

***Oracle Fusion Middleware - WebLogic  
Server 14c (14.1.1.0.0) on SUSE Linux  
Enterprise Server 15 (SP1) for x86-64***



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## Introduction

This document provides details on installing Oracle WebLogic Server 14c on SUSE Linux Enterprise Server 15 SP1. Details are provided for Intel(x86-64) versions of both Oracle WebLogic Server 14c and SUSE Linux Enterprise Server 15 SP1. Similar steps apply to other platforms (x86, ia64, System z, etc.).

Official Oracle product documentation is available at: <http://docs.oracle.com/en/>

## System Requirements and Specifications

### Hardware Requirements

Requirement	Minimum
CPU	1-GHz CPU
Physical Memory	4 GB
Swap space	Approx. twice the size of RAM
Disk space in /tmp	2 GB
Disk space for software files	2 GB

### Software Requirements

#### SUSE

- SUSE Linux Enterprise Server 15 SP1 (x86-64)  
(<http://download.suse.de/install>)

#### Oracle

- WebLogic Server 14c (14.1.1.0.0) (fmw\_14.1.1.0.0\_wls\_Disk1\_1of1.zip)  
(<https://www.oracle.com/middleware/technologies/fusionmiddleware-downloads.html>)
- Java SE Development Kit 8 (jdk-8u221-linux-x64.tar.gz)  
(<https://www.oracle.com/technetwork/java/javase/downloads/index.html>)

### Testing Machine Information

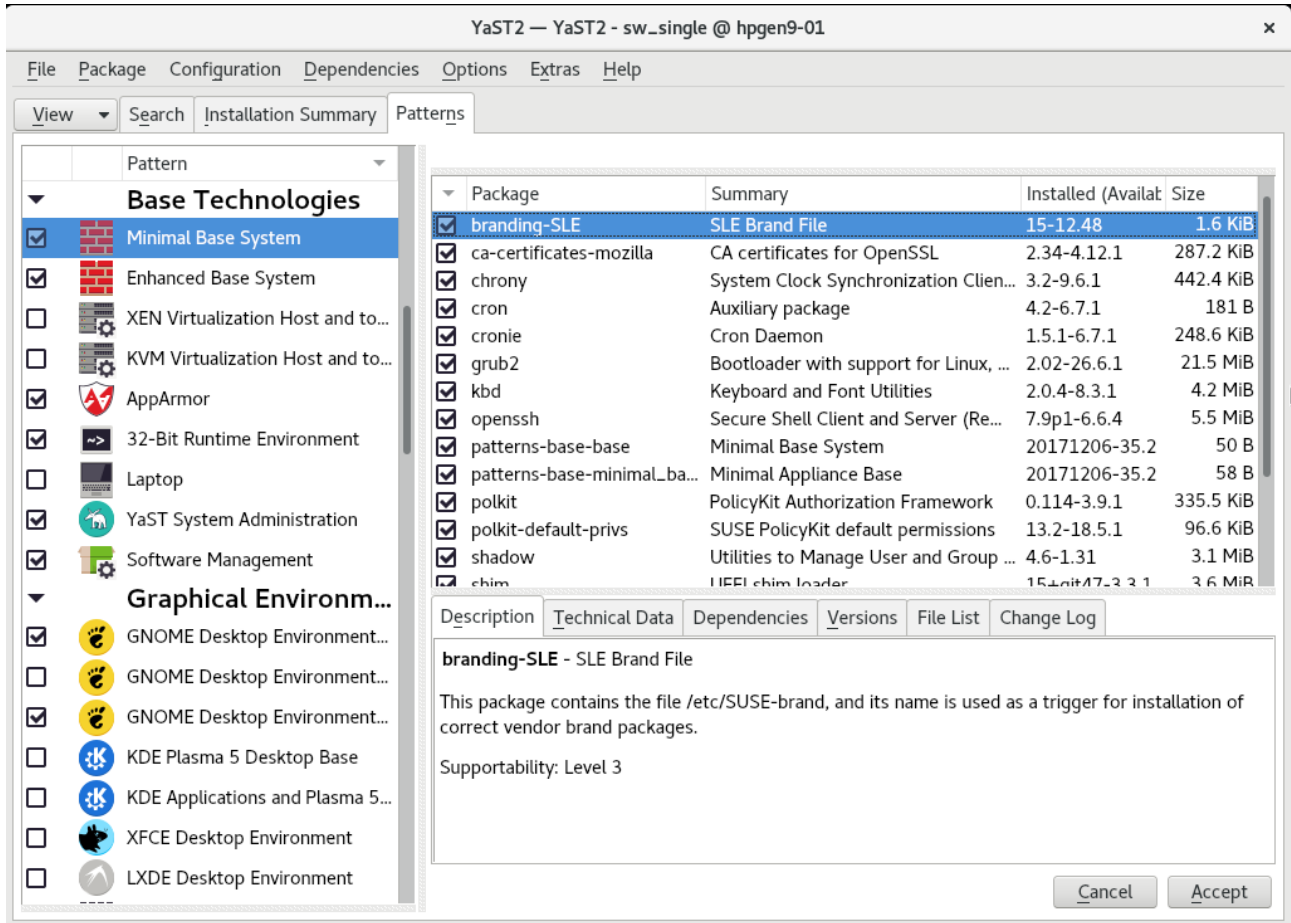
HP DL388 Gen9 Server  
 CPU: 2 \* Intel(R) Xeon(R) CPU E5-2630 v3 @ 2.40GHz  
 RAM: 64 GB  
 NIC: 8  
 Local HDD: 2TB  
 OS: SUSE Linux Enterprise Server 15 SP1 (x86-64) - Kernel version: 4.12.14-197.15-default

# Prerequisites

## 1. Installing SUSE Linux Enterprise Server 15 SP1

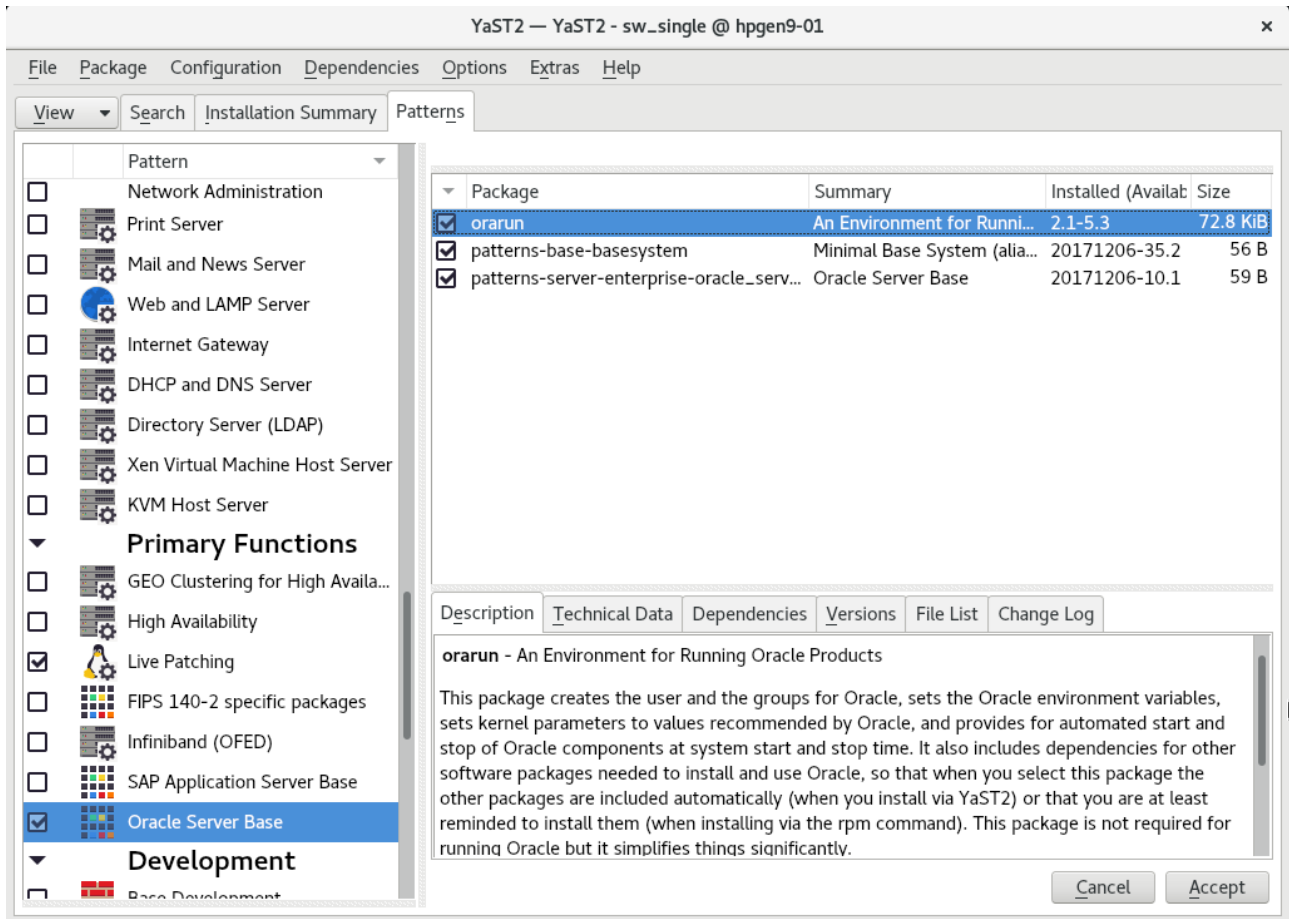
1-1. Install SUSE Linux Enterprise Server 15 SP1 on your testing machine. To do so, follow the instructions in the official SUSE Linux Enterprise Server documentation at <https://www.suse.com/documentation/>.

