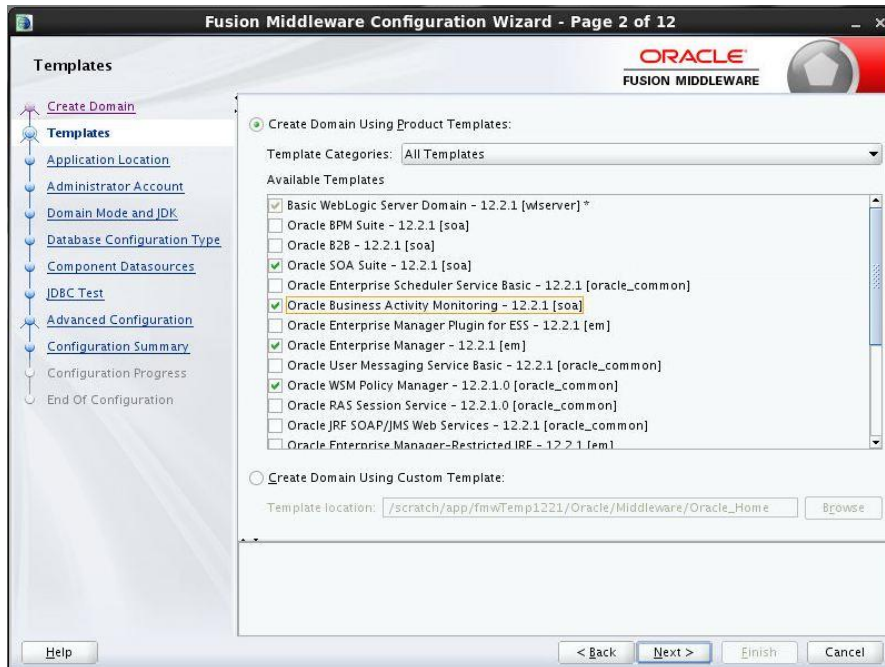
## Step 2:

Domain creation template

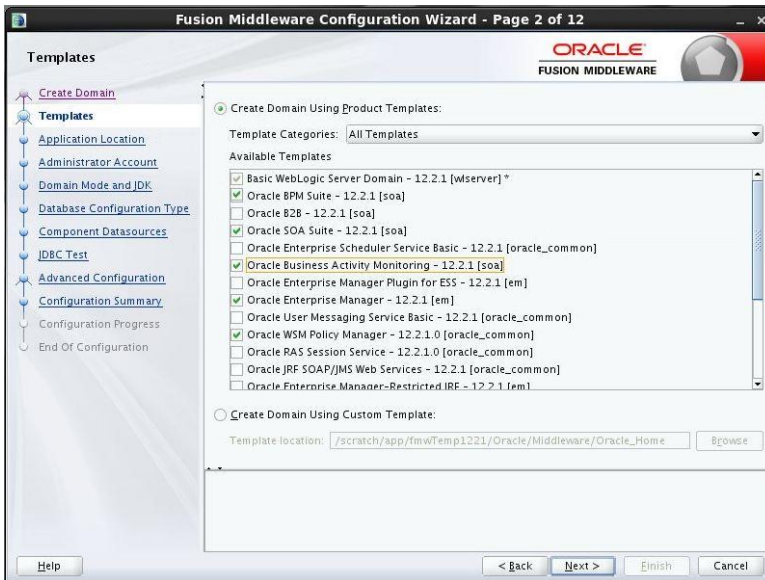
For BPEL only domain



Based on the requirement select the Oracle Business Activity Monitoring (BAM) check box.



For BPM enabled domain (If BPM process flows deployment is required then we have to select the Oracle BPM Suite – 12.2.1 )



### Step 3:

The screenshot shows the 'Application Location' step of the Fusion Middleware Configuration Wizard. The left sidebar contains a tree view with the following items: Create Domain, Templates, Application Location (selected), Administrator Account, Domain Mode and JDK, Database Configuration Type, Component Datasources, JDBC Test, Keystore, Advanced Configuration, Configuration Summary, Configuration Progress, and End Of Configuration. The main area displays the following configuration details:

- Domain name: ws\_domain
- Domain location: temp1221/Oracle/Middleware/Oracle\_Home/user\_projects/domains
- Application location: /Middleware/Oracle\_Home/user\_projects/applications/ws\_domain

At the bottom, there are navigation buttons: Help, < Back, Next >, Finish, and Cancel.