**Figure 1-1 Software Installed as shown below**



In YaST, select the patterns you need. Make sure you select the patterns and packages required to run Oracle products.

**Figure 1-2 Software Installed as shown below**



After the installation of SUSE Linux Enterprise Server, the following information about the operating system and the kernel version is displayed.

**Figure 1-3 OS release information and kernel version**

```
oracle@hpgen9-01:~> more /etc/os-release
NAME="SLES"
VERSION="15-SP1"
VERSION_ID="15.1"
PRETTY_NAME="SUSE Linux Enterprise Server 15 SP1"
ID="sles"
ID_LIKE="suse"
ANSI_COLOR="0;32"
CPE_NAME="cpe:/o:suse:sles:15:sp1"
oracle@hpgen9-01:~> uname -a
Linux hpgen9-01 4.12.14-197.15-default #1 SMP Thu Aug 1 12:18:13 UTC 2019 (8a1385f) x86_64 x86_64 x86_64 GNU/Linux
oracle@hpgen9-01:~> █
```

1-2. Special Startup Requirements.

1). To set the SHMMAX kernel parameter.

Change the value of SHMMAX to 4294967295 by including the following line in `/etc/sysctl.conf`:

```
kernel.shmmax = 4294967295
```

Activate the new SHMMAX setting by running the command:

```
/sbin/sysctl -p
```

2). Checking the Open File Limit and Maximum Stack Size.

```
ulimit -a
```

To change the open file limits, login as root and edit the `/etc/security/limits.conf` file. Look for the following lines:

```
* soft nfile 4096
* hard nfile 65536
* soft nproc 2047
* hard nproc 16384
```

To change the maximum stack size, login as root and edit the `/etc/security/limits.conf` file. Add the following line:

```
oracle soft stack 10240
```

then reboot the machine.

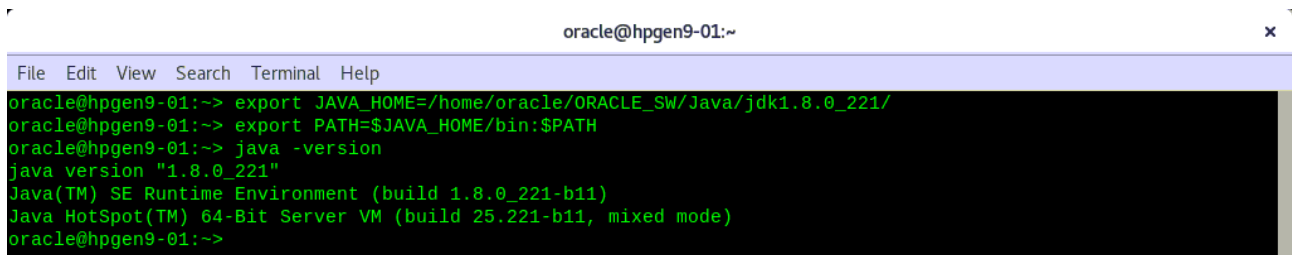
## 2. Installing Java

2-1. Log in to the target system (SUSE Linux Enterprise Server 15 SP1 64-bit OS) as a non-admin user. Download Java SE Development Kit 8 (jdk-8u221-linux-x64.tar.gz) from <https://www.oracle.com/technetwork/java/javase/downloads/index.html>.

(Note: The classes in com.oracle.weblogic.management.tools.migration.jar are built with JDK8 and must be run with JDK8. For 14c(14.1.1.0.0), the certified JDK was jdk1.8.0\_191 and later.)

2-2. Set environment variables JAVA\_HOME and PATH to ensure the proper JDK version is installed and ready for use.

**Figure 2-1 Java information**



```
oracle@hpgen9-01:~  
File Edit View Search Terminal Help  
oracle@hpgen9-01:~> export JAVA_HOME=/home/oracle/ORACLE_SW/Java/jdk1.8.0_221/  
oracle@hpgen9-01:~> export PATH=$JAVA_HOME/bin:$PATH  
oracle@hpgen9-01:~> java -version  
java version "1.8.0_221"  
Java(TM) SE Runtime Environment (build 1.8.0_221-b11)  
Java HotSpot(TM) 64-Bit Server VM (build 25.221-b11, mixed mode)  
oracle@hpgen9-01:~>
```

# Oracle WebLogic Server 14c Installation

## 1. Installing Oracle WebLogic Server software

1-1. Log in to the target system (SUSE Linux Enterprise Server 15 SP1 64-bit OS) as a non-admin user. Download the Oracle WebLogic Server 14c (14.1.1.0.0) from <https://www.oracle.com/middleware/technologies/fusionmiddleware-downloads.html>.

(**Note:** Please ensure the installation user has the proper permissions to install and configure the software.)

1-2. Go to the directory where you downloaded the installation program. Extract the contents of this .zip (fmw\_14.1.1.0.0\_wls\_Disk1\_1of1.zip) file and launch the installation program by running **'java -jar fmw\_14.1.1.0.0\_wls.jar'**

### Install Flow:

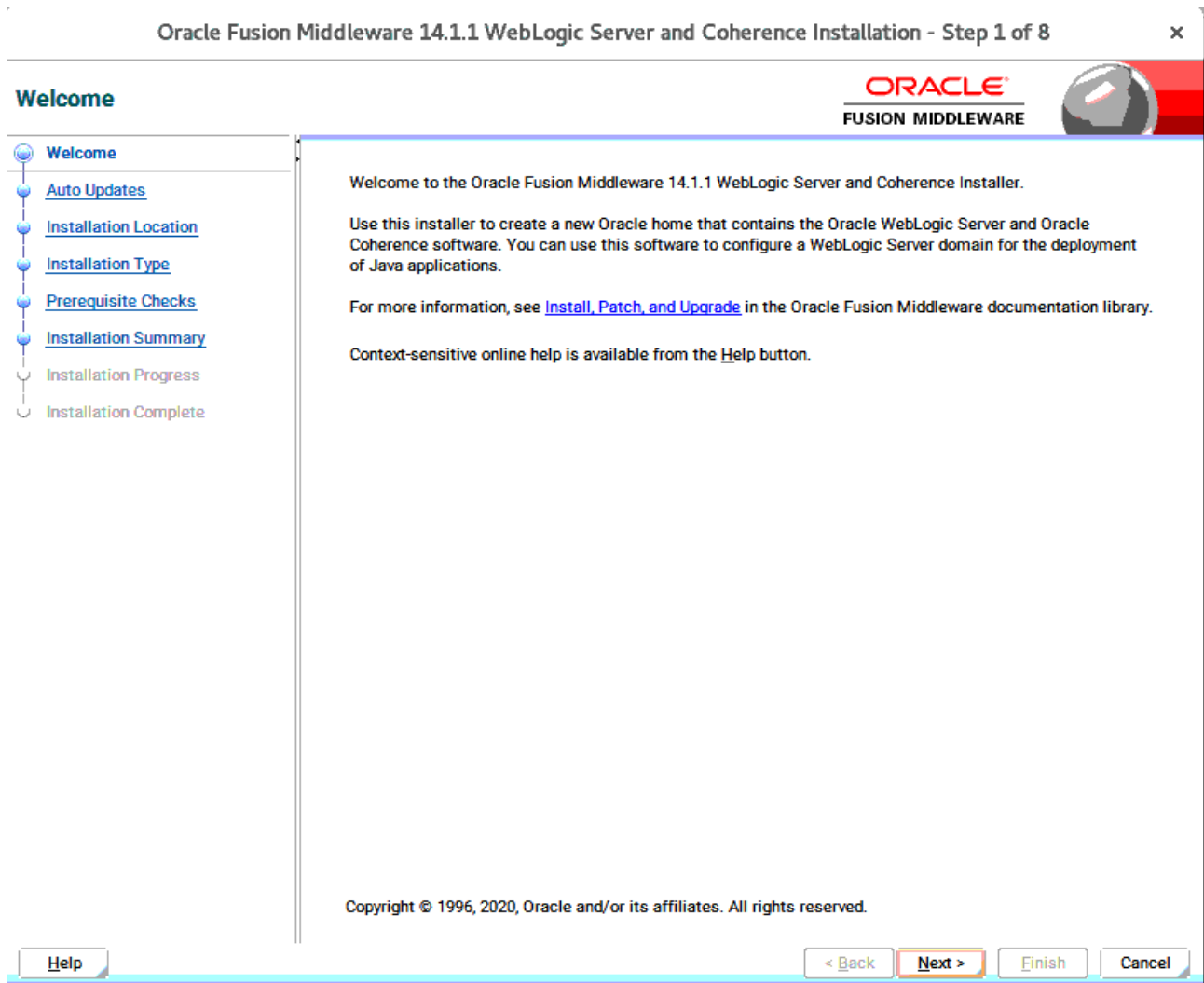
1). Installation Inventory Setup.

If this is your first Oracle installation on a host that is running SLES, please use this screen to specify the location of the Oracle central inventory directory and Operating System Group Name, then click **OK** to continue.



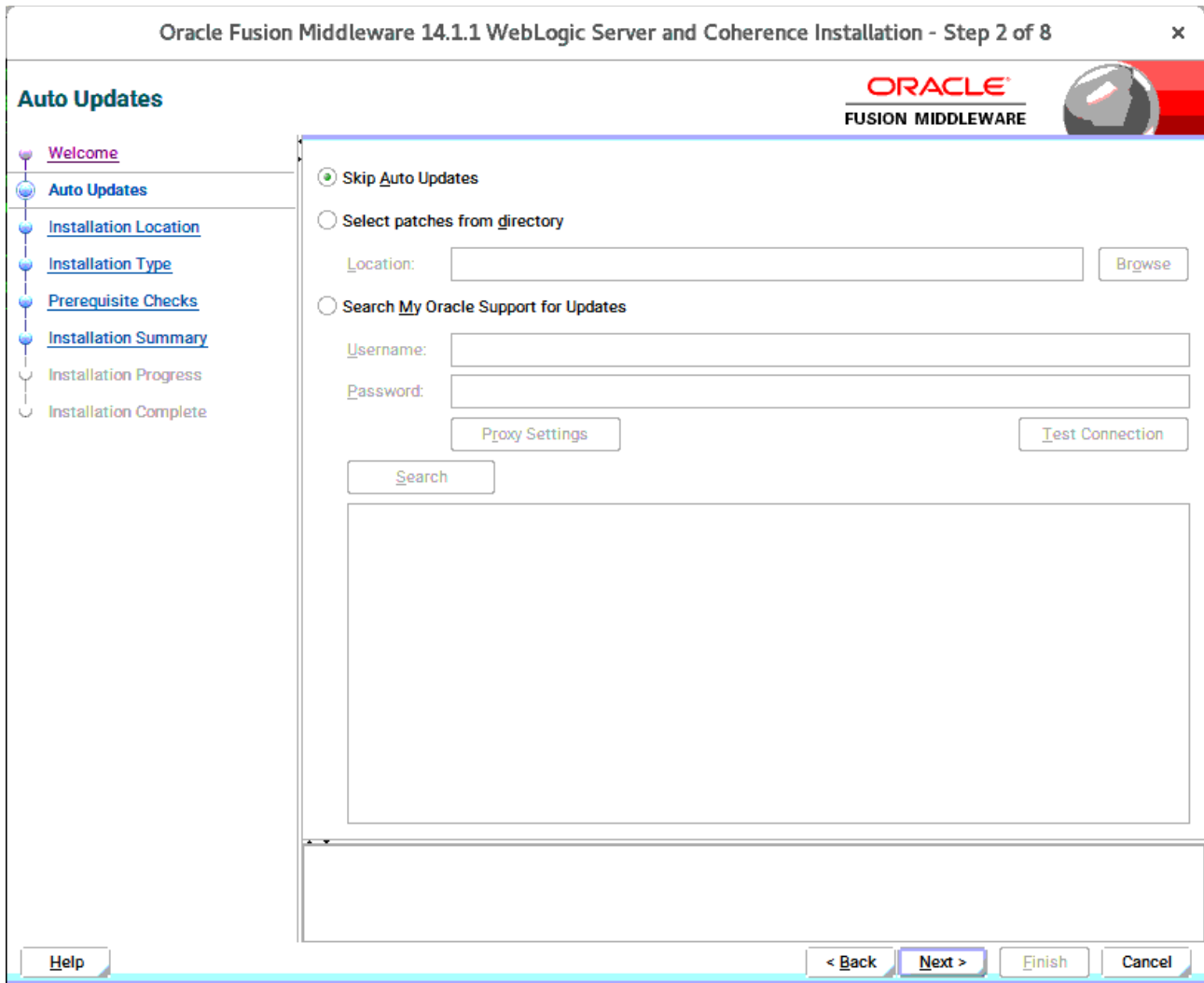


2). Welcome.



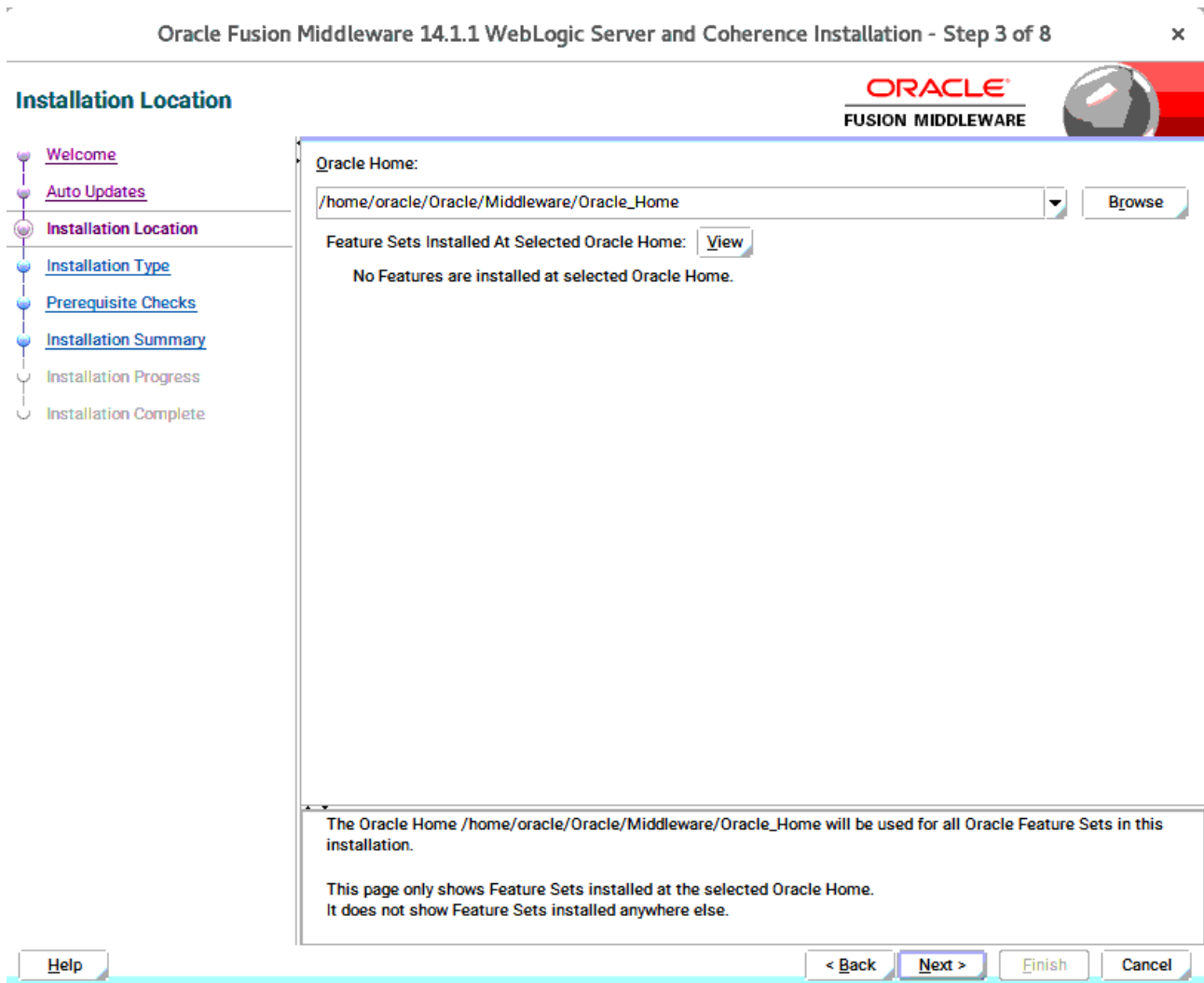
Review the information on this screen carefully to be sure you have performed all the necessary prerequisites, then click **Next** to continue.

3). Auto Updates.



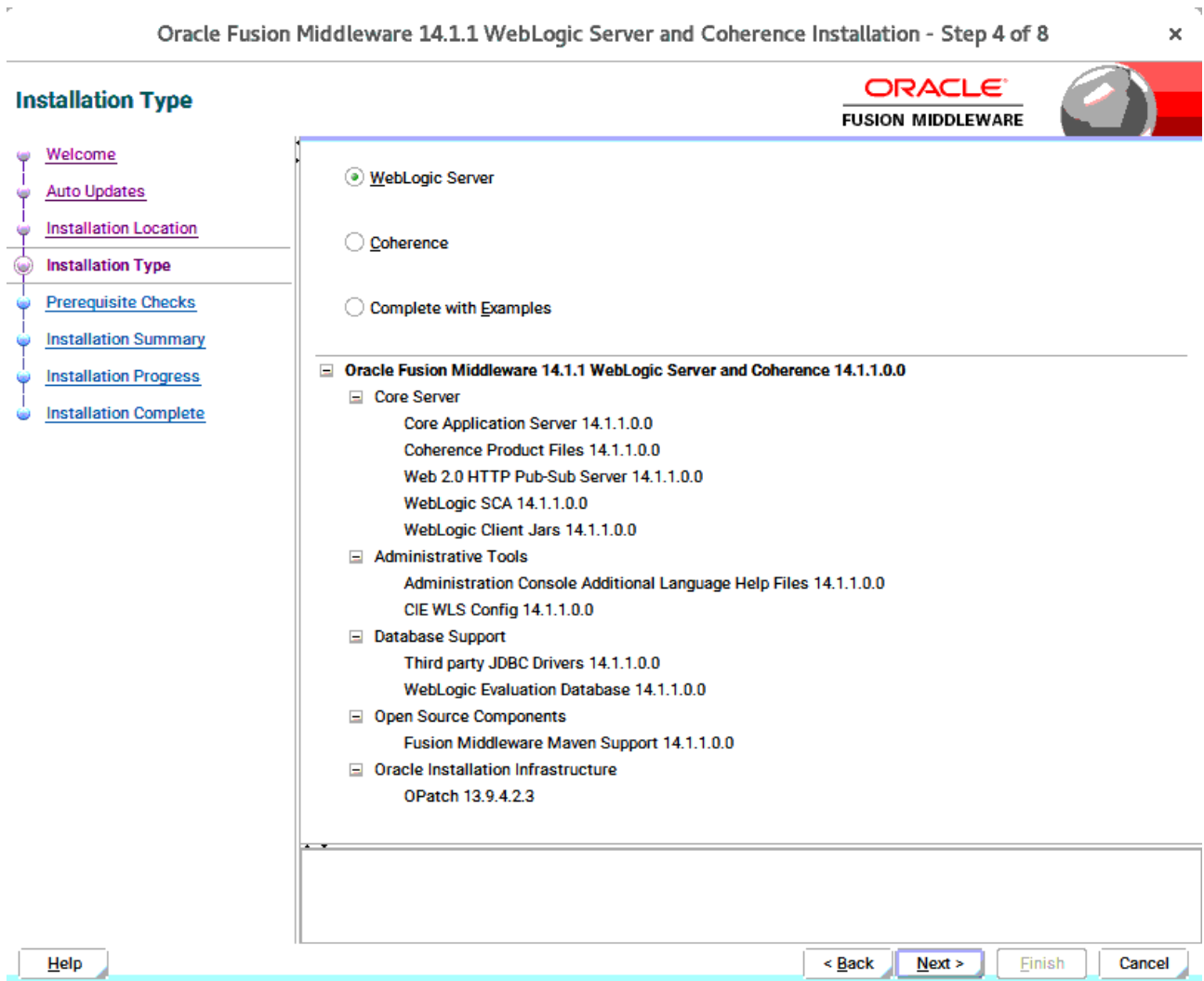
Select option "Skip Auto Updates" to skip this screen, then click **Next** to continue.