### Step 4:

Defining the domain user name and password


The screenshot shows the 'Administrator Account' step of the Fusion Middleware Configuration Wizard. The left sidebar contains a tree view with the following items: Create Domain, Templates, Application Location, Administrator Account (selected), Domain Mode and JDK, Database Configuration Type, Component Datasources, JDBC Test, Keystore, Advanced Configuration, Configuration Summary, Configuration Progress, and End Of Configuration. The main area displays the following configuration details:

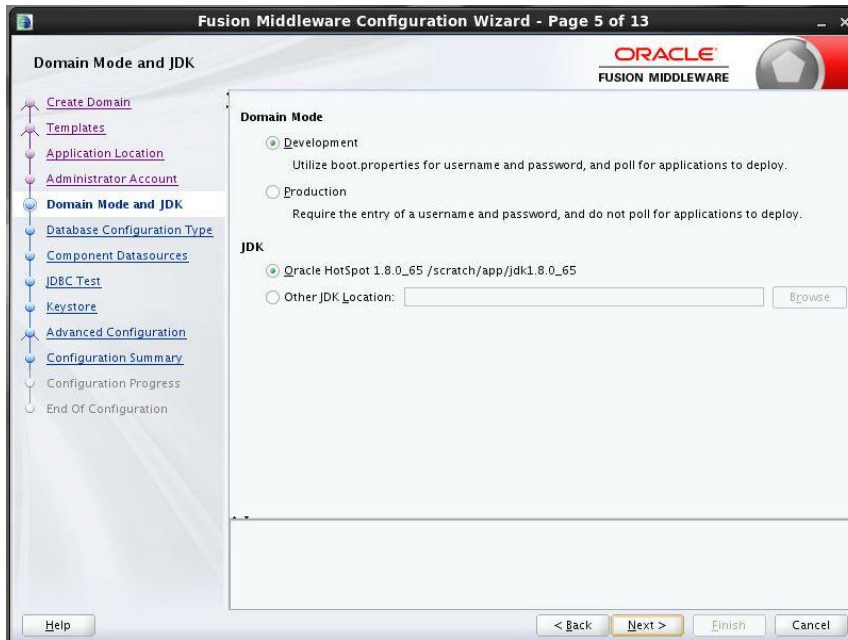
- Name: weblogic
- Password: [masked]
- Confirm Password: [masked]

Below the input fields, there is a note: "Must be the same as the password. Password must contain at least 8 alphanumeric characters with at least one number or special character."

At the bottom, there are navigation buttons: Help, < Back, Next >, Finish, and Cancel.

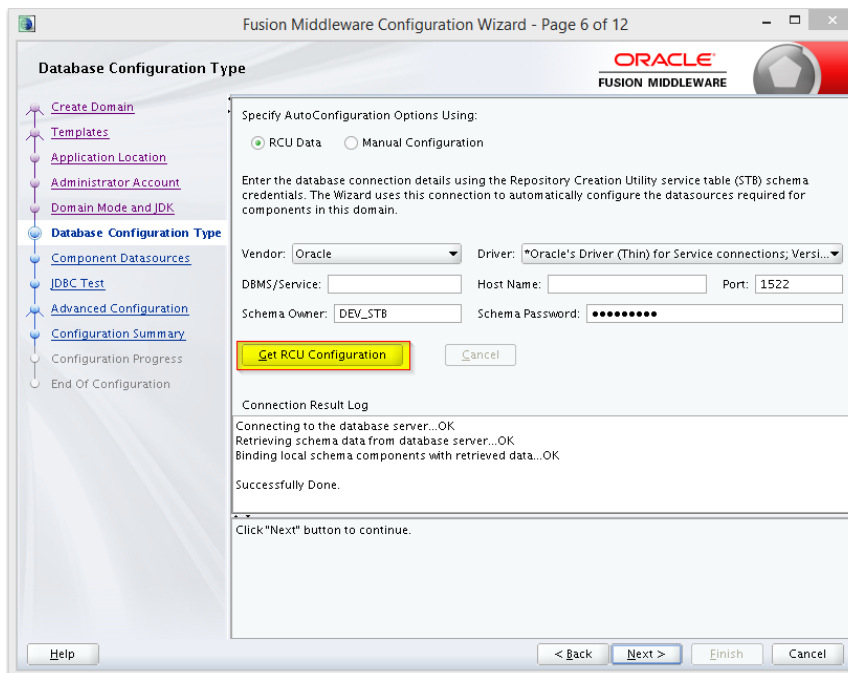
## Step 5:

 Domain mode needs to be production for all installations.