4). Installation Location.



Type the full path of the directory in the Oracle Home field, then click **Next** to continue.

5). Installation Type.



Use this screen to determine the type of installation you want to perform, then click **Next** to continue.

6). Prerequisite Checks.

Oracle Fusion Middleware 14.1.1 WebLogic Server and Coherence Installation - Step 5 of 8

### Prerequisite Checks

100%

✓	Checking operating system certification
✓	Checking Java version used to launch the installer

Stop Rerun Skip View Successful Tasks View Log

✓ Checking operating system certification  
Expected result: One of oracle-6, oracle-7, redhat-7, redhat-6, SuSE-11, SuSE-12, SuSE-15  
Actual Result: SuSE-15-SP1  
Check complete. The overall result of this check is: Passed

✓ Checking Java version used to launch the installer  
Expected result: 1.8.0\_191  
Actual Result: 1.8.0\_221  
Check complete. The overall result of this check is: Passed

Help < Back Next > Finish Cancel

Prerequisite Checks results will be shown as above, Oracle Fusion Middleware 14c is certified on SLES 15(+), click **Next** to continue.

7). Installation Summary.

Oracle Fusion Middleware 14.1.1 WebLogic Server and Coherence Installation - Step 6 of 8

**Installation Summary**

- Welcome
- Auto Updates
- Installation Location
- Installation Type
- Prerequisite Checks
- Installation Summary**
- Installation Progress
- Installation Complete

**Install Oracle Fusion Middleware 14.1.1 WebLogic Server and Coherence**

- Installation Location**
  - Oracle Home Location: /home/oracle/Oracle/Middleware/Oracle\_Home
  - Log File Location: /tmp/OraInstall2020-05-08\_04-13-02PM/install2020-05-08\_04-13-02PM.log
- Disk Space**
  - Required: 976 MB
  - Available: 417108 MB
- Feature Sets to Install**
  - Administration Console Additional Language Help Files 14.1.1.0.0
  - CIE WLS Config 14.1.1.0.0
  - Fusion Middleware Maven Support 14.1.1.0.0
  - OPatch 13.9.4.2.3
  - Third party JDBC Drivers 14.1.1.0.0
  - WebLogic Evaluation Database 14.1.1.0.0
  - Core Application Server 14.1.1.0.0
  - Coherence Product Files 14.1.1.0.0
  - Web 2.0 HTTP Pub-Sub Server 14.1.1.0.0
  - WebLogic SCA 14.1.1.0.0
  - WebLogic Client Jars 14.1.1.0.0

Save Response File

Select Install to accept the above options and start the installation.

To change the above options before starting the installation, select the option to change in the left pane or use the Back button.

Help < Back Next > Install Cancel

This screen contains a list of the feature sets you selected for installation, along with the approximate amount of disk space to be used by the feature sets once installation is complete. Check the information, then click **Install** to continue.

8). Installation Progress.

Oracle Fusion Middleware 14.1.1 WebLogic Server and Coherence Installation - Step 7 of 8

**Installation Progress**

ORACLE  
FUSION MIDDLEWARE

100%

✓	Prepare
✓	Copy
✓	Generating Libraries
✓	Performing String Substitutions
✓	Linking
✓	Setup
✓	Saving the inventory
✓	Post install scripts

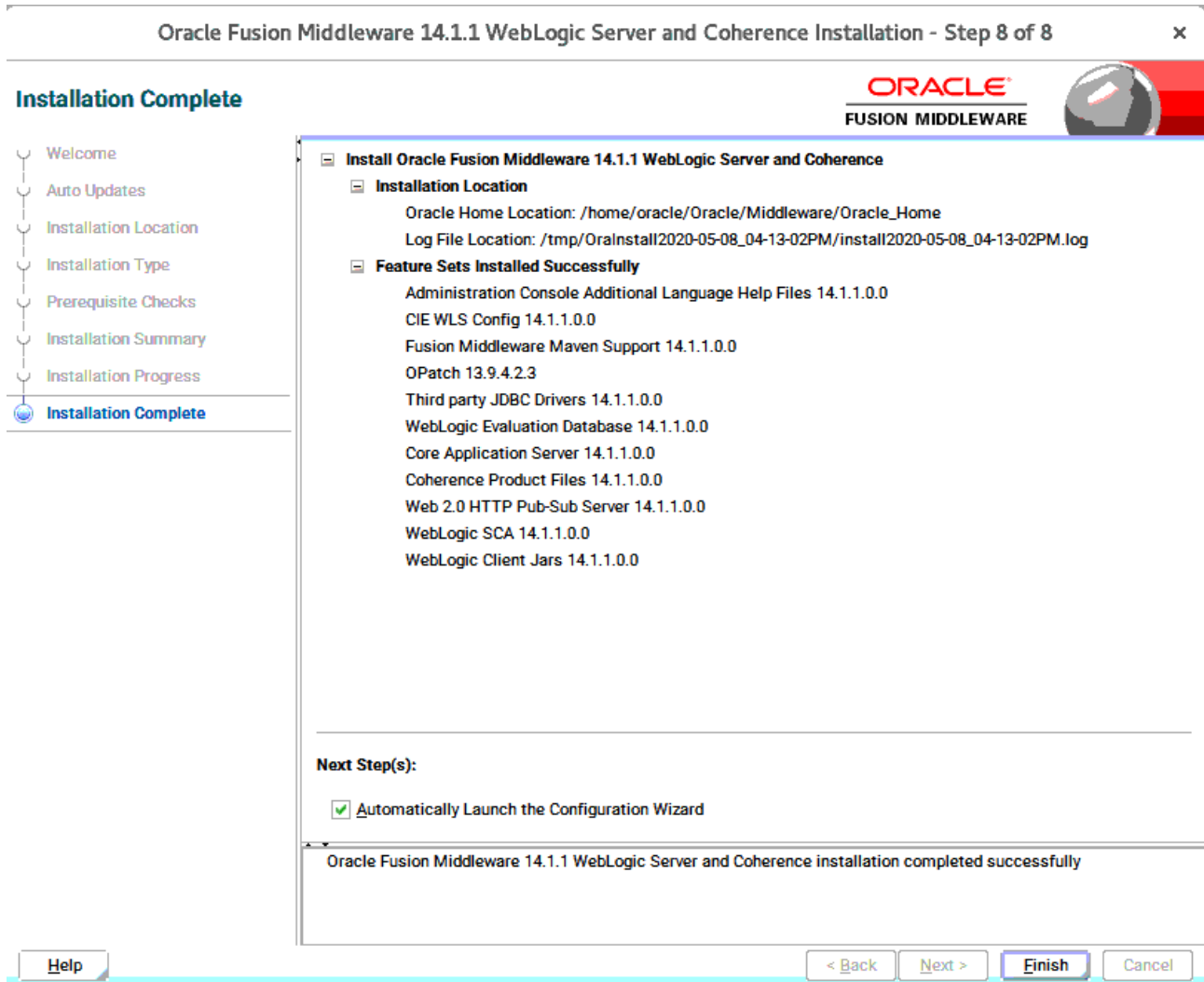
View Messages  View Successful Tasks View Log

Hardware and Software  
Engineered to Work Together

Help < Back Next > Finish Cancel

This screen shows the progress of the installation. When the progress bar reaches 100%, the installation is complete. Click **Finish** to continue.

9). Installation Complete.



This screen appears at the conclusion of the installation. Select option "**Automatically Launch the Configuration Wizard**", then click **Finish** to dismiss the installer.