## Step 6:

Define the RCU schema details and the TNS connection details



## Step 7:

Fusion Middleware Configuration Wizard - Page 7 of 12

**JDBC Component Schema**

Vendor:  Driver:

DBMS/Service:  Host Name:  Port:

Schema Owner:  Schema Password:

Oracle RAC configuration for component schemas:  
 Convert to GridLink  Convert to RAC multi data source  Don't convert

Edits to the data above will affect all checked rows in the table below.

<input type="checkbox"/>	Component Schema	DBMS/Service	Host Name	Port	Schema Owner	Schema Password
<input type="checkbox"/>	BAM Schema	ORFC12C	ofss220337	1522	DEV_SOAINFR	*****
<input type="checkbox"/>	BAM Job Sched Schema	ORFC12C	ofss220337	1522	DEV_WLS	*****
<input type="checkbox"/>	SOA EDN (XA)	ORFC12C	ofss220337	1522	DEV_SOAINFR	*****
<input type="checkbox"/>	SOA EDN (Local)	ORFC12C	ofss220337	1522	DEV_SOAINFR	*****
<input type="checkbox"/>	LocalSvcTbl Schema	ORFC12C	ofss220337	1522	DEV_STB	*****
<input type="checkbox"/>	User Messaging Servic	ORFC12C	ofss220337	1522	DEV_UMS	*****
<input type="checkbox"/>	SOA (XA)	ORFC12C	ofss220337	1522	DEV_SOAINFR	*****
<input type="checkbox"/>	SOA (Local)	ORFC12C	ofss220337	1522	DEV_SOAINFR	*****
<input type="checkbox"/>	BAM MDS Schema	ORFC12C	ofss220337	1522	DEV_MDS	*****
<input type="checkbox"/>	OWSM MDS Schema	ORFC12C	ofss220337	1522	DEV_MDS	*****

Help < Back Next > Finish Cancel

## Step 8:

Fusion Middleware Configuration Wizard - Page 8 of 12

**JDBC Component Schema Test**

Status Component Schema JDBC Connection URL

✓	✓	User Messaging Ser	jdbc:oracle:thin://ofss220337:1522/ORFC12C
✓	✓	SOA (XA)	jdbc:oracle:thin://ofss220337:1522/ORFC12C
✓	✓	SOA (Local)	jdbc:oracle:thin://ofss220337:1522/ORFC12C
✓	✓	BAM MDS Schema	jdbc:oracle:thin://ofss220337:1522/ORFC12C
✓	✓	OWSM MDS Schema	jdbc:oracle:thin://ofss220337:1522/ORFC12C
✓	✓	SOA MDS	jdbc:oracle:thin://ofss220337:1522/ORFC12C
✓	✓	OPSS Audit Schema	jdbc:oracle:thin://ofss220337:1522/ORFC12C
✓	✓	OPSS Audit Viewer S	jdbc:oracle:thin://ofss220337:1522/ORFC12C
✓	✓	OPSS Schema	jdbc:oracle:thin://ofss220337:1522/ORFC12C