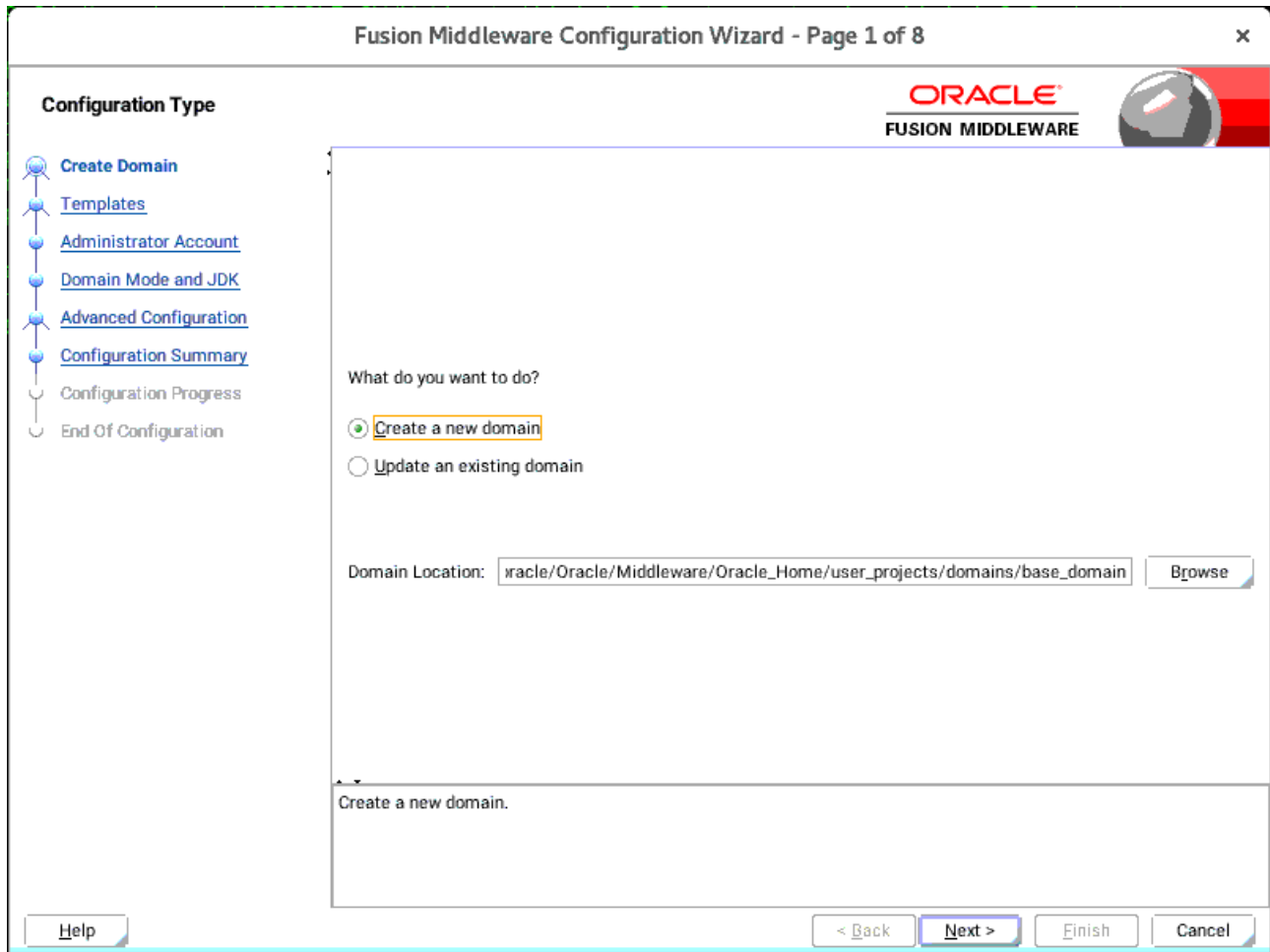


## 2. Creating and Configuring the WebLogic Domain

2-1. To begin domain configuration, you can automatically launch the Configuration Wizard through the option "**Automatically Launch the Configuration Wizard**" on the last Installation complete screen. You can also navigate to the '**ORACLE\_HOME/oracle\_common/common/bin**' directory and start the WebLogic Server Configuration Wizard by running: **./config.sh**'.

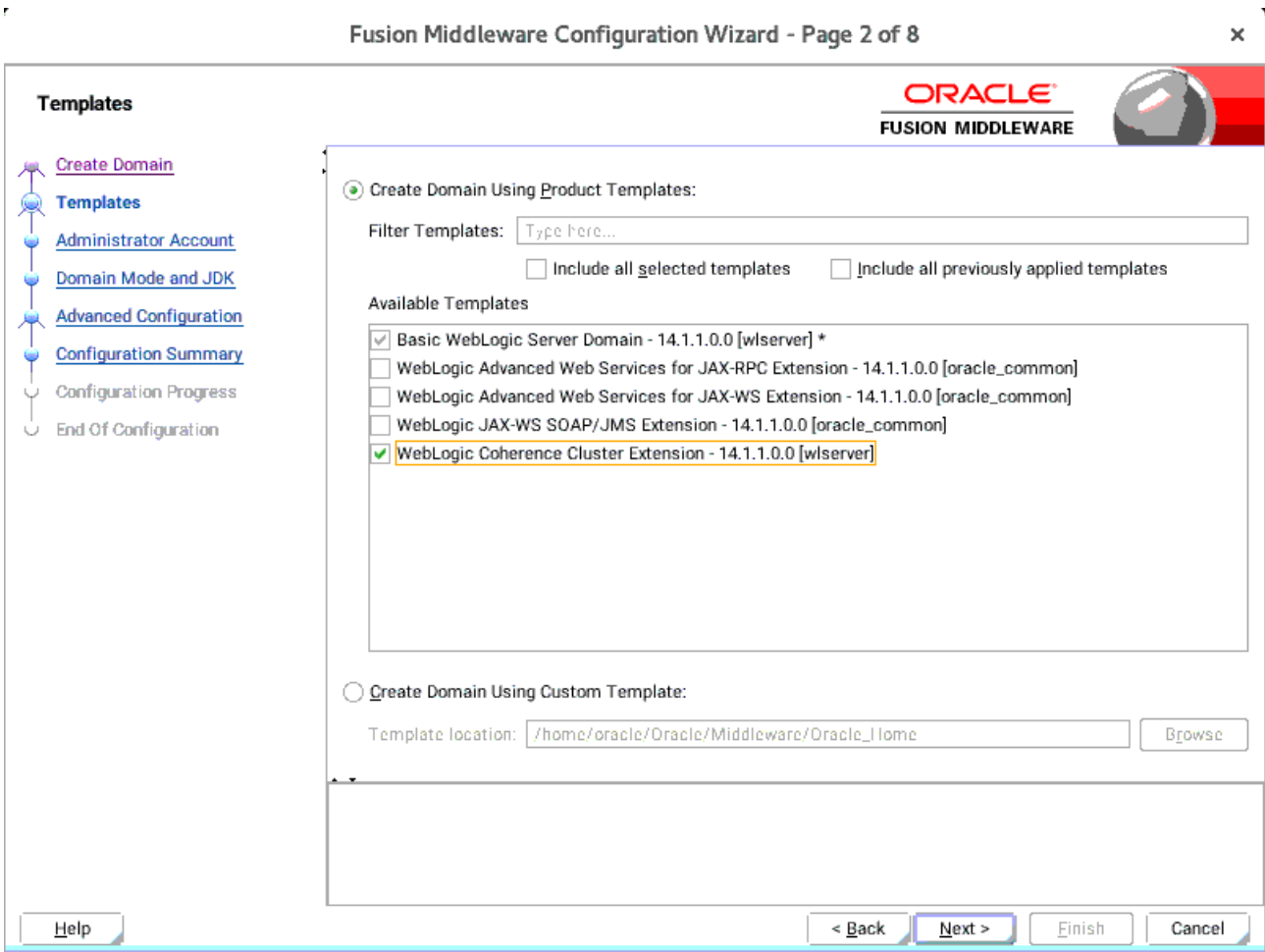
### Starting configuration:

1). Configuration Type.



Select option "**Create a New Domain**" and specify the Domain home directory in the "**Domain Location**" field, then click **Next** to continue.

2). Templates.



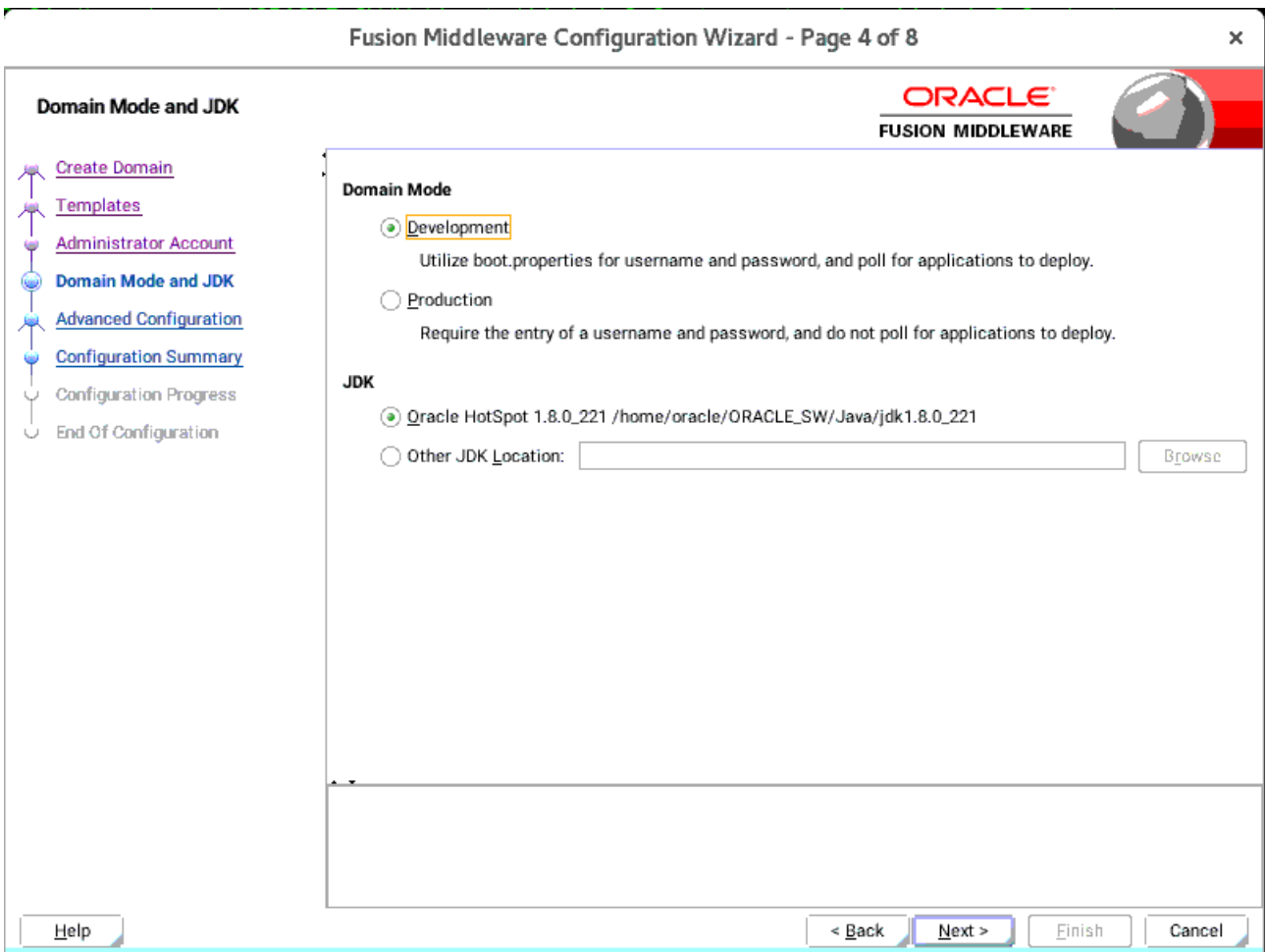
On the Templates screen select "**Basic WebLogic Server Domain (selected by default)**" and "**WebLogic Coherence Cluster Extension**" for configuration, then click **Next** to continue.