Test Selected Connections Cancel Testing

Connection Result Log

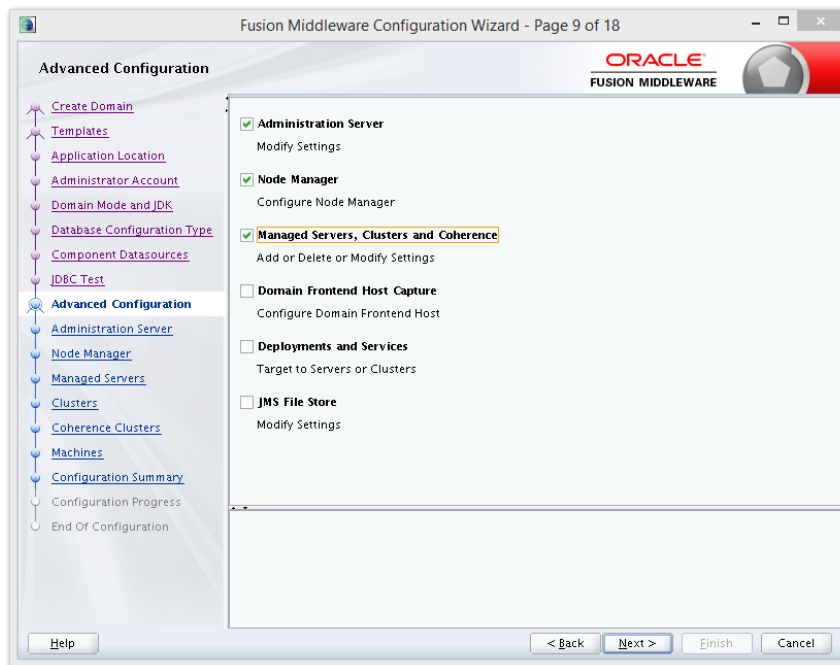
```

Component Schema=BAM Schema
Driver=oracle.jdbc.xa.client.OracleXADataSource
URL=jdbc:oracle:thin://zeus.zion.local:1522/PD801.ZION.LOCAL
User=DEV_SOAINFR
Password=*****
SQL Test=select 1 from schema_version_registry where owner=(select user from dual) and mr_type='SOAI
CFGFWK-64213: Test Successful
CFGFWK-64213: JDBC_connection_test_was_successful
    
```

Help < Back Next > Finish Cancel

### Step 9:

Select the admin server, node manager and managed servers.



### Step 10:

Specify the server name as AdminServer and listener address as hostname. Based on the installation requirement SSL need to be enabled.



### Administration Server

- Create Domain
- Templates
- Application Location
- Administrator Account
- Domain Mode and JDK
- Database Configuration Type
- Component Datasources
- JDBC Test
- Advanced Configuration
- Administration Server**
- Node Manager
- Managed Servers
- Clusters
- Coherence Clusters
- Machines
- Configuration Summary
- Configuration Progress
- End Of Configuration

Server Name:

Listen Address:

Listen Port:

Enable SSL:

SSL Listen Port:

Server Groups:

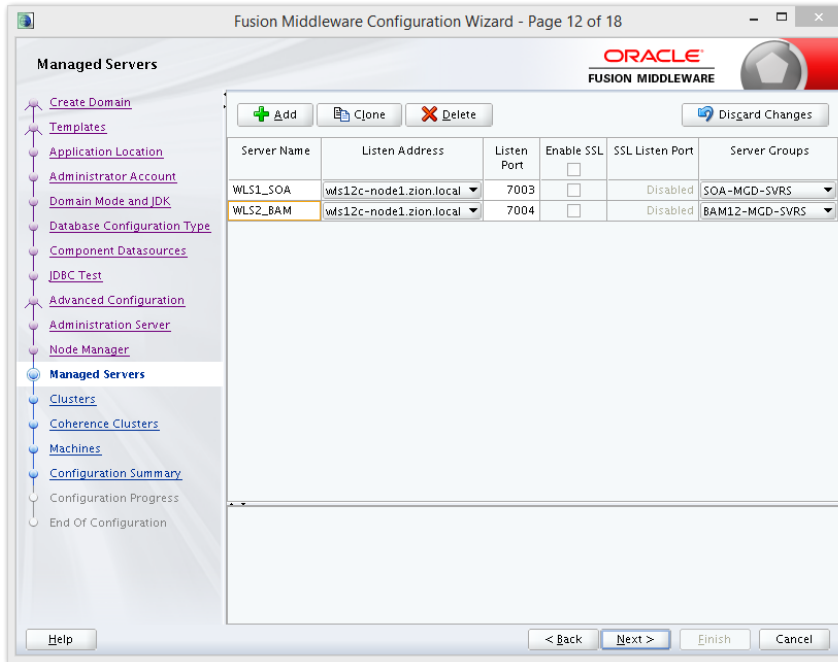
The name must not be null or empty and may not contain any : , \* ? % \_ cloned.



**Step 11:**

Specify the server name as soa\_server1 and bam\_server1 for the managed servers.

Based on the installation requirement SSL need to be enabled for managed servers



## Step 12:

Fusion Middleware Configuration Wizard - Page 15 of 19

**Coherence Clusters**

ORACLE  
FUSION MIDDLEWARE

Disgard Changes

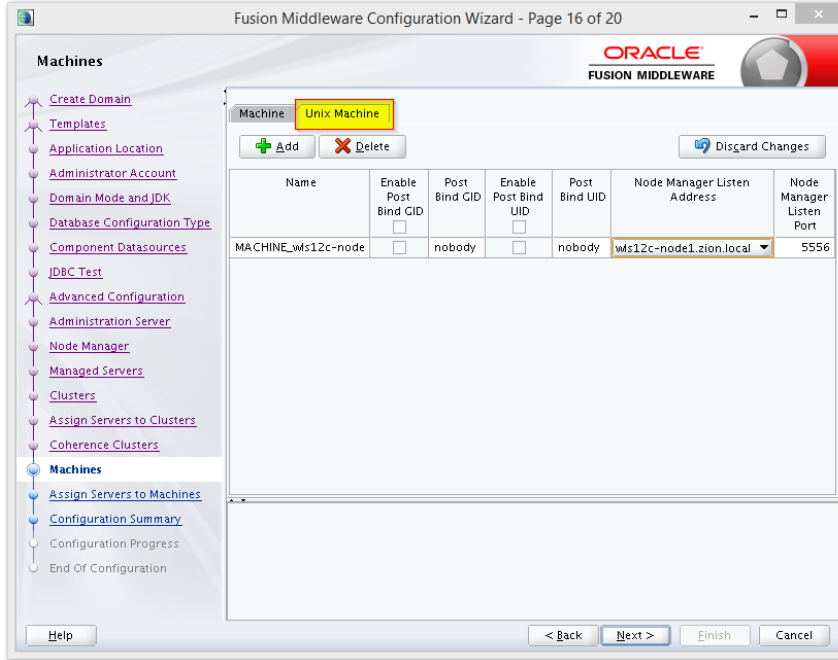
Cluster Name	Unicast Listen Port
defaultCoherenceCluster	0

Help

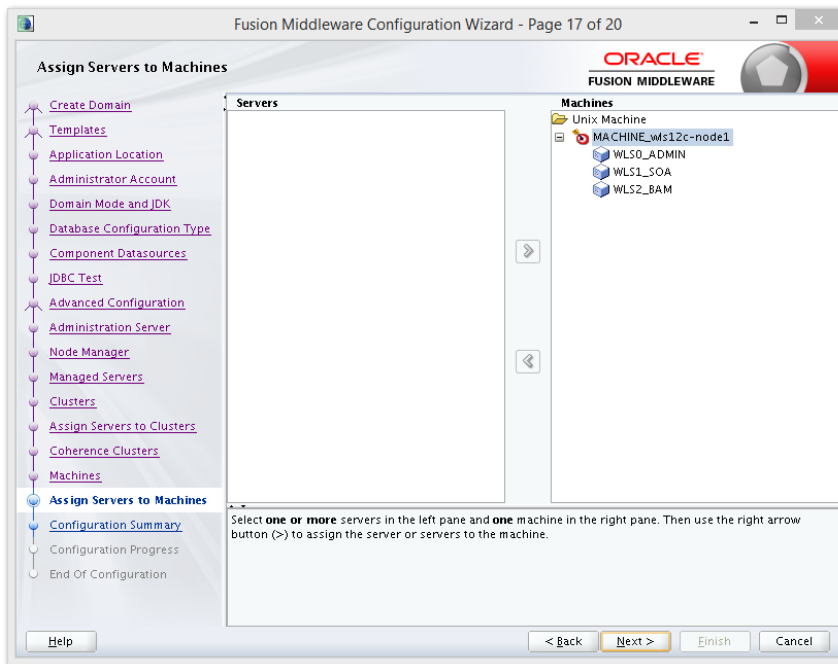
< Back Next > Finish Cancel

The screenshot shows the 'Coherence Clusters' configuration page in the Fusion Middleware Configuration Wizard. The left sidebar contains a navigation tree with the following items: Create Domain, Templates, Application Location, Administrator Account, Domain Mode and JDK, Database Configuration Type, Component Datasources, JDBC Test, Advanced Configuration, Administration Server, Node Manager, Managed Servers, Clusters, Assign Servers to Clusters, Coherence Clusters (highlighted), Machines, Configuration Summary, Configuration Progress, and End Of Configuration. The main area displays a table with two columns: 'Cluster Name' and 'Unicast Listen Port'. A single row is visible with the cluster name 'defaultCoherenceCluster' and a listen port of '0'. At the top right of the main area, there is a 'Disgard Changes' button. At the bottom of the window, there are navigation buttons: '< Back', 'Next >', 'Finish', and 'Cancel'. A 'Help' button is located at the bottom left.