3). Administrator Account.

The screenshot shows the 'Administrator Account' configuration step in the Fusion Middleware Configuration Wizard. The window title is 'Fusion Middleware Configuration Wizard - Page 3 of 8'. The Oracle logo and 'FUSION MIDDLEWARE' text are visible in the top right corner. On the left, a navigation pane lists the following steps: 'Create Domain', 'Templates', 'Administrator Account' (highlighted), 'Domain Mode and JDK', 'Advanced Configuration', 'Configuration Summary', 'Configuration Progress', and 'End Of Configuration'. The main area contains three input fields: 'Name' with the value 'weblogic', 'Password' with masked characters '.....', and 'Confirm Password' with masked characters '.....'. Below these fields is a text box containing the instruction: '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 four buttons: 'Help', '< Back', 'Next >', 'Finish', and 'Cancel'.

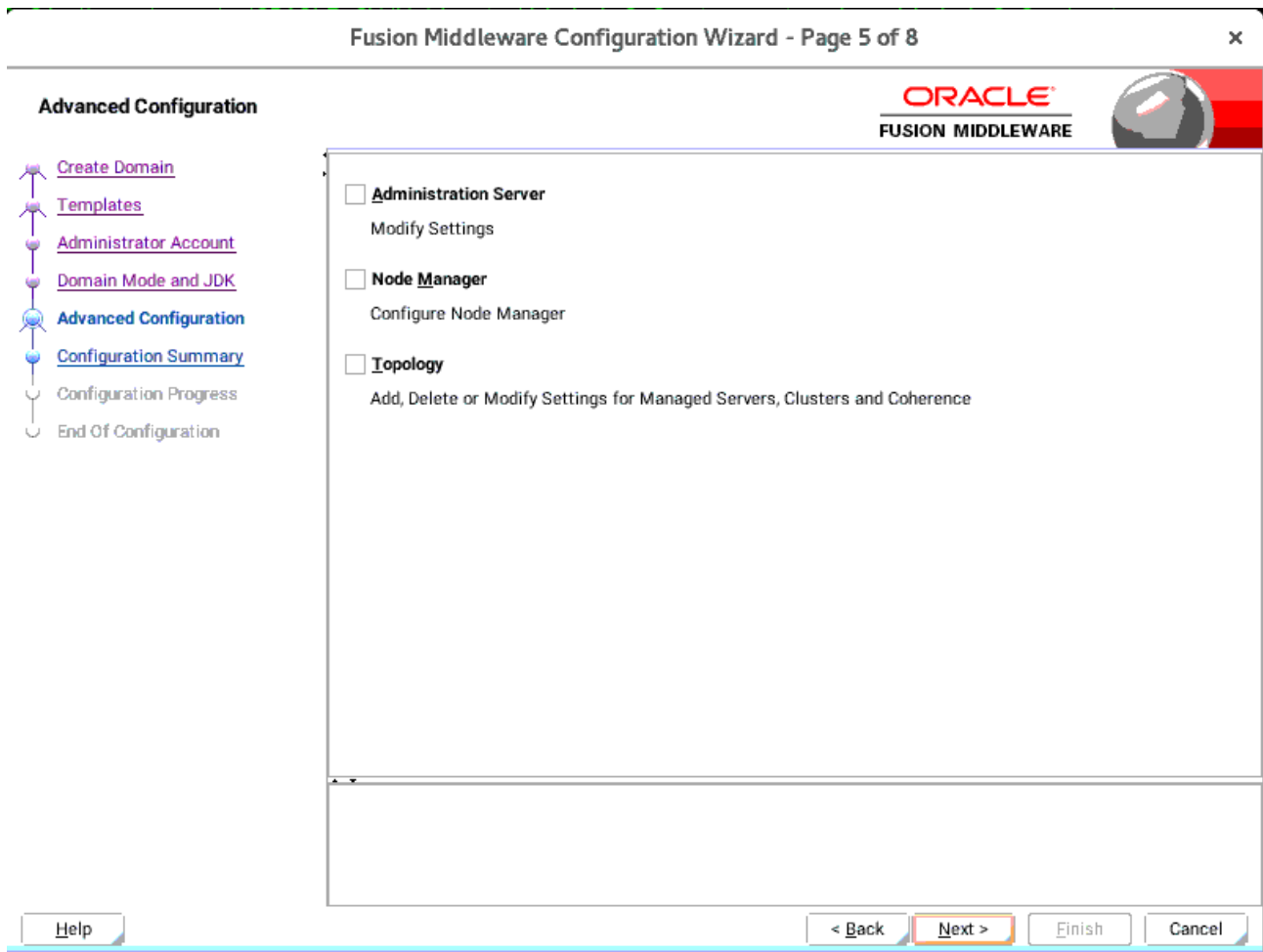
Specify the user name and password for the default WebLogic Administrator account for the domain, then click **Next** to continue.

4). Domain Mode and JDK.



Select "**Development**" in the Domain Mode field, select the "**Oracle HotSpot**" in the JDK field. Then click **Next** to continue.

5). Advanced Configuration.



According to your requirements, select the desired options on the Advanced Configuration screen. Then click **Next** to continue.

6). Configuration Summary.

**Fusion Middleware Configuration Wizard - Page 6 of 8**

**Configuration Summary**

ORACLE  
FUSION MIDDLEWARE

View: Deployment

- base\_domain (/home/oracle/Oracle/Middleware/Oracle)
  - AdminServer
    - AdminServer

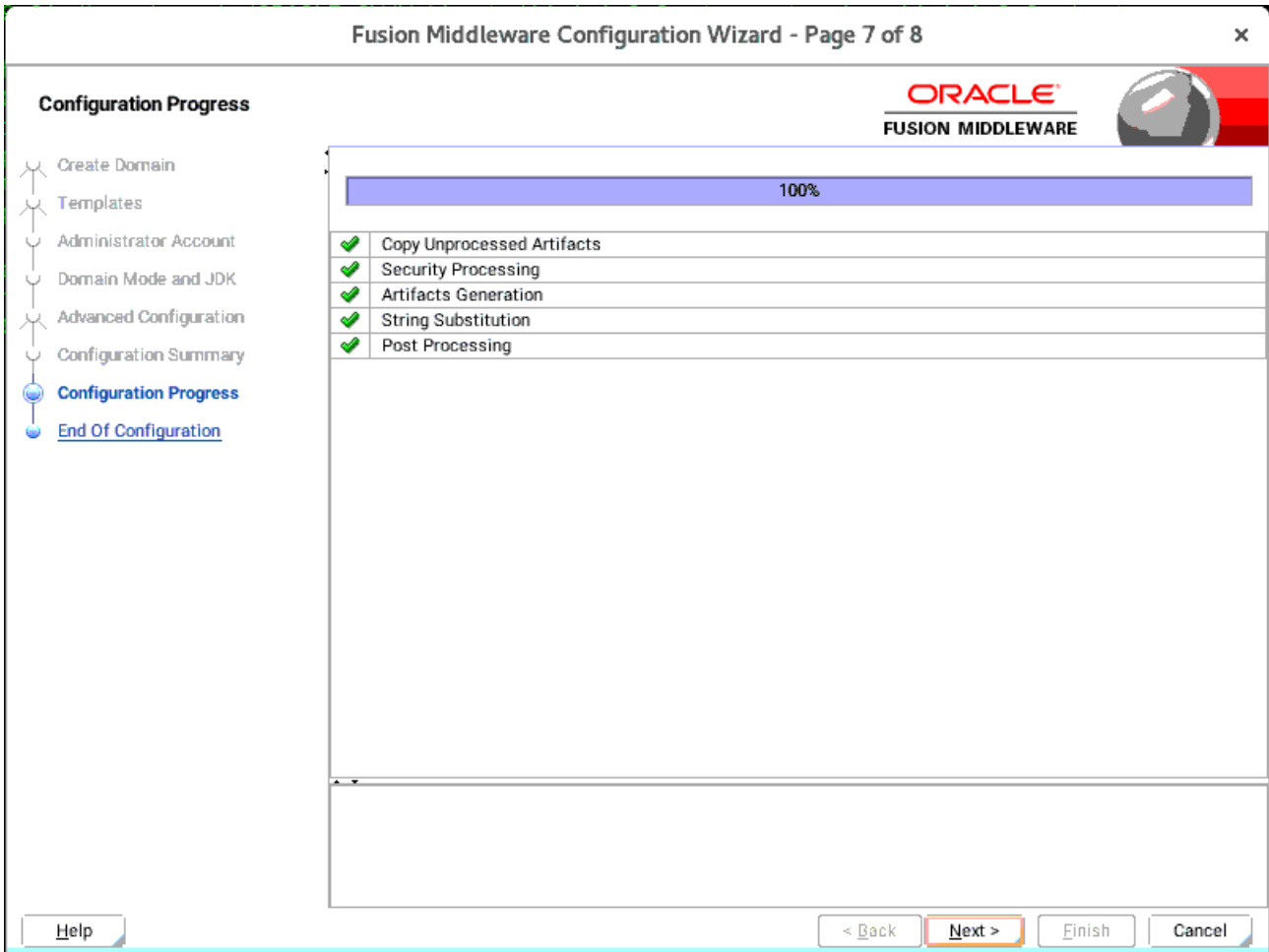
Name	Basic WebLogic Server Domain
Description	Create a basic WebLogic Server domain
Author	Oracle Corporation
Location	/home/oracle/Oracle/Middleware/Oracle
Name	WebLogic Coherence Cluster Extension
Description	Extend an existing WebLogic Server domain
Author	Oracle Corporation
Location	/home/oracle/Oracle/Middleware/Oracle