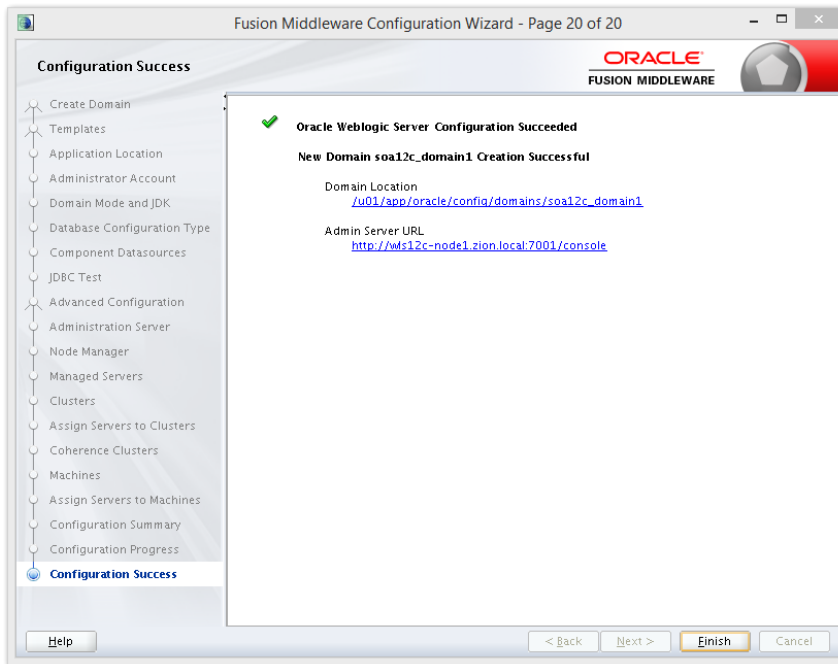
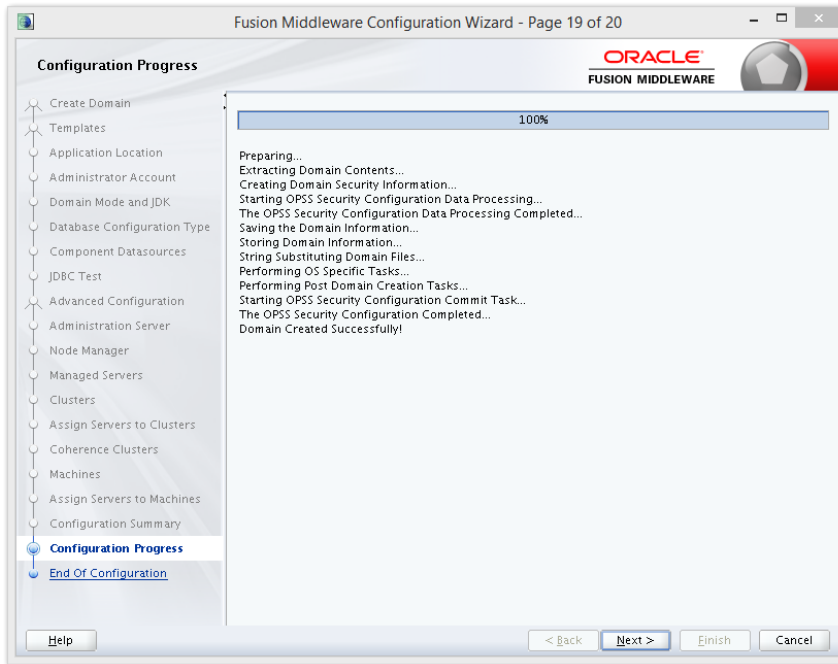
### Step 13:



### Step 14:



### Step 15:



## 2.8 Remote Setup Configuration:

Remote setup means SOA is installed in different machine and EAR is running in different machine.