Select **Create** to accept the above options and start creating and configuring a new domain. To change the above configuration before starting Domain Creation, go back to the relevant page by selecting its name in the left pane, or by using the **Back** button.

Help    < Back    Next >    **Create**    Cancel

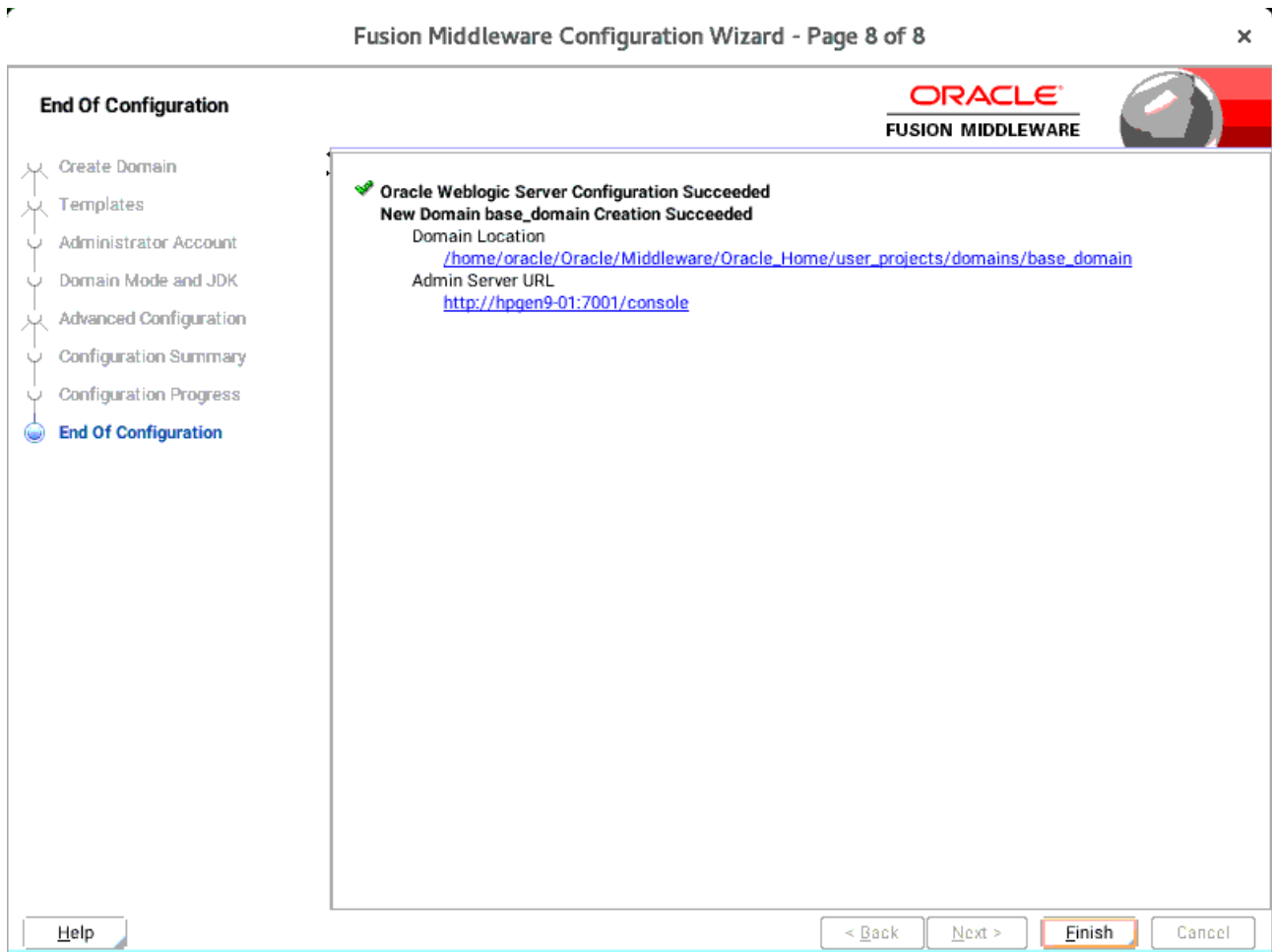
Review this screen to verify the information is correct, then click **Create** to continue.

7). Configuration Progress.



The Configuration Progress screen as shown above, once you see: "Domain Created successfully", click **Next** to continue.

8). End Of Configuration.



Once you see: "Oracle Weblogic Server Configuration Succeeded", record the "**Domain Location**" and "**Admin Server URL**", then click **Finish** to dismiss the Configuration Wizard.



### 3. Starting the Administration Server and verifying the Configuration

3-1. To start the Administration Server through a terminal, go to the DOMAIN\_HOME/bin directory and run the command `./startWebLogic.sh`.

**Figure 3-1-1 Starting the Administration Server through a terminal**

```

oracle@hpgen9-01:/home/oracle/Oracle/Middleware/Oracle_Home/user_projects/domains/base_domain/bin
File Edit View Search Terminal Tabs Help
oracle@hpgen9-01:/home/oracle/Oracle/Middleware/Oracl... x
iiop://147.2.207.96:7001/jndi/weblogic.management.mbeanservers.domainruntime.>
<May 8, 2020 4:30:09,464 PM GMT+08:00> <Notice> <JMX> <BEA-149512> <JMX Connector Server started at service:jmx:
iiop://147.2.207.96:7001/jndi/weblogic.management.mbeanservers.edit.>
<May 8, 2020 4:30:10,376 PM GMT+08:00> <Notice> <WebLogicServer> <BEA-000365> <Server state changed to STANDBY.>
<May 8, 2020 4:30:10,377 PM GMT+08:00> <Notice> <WebLogicServer> <BEA-000365> <Server state changed to STARTING.>
<May 8, 2020 4:30:10,438 PM GMT+08:00> <Notice> <Log Management> <BEA-170036> <The Logging monitoring service ti
mer has started to check for logged message counts every 30 seconds.>
<May 8, 2020 4:30:11,370 PM GMT+08:00> <Notice> <Log Management> <BEA-170027> <The server has successfully estab
lished a connection with the Domain level Diagnostic Service.>
<May 8, 2020 4:30:11,556 PM GMT+08:00> <Notice> <WebLogicServer> <BEA-000365> <Server state changed to ADMIN.>
<May 8, 2020 4:30:11,619 PM GMT+08:00> <Notice> <WebLogicServer> <BEA-000365> <Server state changed to RESUMING.>
<May 8, 2020 4:30:11,666 PM GMT+08:00> <Warning> <Server> <BEA-002611> <The hostname "localhost", maps to multip
le IP addresses: 127.0.0.1, 0:0:0:0:0:0:1.>
<May 8, 2020 4:30:11,667 PM GMT+08:00> <Notice> <Server> <BEA-002613> <Channel "Default[2]" is now listening on
127.0.0.1:7001 for protocols iiop, t3, ldap, snmp, http.>
<May 8, 2020 4:30:11,669 PM GMT+08:00> <Notice> <WebLogicServer> <BEA-000331> <Started the WebLogic Server Admin
istration Server "AdminServer" for domain "base_domain" running in development mode.>
<May 8, 2020 4:30:11,669 PM GMT+08:00> <Notice> <Server> <BEA-002613> <Channel "Default[1]" is now listening on
0:0:0:0:0:0:1%lo:7001 for protocols iiop, t3, ldap, snmp, http.>
<May 8, 2020 4:30:11,670 PM GMT+08:00> <Notice> <Server> <BEA-002613> <Channel "Default" is now listening on 147
.2.207.96:7001 for protocols iiop, t3, ldap, snmp, http.>
<May 8, 2020 4:30:11,670 PM GMT+08:00> <Notice> <Server> <BEA-002613> <Channel "Default[2]" is now listening on
127.0.0.1:7001 for protocols iiop, t3, ldap, snmp, http.>
<May 8, 2020 4:30:11,671 PM GMT+08:00> <Notice> <Server> <BEA-002613> <Channel "Default[1]" is now listening on
0:0:0:0:0:0:1%lo:7001 for protocols iiop, t3, ldap, snmp, http.>
<May 8, 2020 4:30:11,672 PM GMT+08:00> <Notice> <Server> <BEA-002613> <Channel "Default" is now listening on 147
.2.207.96:7001 for protocols iiop, t3, ldap, snmp, http.>
<May 8, 2020 4:30:11,682 PM GMT+08:00> <Notice> <WebLogicServer> <BEA-000360> <The server started in RUNNING mod
e.>
<May 8, 2020 4:30:11,706 PM GMT+08:00> <Notice> <WebLogicServer> <BEA-000365> <Server state changed to RUNNING.>

```

**Figure 3-1-2 Checking the listening port(7001)**

```

oracle@hpgen9-01:~$ ss -tupln | grep 7001
tcp LISTEN 0 128 [::ffff:147.2.207.96]:7001 *:* users:(("java",pid=19830,fd=729))
tcp LISTEN 0 128 [::1]:7001 [::]:* users:(("java",pid=19830,fd=728))
tcp LISTEN 0 128 [::ffff:127.0.0.1]:7001 *:* users:(("java",pid=19830,fd=727))
oracle@hpgen9-01:~$

```

3-2. Access to Oracle WebLogic Server Administration Console.

Figure 3-2-1 Access to WebLogic Server Admin Console - Login page

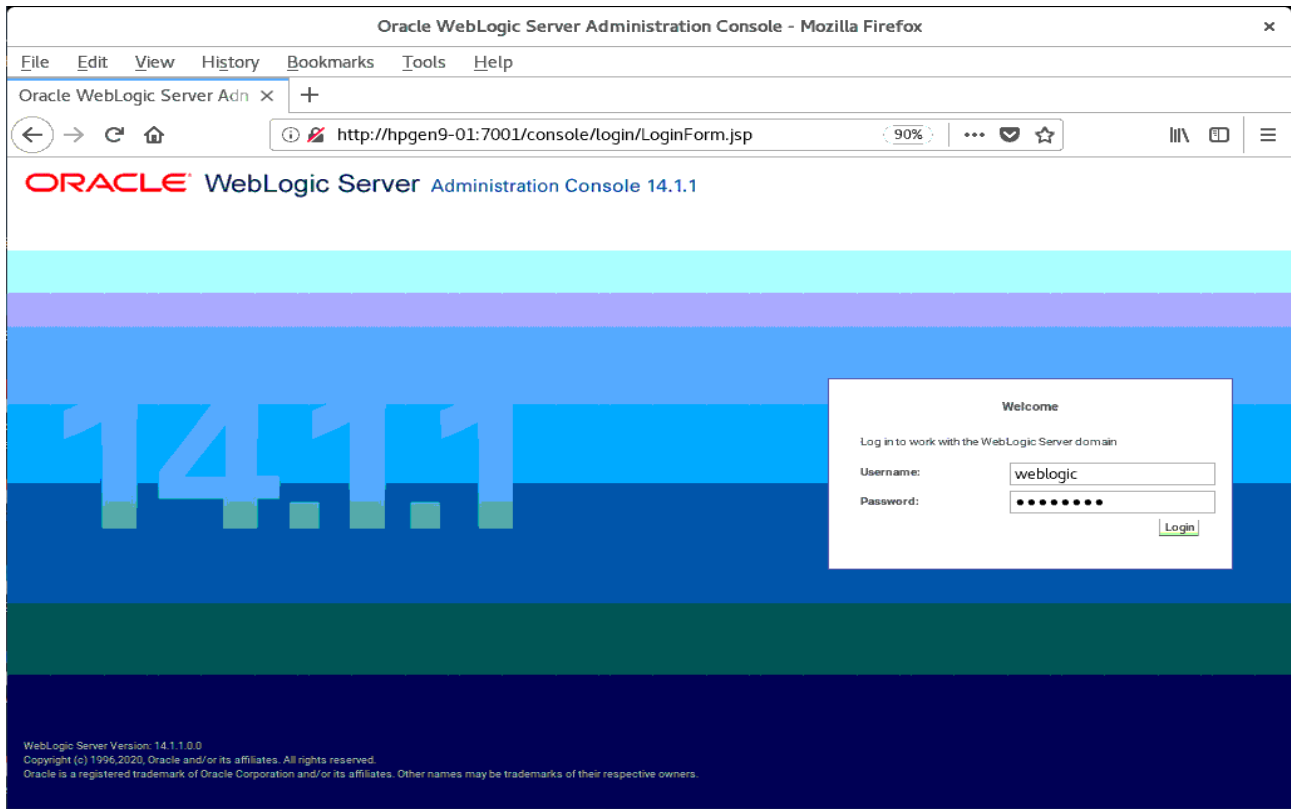


Figure 3-2-2 Viewing WebLogic Server Admin Console - Home page

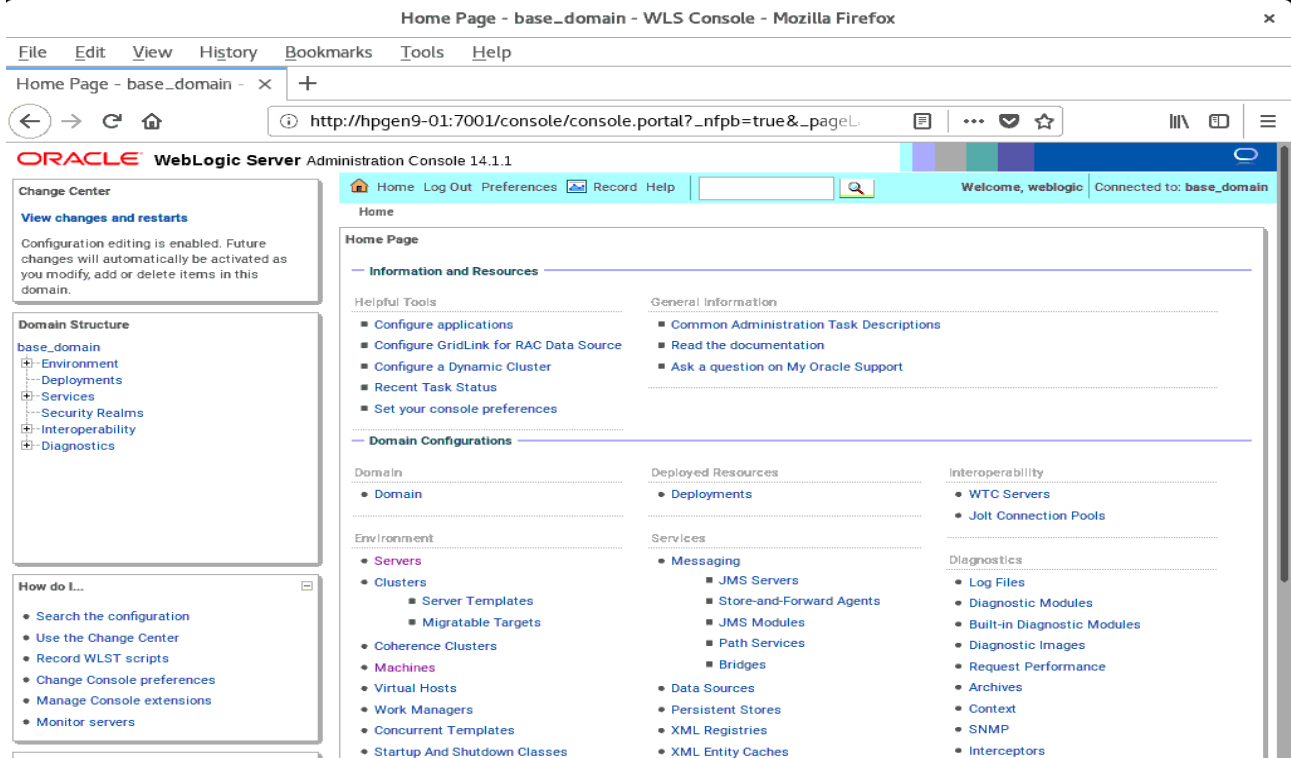


Figure 3-2-3 Viewing WebLogic Server Admin Console - Summary of Servers

The screenshot shows the Oracle WebLogic Server Administration Console interface. The browser window title is "Summary of Servers - base\_domain - WLS Console - Mozilla Firefox". The URL is "http://hpgen9-01:7001/console/console.portal?\_nfpb=true&\_pageL...". The page header includes "ORACLE WebLogic Server Administration Console 14.1.1" and "Welcome, weblogic Connected to: base\_domain".

The main content area is titled "Summary of Servers" and has two tabs: "Configuration" (selected) and "Control". Below the tabs, there is a description: "A server is an instance of WebLogic Server that runs in its own Java Virtual Machine (JVM) and has its own configuration. This page summarizes each server that has been configured in the current WebLogic Server domain." There is a refresh icon and a "Customize this table" link.

The table shows "Servers (Filtered - More Columns Exist)" with the following data:

<input type="checkbox"/>	Name	Type	Cluster	Machine	State	Health	Listen Port
<input type="checkbox"/>	AdminServer(admin)	Configured			RUNNING	OK	7001

Navigation buttons "New", "Clone", and "Delete" are present above and below the table. The page also includes a "Change Center" sidebar with "View changes and restarts" and a "Domain Structure" sidebar showing a tree view of the domain.

## **Additional Comments**

This document shows how to create a standard installation topology for Oracle WebLogic Server. You can extend this topology to make it highly available and secure so it is suitable for a production system.

**Thank you !**  
**SUSE ISV Engineering Team**  
**May 9th, 2020**  
<https://www.suse.com>