**Configuring Flexcube Application to point to remote BPEL instances.**

1. Following Jars has to be copied to <Weblogic\_home>\<domain>\lib

Jar to be copied	Path where the jar is available in SOA Middleware
bpm-services.jar	%Middleware Home%/soa/soa/modules/oracle.soa.workflow_11.1.1
fabric-runtime.jar	%Middleware Home%/soa/soa/modules/oracle.soa.fabric_11.1.1
tracking-fabric.jar	
tracking-api.jar	
jrf-api.jar	%Middleware Home%/oracle_common/modules/oracle.jrf
orabpel-common.jar	%Middleware Home%/soa/soa/modules/oracle.soa.bpel_11.1.1
orabpel-thirdparty.jar	
orabpel.jar	
soa-infra-mgmt.jar	%Middleware Home%/soa/soa/modules/oracle.soa.mgmt_11.1.1
xml.jar	%Middleware Home%/oracle_common/modules/oracle.xdk
xmlparserv2.jar	
mdsrt.jar	%Middleware Home%/oracle_common/modules/oracle.mds
com.oracle.webservices.fmw.wsclient-rt-impl.jar	%Middleware Home%/oracle_common/modules

2. Additionally if BPMN enabled

Jar to be copied	Path where the jar is available in SOA Middleware
------------------	---

oracle.bpm.bpm-services.client.jar	%Middleware Home%/soa/soa/modules/oracle.bpm.client_11.1.1
oracle.bpm.bpm-services.interface.jar	
oracle.bpm.project.draw.jar	%Middleware Home%/soa/soa/modules/oracle.bpm.project_11.1.1
oracle.bpm.project.model.jar	
oracle.bpm.core.jar	%Middleware Home%/soa/soa/modules/oracle.bpm.runtime_11.1.1
oracle.bpm.ui.jar	%Middleware Home%/soa/soa/modules/oracle.bpm.workspace_11.1.1
oracle.bpm.casemgmt.interface.jar	%Middleware Home%/soa/soa/modules/oracle.bpm.runtime_11.1.1

3. The jars copied have to be from same soa-suite version where BPEL processflows deployed. Ie, We cannot have jars from soa12.1.3.0.0 and BPEL deployed in soa12.2.1.0.0 It should be consistent.
4. The properties file **fcubs.properties** should read as below  

```

WORKFLOW_CLIENT_TYPE =REMOTE
java.naming.provider.url =t3://10.184.74.143:8001/?partitionName=DOMAIN (Remote soa server provider url)
java.naming.security.principal =weblogic (Remote bpel server userid)
java.naming.security.credentials=RF2MRTP/MG8TB1T5QG6lnQ== (Remote soa server password)
dedicated.connection =true
domain.name =default (Remote soa server partition)
domain.pwd =RF2MRTP/MG8TB1T5QG6lnQ==
(Remote soa server password)

```
5. Configure domain password same as for both fcj ear domain and remote BPEL domain and DowngradeUntrusted Principals has to be checked

Security - base\_kernel1132 - WLS Console - Mozilla Firefox

File Edit View History Bookmarks Tools Help

adding trust between two weblogic dom... x Configuring Security for a WebLogic Do... x Enable global trust between domains x Security - base\_kernel1132 - WLS Console x /Farm\_base\_kernel1132/base\_kernel11... x

http://110.184.74.143:7389/console/console.portal?\_nfpb=true&\_pageLabel=DomainSecurityGeneralPage8SecurityDomainDomainConfigGeneralPortlethandl

Reset the EnforceStrictURLPattern flag

System Status

Health of Running Servers

- Failed (0)
- Critical (0)
- Overloaded (0)
- Warning (0)
- OK (2)

Advanced

**Security Interoperability Mode:** default

**Credential:** .....

**Confirm Credential:** .....

**NodeManager Username:** weblogic

**NodeManager Password:** .....

**Confirm NodeManager Password:** .....

**Web App Files Case Insensitive:** false

**Enforce Strict URL Pattern**

**Downgrade Untrusted Principals**

**Principal Equals Case Insensitive**

**Principal Equals Compare DN and GUID**

**Compatibility Connection Filters Enabled**

**Allow Security Management Operations if Non-dynamic Changes have been Made**

**Clear Text Credential Access Enabled**

Find: ;lang.SecurityException |text | Previous Highlight all Match case



SOA Suite Setup for BPEL Process Flow  
[December] [2018]  
Version 14.2.0.0.0

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